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Actor Roles in an Urban Living Lab: What Can We Learn from Suurpelto, Finland?

Soile Juujärvi and Kaija Pessa

“It is essential to find the right people: those who are enthusiastic about the project.”

An interviewee in this study

There is a growing trend to involve citizens in city development to make urban areas more suitable to their needs and prevent social problems. City centres and neighbourhoods have increasingly been serving as regional living labs, which are ideal platforms to explore the needs of users as residents and citizens. This article examines the characteristics and success factors of urban living labs based on a case study of Suurpelto, Finland. Urban living lab activity is characterized by a practice-based innovation process with diffuse and heterogeneous knowledge production that aims to address urban problems of varying complexity. User involvement is critical for co-creating value, but equally important is collaboration between other living lab actors: enablers, providers, and utilizers. Enabler-driven labs can be successful in creating common goals but they need providers, such as development organizations, to boost development. Proactive networking, experimentation as a bottom-up process, using student innovators as resources, as well as commitment and longevity in development work are success factors for urban living labs.

Introduction

City planners, universities, and technology companies are increasingly viewing urban areas as natural places to develop living labs. Urban areas, particularly that are newly built, offer opportunities to implement novel infrastructure, conduct longitudinal research studies, and co-create innovation with an engaged and readily identifiable set of users. In addition, urban areas with active living lab projects are often attractive to residents, because innovation activities create added value for them. Even though living labs have different focuses and their innovation activities represent diverse goals, urban living labs fit Westerlund and Leminen's (2011; timreview.ca/article/489) definition of the living lab as a virtual reality or a physical region in which different stakeholders form public-private-people partnerships of public agencies, firms, universities, and users collaborate to create, prototype, validate, and test new technologies, services, products, and systems in real-life contexts.

At least three types of urban living labs can be distinguished. First, urban areas can serve as technology-assisted research environments, in which users give feedback on products and services through webpages or sensor-based methods. In this context, the goal of a living lab is to improve an urban environment or local services, such as housing or public transformation. Second, users can co-create urban artifacts and local services, such as communal yards, garden allotments, or daycare services. Third, a living lab can develop new kinds of urban planning using new tools and processes with the engagement of citizens. In this case, the goal is to facilitate the vision-making of the area and planning procedures, and increase the access and mutual learning of stakeholders. Thus, a living lab can provide a platform for stakeholders to participate in a city's planning initiatives and decision making. In new urban areas, the boundaries between different living labs may become blurred because the many diverse actors may be simultaneously collaborating in multiple labs (Wallin,

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S., forthcoming: "APRILab: Guidelines to Define and Establish an Urban Living Lab", Urban Europe Joint Programming Initiative; jpi-urbaneurope.eu).

There is an accumulating body of research on living labs in general, but little is known about living labs whose primary denominator is a geographical area. Regional living lab activities have implicitly been studied as a part of regional innovation networks (Harmaakorpi and Niukkanen, 2007: tinyurl.com/njs3pfj; Melkas and Harmaakorpi, 2008: tinyurl.com/ke3r9n4; Kallio et al., 2010: tinyurl.com/m5lrnjf) and participatory urban planning (Wallin, 2013; tinyurl.com/pt9akzl). The urban living lab is an emerging concept referring to a living lab in a urban environment, such as a neighbourhood, that connects definite characteristics of both approaches.

This article examines the concept of the urban living lab and its success factors through an empirical case study. First, we discuss the concept of the urban living lab in the context of regional innovation networks and knowledge production. Then, we introduce the methodology and description of the case study. Finally, we present our findings and conclusions.

Urban Living Labs as Regional Innovation Networks

A regional innovation system is understood as a system of innovation networks located within a certain geographical area in which firms and other organizations are systematically engaged in interactive and collective learning through an institutional milieu characterized by social embeddedness. It typically consists of different kinds of multi-actor networks including actors with different aims and knowledge interests (see Melkas and Harmaakorpi, 2008; tinyurl.com/ke3r9n4). Regional innovation networks can be categorized as follows: i) large, loose regional networks, ii) heterogeneous multi-actor innovation networks, and iii) closed homogeneous public-actor networks (Harmaakorpi and Niukkanen, 2007; tinyurl.com/njs3pfj). Within this classification, living labs represent multi-actor innovation networks involving actors from different sectors of society with a commonly accepted goal; a commonly accepted coordinator steers activities and interactive learning is emphasized in getting results. (Harmaakorpi and Niukkanen, 2007: tinyurl.com/njs3pfj; cf. Leminen et al., 2012: timreview.ca/article/602). Regional innovation networks and living labs share the emphasis on open innovation and networking (Harmaakorpi and Niukkanen, 2007: tinyurl.com/njs3pfj; cf. Leminen and Westerlund, 2012: timreview.ca/article/602).

