

# The Living Labs Concept Enhancing Regional Innovation Policies and Instruments

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## **Abstract**

This paper takes its point of departure in an analysis of regional innovation policies and policy instruments, dedicated to economic and social development, to explore the potential integration of living labs innovation concepts to enhance such policy instruments. It is argued that the living labs concept which is built upon principles of user driven open innovation has the potential to enrich the existing set of instruments for regional innovation policies. In order for this living labs concept to become effectively integrated as part of the set of regional innovation instruments, regional policy instruments must adapt and itself innovate. The paper identifies the key issues in making the living labs concept more effective for regional innovation and presents a set of recommendations regarding the role of the living labs concept in policy instruments for regional innovation.

## **Keyword**

Policy, Instruments, Regions, Innovation, Living Lab

## 1 Introduction

In recent years, many countries and regions across Europe have actively implemented policies to deploy broadband and wireless network infrastructures for the purpose of enabling advanced ICT-based applications. Several of these regions have taken one further step by starting to experiment the set up of innovation ecosystems, bringing together stakeholders in a process of open and user driven innovation for enhancing regional development. Still, work needs to be done to align the different policies targeting the different but related aspects of innovation at city, regional, national and EU levels. For example, infrastructure deployment policies are often supply driven and only weakly connected to service innovation initiatives. Also, ICT related innovation policies are often not connected to policies focusing on societal innovation and urban and regional economic development.

Regions and cities within those regions constitute the key geographical environment for SME innovation as they host the networks of companies, their customers and suppliers, research institutes, government agencies and innovation intermediaries. Many regions, provinces and cities across Europe have implemented policies and instruments to stimulate innovation and socio-economic development, for example through fostering clusters and through intensifying innovation support. It is now widely recognized that it is no longer sufficient to focus on technology innovation as innovation is increasingly shifting towards market and society pull models. Responding and giving shape to this transformation, the living labs concept aims to balance the forces of technology push and market pull by contributing to the formation of sustainable innovation ecosystems where regional stakeholders, citizens and companies including SMEs are engaged and collaborating in an early stage for user-driven and open innovation.

This paper identifies the key issues in making the living labs concept more effective for regional innovation and presents a set of recommendations regarding the role of the living labs concept in policy instruments for regional innovation.

## 2 Engaging SMEs in Regional Innovation

SMEs are by far the most important category of companies; there are 25 million SMEs in the European Community. SME is a highly diverse category and includes advanced innovative companies who often are working internationally, as well as less innovative suppliers and individual professionals for whom the region is the market. The role of advanced SMEs in the regional and national innovation system as creators of new products, services and markets and partners for larger companies is crucial and so is the strength of the regional innovation ecosystem that supports them. As globalization of markets and industries continues, these innovation systems must become more and more open and cross-border. Increasing competition due to the forces of globalization, forces advanced SMEs to enhance their capabilities to innovate and to participate in international value and knowledge networks in order to survive. Their networking capabilities and competencies to engage in open innovation therefore must be enhanced. The “regional system of innovation” [Douloureux, Parto 2004] provides a natural environment for policy initiatives related to that goal. Interestingly, recent initiatives to create national networks of living labs in Sweden, Italy and Spain, and cross-border living labs initiatives such as in the Nordic-Baltic region ([www.lilan.org](http://www.lilan.org)) illustrate a development towards learning and exchange mechanisms across regions. As regards less innovative and follower SMEs, innovation is increasingly seen as a key requirement also for them. Upgrading strategies and initiatives to create and strengthen regional networks and clusters are of high importance for this category as well. So, for different categories of SMEs the regional or territorial innovation systems, and the regionally based policies for innovation, face different challenges and demands.

Innobarometer 2009 states that one out of four companies within the EU is working in a cluster-like environment, characterized by a close cooperation with other businesses in the region and strong ties with the local business infrastructure [European Commission 2009a]. However, current clustering approaches not been able to reduce the innovation capability gap of Europe and major competitors such as the US and South-East Asia. Moreover, the large European SME industrial base, characterized by dynamic players with low overheads and the ability of forming partnerships on a peer-to-peer basis could exploit the opportunities of providing new, added value products and services to customers, in particular citizens as end-users. Fundamental factors hindering the realization of this SMEs innovation potential are [Santoro, Conte 2009]:

- An insufficient ability of vertical integration of complementary competencies at SMEs level. SMEs must be organized in collaborative networks, which can aggregate pools of complementary resources and competencies.
- A lack of mechanisms and processes for the use validation of business opportunities originated by the industry, especially if the targeted market is characterized by the classical dilemma technology push or market pull.
- Scarce availability and/or difficult access to knowledge resources, necessary to support the innovation process within SMEs.
- An insufficient readiness to collaboration of SME workers, who are in general not used to collaborate with other SMEs.

