

GRASPINNO

Transnational model, strategies and decision support for innovative clusters and business networks towards green growth, focusing on green e-procurement in EE/RES for energy refurbishment of public buildings.

Deliverable:

4.1.1

Living Lab approach for GRASPINNO

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1 EXECUTIVE SUMMARY

GRASPINNO project aims to support and strengthen innovative clusters and network for increasing their capacity and competence in green growth and eco-innovation, especially in innovative energy refurbishment and green public procurement. It addresses the challenge of developing effective energy management solutions by improving the capacity of both public and private sector on eco-innovation solutions by adopting Living Lab methodology. Indeed, the Living Lab (LL) presents a specific trend in open innovation approaches that enables co-creation of novel user-oriented solutions. Its role is likewise deployed within GRASPINNO project to change the stance of actors and civil society toward green sustainable growth. With setting up eight Living Labs in seven different countries the project triggers behavioural changes of actors in MED area and beyond in favour of eco-innovation, green energy and green growth with deployment of a user-oriented innovation approach. The GRASPINNO Living Labs integrate R&I processes and create a user-oriented open innovation ecosystem that will strengthen transnational cooperation and networking among existing clusters and networks of green energy market eco-innovation. The main goal of GRASPINNO LLs is to transfer the knowledge obtained within the project's pilots actions and to exchange experiences or concerns for green growth, especially including end-users, and so setting the base for further actions. The GRASPINNO LLs will consist of different actors, such as SME's, clusters of SME's, innovative companies, Public Authorities (Pas), decision and policy makers, business angels, mentors etc..., and will:

- actively involve them in the process of green public procurement, public building refurbishment, public lightning, eco-innovation, funding and mentoring, policy recommendation;
- establish an interaction among them;
- transfer to actors and other interest's stakeholders GRASPINNO knowledge and pilot results in field of green energy.

Various actors engaged in green, smart and sustainable development are expected to join the Living Lab and to gain several benefits. The SMEs which will receive training on eGPP (electronic Green Public Procurement) and funding opportunities for eco-innovative products, will most likely benefit from improved understanding of the public sector needs on energy efficiency of buildings and will be able to better develop and promote their innovative products. The PAs will enhance their innovation capacities and knowledge on green refurbishment and electronic public procurement and will be able to develop more effective energy management moving towards almost zero-energy buildings. The PAs will be able to upgrade, validate and adopt green public procurement through knowledge base, decision support tools and e-procurement systems (eGPP). Regional, national and European decision and policy makers will benefit from gaining effective policy recommendations for green energy innovation, green public procurement and energy refurbishment and will be able to improve their policies and Action Plans (AP) for energy refurbishment while also influencing key stakeholders in eGPP and green building refurbishment. The mentors and business angels will be able to recognize, together with other actors, current barriers hindering the growth of green energy market and energy refurbishment of public buildings and will be able to offer more tailored mentoring and financing schemes to SMEs and PAs. In such close cooperation, several novel instruments for coaching, mentoring, sustainable financing are expected to arise.

2 INTRODUCTION

The Deliverable: 4.1.1 Living Lab approach for GRASPINNO consist on two main parts, part I and II, and describes step by step the approach for setting up GRASPINNO Living Labs to guide and support project partners in their Living Lab setup activities. While aim of first part is to provide general understanding of Living Lab concept, the second part provides more extensive introduction to GRASPINNO Living lab methodology and set up.

In the part I, the general understanding of Living Labs concept is established by providing general description and definition of Living Labs. By emphasizing different types, key components and principles of Living lab environment, partners will gain valuable background knowledge of Living lab concept. The gained knowledge will assist them to build Living Lab able to address their problems or opportunities throughout innovation process. Alongside definitions of LL also existing methodologies for the formalization or design of Living Lab are presented with special emphasis on Living Lab approach used in CO-EFFICIENT project. The first part of deliverable concludes with an overview of Living Labs established in areas related to the GRASPINNO project, i.e. in green energy. Several valuable conclusions from studying existing Living Labs are introduced to partners and taken into knowledge while forming GRASPINNO Living Lab methodology.

In part II, the detailed approach on setting up GRASPINNO Living Labs set-up is presented. The set-up of GRASPINNO Living Lab will include six phases, each following several steps, whereas the sequence of these steps within the phases can differ based on the demand or environment of the Living Lab. The deliverable outlines potential Living Lab models, i.e. eGPP Living Lab, Green Fund Living Lab, Green Policy Living Lab. The deliverable concludes with short but valuable conclusion to encourage partners how to be successful in setting up their own Living Lab.

3 PART I: INTRODUCTION TO LIVING LABS

3.1 GENERAL DESCRIPTION AND DEFINITIONS

Living Labs present a specific trend in open innovation approaches. In Living Lab approach, external ideas are resources in innovation process. The aim of the Living Lab approach is to support innovation process with a usable product or service as a result of the innovation process. Different stakeholders are involved in the Living Lab, from researchers, developers and end-users aiming to co-create innovative products and services in a real-world environment.

The Living Lab concept is based on a systematic user co-creation approach integrating research and innovation processes (bringing together users, R&D institutions, producers, service providers and all relevant stakeholders in focused and integrated development process). These are integrated through the co-creation, exploration, experimentation and evaluation of innovative ideas, scenarios, concepts and related technological artefacts in real life use cases. Such use cases involve user communities, not only as observed subjects, but also as a source of creation. This approach allows all involved stakeholders to concurrently consider both the global performance of a product or service and its potential adoption by users. This consideration may be made at the earlier stage of research and development and through all elements of the product life-cycle, from design up to recycling.

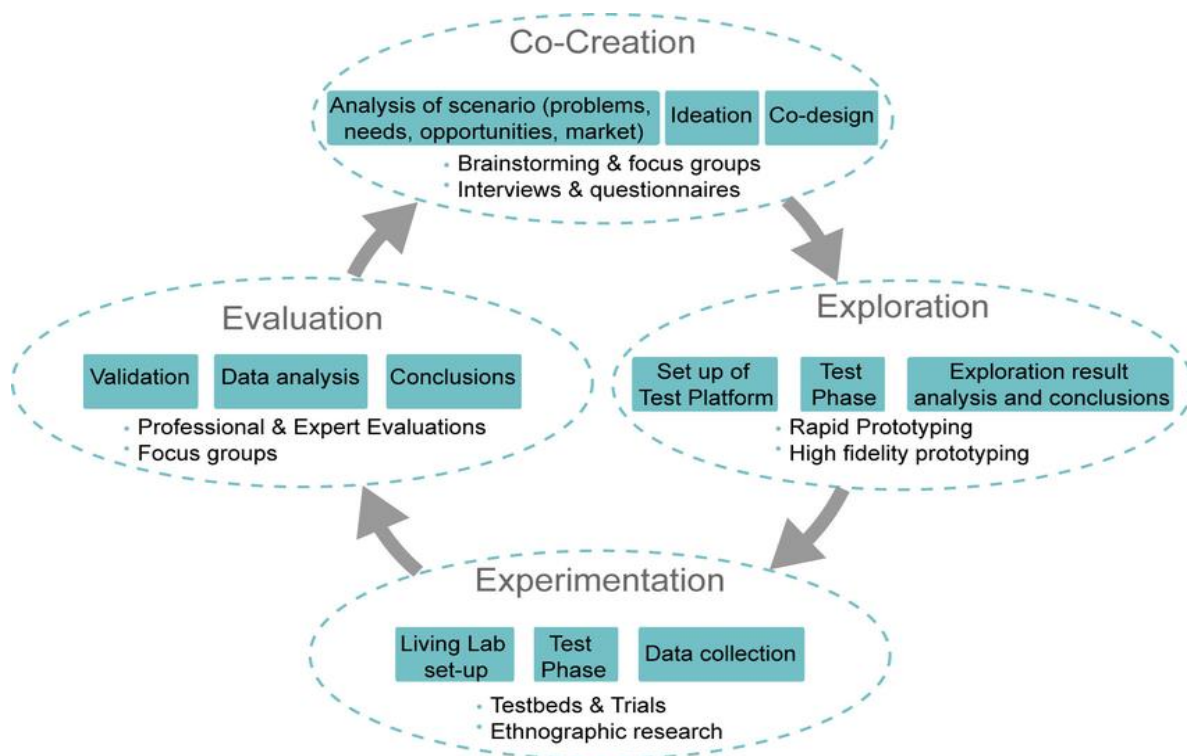


Figure 1: A visual representation of the Living Lab process (Vicini, Bellini, Sanna, SMART 2012)

Living Labs usually exploit opportunities of modern ICT and can be seen as “a large, broadly conceptualized laboratory”. Cooperation of all stakeholders (from users, to companies, ICT providers, developers, government organizations, universities and other involved institutions) is sought.

3.1.1 Living Lab as an environment

Living Lab is an environment in which researchers, developers and end-users co-create innovative products or services in the shortest possible time according to the needs of end-users and test the idea in the real-life environment (a city, a region, a country, an industry or a supply chain).

Many different types of Living Lab environments exist such as:

- **Research Living Labs** focusing on performing research on different aspects of the innovation process.
- **Corporate Living Labs** that focus on having a physical place where they invite stakeholders (e.g. citizens) to co-create innovations.
- **Organizational Living Lab** where the members of an organization co-creatively develop innovations.
- **Intermediary Living Labs** in which different partners are invited to collaboratively innovate in a neutral arena.
- **A time limited Living Lab** as a support for the innovation process in a project. The Living Lab closes when the project ends.

3.1.2 Living Lab key components

The **key components of the Living Lab** are:

- **Users** - Those who actually use a product or service. This embraces end-users, consumers and companies/organisations
- **Structured working methods** - Constituted by the appropriate methods, knowledge and expertise when involving users in their own environments for cooperation in the development process. These methods facilitate the creation of knowledge which is transferable to new areas and new markets
- **Organizational structure** - The Living Lab environment is viewed as an innovation system. That is based on a sound strategic concept and fronted by suitable representatives with a significant role to play for long term objects
- **Technical platforms** - Constituted by the sufficient technological equipment in order to facilitate the necessary communication between the user and the innovation system to obtain the view of the user.

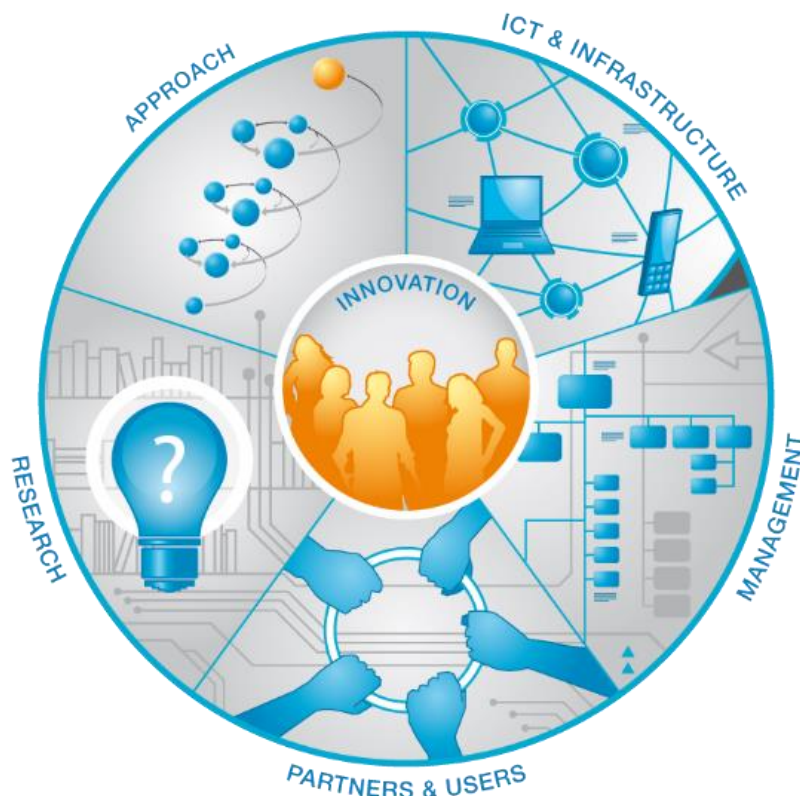


Figure 2: Living Lab components-SMART IES, 2012.