What are the crucial differences between these two approaches? First, regional innovation networks do not necessitate user involvement as living labs do. Second, they focus on the quality of knowledge creation and innovation process rather than actor roles and outcome accomplishment (see Melkas and Harmaakorpi, 2008; tinyurl.com/njs3pfj). An urban living lab can be seen as a special type of regional innovation network that puts emphasis on residents and their communities as users (i.e., ordinary people who want to solve their real-life problems). With regard to other actor roles, utilizers refer to enterprises and other service providers that want to develop their businesses in the area. Enablers include various public-sector actors and financiers, such as cities and area-development organizations that have far-reaching goals for regional and societal improvements, and that provide infrastructure and resources. Providers represent various development organizations, such as universities, educational institutes, and consultants offering tools and methods for research and development. All actors should acknowledge user participation and open innovation as key elements of the living lab (Chesbrough, 2003: tinyurl.com/nxupq2q; Leminen et al., 2012; timreview.ca/article/602).

Knowledge production in urban living labs

The most important lesson to be taken from regional innovation networks is their distinctive method of knowledge production, which emphasizes "learning by doing". The method is organized around a particular application and is heterogeneous, diffuse, and transient by nature. Innovators need to gather and combine different types of information from different types of sources at different times. This kind of knowledge production is called Mode 2, in contrast with Mode 1, which represents science-based innovation activity drawing on homogeneous accumulation of knowledge and clearly-defined problem solving within a particular discipline. (Gibbons et al., 1994: tinyurl.com/lmrh5eq; Melkas and Harmaakorpi, 2008: tinyurl.com/ke3r9n4). Mode 2 activity dominates knowledge production in regional innovation networks and, arguably, in urban living labs, where the innovation process is more practice-based than theory-driven. Scientific knowledge from various disciplines can offer tools for problem solving but cannot supersede place-based knowledge that is inevitably required to reach working solutions.

Wallin (2013; tinyurl.com/kgjkb77) further points out that problems in urban areas vary in complexity (see Baynes, 2009; tinyurl.com/ny5tsht) and therefore different kinds of problem solving techniques are needed in urban plan-

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ning. First, there are *simple complex problems*, such as bus routes or energy consumption, that can be demanding but still solvable through special expertise and Mode 1 thinking with a top-down process. Second, there are problems arising from *disorganized complexity*, such as the availability of services and workplaces, unemployment, or segregation, that are difficult to comprehend and handle due to their multidimensional and changing nature. These types of problems call for the emergence of Mode 2 thinking and a bottom-up process. Third, there are problems of *organized complexity* caused by a multiplicity of organizations that seem rational and well-steered but “end up in a [rigid], competitive, and overlapping system of administration that triggers wicked urban problems” (Wallin, 2013; tinyurl.com/pt9akzl). Problems of organized complexity can be especially compelling in urban living labs that involve public sector organizations, such as cities and municipalities, which are characterized by top-down planning and steering and which may contradict bottom-up innovation processes as well as parallel bureaucratic top-down processes.

Melkas and Harmaakorpi (2008; tinyurl.com/ke3r9n4) argue that proactive networking is closely linked to knowledge creation because innovation potential lies on boundaries between different groups and, consequently, actors able to span them are at higher “risk” of having good ideas. Actors also need to create shared long-term goals and prioritize them over short-term benefits; this process requires mutual trust and commitment (Kallio et al., 2010; tinyurl.com/n8gt3lx; Leminen and Westerlund, 2012; tinyurl.com/orlnfh5). An urban living lab should be flexible and adapt to rapid changes, but simultaneously be able to guarantee its stability in terms of crucial skills and accumulating knowledge (Leminen and Westerlund, 2012; tinyurl.com/orlnfh5). Coordinators of networks need strategic leadership and communication skills, as well as visionary thinking (Harmaakorpi and Niukkanen, 2007; tinyurl.com/njs3pfj). To summarize, previous research suggests that proactive networking, practice-based innovation, and commitment to long-term development, accompanied by strategic leadership, are success factors for urban living labs. In the next section, we present a case study of Suurpelto, a living lab in southern Finland, to better understand characteristics and success factors of urban living labs.