Other factors hindering SME innovation – of course applying differently across the European regions - include the lack of legal competencies necessary to protect IPR, the short-term profit focus of many SMEs causing a lack of attention to innovation, and the lack of suitable instruments for SME innovation at the regional level. A recent consultation on public support for innovation in the [European Commission 2009b] concluded that factors hampering innovation include the lack of access to finance, the high costs of innovation and the lack of incentives to facilitating cooperation between actors. The vast majority of enterprises and innovation professionals believe that direct innovation support (such as funding schemes, support to networking and cooperation, awareness raising and technology transfer) is important to

overcome barriers to innovation; however the level of satisfaction regarding direct innovation support is quite low. A wide range of challenges of innovation policy have also been analysed by [European Commission 2009c] and by the OECD [Box 2009]. Responding to these challenges and for the purpose of improving the efficiency and effectiveness of policy instruments to support innovation in SMEs, innovation researchers have proposed a change in the nature of innovation policy towards a stronger orientation to interactive learning within firms and within the region [Nauwelaers, Wintjes, 2006]. Such a view addresses issues such as managerial and organizational capabilities, interaction among actors and creating networks for learning, and openness for external sources of knowledge and for collaboration. Such a view also brings the policy actors more explicitly into the innovation process and innovation ecosystem. This systems and change oriented view on innovation in focusing on joint learning among all stakeholders fits very well the emphasis of open innovation and living labs.

### 3 The Living Labs Concept and Regional Innovation Policies

Given the bottlenecks hampering SME innovation, there is a need to improve on the current approach to regional innovation support going beyond traditional clusters and incubation support approaches. In our view regional instruments for innovation may benefit from the living labs concept to include the characteristics of user driven open innovation, integrating elements such as the creation of thematic innovation communities, establishment of collaborative networks of SMEs, and offering living labs innovation facilities. The living lab concept creates innovation ecosystems that bring policy stakeholders and players of the value network including SMEs and end-users (citizens) early into the innovation process to discover new and emerging user patterns and allow for early experimenting and validating new products and services. Benefits of the living lab concept for SMEs, including micro-entrepreneurs, are in developing, validating and integrating new ideas and more easily scaling up local services and products to other markets [European Commission, 2008]. To existing regional innovation policies and instruments, the living lab concept brings the vision and strategy for creating open innovation platforms fostering cooperation and partnership, a focus on prioritized innovation domains and nurturing value networks within these domains, and strategies to bridge the gap between isolated prototypes and scaling up towards user roll-out and eventually business venturing (new business creation).

As the adoption or integration of a living labs approach has important implications, implementation into existing regional instruments should take into account the specific regional situation. It is required the collaboration among key stakeholders at the regional and cities level, such as public administrations, regional and city development agencies, research institutes and companies as well as cities as end-users and also co-creators of innovations. Such collaboration could very well be agreed in a public-private partnership program for regional innovation. Such a structure avoids the fragmentation of projects and creates incentives to pass the phases of applications development and prototyping towards commercialization. Region-wide collaboration and coordination establishes more easily the conditions for systematic networking and exchange, reuse and sharing of knowledge and technologies, and scaling up and rolling out.

For practical implementation the living lab will be established as an open innovation project environment based on thematic open innovation communities, and on processes for setting up, operation and management of the living lab facilities infrastructure as an environment for generating innovative projects and of the concrete innovation projects. The facilities infrastructure can be contributed as “commons” by the parties involved, thus establishing a distributed, interconnected living lab facility contributed by all. Arrangements for IPR and knowledge sharing, and for facilitating the communication and interaction across constituents e.g. through the use of Web 2.0 tools will be part of the living lab process management. Several current living labs are already advanced in their organization and operations. The CO-LLABS Thematic Network has made available an assessment and lessons learned of selected living labs practices across Europe [CO-LLABS 2009].