- **ICT & Infrastructure** – outlines the role that ICT technology can play to facilitate new ways of cooperating and co-creating new innovations among stakeholders.
- **Management** – represent the ownership, organization, and policy aspects, a Living Lab can be managed by consultants, companies or researchers.
- **Partners & Users** – bring their own specific wealth of knowledge and expertise to the collective, helping to achieve boundary spanning knowledge transfer.
- **Research** - symbolizes the collective learning and reflection that take place in the Living Lab. Technological research partners can also provide direct access to research that can benefit the outcome of a technological innovation.
- **Approach** - Represents the methods and techniques for Living Lab practices which are necessary for professional and successful Living Lab operations.

Living Labs are built around innovation (creating new innovative solutions) and structured cooperation. A living lab is not similar to a test-bed as its philosophy is to turn users, from being traditionally considered as observed subjects for testing modules against requirements, into value creation in contributing to the co-creation and exploration of emerging ideas, breakthrough scenarios, innovative concepts and related artefacts. Hence, a living lab rather constitutes an experiential environment, where users are immersed in a creative social space for designing and experiencing their own future.

Living labs can be used by policy makers and users/citizens for designing, exploring, experiencing and refining new policies and regulations in real-life scenarios in order to evaluate their potential impacts before actual implementation.

3.1.3 Living Lab Key principles

In Living Lab activities there are five Key Principles that should permeate all operations:

VALUE - Living Lab processes support the process of understanding if the customer or user has a need for a service and how intense their attraction or repulsion for that service is in the real-world context. Living Labs can support processes by allowing users to elaborate with the service in their context to determine if it provides a value for them. In addition, a Living Lab can also provide insights about how users perceive value. These insights can guide the innovation process to deliver innovations that are perceived as valuable from a business and a customer perspective.

INFLUENCE – To take the step from participation or involvement to influence, domain experts' and users' needs and ideas should be clearly traceable in concepts, prototypes, and the finished product. One important issue that Living Labs need to manage is how to assure that participation, influence, and responsibility among different partners are balanced and harmonised with each other and with the ideology of the user influence of the project.

SUSTAINABILITY – Focusing on the sustainability of the Living Lab highlights aspects such as continuous learning and development over time. Here, the research component of each Lab plays a vital role in transforming the generated knowledge from Living Lab operations into models, methods and theories.

OPENNESS - The key principle openness emphasises creating an innovation process that is as open as possible with the stakeholders since multiple perspectives bring power to the development process. Openness is crucial for innovation processes in Living Labs to gather a multitude of perspectives in order to develop as attractive an innovation as possible. Opening up innovation processes also offers potential to decrease the time to market and to better utilise collective creativity.

REALISM - When it comes to facilitating realistic use situations, two different approaches can be observed in relation to Living Labs. In the first approach, environments for testing and evaluating products or services are created in ways that are similar to the real world, while in the second approach, products and services are tested and evaluated in users' real-world environments.

3.2 METHODOLOGIES FOR LIVING LAB SET UP

Several methodologies for the formation or design of Living Labs are proposed in the literature. Some of them are presented in the following sections.

3.2.1 Living Lab business model

The research focus in (Schaffers, Cordoba, Hongisto, Kallai, Merz, & Van Rensburg, 2007) is on how the Living Labs business model:

- 1) stimulates the creation of sustainable partnerships;
- 2) provides an environment for new business development through service innovation;
- 3) exploits opportunities to capitalize on network effects.

It is of key importance to distinguish between different phases of Living Labs development and to focus on how in each phase particular aspects of the business model are addressed. The key phases in Living Labs evolution are:

- **Initialisation and preparation.** In this phase, creating the partnership based on the need to enhance the scope of the regional network and on some form of business plan is crucial and will enable the longer term viability of the Living Lab. Conditions for future business development in later stages are being set in this initial phase.
- **Living Labs operation.** This phase is closely connected with the provision of user-centric innovation services that enable new business development. Relations between Living Labs in a network could be established, to generate economies of scale and scope and benefit from larger user communities and complementary innovation services.
- **Upscaling and commercialization.** This phase embeds the Living Lab into the regional innovation system. Strategies to capitalize on network effects will become more mature.

Tabel 1: Business model aspects in different phases of Living Labs development

	Phase I Initialization	Phase II Operation	Phase III Commercialization
Living Lab partnership creation	Establish rural Living Lab partnership and shared value system User groups creation	Service provision models, configuration of resources, value capture strategies	Embedding the Living Lab into the regional innovation system
New Business development	Establish product and service offering and value capture	Service provision mechanisms Core managerial processes	Commercialization of service provision
Synergies and network effects	Synergies in utilising common know-how, methodologies, technologies	Design synergies in providing services in a network of Living Labs	Upscaling in untapped markets; models for IPR exploitation

Source: (Schaffers, Cordoba, Hongisto, Kallai, Merz, & Van Rensburg, 2007).

3.2.2 Seven Steps to Build up a «Cross-border living lab»: The LEADERS Approach

The LEADERS approach represents guidelines for Living Lab establishment (Molinari, 2011). It consists of seven steps, as follow (Clermont et al., 2013):

1. Localise and identify your stakeholders

It is important to be as open and inclusive as possible at this stage. In this step the following items should be considered:

- The thematic domain(s) targeted
- Your policy priorities
- The «cross border» Living Lab model selected ("federated" or "unitary")
- The aims of the whole initiative (your vested interest in doing all this)

2. Establish a Living Lab PPP (Public Private Partnership)

A formal partnership building (e.g. by going to the notary) is recommended at this stage. In addition, it is significant to create mechanisms for governance and engagement of Living Lab stakeholders, e.g.

- A general assembly and/or management board
- Individual working groups (e.g. one per pilot)
- Periodic consultation mechanisms (e.g. frequent stakeholder workshops and an ICT forum – see step 4)
- External communication items (e.g. portal, newsletter, webinars)

3. Assess the relevance of «cross border» issues

This step includes a discussion that is affecting the monitoring and evaluation step (step 7). Be careful about:

- Involving your stakeholders in this assessment
- Including, where possible, selected “champion” users in the same task on a peer (not agency or dependency) basis
- Consulting with other project partners, experts and especially the thematic leaders
- Compliance with the current Regional policy setup is helpful - but not mandatory

4. Deploy an ICT infrastructure

At basic level, it can well be a (permanent) online forum attached to the Regional portal. Best would be a (freely accessible, geo-localised, always-on) mobile platform. In this step care should be taken of:

- User anonymity (by default) and profiling (with privacy protection)
- Structuring the discussions at individual pilot level, to avoid useless and dangerous “noise”
- Alternating on- and off- line initiatives that can bring more users into the platform
- Documentation of pilot results
- Integrating the parallel activities ongoing within and across the borders on the same thematic domain
- Monitoring traffic on a daily basis and keeping contents up to date.

5. Establish a local and/or «cross border» PPPP community (PPP + People)

A number of tools can be attached to the Living Lab’s ICT platform to enhance the power and impact of social innovation, e.g. for

- Crowd sourcing
- Preference aggregation
- Matchmaking
- IPR tracking

In this step care should be taken of:

- Being as inclusive as possible
- Alternating on- and off- line initiatives (see step 4)
- Providing incentives for participation (like small value prizes and awards)
- Segmenting the community according to people’s preferences and skills as well as to the nature of the individual pilots

6. Run one or more User Driven, Open Innovation pilots

Assign goal and content leadership to the stakeholders themselves (e.g. SMEs, larger enterprises) in this step. It is important to consider the IPR aspects and implications (AS IS – TO BE). Care should be taken of the following items:

- User engagement since the early stages
- Openness / Transparency of the whole process
- Documentation and reporting (periodic and final)
- A number of social research methods and tools that can be useful at this stage (e.g. ethnographic observation, facilitation of small group discussions, Delphi, etc.)

7. Summarise and evaluate the results

A monitoring and evaluation system is to be established (and embedded) upfront. Please consider the following as basic targets:

- Community building and proper functioning
- User driven, Open innovation methodology implementation
- Pilot outputs (and outcomes?)
- Stakeholder satisfaction
- Cost / Benefits analysis
- Reuse / Transferability potential
- Policy impact?

Care should be taken of:

- Added value of the «cross border» aspect.

3.2.3 FormIT methodology

FormIT is a methodology that is developed to suit and support Living Lab Activities (Ståhlbröst & Holst, 2011). The methodology is based on the results of the SmartIES project and was evaluated in a Nordic cross-border pilot. The FormIT process is presented as a spiral in which the focus and shape of the design becomes clearer, while the attention of the evaluation broadens from a focus on concepts and usability aspects to a holistic view on the use of the system. In the FormIT process there are three iterative cycles:

- Concept design cycle in the lower part of the figure
- Prototype design cycle in the middle and
- Innovation design cycle in the upper parts of the figure.

Each cycle includes three phases: appreciate opportunities, design and evaluate; the phases include three aspects: use, business and technology. Before and after these three cycles, two additional cycles are included in the process. The first is planning, seen in the lower part of the Figure 3, and the commercialisation, which is visible in the upper part of the figure.

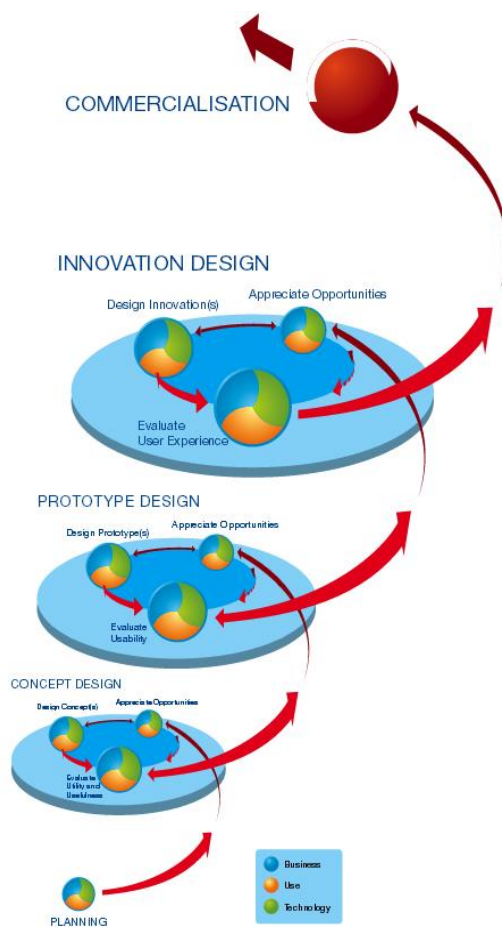


Figure 3: The FormIT Process (Ståhlbröst & Holst, 2011)

3.2.4 The Business Model Canvas

The Business model Canvas (Osterwalder, 2006), presented in Figure 4, focuses on infrastructure, e.g. the activities necessary to implement the business model, the resources that are necessary to create value, and the partner network in terms of alliances needed. In a cross-border setting, creating partnership agreements may need specific attention in terms of legal arrangements.