## 4 Living Labs: The Need for Maturity

At the regional and national level, public authorities are increasingly backing the development of open innovation environments in order to foster regional innovation and development, including the development of living lab initiatives. At the European level, the European Commission has strongly pushed the living lab concept through research and innovation activities in FP7-ICT, through stimulation of living lab pilot initiatives in the CIP ICT-PSP programme, and through policy-oriented activities focusing on regional development. Supported by the European Commission, the European Network of Living Labs (ENoLL) is gaining in importance, with currently more than 200 living labs, targeting innovation in domains such as energy, media, mobility, healthcare, e-business and farming.

The living lab concept potentially can be highly beneficial and enriching for regional innovation and development policies. On the other hand the living lab concept must become more mature to live up to its promise. Although a small number of living labs already can be characterized as true user-driven open innovation environments, so far there is limited experience in current living labs providing such innovation environments for SMEs. There is a need to establish a wide body of validated methodologies as well as experiences and practices, demonstrating the involvement and engagement of SMEs in living lab processes and the capabilities of living labs to support SMEs. The promise of the concept of open user driven innovation needs robust and ongoing work in the living labs community in order to enhance the quality level of living labs as SME-innovation environments and enhance its methodologies. However there are a number of very good showcases and good practices of living lab innovation [CO-LLABS 2009] and through the European Network of Living Labs it is aimed to enhance the quality of living labs. There are also some promising examples of how regional stakeholders and policy makers have already taken up the living lab concept. Some of these examples are the following:

- In Sweden, innovation agency VINNOVA initiated a pilot living labs initiative, aiming to create a national network of living labs and innovation pilots. The objective is to ensure that Swedish suppliers develop more competitive products and services.
- Innovation agencies in seven Nordic-Baltic countries have established a cross-border program of living labs. This program funds research and development based on the living lab concept, aiming to empower organizations to share innovations, develop ideas and engage people.
- Sicily regional actors created a regional partnership for living lab innovation. The Sicily living lab builds living lab activities on top of Structural Fund based development activities. It also participates in the MedLab thematic network, which brings together various living labs in South Europe ([www.medlivinglab.eu](http://www.medlivinglab.eu)).
- Cudillero living lab in Spain, focusing on innovation in the local fishery industry, has been established in the context of the Collaboration @ Rural Integrated Project ([www.c-rural.eu](http://www.c-rural.eu)), see [Schaffers et al. (eds.) 2010]. Collaboration has emerged with Asturias regional authorities and Local Action Group.
- In the Netherlands, the East region has started a policy initiative to integrate the living labs concept into the regional innovation strategy. Several mid-size cities and two provinces are working together to establish a living lab innovation programme devoted to socio-economic development of the region, capitalizing on existing assets such as advanced fiber networks and experimental facilities, to establish a region wide sustainable cooperation.
- In Region Cataluña in Spain, the i2CAT foundation is a non-profit organization whose aim is to promote research and innovation in advanced Internet technology. The i2CAT model makes Internet research and innovation accessible to the whole of society through

collaboration between the public sector, businesses and research groups within universities and the educational world.

- PACA Labs is an innovative regional funding programme in Provence-Alpes-Côte d'Azur (PACA). PACA Labs creates an open culture to facilitate innovation. In order to create more synergies between research organisations, industry, SMEs, user organisations and local authorities, the Regional Authority of PACA has set up a regional funding programme designed to favor research and market access by testing new technologies, services or processes in real-time and real-life situations.
- The INNOFIT project (Innovation Benefits Europe) focuses on open innovation strengthening entrepreneurial activities. Capabilities of European “Regions of Knowledge” are promoted to transfer knowledge into products and services with a demand from markets fuelling economic growth. The project focuses on the satellite navigation sector and regions of Holland, Munich and Prague work together.

The issue of SMEs role in innovation and how to increase entrepreneurship and new business creation is still on the agenda. Having received less emphasis in projects at European level, it is regions and cities that need to stronger push living lab focus on SMEs innovation. Cities and regions are already continuously working on initiatives and policies for SME innovation and are improving frameworks for socio-economic innovation. However, policies and instruments at the EU level and at national, regional and city level need to be aligned to create synergy. The issue of complementarities between regional, national and EU support instruments has received increasing attention [Radosevic, White, Furlani, 2008]. A dialogue should be established between the different actors and initiatives involved in SME innovation, policy development, and living labs – at European level as well as at national and regional level - to discuss the potential of regional living lab policies and programmes in the future European innovation ecosystem.

Over-all there is a need to explore new directions in strengthening SME participation into the innovation process. Such directions not necessarily replace existing instruments and policies but should enrich and complement them. The living labs concept offers the new organizational dimension, processes, services and ICT-infrastructures to improve SME competitiveness and innovation potential and to enable SME to become protagonist on the innovation process, through partnership building among themselves and in collaboration with supporting institutions, such as university research centers and regional development agencies.

## 5 Challenges in Integrating the Living Labs Concept into Policy Instruments

Innovation policies are changing and new approaches are experimented, in many countries as well at the European level. Two main shifts that can be identified include the development of different policy mixes of measures and innovation support instruments, and a shifting emphasis of innovation support, from direct funding to sectoral and thematic focus, to emphasis on societal goals, to non-technological innovation and to the regional dimension [Cunningham, Robson, Neves, 2008]. Such shifts reflect the increasing demand orientation of innovation policy importance, which makes it more receptive to the living labs concept.

Integrating the living lab concept in policy instruments promoting SME innovation requires a better understanding of the needs of SMEs regarding innovation. A crucial development will also be the transformation of the existing set of regional policies and instruments towards even more demand orientation, interactivity and openness. SMEs are characterized by a limited resource base, need external orientation to understand and adapt to environments, and engage in innovation in a more informal mode [Nauwelaers, Wintjes, 2006]. As the regional dimension of innovation is highly important for small companies, SME innovation needs should be understood and addressed in their local and regional contexts. Important elements of that context are:

- The need for SMEs to become part of regional networks or clusters (larger companies, innovation agencies, customers, authorities) in order to stay competitive.
- The need for SMEs to get easy access to critical competitive information, knowledge and technologies and improve the capability of SMEs to absorb innovations (upgrading, learning).
- SMEs could much benefit from opening up the innovation system towards accessible forms of open innovation.

Nowadays, it seems to be accepted knowledge that policy instruments focusing on SME innovation and changing innovation practices should meet the characteristic of increasing the capabilities of regions and its SMEs to innovate, in order to foster interactive learning within the company and region. This is calling for more interactive and learning based policy. Interactive innovation policies focus on processes of interaction and learning, and changing existing innovation practice through bringing together demand and supply sides i.e. bringing in the users of innovation policies in an early stage. Examples of such interactive policy instruments have been relatively scarce but elements of it are available in some national innovation programs.

Living labs could constitute such an interactive “policy intervention” as they constitute an open innovation instrument which brings in the users in an early stage. However to qualify as interactive policy intervention, living labs should constitute a learning environment for both living labs stakeholders and policy makers. I.e., living labs should provide an environment for policy innovation as well. The C@R project ([www.c-rural.eu](http://www.c-rural.eu), see [Schaffers, García Guzman, Navarro, Merz et al. (eds.), 2010]) has explored such a role of living labs in rural and regional areas, and has experimented in making policy innovations part of the living lab approach. This assumes the acceptance and adoption of the living labs approach by the rural and regional stakeholders. It also assumes a new form of policy development which is more transparent and more willing to interact with and more grounded in the local community of stakeholder interests.

Living labs can thus become themselves an instrument for policy innovation. This is a strategic consideration that should be further explored. There is a need for the policy makers to “listen” to the socio-economic innovations emerging from the living labs in their region. In fact within the European Network of Living Labs there are often several living labs of the same region that pursue their local atomic innovations ideas with little coordination and scarce influence to the policy making process. An exemplary initiative to connect living labs and policy makers is the Paris Greater Region Living Lab, which act as an umbrella organization, promoted by the city of Paris itself, supporting the coordination of several local living labs. This approach would improve the “listening” and the “lateral thinking” of policy makers for developing new policies supporting the living lab constitution and operation for the region, resulting in greater involvement of, entrepreneurs, SMEs and citizens, for lasting socio-economic innovations.

Policy instruments focusing on SME innovation and changing innovation practices should meet the characteristic of increasing the capabilities of regions and its SMEs to innovate, in order to foster interactive learning within the company and region. This is calling for instruments that foster interactive policy interventions, focusing on processes of interaction and learning, and changing existing innovation practice through bringing together demand and supply sides i.e. bringing in the users of innovation policies in an early stage. Examples of such interactive policy instruments that are clearly recognizable in national and regional innovation programs exist in several European countries.