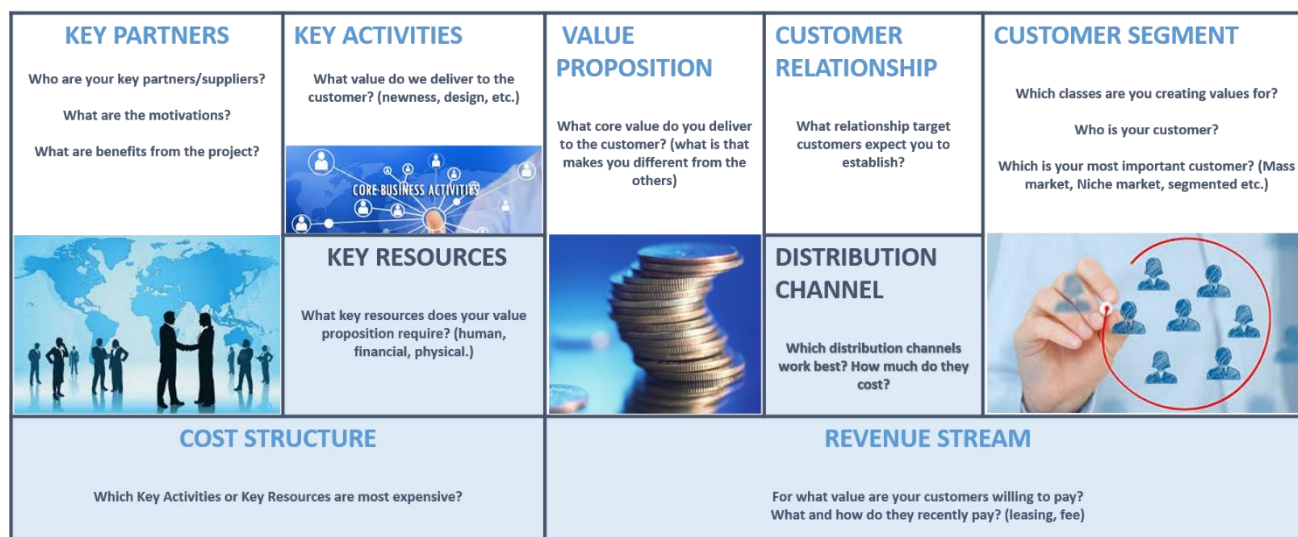


Figure 4: Business Model Template (Osterwalder, 2006)

The Business Model Canvas, presented in Figure 4, is a strategic management and entrepreneurial tool. It allows you to describe, design, challenge, invent, and pivot your business model (Osterwalder & Pigneur, 2010). Initial phase of Living Lab formation is Business Model Canvas. Contributors are active stakeholders of the LL and aim of this phase is to develop a business model of the LL to get an oversight on the current situation and issues of the LL formation. All stakeholders should be invited to participate and the scope of the LL should be clearly explained. It could be presented during workshops or similar.

3.2.5 CO-EFFICIENT Living Lab approach



CO-EFFICIENT
 COLLABORATIVE FRAMEWORK FOR
 ENERGY EFFICIENT SME SYSTEMS



In CO-EFFICIENT project the partnership opted for Business Model Canvas approach. Living Lab set-up methodology consisted of 6 phases that supported the formation of two Living Labs - Transport optimization (eServices) Living Lab and Energy Efficiency Living Lab based on following phases:

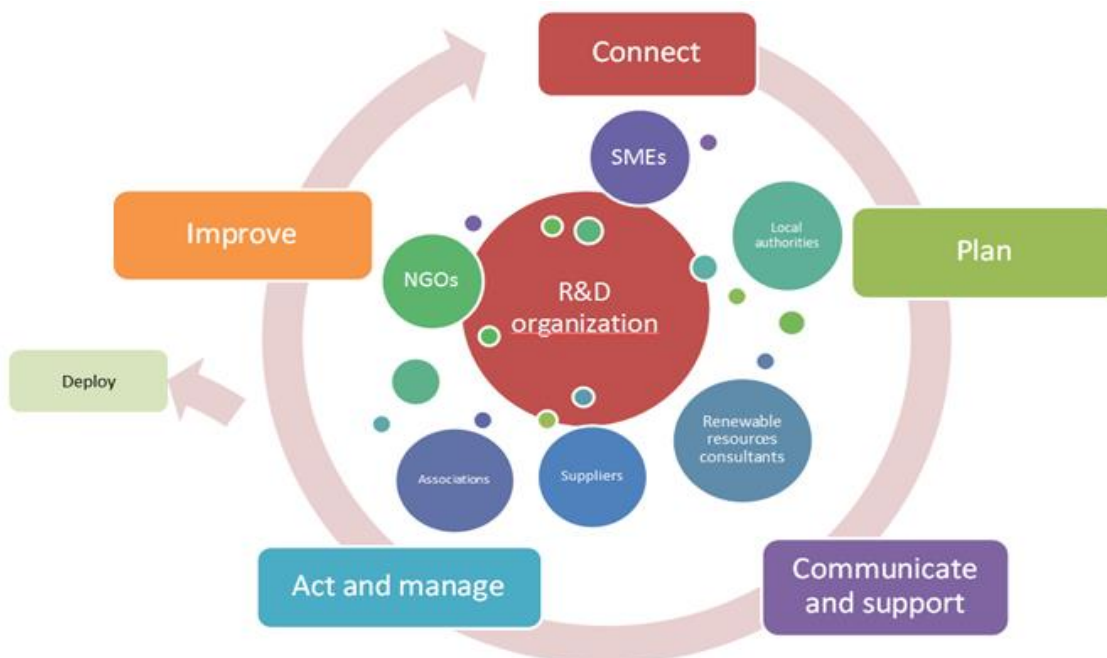


Figure 5: CO-EFFICIENT Living Lab Phases

1. Connect

- Find people and organizations with positive innovation attitude
- Find complementary skilled people to cover the diversity of innovation process
- Form knowledge base of stakeholder 's competencies and expertise
- Use web portal to share information
- Use social networks to enable formation of sub networks
- Prepare and sign the Memorandum of understanding (MOU) to define and understand the obligations of the involved stakeholders.

2. Plan

- Push stakeholder to define a problem/opportunity (User Driven definition)
- Define strategy, goals, objectives and expectations
- Define performance indicators for LL process evaluation
- Define time frame
- Determine commitments and leadership, resources
- Plan how to establish trust among network members and engage them
- Identify and form knowledge base of best practice cases

3. Communicate and support

- Define network sponsorship/financing
- Determine role of meetings, workshops and seminars
- Define key knowledge and information input
- Define external expertise needed
- Determine required ICT support
- Use dissemination activities (conferences, newsletters) to extend partnership network and share experiences

4. Act and manage

- Conduct workshop to engage stakeholders in the process of finding the solution
- Develop or use an existing solution
- Present the solution process to stakeholders
- Perform on-site training of stakeholders
- Run one or more User Driven, Open Innovation pilots
- Test the solution 's compliance with defined goals and objectives
- Measure performance indicators
- Review responsibilities and commitments of stakeholders

5. Deploy

- Deploy developed solutions
- Communicate and share knowledge

6. Improve

- Evaluate the process based on performance indicators, goals and objectives
- Push stakeholders to generate ideas for improvement of the process
- Evaluate contribution and consolidate network of stakeholders
- Expand network of stakeholders based on identified knowledge gaps
- Consolidate knowledge database
- Summarize the results

In phase 1, stakeholders were connected in a network with a clear insight and role to play in the Living Lab. In phase 2, plan of the Living Lab including objectives, activities, roles, agreements, responsibilities, cost/profit issues and risk management was agreed among partners. This was done via Memorandum of Understanding (MoU) which defined roles and responsibilities of participants. As the Living Lab was established and financed within project, there were no financial issues. The MoU was kept rather simple not to drive away stakeholders. For those participants there were not interested to participate in Living Lab but were willing to test proposed solutions, Declaration of Participation (DoP) was used. The DoP specified the scope, responsibilities, right and data protection (very important) for those participating in testing of solutions.

Inputs, schedules and dissemination activities were defined in phase 3, followed by the process of solution development and continuous improvement of the user driven innovation process defined in the Living Lab in phase 4. The deployment of the solution, presented in phase 5, aims at sharing knowledge in participating regions and gaining sustainability of the Living Lab which is continuously improved in phase 6, with the aim to support user-driven open innovation process in continuous activities.

For each of the Phases listed above basic information table with responsibilities, aims and methodologies was prepared and used.

Table 2: Example of basic information table for CO-EFFICIENT Living Lab development Phase 2 - Plan.

Responsible	Initiator of the LL
Contributors	All participating stakeholders.
Aim	The Communicate and support phase determines the inputs, schedules and dissemination activities.
Methodology	The presented phase consists of six detailed steps which enable transparent communication and support the LL activities.
How to start	Following the outputs presented in Gantt chart of the LL, determine the role of meetings, seminars and workshops.
Where	In all involved regions.
Deliverables	Defined financing, prepared and conducted events (workshops, meetings, seminars), reports about events, defined key knowledge and information input, defined needs for external expertise, dissemination activities.

CO-EFFICIENT living Lab practical implementation sequential

1. **Desktop research** on existing methodologies, approaches, and tools for energy efficiency improvement and use of renewable resources in production and operations
2. **Identification of key stakeholders**, associations, clusters (and SMEs) and **identification of key added values** for each participant
3. **Definition of strategy**, aims, and objectives of the Living Lab;
4. **Definition of terms of collaboration, ownership of resulting tools, rules for use and further modifications**
5. Via workshops, conferences, in-company visits, one-on-one meetings, **consultations and interviews** involving key stakeholders and SMEs
6. **Identification of areas with large unused capacities** within the energy assemblies installed in SMEs; identification of typical areas with potentials for improved maintenance and management, identification of areas for instalment of renewable resources
7. **Joint development** of analytical tool and indicators for improved energy efficiency and use of renewable resources in production processes (SMEs closely collaborate in the process)
8. **Testing** of the beta version of the analytical tool on a panel of 50 SMEs to test its quality and relevance;
9. Design of final version of analytical tool
10. **Individual consultations** and advice to SMEs in Living Labs on improving energy efficiency and use of renewable resources.

3.3 LIVING LABS RELATED TO GRASPINNO PROJECT

Several business models of Living Labs and pilots exist in the literature. In the following section, we present the Lighting Living Lab, Lightning Living Lab, Apollon, MIT Living Labs and Beer Living Lab.

3.3.1 The Lighting Living Lab

Stakeholders	Ric Agueda (Agueda Innovation and Competitiveness Network) University – Enterprises - Government
Region	Portugal, Aviero Region, centered on the Águeda municipality
Scope	To contribute to the implementation of the European Sustainable Energies Policy, in line with the conclusions of the 2007 Spring European Council which sets out an ambitious EU approach to energy issues and climate changes aiming to ensure the security of energy supply, the increase of energy efficiency and the reduction of carbon dioxide (CO ₂) emissions.
Goals	To promote innovation and the development of research in new technologies and applications in the field of lighting, focused on the concepts of Smart Lighting and Eco-friendly Lighting, and supported by the ICT sector, giving birth to new services/systems/products and business opportunities.
Operations	In the initial stage, the Lighting Living Lab addresses public spaces lighting, be them exterior or interior and/or located on urban or rural areas, but it will spread its activities into more general applications. This selection is based on common existing problems through European cities/villages, like for instance, the need to illuminate some areas where introduction of linear infra-structures (e.g. electrical network) is neither feasible (e.g. environmental sensitive areas) nor desired (e.g. poor benefit-cost rate). Providing a means for participants to create, to test and to demonstrate prototype technologies prior to commitment to real product (NICTA, 2013).
Funding	This network is supported by the European URBACT II Programme.
Results	A group of pilot-projects on streets and other public spaces of Águeda municipality. One of these pilot-projects, implemented through a partnership between some LLL members, namely the Águeda City Council and Exporlux – Iluminação, SA (www.exporlux.pt), will save annually 7,328.6 kW of energy, that represent also less 665.40€ spent on energy and 3.2 tons of CO ₂ emissions avoided.
More information	Website: http://www.openlivinglabs.eu/pdfs/lighting-living-lab.pdf www.cm-agueda.pt Contact person: Marlene MARQUES Office of Organisation, Planning and Administrative Modernisation Câmara Municipal de Águeda Tel: +351 234 610 070 Email: marlene.marques@cm-agueda.pt

3.3.2 Energy Living Lab

Stakeholders	Chablais Agglo(PA) – University of Applied Science Western Switzerland – Private companies in field of energy - Users
Region	Western Switzerland, French speaking region
Scope	The Energy Living Lab is an open innovation ecosystem dedicated to energy efficiency and the development of renewable energy in Western Switzerland.
Goals	The goal of the Living Lab is to empower the users of energy (citizen of the region, employees of private companies, members of the association of users...) and integrate them into the innovation process, motivating them to participate, putting the right tools in place to enable a bottom-up dialogue, and translating ideas into sustainable commercial products or services.
Operations	The Institute of Entrepreneurship and Management has been conducting applied research in the field of open innovation for the past decade. Its crowd-sourcing platform – www.i-brain.ch – translated into 7 languages, enables a cheap and rapid ideation phase. It has been used for numerous companies such as Romande Energie, the local energy distributor, towards the goal of developing energy efficiency services in line with the needs of their customers. The Energy Living Lab has collected more than 500 ideas and has selected 30 of them, through a process involving internal and external experts. One of these ideas, rated by a community of users, could generate a new business model for this energy company.
Funding	This network is supported by the European URBACT II Programme. The revenue stream is a combination from public and private funding.
Results	Chablais Agglo is conducting a large mobility project, together with the local public transportation company, (TPC) in the region. The idea is to develop physical infrastructure and adequate services necessary to help citizens in the region switch from private to public transport. The Energy Living Lab supported this effort by using a service design toolkit to visualise what could help the customers toward a better travel experience.
More information	Website: http://enoll.org/livinglab/energy-living-lab Contact person: Joëlle Mastelic Project Leader Energy Living Lab, University of Applied Science Western Switzerland TechnoPôle 3 3960 Sierre Switzerland Tel.: +41 27 606 90 93 Email: joelle.mastelic@hevs.ch

3.3.3 Apollon - Energy Living Lab

Stakeholders	30 Organizations from 12 European Countries (Finland, France, Belgium, Germany, Hungary, Italy, Portugal, Slovenia, Sweden, Netherlands, UK) SME Partners of the experiments • ISA - Intelligent Sensing Anywhere S.A - http://www.isasensing.com • Instituto Nokia de Tecnologia (INDT) - http://www.indt.org.br • Process Vision - Integrating Systems and Knowledge - http://www.processvision.fi • Home Aut. Europe - http://www.homeautomation europe.com • Luleå Energi - http://www.luleaenergi.se
Region	Europe
Scope	Scope of the Apollon project is European Living Lab (cross-border) networks, Network Collaboration and management, Development trend, Methodologies and Success Factors added value. Testing the impact of real time information on energy consumption provided by ICT on user behaviour transformation towards energy efficiency and how can energy metering solutions from diverse SMEs be integrated, from the cross-border point of view, and what are the advantages, best practices and limitations of cross-border activities within the Living Lab network
Goals	To validate the outcomes of four local Living Lab projects on a broader scale by using a common research benchmark and, by doing so, enhance the scalability of Living Lab research.
Operations	The Energy Efficiency vertical experiment will cluster four running local Living Lab projects in four countries dealing with Energy efficiency in general and Smart metering in particular: the Energy Pilot in Sweden, the Pilot for real-time in Finland, the Amsterdam Smart City in the Netherlands and the Lisbon Energy Pilot in Portugal.
Funding	Funded under The Information and Communication Technologies Policy Support Programme
Results	The lessons learned and best practices gained from the cross-border experiments have been used to create the requirements for the Energy Efficiency Thematic Domain Network of APOLLON, which will be adopted by ENoLL and aims at facilitating the cross-border collaboration between Energy Efficiency-related Living Labs.
More information	Website: http://staging.apollon-pilot.eu/overview Contact person: Pieter BALLON pieter.ballon@ibbt.be IBBT Pleinlaan 9 Avenue de la Plaine B - 1050 Brussels Belgium Tel: +32 2 629 16 26 Fax +32 2 629 28 61

3.3.4 Energy Efficient Buildings Hub

Stakeholders	It includes 24 partner – institutions from industry, academia, National laboratories and private companies, development agencies. The EEB Hub is operated by a consortium of 11 academic institutions, two DOE laboratories, six global industry partners and regional economic development agencies, and is led by the Pennsylvania State University.
Region	Philadelphia, Pennsylvania, USA
Scope	The Energy Efficient Buildings Hub team is taking a “Living Lab” approach, working in a 30,000-square-foot building in the Navy Yard, where they are testing how different technologies interact in the building with sophisticated sensors and modelling equipment.
Goals	The goal of the Hub is to improve energy efficiency and reduce carbon emissions of both new and existing buildings while also stimulating private investment and quality job creation.
Operations	Focused on existing average size commercial and multi-family residential buildings, the goal is to transform the retrofit and new construction processes into a systems-delivery industry and demonstrate building operational energy savings of 50 percent by 2015 in a scalable, repeatable and cost effective manner across a broad building stock, while preserving workplace quality. A secondary goal is improving the usability and accuracy of computer models that predict the amount of energy that will be used by different building designs.
Funding	The Energy Efficient Buildings Hub (EEB Hub) was established as an Energy-Regional Innovation Cluster (E-RIC) on February 1, 2011 with funding from the U.S. Department of Energy (DOE), the Economic Development Administration (EDA), the National Institute of Standards and Technology (NIST), the Small Business Administration (SBA), and the Commonwealth of Pennsylvania. More than 90 percent of the Federal funding for the EEB Hub during the first five years (\$130 million) comes from DOE. The EDA, NIST, and SBA are collectively providing \$7.8 million.
Results	All EEB Hub members are working to help achieve the U.S. government’s goal of reducing energy usage in commercial buildings by 20 percent by 2020. Major objectives include developing and deploying a state-of-the-art modeling platform to the building industry to integrate design, construction, commissioning, and operation. In addition, the EEB Hub seeks to demonstrate the market viability of integrating energy-saving technologies for whole building system solutions, and to help drive energy policies in the Greater Philadelphia region.
More information	Website: https://energy.gov/articles/energy-efficient-buildings-hub Contact person: Laurie Actman Email: lactman@engr.psu.edu

3.3.5 iHomeLab Living Lab

Stakeholders	Lucerne University of Applied Sciences (LUAS) iHomeLab network has currently over 200 partners (In the project Demand-Response the iHomeLab explores together with the Swiss Federal Office of Energy SFOE, Siemens Switzerland AG, BKW Energie AG, Swiss Grid and MeteoSwiss, how to master the changing demands of the future energy market.
Region	Lucerne, Switzerland
Scope	The researchers at the iHomeLab are looking at the question of how to improve energy efficiency in buildings. Their work aims to discover how to use less energy in buildings without compromising on comfort. The research strategy focuses on the three research areas of energy efficiency (EE), ambient assisted living (AAL) and human building interaction (HBI) under the roof of the metaresearch topic "The Building as a System" at the Lucerne University of Applied Sciences.
Goals	Together with its industrial partners, the iHomeLab Living Lab team conducts applied research to increase the energy efficiency, security and comfort in residential as well as commercial buildings.
Operations	The iHomeLab Living Lab Facility provides an integrated, sophisticated, state-of-the-art environment to demonstrate the results to experts and the public. Since opening in November 2008, over 2500 visitors participate in around 150 iHomeLab Living Lab events annually.
Funding	iHomelab projects are funding programs of the swiss federal government
Results	The platform brings together stakeholders from different domains with the goal to set-up innovative, interdisciplinary research projects for creating applied, mass market ready building and home automation solutions based on open industry standards. The iHomeLab Living Lab today is the Swiss think tank for building intelligence and building automation. Built in 2008, it is continuously upgraded and managed by its team. The iHomeLab Living Lab sensitizes experts and public to the increasingly popular topic of building intelligence and intelligent living.
More information	Webiste: https://www.hslu.ch/de-ch/technik_architektur/forschung/kompetenzzentren/ihomelab/ Contact person: Dieter von Arx Head of iHomeLab a.I. +41 41 349 35 99 info@iHomeLab.ch

3.3.6 Enhance Living Lab

Stakeholders	2 Public sector organisations situated in UK: University of Edinburgh City of Edinburgh council
Region	UK
Scope	The Enhance research project takes a multidisciplinary approach to the study of energy use, and the potential for energy saving through smart digital feedback, in two public sector organisations, that of a University and a City Council. Recognising the complex interactions of infrastructure, organisations and users, the project multidisciplinary team, have backgrounds in data analytics, architecture and social sciences. The project is engaging in a living lab methodology to embrace its holistic approach to understanding energy use in the non-domestic buildings, and uses both quantitative and qualitative data gathering, analysis and feedback. It runs from 2015 to 2017.
Goals	Enhance is a digital innovation project which is taking a Living Lab approach to understanding and reducing energy demand in public sector buildings.
Operations	The data collected so far includes qualitative data from meetings and focus groups, organisational structure data, Building Management Systems Data and usage data for lighting and laboratory equipment. Data on other aspects of the Living Lab will be collected as the lab progresses. Analysis is only in the early stages and it is hoped that report findings in 2017
Funding	This research is funded by EPSRC grant number EP/L024403/1. Data underlying this paper will be made available in anonymised form on the University of Edinburgh archive, Datashare at http://datashare.is.ed.ac.uk .
Results	The project is a collaboration between the School of Informatics, School of Social and Political Science, and Edinburgh College of Art at the University of Edinburgh. It is funded by the Engineering and Physical Sciences Research Council (EPSRC) and is a member of the EPSRC Network of (Build) TEDDI projects known as TEDDINET.
More information	Website: http://www.enhance-project.org/living-labs/ Contact person: Room 3.29, Informatics Forum, Edinburgh EH8 9AB Email: enhance.project@ed.ac.uk

4 PART II: GRASPINNO LIVING LABS

4.1 GRASPINNO LIVING LABS METHODOLOGY

The GRASPINNO Living Lab methodology is to be applied in each participating country and it consist of 6 phases i.e. **Connect, Educate and train, Implement, Improve, Evaluate and Disseminate**, as shown in Figure 6. Within project, at least eight Living Labs are planned to be set-up in different thematic fields that are recognized as the most relevant for the participating stakeholders. It is highly recommended to set up at least one LL in field of green procurement per country, while in some countries, such as Greece and Italy, is recommended to address also other relevant fields, such as SEAPs, mentoring and funding, policy guideless in field of green procurement and refurbishment of public buildings, Green funding or green policy and to establish LLs dedicated to these topics.