A stronger alignment of policy instruments across the different levels (EU, national, regional) must be undertaken to show how the living labs concept influences and enriches innovation instruments, benefiting SME innovation. The source of SME innovation is the regional level of networks for innovation. We must acquire insight in the current regional level innovation instruments in order to identify the prospects for living labs concepts to influence and enrich

these instruments. Many regions have already strong experience in initiation and developing broadband and mobile services innovation activities and even large-scale programs.

Adoption of living labs approach has also significant implications concerning local, regional and national policy makers. An additional outcome of the adoption of living lab approaches is to provide regional development agencies with concrete ideas for involving their regional clusters in a European-wide movement, with a view of maximizing the societal and industrial impact of the specific targeted market, relevant for the regional development policies, and of integrating complementary resources and expertise at local level. A desirable outcome of this initiative would be the launch of regional projects supported by Regional Structural Funds, committed to support the uptake of the consolidated collaborative model and to facilitate the development of products and services in the specific targeted market. This would enable the creation of European models for advanced collaboration and innovation support in specific, strategic industrial sectors, for the consolidation of a common business language and taxonomy, for the harmonization of initiatives and approaches and for facilitating the access of SMEs to competences and technology at the overall European level with following objectives [Santoro, Conte, 2009]:

- Analyze and consolidate ongoing initiatives and best practices relevant to targeted market sectors;
- Facilitate the set-up of a new generation of collaborative clusters in Europe, integrating user communities and all relevant stakeholders (functional regions) working in the targeted market sectors, suitable for creating a significant critical mass of SMEs capable of playing leading roles and of integrating complementary technologies and capabilities through the adoption of advanced collaborative mechanisms and for involving the users in the development process;
- Foster the integration of European Network of SMEs' clusters with the European Networks of Living Labs and to stimulate the initialization of successful business cases in the targeted market sectors, based on advanced collaboration and on open innovation techniques (living labs);
- Put the basis for the consolidation of a Joint Action Plan, specific to address the targeted market sectors, suitable for being used by the European Commission, National and Regional stakeholder to identify proper actions and support measures to boost the impact on industry as well as society and for attracting additional financial resources on the overall roll-out program in the targeted market sectors (through both available Regional Structural funding as well as private equity and venture capital companies).

## 6 Conclusions and Recommendations

We conclude the paper by formulating a few statements and recommendations that may be included in follow-up policy initiatives regarding living labs, both at EU and regional level.

- Given the insufficient ability of Europe to transform high level technology into successful business ideas driven by true market needs, regions should act as catalyzer of open innovation mechanisms by enabling greater involvement of users, stimulating demand creation and fostering entrepreneurial SMEs. This requires the set up of innovation ecosystems pivoting on the living labs concept.
- It is recommended to develop a joint action plan by the leading group of European regions for reinforcing regional ecosystems of innovation for the benefit of SMEs based on living labs and open innovation concepts.
- The joint action plan aims to create a European model for living labs and open innovation in regions, based on modernizing the existing frameworks, instruments and policies for regional innovation. Specific actions such as awareness, piloting and support of business

creation shall be identified for implementing the European model, through a process of consensus building and consolidation with the identified community of stakeholders.

- National, regional and EU policies, instruments and initiatives regarding innovation and living labs should be aligned and synchronized to enhance synergies, focusing on SMEs innovation in regional innovation ecosystems (including cities and urban areas). This could be done very well around major themes that drive innovation, of importance for a wide range of stakeholders, such as energy efficiency, and health & care services.
- The living lab concept shows great promise to enhance regional innovation instruments and policies. In order to fulfil the promise, living labs should become more mature in relation to their organisation as an open environment for user driven innovation projects. Besides coherent methodology living labs should be capable to organize the innovation community and mobilise stakeholders. Thereby, living labs should focus more systematically on SME innovation.
- The potential of living labs to not only organize the innovation process and mobilize innovation stakeholders but also enhance entrepreneurship and venturing should be further investigated in pilot projects at the regional level supported by regional policy makers. Living labs may link up with ongoing regional activities related to business incubation and venturing.
- Success of implementing the living lab concept in regional policies assumes the creation of an innovation-ecosystem playing a role not only in innovation but also in entrepreneurship and venturing. The living lab concept should gradually evolve to business creation support.

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