Through Living Lab approach stakeholders (public sector, SMEs as well as other interested participants) need to be involved not only as observed subjects but active contributors and as a source of creation. Namely, innovations (including new approaches and tools) generally face resistance from users especially if users are not sure about benefits to be gained - this might be especially true for public sector. Experiential learning is one of the most powerful teaching and learning tools to overcome this reluctance and to facilitate change of people behaviours. Experiential learning involves: (i) a "reflective learning phase"; (ii) a learning phase coming from the experimentation; and (iii) a learning phase coming from feedback. These phases well aligned with the phase Educate and train, Implement and Improve of the iterative GRASPINNO Living Lab approach ().

Two main types of stakeholders in particular are to be targeted – namely **public sector** and **product providers (especially SMEs)**. Beside mentioned, also mentoring/financing experts are to be involved to share their expertise in funding/mentoring opportunities to invent/produce/use eco-innovative solutions in eGPP/building refurbishment. Additionally, the LLs should also involve policy stakeholders with power to design public policies for eco-innovation, action plans for energy refurbishment of public buildings, framework of models, strategies, methods, database and tools to support the green energy MED policies.

In order to implement the Living Lab approach in GRASPINNO an informal "Living lab forum" or "cluster" of stakeholders (mainly organisations from public sector however SMEs, R&Ds, policy makers and other interested stakeholders) are to be organized. This "Living Lab forum" will take over the role of Living Lab implementing activities without formalisation in terms of legal commitments, formalisation of procedures and management. The informal establishment of Living Lab, not requiring establishment of new legal entity but only formal commitment to participation (Declaration of Participation or similar) should ease the involvement of stakeholders. Nevertheless, the work in "Living Lab forum" is structured and led by project partners following

joint methodological approach. One “Living Lab forum” per partner country is mobilized bringing together organisations actively involved in GRASPINNO implementation as well as other organisations who interested to observe but not to actively participate. The activities of “Living Labs forum(s)” follow the phases of Living Lab as shown below. Some activities above are open to all participants while other activities (individual consultations and individual support with implementation) are given only to organisations actively participating in GRASPINNO activities.

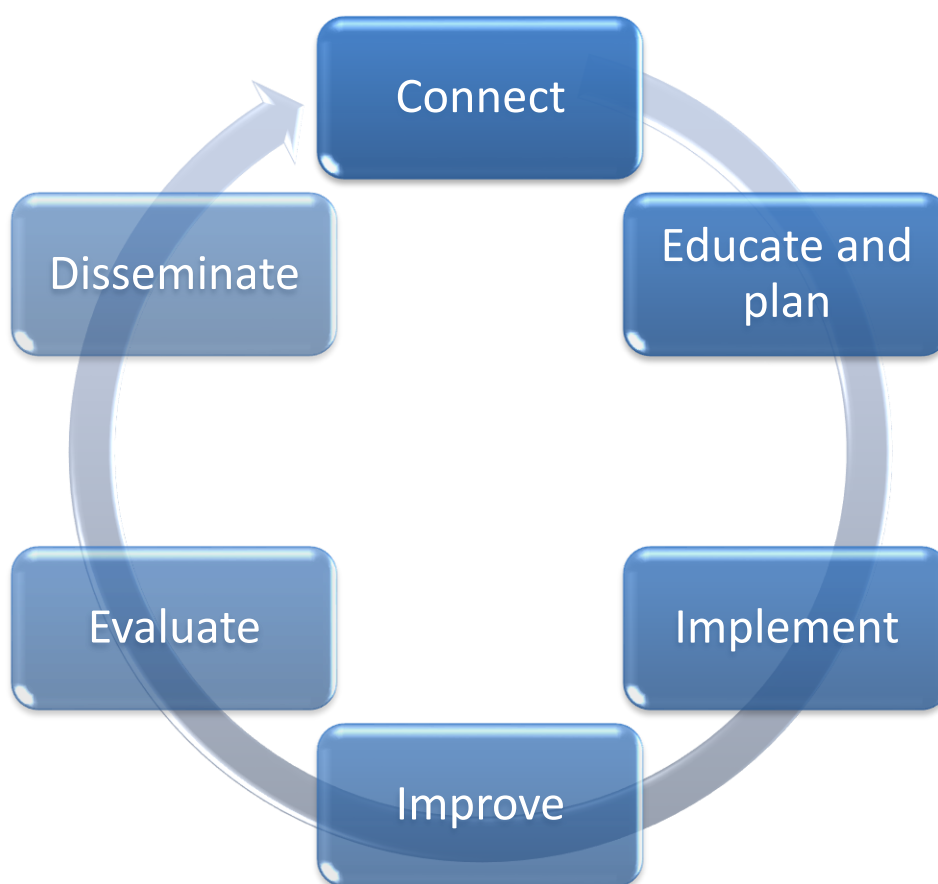


Figure 6: GRASPINNO Living Lab approach

The national “Living Lab forums” will work together following the same methodology and exchanging experiences. Still the final methodology for Living Lab implementation will remain open in order to adapt it to national/regional specifics.

4.2 GRASPINO Living Labs set-up

In the following section the GRASPINNO Living Labs set-up using the uniform methodology is presented in details. The set-up of GRASPINNO Living Lab combines six phases, each consisting of several steps. The sequence of these steps within the phases can differ depending on the demand or environment of each Living Lab. The GRASPINNO Living Lab set-up time plan is presented in Figure 7. The more detailed timetable for setting up GRASPINNO Living labs is part of the appendix.

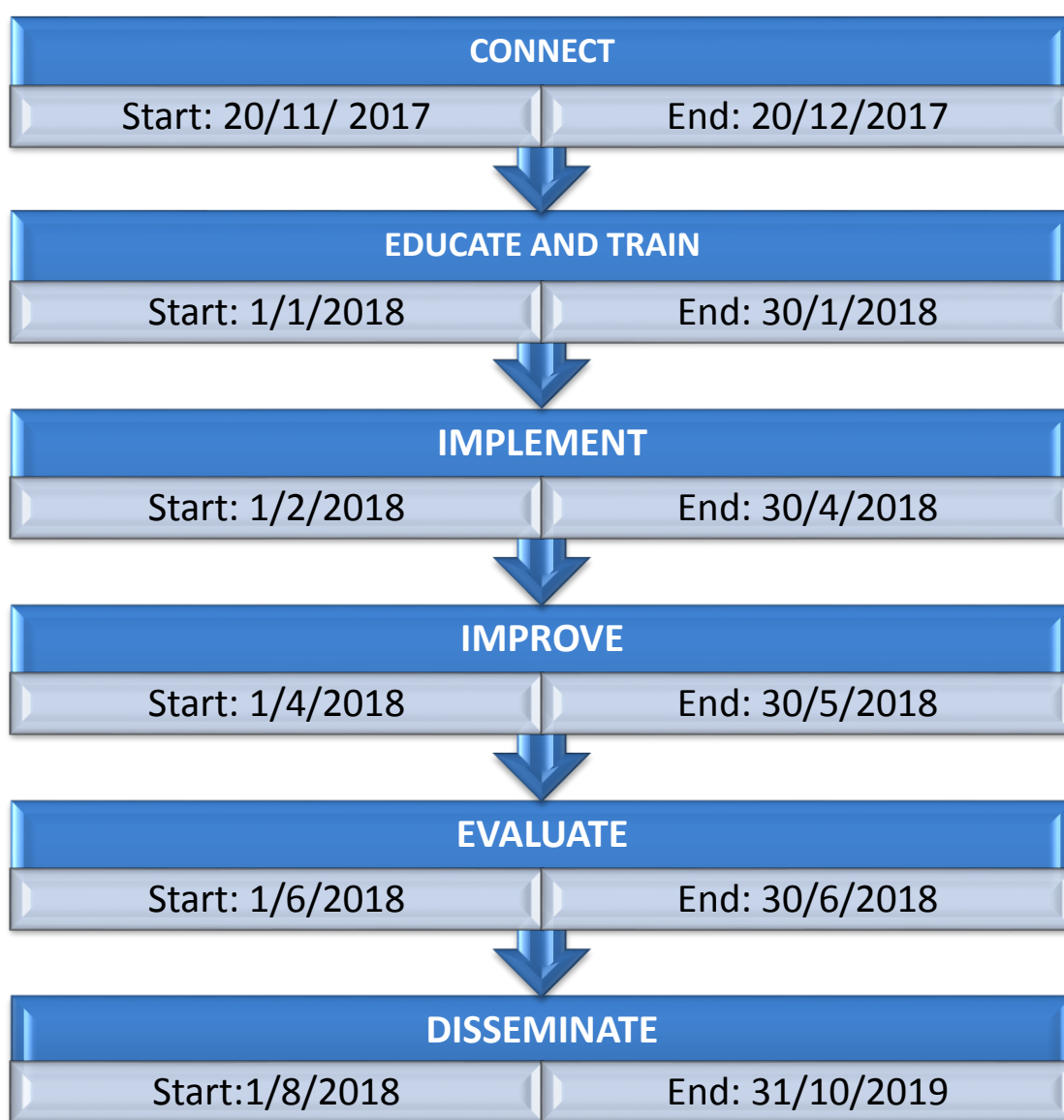


Figure 7: GRASPINNO Living lab set up time plan

4.2.1 Phase 1 – Connect



Responsible	Initiator of the LL
Contributors	All participating stakeholders.
Aim	To form the Living Lab network of complementary stakeholders addressing a common problem/opportunity with clear understanding of LL leadership, stakeholder's commitment, necessary activities and resources.
Methodology	The initiator of LL is identified within the project consortium to take over the Living set up activities. Several channels and dissemination tools (website, promotional material social media etc...) are used to address potential stakeholders and to identify the stakeholders with interest and appropriate skills to participate in the LL. The common problem or opportunity for collaboration is identified and a solid Living lab plan with necessary time frame and resources is established. For more formal collaboration, each stakeholder signs the Declaration of Participation (DoP) LL (or similar) to define the purpose and obligation of such collaboration. Alongside also Key Performance Indicators to monitor the effectiveness of the proposed solutions/opportunities and the LL process, outputs and stakeholder experience are developed by University of Maribor.
Deliverables	Identified LL initiator List of stakeholders to participate in LL Define a user driven problem/opportunity Define LL plan Signed DoP Key Performance Indicators

Step by step approach to connecting stakeholders

STEP 1: DEFINE LL LEADERSHIP

Activities	Identify the initiator of LL responsible for coordination of Living lab i.e. an organisation and a person within the organisation who will be leading the set up and operation activities of Living Lab (project partner, SME's, public authorities, ministry, funding authorities etc...). The LL coordinator should be responsible to motivate stakeholders to actively engage in LL activities, to arrange meetings/workshops/training courses, correspond to stakeholder needs or requirements, coordinate preparation of LL plan, DoP, reports (with assistance of all stakeholders), to ensure that activities are carried out with time plan etc...
Deliverables	Identified LL leadership (organisation and contact person) The description should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.1. Connect- 4.1.1 The leader of Living lab).

STEP 2: ADDRESS AND IDENTIFY STAKEHOLDERS

Activities	Identify organisations in public sector and SME's with positive attitude towards energy efficiency, green refurbishment, green public procurement, new procedures, innovations. This organisation should have time, resources and interest to participate in LL. Address potential stakeholders by: • Using contacts from stakeholder participated in pilot actions • Using channels to find people and organizations with positive innovation attitude (business networking, social networking, web e.g. GRASP TMN, SMART INNO BAN, MED-BAN, INNEON, Mentors networks etc...). • Using project web portal (GRASPINNO unified platform) and project promotional material (posters, flyers, public project reports) • Using social media (LinkedIn, Facebook, Twitter etc..).
Deliverables	List of LL potential stakeholders The list of potential LL stakeholders should be included in D4.4.1. GRASPINNO_ Reports on GRASPINNO as appendix.

STEP 3: DEFINE COMMON PROBLEM OR OPPORTUNITY AND CONNECT STAKEHOLDERS

Activities	Define a user driven problem/opportunity in order to define key areas for improvement (e.g. improvement of innovative green procurement, funding and mentoring mechanism for green growth, solutions for energy savings/efficient refurbishment of public buildings, public policies for eco-innovation etc...). The problem can be identify either by desktop research, conclusions form pilot's activities on eGPP or in-company visits,
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	consultations, interviews with PA's and SMEs, workshops brainstorming events,
Deliverables	Short report on interaction with stakeholders i.e. report on workshops or meetings organized, public authorities or in-company visits, interviews, pilot's actions etc.) and which common problem or opportunity were identified. This short report on interaction with stakeholders should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.1. Connect- 4.1.2 Potential LL stakeholders and 4.1.3. The Living lab scope).
Activities	Propose LL plan agreed among the LL stakeholders. The plan should provide main LL objectives and goals, activities, stakeholders roles, agreements etc... within the expected time frame (Gantt chart) including milestones (start date, start of operational test, presentation of intermediate results, end date, etc..).
Deliverables	LL plan including objectives, activities, partner roles, agreements, costs, profit and risk issues. The LL plan should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.1. Connect - 4.1.2 Potential LL stakeholders).
Activities	The collaboration between stakeholder is define in Declaration of participation (DoP) which ensures that the collaboration is more former and to make clear agreement on the purpose and obligation of such cooperation.
Deliverables	Declaration of participation signed between LL stakeholders The signed DoP should be included in D4.4.1. GRASPINNO_ Reports on GRASPINNO as appendix.
Activities	After the scope and solutions of LL has been identified, the Key Performance indicators to measure the effectiveness of the proposed solutions/ opportunities and the LL performance, will be set in place. Choosing the right KPIs relies upon a good understanding of what is important to the LL. KPI can be related to energy saving, with a link to green public procurement/refurbishment; operational and organisational improvements; social benefits; environmental benefits; economic benefits. The KPI will be developed by University of Maribor and partner's responsibility will be to review to the questionnaires' for KPI and to propose adoptions. In phase Implement the project partner's responsibility will be to fulfil the questionnaire for LL performance and to motivate end users of solution to fulfil questionnaires' for the tested solutions (eGPP, LCC, funding/mentoring mechanisms etc...).
Deliverables	Key Performance Indicators for solutions and LL process

4.2.2 Phase 2 – Educate and train

EDUCATE AND TRAIN	
Start: 1/1/2018	End: 30/1/2018

Responsible	Initiator of the LL
Contributors	All participating stakeholders.
Aim	Educate and train stakeholders on available tools and methodologies for energy management, green refurbishment, green procurement.
Methodology	The stakeholders should be educated and trained on available tools and methodologies for energy management, green refurbishment, public procurement innovation. Education is a process by which people gain knowledge and understanding. Training, on the other hand, is the process by which people gain tangible skills that they can start applying immediately. Therefore, different workshops and training courses should be conducted for stakeholders to educate and train them on different topics and to enable transparent communication and support to the LL activities.
Deliverables	Workshops/meetings Training courses

Step by step approach to educate and train stakeholders	
STEP 1: EDUCATE STAKEHOLDERS	
Activities	The stakeholders should be educated on available tools and methodologies for energy management, green refurbishment, public procurement innovation. Information and knowledge about energy management, green refurbishment, public procurement innovation are key factors for the success of LL activities, as LL cannot achieve good results without proper input information and knowledge. Several workshops or meetings should be organized to educate stakeholders on energy management, electronic green procurement, green refurbishment, funding opportunities, mentoring and coaching schemes, benchmarking and design of public policies for eco-innovation, action plans for energy refurbishment of public buildings etc. As several different topics will be addressed also selection of participants should be made according to the topics.
Deliverables	Workshops/meetings to educate stakeholders on energy management, green refurbishment and procurement.

	The report on educating stakeholders should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.2. Educate and train – 4.2.1. Educate stakeholders).
STEP2: TRAIN STAKEHOLDERS	
Activities	The stakeholders should also be trained to use available tools and to gain necessary skills and knowledge for further use and their implementation, what will be crucial in next phase of LL set up: Implement. Therefore, each partner should organise a training course in his territory to train potential stakeholders involved in the pilots and others (public authorities, SME's, clusters, networks,) to use the available tools such as: eGPP tools, LCC tools, mentoring schemes, funding schemes, GRASPINNO platform etc... It is recommended to carry out on-site training, for which is typical to: • takes place in premises of one of the stakeholders, which agrees on the usage of his facilities (e.g. rooms, ICT support). • be held by an expert, who is familiar with the solution and was, if possible, involved in the solution's development process (the developers could gain significant comments and ideas for improvement from stakeholders).
Additional information	For training courses partners can use project materials such as: • Del.3.2.1_Methodology for developing green electronic procurement criteria • Del. 3.3.1_Report on the tools that will be used for the purposes of GRASPINNO pilots • Del. 3.4.1 Report on the upgrade and the parameterisation of tools_ver2 • Del.3.4.2. LCC_Manual • eGPP_Updated_Manual • GRASPINNO DBs Updated Manual • Del. 3.8.1_Reports on training courses • GRASPINNO_eGGPTool_TrainingVideo
Deliverables	Training courses held among stakeholders for implementing existing methodologies and tools The report on training stakeholders should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.2. Educate and train – 4.2.2. Train stakeholders).

4.2.3 Phase 3 – Implement

IMPLEMENT	
Start: 1/2/2018	End: 30/4/2018

Responsible	Initiator of LL
Contributors	All stakeholders will be involved in the implementation phase in accordance with their role.
Aim	To support wider implementation of methods, tools and solutions for green growth and green procurement by involved stakeholders.
Methodology	Motivate stakeholders to implement and test the solutions, e.g. methods, tools and solutions for energy management, green refurbishment and green procurement. The stakeholders should provide feedback if the implemented solutions are a good fit to their problems and environment. Therefore, the key performance indicators will measure the effectiveness of solutions and LL process.
Deliverables	Implementation of solutions Measure key performance indicators

Step by step approach to implement solutions

STEP 1: IMPLEMENTATION OF SOLUTIONS (e.g. METHODS, TOOLS AND SOLUTIONS FOR ENERGY MANAGEMENT, GREEN REFURBISHMENT AND GREEN PROCUREMENT)	
Activities	After stakeholders has been educated and trained about available tools and methodologies for energy management, green refurbishment, procurement etc..., the most appropriate methods, technical tools and solutions should be implemented in relevance to LLs specifics cases (e.g. problems or opportunities identified). For example, the stakeholders (especially PA and SMEs) could encouraged to perform green procurement through use of project tools and knowledge gained in project and with this contribute to lower impact on environment. The use of existing methods, technical/green procurement tools and solutions is carried out by each stakeholder individually, while the supervision and necessary support can be provided by (internal/external) expert on site or remotely. On-site guided implementation is carried out in premises of one of the stakeholders, which agrees on the usage of his facilities (e.g. rooms, ICT). It is supervised and supported by an expert present on-site and who is familiar with the methods, tools and solutions for energy management, green refurbishment and green procurement.

	In case of remotely guided implementation, expert is not present on-site, instead he/she provides a support via electronic means (via emails, skype conference, telephone, remote access). In both cases it is recommended to prepare a solid implementation guide with time frame, responsibilities, resources needed and goals for more efficient and effective execution. The methods, technical tools and solutions should be available for free to users and appropriate translation should be provided if/when necessary.
Additional information	As GPP is voluntary instrument on European level, country has adopted different sets of green criteria and procedures leading to the fact that green criteria for procurement are differently adopted across the European countries. Each initiator of LL addressing the green procurement should be aware of this specifics and adopt actions accordingly so the LL are able to implement green public procurement successfully. Partners can use project materials such as - eGPP tool and unified platform - D32.1 Methodology for developing green electronic procurement criteria - D3.8.1 Reports on Training courses (eGPP tool) - D 3.10 Reports on Pilots (eGPP tool)
Deliverables	Stakeholders have successfully implemented tools/solutions into their business processes/environment. The report on implementation of tools should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.3. Implement – 4.3.1 Process of implementing).
STEP 2: MEASURE KEY PERFORMANCE INDICATORS	
Activities	After the solutions has been used in real environment and an assessment of their performance has been performed. Only solutions that are able to solve stakeholder problems or raise their opportunities and at the same time acknowledge goals and objectives of LL, are found to be relevant for operations in Living labs. Alongside also the performance of LL has to be measured to get feedback on the LL process, outputs and stakeholders experiences. The project partner's should fulfil the questionnaire for LL performance and motivate end users of solution to fulfil questionnaires' for the tested solutions (eGPP, LCC, funding/mentoring mechanisms etc...). University of Maribor will prepare summary on KPI in phase Implement, based on the questionnaires provided by LL stakeholders.
Deliverables	Report on the measured performance indicators for solutions and LL process. The report on implementation of tools should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.3. Implement – 4.3.2 Measurement of key performance indicators).

4.2.4 Phase 4 – Improve



Responsible	Initiator of LL
Contributors	All stakeholders will be involved in the improve phase in accordance with their role.
Aim	To actively engage stakeholders in the improvement process of solutions and specially to encourage them to provide feedback for adoption of solutions to their actual needs. Stakeholders should implement the improved solutions (methods, tools, etc...) in their real environment.
Methodology	Motivate stakeholders to participate actively in the improvement of solutions in field of green procurement and refurbishment and specially to share their needs and ideas.
Deliverables	Solution improvements Improved solution (methods, tools etc...)

Step by step approach to improve solutions	
STEP 1: GENERATE IMPROVEMENTS	
Activities	Stakeholders should be motivated to provide ideas how to improve the solutions that they have been previously use in phase implement. Stakeholders should closely collaborate in this process - they may be offered consultations by internal/external experts, helping them to better identify possible improvements and to generate ideas for further implementation of solutions. Additionally, an awarding system can be set in place for those participating and generating the improvements (e.g. certificate of participation, certificate of achievement, best idea of the week/month posted on the web portal with an interview with the author etc...) If a lack of innovative ideas is still noticed, a special workshop with stakeholders can be organized to brainstorm the "possible improvements of the LL performance". The workshop could be organized by one of the partners as an in-class event or with the help of group decision support software as an online event (e.g. Think Tank software). The improvements of solution and new ideas should be gathered and afterwards evaluated by the group of stakeholders.
Deliverables	Report on potential improvements of the solution

The report on implementation of improvements should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.4. Improve – 4.4.1 Generation of potential improvements).

STEP 2: IMPLEMENT IMPROVEMENTS

Activities	Based on the stakeholder's feedback from the previous step the final version of the solution should be designed and contribute to more environmentally oriented solutions (e.g. electronic green procurement, funding mechanisms for green refurbishment, commerce of eco-innovative products etc...). Among wide set of potential improvements collected, some of them may not be feasible or their implementation into existing methods or tool is limited due to some organisational or technical restriction. Therefore, it is important in this step to adjust the existing methods and tools with feasible improvements, so that latter the updated methods and tools can be fully implemented and evaluated.
Deliverables	The solutions are improved by necessary improvements proposed by stakeholders and the updated version of solution is deployed and available to all stakeholders. The report on updated solution/tools/methodologies should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.4. Improve – 4.4.2 Implementation of improvements).

4.2.5 Phase 5 – Evaluate

EVALUATE	
Start: 1/6/2018	End: 30/6/2018

Responsible	Initiator of LL
Contributors	All stakeholders will be involved in the evaluate phase in accordance with their role.
Aim	The aim is to evaluate solution as well as Living Lab process to enhance it and support the user driven open innovation process.
Methodology	The appropriate evaluation methodology will be set in place by University of Maribor to evaluate the used solution and LL performance and to outline guidelines and recommendations for future improvements and sustainability of LL. The implemented improvements of solution have to be appropriately evaluated. After the evaluation of solution is carried out also the process, output and stakeholders experience has to be evaluated providing solid and reliable baseline for evaluation of LL performance. The conclusions deriving from the evaluation process will provide foundations for providing guidelines and recommendation for improvements and suitability of LL. When necessary, the external expert should be invited to participate in forming training material and latter transferring the knowledge by training the stakeholders.
Deliverables	Living Labs reports (containing Evaluation report) Guidelines/recommendation for using e GPP, developing a SEAP, mentoring and funding which should be translated in to project partners languages.

Step by step approach to evaluate LL	
STEP 1: EVALUATE USED SOLUTIONS	
Activities	The improved version of solutions (methods, tools and solutions for energy management, green refurbishment and green procurement) should be evaluated against set goals and aims of LL, only so we are able to assess, if the solutions were able to keep up with our expectations and to have enough time to recognized possible shortcoming and to overcome them before starting to disseminate the solutions to wider public. Therefore, the evaluation questionnaire for solution will be formalized by University of Maribor and fulfilled by each project partner responsible for LL set up. The partner should summarize the outcomes of questionnaire in form of a short report and included it later in their Living Lab report.
Deliverables	Solution evaluation report (e.g. eGPP evaluation report).

	The evaluation of solution/tools/methodologies should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.5. Evaluate – 4.5.1 Solution evaluation).
STEP 2: EVALUATE LL PROCESS	
Activities	The performance of overall LL need to be appropriately monitored and assessed to ensure that guidelines and recommendation for sustainability of LL can be provided, therefore also process, outputs and stakeholders experience need to be evaluated. The evaluation questionnaire, for monitoring process, outputs, stakeholders experience and with this the overall LL performance, is established by University of Maribor. The partner's responsibility is to evaluate their LL performance according to the set questionnaire and prepare evaluation report of LL performance. The LL evaluation report should be included in overall report of Living Lab.
Deliverables	LL evaluation report (i.e. report on the process of LL, outputs, stakeholder experience) The evaluation of LL should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.5. Evaluate – 4.5.2 LL evaluation).
STEP 3: DEVELOP GUIDELINES AND RECOMMENDATIONS	
Activities	After successful evaluation of LL performance, the main results coming from implementation and evaluation process should be summarized, alongside with guidelines and recommendations ensuring future improvements and sustainability of established Living Labs. The training material and roadmap for eGPP platform should be developed and used in the Living Labs for transferring knowledge and training the stakeholders (Responsibility of Terre di Siena Lab, MCAB and Atlantis).
Deliverables	• D4.2.2. Roadmap for wider uptake of the integrated e GPP platform (31.5. 2018) • D4.3.1. Training material for GRASPINNO Living Labs (1.6.2018, translations by 31.6.2018): – Guidelines/recommendations for using eGPP – Guidelines/recommendations for the development of a SEAP – Guidelines/recommendations for mentoring and funding. The guidelines and recommendations should be included in the D4.4.1. GRASPINNO_ Reports on GRASPINNO Living lab_ per partner (chapter 4.5. Evaluate – 4.5.3 Guidelines and recommendations).
Activities	All steps of setting up the LLs and testing the solution should be summarized by each responsible partner in the Living Lab report (D4.4.1) alongside with evaluation of the solution, outputs, stakeholder experience and LL

	performance. The report should contain also recommendations and guidelines for LL sustainability. The template for Living Lab reports will be provided by University of Maribor and fulfilled by responsible partners. The consolidated report on LLs, presented the lessons learned, obstacles identified, solution proposed, agreement achieved and recommendation for future improvements, is produced (based on 8 Living Lab reports) by University of Maribor.
Deliverables	D4.4.1 Reports on GRASPINNO Living Labs (1.7.2018) – all involved partners D4.4.2 Findings from Living Labs (31.7.2018) - UM

4.2.6 Phase 6 – Disseminate



Responsible	Initiator of LL
Contributors	All stakeholders and project partners are participating in the disseminate phase in accordance with their role.
Aim	The aim is to communicate and deploy results, to share gained knowledge and solutions and to expand the network of stakeholders of LL in participating region and beyond.
Methodology	The phase disseminate will be appropriately integrated into GRASPINNO Capitalisation Plan.
How to start	The activities will start alongside the Capitalising activities. The Capitalisation plan will involve suggested action/events for capitalising on project results, among others also established LLs and developed solutions. Project events could be used as means to share knowledge and results among involved regions. Final local events are useful to show LL results and collect further stakeholder's interests. Within capitalisation plan also information on how the dissemination of LLs activities will be organized and will be updated in details at later stage. The Capitalisation plan will be regularly updated with implemented and new capitalisation activities and will foresee an effective involvement of key stakeholders, inside and outside the project regions.
Deliverables	LL communication and dissemination activities (integrated into GRASPINNO Capitalisation Plan).

Step by step approach to disseminate LL and solutions

STEP 1: DEPLOY AND COMMUNICATE DEVELOPED SOLUTIONS

Activities	The solutions and LLs have to be deployed and communicated to specific stakeholders that can gain benefits by participating in LLs (e.g. SMEs, PAs, policy makers, energy experts, funding mentors etc...). For effective deployment of developed solutions appropriate guidelines and recommendations (i.e. for eGPP, SEAP, mentoring, funding et...) need to be disseminated. Stakeholders need to clearly understand the functionalities/methodologies of the solutions to be able to use it in appropriate manner. Therefore, the supporting materials (e.g. guidelines and recommendation) need to be translated to national language to avoid
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	language barriers. Partner must assure that all materials are available to interested audience (i.e. released in GRASPINNO unified platform, disseminated through their distribution channels, available on request etc...)
Additional information	Several project deliverables can be used for dissemination activities such as: • Roadmap for wider uptake of the integrated e GPP platform • Guidelines/recommendations for using eGPP • Guidelines/recommendations for the development of a SEAP • Guidelines/recommendations for mentoring and funding • Recommendation for future improvements of solution and LL (from Living Lab reports) • Methodology for developing green electronic procurement criteria • Preliminary study for supporting clusters to participate in eGPP
Deliverables	LL solutions are communicated and disseminated to wider audience
STEP 2: EXPAND LL WITH NEW STAKEHOLDERS AND RESEARCH AREAS	
Activities	For achieving sustainability of Living Lab, it is important to expand the network of stakeholders and a good way to do so is to keep the innovation process in LL constantly running by identifying new relevant problems, opportunities and knowledge gaps. The establishment of a permanent working/committee group represents the way to support the Living Lab sustainability. The group should be composed of SMEs, PAs, energy expert, financial mentors, funding authorities, policy makers, etc... These meetings or events should allow partners to discover and match stakeholders' needs, map and disseminate best practices, emphasize the importance of energy efficiency and discuss about new topics related to energy management, green refurbishment, green procurement etc... Periodical meetings (face-to-face or on-line meetings) should be held among LLs committee members in order to collect SME' and PAs needs, identify themes to analyse and transfer experiences at local level.
Deliverables	Establishment of a permanent working/committee group to ensure suitability of LL.

4.3 GRASPINNO Living Labs models

Within the project, several potential models of GRASPINNO Living Labs were developed which differ: (i) by the type of stakeholders involved in LL process PAs, SMEs, policy stakeholders etc..., (ii) by the potential research and business area or scope identified and (iii) by specific goals and supporting operations to achieve the set goals. The potential models of GRASPINNO Living labs, presented in the following subchapters, presents a foundation upon which partners will be able to build their own Living Lab model in respect to the identified needs and opportunities of stakeholders in their region or local environment. Where the needs or problems are corresponding to more regions or countries, partners are more than encouraged to connect the stakeholders into interregional or cross- border LL and take advantage of synergies arising from transnational or even international cooperation.

4.3.1 eGPP Living Lab	
Stakeholders	PA's (demand) and SME (offer), SME clusters, ICT developer (technical assistants), green procurement experts, energy efficiency experts etc...
Region	Depends on: LL per partners country (regional), LL connecting more region in one country (interregional), or LL connecting different countries (cross border).
Scope	Electronic green public procurement.
Goals	- To ensure the wider uptake of green electronic public procurement to achieve green energy refurbishment of public building. - Improve capacity of public building owners to manage energy efficiency moving towards almost-zero-energy buildings. - Strengthen the capacity of SME and other eco-innovation actors and grow in the green energy market by networking and capitalizing on their knowledge.
Operations	Use of eGPP platform, LCC tool provided through seminars, pilots, training material etc...
Funding	The LL lab will be funded within the GRASPINNO project co-financed by the European Regional Development Fund. After project ends, appropriate funding mechanism should be established.
Inputs relevant for setting up Living Lab	- GRASPINNO D3.7.1. Preliminary study for supporting clusters participate in eGPP which provides a brief description of the clusters, identified by the project partners, to be potentially involved in the eGPP domain and the respective tenders (Chapter 2: Identified clusters to participate in eGPP) - GRASPINNO D3.2.1. Methodology for developing green electronic procurement criteria - GRASPINNO D3.3.1. Report on the tools that will be used for the purposes of GRASPINNO pilots - GRASPINNO D3.4.1. Report on the upgrade and the parameterisation of tools - GRASPINNO D3.4.2 Upgrade tools with updated user manuals for GRASPINNO pilots and workshops - GRASPINNO D3.5.1. Graspinnno unified platform (online platform with all upgraded tools) - GRASPINNO D3.6.1. Technical report on the test of the unified platform - GRASPINNO D3.8.1. Report on training courses - GRASPINNO D3.9.1. Report on the pilots - GRASPINNO D3.10.1. Tenders evaluation using the LCC tool - GRASPINNO D3.10.2. Evaluation of pilots site EE after refurbishment - GRASPINNO D4.3.1. Training material for GRASPINNO Living Labs (using e GPP) - GRASP: D4.1.: Knowledge database - CO-EFFICIENT: Knowledge database (webpage)

LL contributions	Beneficial input of LL for GRASPINNO project: - Output 3.1. GRASPINNO unified eGPP platform - D5.2.1 Guidelines for Public-Private partnership to achieve EE in Public buildings - D.5.5.2 GRASPINNO Spatiotemporal Patterns
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4.3.2 Green Fund Living Lab

Stakeholders	PA's, SME, mentoring/financing experts, business angles, energy experts etc...
Region	Depends on: LL per partner's country (regional), LL connecting more region in one country (interregional), or LL connecting different countries (cross border).
Scope	Identifying and promoting funding and mentoring opportunities for green growth.
Goals	To ensure tailored mentoring or financing to SMEs and PAs for eco-innovation actions.
Operations	To identify which coaching, mentoring and funding services the SME would need to stimulate them for eco-innovation and green energy refurbishment of public business (for example help them to enter the green market by improving or certifying their product, providing access to public funding opportunities, improving the access to private capital). Alongside also identify financial tools, grants, types of partnership, possible financial interventions for PAs to establish energy management, green refurbishment of their buildings and green procurements procedures.
Funding	The LL lab will be funded within the GRASPINNO project co-financed by the European Regional Development Fund. After project ends, appropriate funding mechanism should be established.
Inputs relevant for setting up Living Lab	GRASPINNO D3.7.1. Preliminary study for supporting clusters participate in eGPP (Identified Funding Opportunities) GRASPINNO: D4.3.1. Training material for GRASPINNO Living Labs (mentoring and funding (MCAB) SMART INNO: D4.4 SMEs in smart mentoring and coaching schemes SMART INNO: D5.3. BAN Network – Deployment of Adriatic Business Angles Network
LL contributions	Beneficial input of LL for GRASPINNO project: - D5.2.1 Guidelines for Public-Private partnership to achieve EE in Public buildings - D5.3.1. Transfer Seminars for SME's - D5.3.2. Capitalization Workshop for Public Authorities - D5.5.1 GRASPINNO Capacity Building Instruments

4.3.3 Green Policy Living Lab

Stakeholders	PA's, policy makers, legalisation experts, green procurement experts, Action Plan experts, mentoring/financing experts, SME etc.
Region	Depends on: LL per partner's country (regional), LL connecting more region in one country (interregional), or LL connecting different countries (cross border).
Scope	Policy recommendations for green refurbishment and SEAP's.
Goals	- To improve policies and SEAPs for green building energy refurbishment - To overcome barriers hindering the growth in green energy and energy refurbishment of public buildings (barriers for example connected to cultural heritage restrictions etc...)
Operations	To collect good practices on public buildings green refurbishment, benchmarking and design of public policies for eco-innovation, adoption of action plans for energy refurbishment of public buildings, integrate framework of models, strategies, methods, database and tools to support the needs of public authorities while acting in green energy MED. The knowledge produced in GRASPINNO (methods, tools, green specifications, platforms, TMN, SEAP, cooperation/networking facilities) will be made publicly available as white paper and guidelines for wider take-up. The aim is to enable implementation of GRASPINNO conclusions and results into regional, national and EU policies, influencing key stakeholders in the domain of e GPP and green building energy refurbishment.
Funding	The LL lab will be funded within the GRASPINNO project co-financed by the European Regional Development Fund. After project ends, appropriate funding mechanism should be established.
Inputs relevant for setting up Living Lab	GRASPINNO 4.3.1. Training material for GRASPINNO Living Labs (developing SEAP).
LL contributions	Beneficial input of LL for GRASPINNO project: - D5.2.1 Guidelines for Public-Private partnership to achieve EE in Public buildings - D5.3.2. Capitalization Workshop for Public Authorities - D5.3.3 GRASPINNO Capitalization Final Conference - D5.4.1. Practical recommendation based on the project capitalization findings - D5.5.3. GRASPINNO Certification Instruments

As the final methodology for Living Lab implementation remains open, so also proposed models are not final and project partners and stakeholders are encouraging to define new area of their interest, stakeholders, activities etc..., within the existing models or even propose a new version of GRASPINNO Living Lab model. The methodology as LL is life organism, always improving and attempting to the needs of their users.

5 CONCLUSIONS

Several interesting conclusions derive from our research on Living Labs, as from awareness that it is important to select the appropriate methodology for setting up living lab as to the conclusion that methodology is a process of adjusting, i.e. the more is the fit unique to a given set of stakeholders, more relevant will the Living Lab be. Various management models for Living Labs exist, while every approach depends on individual objectives, resources, stakeholders and interests as well as the type and availability of specific user groups. Therefore, the establishment of stakeholders' network in Living Labs strongly depends on individual initiatives of the partners. Diverse stakeholders, who individually would not be able to adequately resolve their problem, cooperate in Living Lab that provides working environment in which the solution is found/designed by tapping into tacit knowledge to be incorporated into products and services, and validates the outcome in real-life environments. The Living Lab operation, and especially results of the pilots and experiments, are the key to the future operation of Living Labs that can vary from regional, interregional to cross border and global scale.

Most Living Lab initiatives depend on national/regional funding while some are established during international (EU) projects. Sustainability of LL after the project/initiative is concluded is the main challenge of every Living Lab. For that purpose, it is of very high importance to involve key stakeholders with true interest in the Living Lab. Usually at the beginning some funding is available in a means of project or sponsorship. In that case it is easier to convince stakeholders to participate. The involvement of stakeholders is of great importance for sustainability of the Living Lab. Some successful stories continue to use sponsorship as a mean of funding as a way of providing LL sustainability.

While setting up GRASPINNO Living Labs, the partners should keep in mind that stakeholders (public sector, SMEs as well as other interested participants) **need to be involved not only as observed subjects but active contributors** and as a source of creation. End-user's involvement is an essential factor for the LL success. Furthermore, GRASPINNO LLs should address the problems or opportunities which are relevant to the stakeholder's business process and correspond to green and sustainable solutions as only so the common LL goal towards green and sustainable growth model could be achieved. Additional remark is not to neglect potential resistance of stakeholders adopting new solutions or methodologies, as being innovative also require stakeholder to learn, invest time and money. Therefore, it is crucial that the benefits of the solutions are well communicated for being appropriately recognized and evaluated.

To conclude, by following GRASPINNO Living lab set-up methodology, we will be able to change the stance, not only of LLs stakeholders but also of civil society, toward green sustainable growth, through their active involvement in innovation process and by spreading the knowledge of green energy. By using GPP, public authorities will motivate industry to develop green technologies and products, what can have considerable positive environmental impact, especially in sectors where public purchase present a significant share on market. With providing efficient communication, awareness, engagement framework and funding possibilities, the LL will be able to outlive the project itself and became a sustainable and living organism.

6 REFERENCES

- Apollon. (2012). *Advanced Pilots of Living Labs Operating Networks*. Retrieved 15th of May 2013 from <http://www.apollon-pilot.eu>
- Balanced Scorecard Basics, Retrieved 22nd October 2013 from <http://balancedscorecard.org/bscresources/aboutthebalancedscorecard/tabid/55/default.aspx>
- Clermont, F., Fionda, F., Molinari, F., Molino, F., & Nossen, V. (2013). *Guidelines on Cross-border Living Labs*. Retrieved 5th of June 2013 from http://www.alcotra-innovation.eu/progetto/doc/Final_version_D_3.1_long_12_aprile_2012.pdf
- Damanpour, F. and Schneider, M. (2009). Characteristics of Innovation and Innovation Adoption in Public Organizations: Assessing the Role of Managers. *J Public Adm Res Theory*, 19 (3): 495-522.
- ENoLL. (2013). *Business Model Design For Cross Border Living Labs Network*. Retrieved 10th of June 2013 from <http://knowledgecentre.openlivinglabs.eu/support/connect/business-model-design>
- ESF - European Science Foundation (2011). Cross-border Research Collaboration in Europe. Retrieved 5th of June 2013 from http://www.esf.org/fileadmin/links/cssd/mo_fora/careers/CrossBorderRes.Collab.pdf
- Molinari, F. (2011). Seven steps to build up a "Cross Border Living Lab": The LEADERS approach, Ptuj, Slovenia - 31st May 2011
- Osterwalder, A. (Nov 2006). *Business Model Template*. Retrieved 15th of May 2013 from <http://www.slideshare.net/Alex.Osterwalder/business-model-template>
- Osterwalder, A., & Pigneur, Y. (2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challenger*. John Wiley & Sons
- Schaffers, H., Cordoba, M. G., Hongisto, P., Kallai, T., Merz, C., & Van Rensburg, J. (2007). Exploring business models for open innovation in rural Living Labs. *13th International Conference on Concurrent Enterprising*. Sophia: ICE'2007
- Shipton, Helen J., West Michael A., Parkes, Carole L., Dawson, Jeremy F. and Patterson, Malcolm G. (2006). When promoting positive feelings pays: Aggregate job satisfaction, work design features, and innovation in manufacturing organizations. *European Journal of Work and Organizational Psychology*, Volume 15, Issue 4, pp. 404-430.
- SMART 2012: How to Co-create Internet of Things-enabled Services for Smarter Cities https://www.researchgate.net/publication/234129213_How_to_co-create_internet_of_things-enabled_services_for_smarter_cities
- Ståhlbröst, A., & Holst, M. (2011). *The Living Lab Methodology Framework*. Retrieved 6th of June 2013 from http://www.ltu.se/cms_fs/1.101555!/file/LivingLabsMethodologyBook_web.pdf

7 APPENDIX

7.1 Declaration of Participation

Declaration of Participation in Living Lab Activities of the GRASPINNO Project

The GRASPINNO project aims to strengthen innovation capacity of public and private sectors in MED region and to support smart and sustainable growth. The project will support green energy and eco-innovation networks/cluster and promote transitional cooperation by strengthening and adapting transnational network of eco-innovation actors. Through Living Labs, it will pursue behavioural change in favour of eco-innovation, green energy and green actors.

In line with the activities of the GRASPINNO project, the signatories hereby agree to participate in:

[Option 1] eGPP Living Lab

which aim is to improve capacity of public building owners to manage energy efficacy moving towards almost-zero-energy buildings and strength the capacity of SME and other eco-innovation actors in the green energy market by ensuring wider uptake of green electronic public procurement.

[Option 2] Green Fund Living Lab

which aims to identify and promote funding and mentoring mechanism for green growth by ensuring tailored mentoring or financing to SMEs and PAs for eco-innovation actions.

[Option 3] Green Policy Living Lab

which aims to improve policies and SEAPs for green building energy refurbishment and to overcome barriers hindering the growth in green energy and energy refurbishment of public buildings by forming policy recommendations.

With this signature of Declaration of Participation, the signatory decides to join the XXX GRASPINNO Living Lab and names a representative to communicate with the Living Lab regional organization:

(name and address of the organization)

(first and last name of legal representative)

(signature of legal representative)

(first and last name of the representative, phone number and e-mail)

(Living Lab regional
organization)

(Living Lab regional
representative)

(signature)

(place and date)

NOTE: This is a voluntary statement and does not imply any financial commitment or any other legally binding commitment.

7.2 GRASPINNO Living Lab set up timetable