Case Study: The Suurpelto Urban Living Lab

Suurpelto is a new urban area located between major traffic routes in the city of Espoo in southern Finland. In Finnish, Suurpelto means “great fields”: the area ori-

ginally consisted of 325 hectares of uninhabited, park-like forest. Following development of the area, the first inhabitants moved in during the fall of 2010. The City of Espoo’s planning process, which took place over a period of 10 years, was unique in terms of combining inputs from various stakeholders, such as building companies, land owners, and city representatives. According to the vision, Suurpelto would be an ecological city that is close to everything. Homes, workplaces, culture, and pastime services would all be within walking distance. The intention of the plan is to promote well-being for people at all stages of life as well as to encourage ecological sustainability and opportunities to smoothly connect work, family, and leisure activities. Suurpelto would also serve as a living lab for novel technology and new ways of living.

Suurpelto was designed to provide homes to over 15,000 people as well as thousands of jobs. Economical recession in the recent years has slowed down investment and the original vision has yet to be fully realized, but the new area has still attracted many development organizations, such as universities and, in particular, small-scale innovation enterprises. For instance, the authors participated in the two-year Koulii project, which was launched by Laurea University of Applied Sciences (laurea.fi) and the Espoo Vocational College Omnia in 2010 (omnia.fi). The aim of the project was to promote co-creation and experimentation of products and services suitable for the needs and life situations of users educators, students, and other stakeholders. During the project, the population of the area increased from zero to almost two thousand people, which offered valuable insights into the evolving living lab activity at a grassroots level (Juujärvi and Pessa, 2012; tinyurl.com/k5wvm9d)

In terms of the type of living lab (cf. Leminen et al., 2012; timreview.ca/article/602), Suurpelto was an enabler-driven living lab from the beginning. The main enabler was the City of Espoo, whose decision makers and planners had created the vision for the new area in collaboration with land owners and construction companies. The City had made substantial investments for infrastructure before the construction process was initiated. The City of Espoo also started a region-specific project to support and manage the construction process and to enhance cooperation between various stakeholders and inhabitants. When the Koulii project, which was launched by the local educational institutions, joined the living lab, the lab's focus changed towards promoting research and creating knowledge based on place-based needs. The most visible change was student involvement and the implementation of a research

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strategy based on "realistic evaluation" (Juujärvi and Pessa, 2012; tinyurl.com/l59bz4w). As a consequence, activities driven by providers (i.e., the educational institutions) and activities driven by enablers (i.e., the City of Espoo) were merged and synthesized in collaboration.

Data collection and analysis

The data was collected from eight stakeholders participating in a panel discussion at a dissemination seminar, which was video recorded and later transcribed. Stakeholders represented two users (e.g., a chair of the neighborhood association), three enablers (e.g., a project manager from the City of Espoo) and three utilizers (e.g., a business developer of a shopping centre). The stakeholder data was complemented with relevant transcription data from seven group interviews of educators (providers) involved in the project.

The data was analyzed by inductive content analysis (Robson, 2000; tinyurl.com/mvedlr4), which yielded four themes: i) networking among living lab actors, ii) experimentation as a bottom-up process, iii) students as innovators, and iv) long-term development work. The following subsections describe the findings for each of the four themes and then discuss the contributions from different actor roles in an urban living lab. To make the results understandable in the context, the findings are complemented with the observations made during the research process.

Theme 1: Networking among living lab actors

The stakeholders emphasized that the creation of innovative services requires collaboration between all actors: users, utilizers, enablers, and providers. As the representative of a construction company put it: "We can bring walls and our expertise. But, to make things happen, we need enthusiastic service providers, developers, and interested people – especially those people in need of services. This [development work] will not continue unless they find each other and meet the needs of each other." The enablers pointed out that the educational organizations have a crucial role in enhancing networking. The Koulii project arranged several networking seminars and local events as well as provided various development methods that sped up community development.

The negative side of university-driven activity was the placement of too great an emphasis on the curricula and learning objectives, as well as students' and educators' limited commitment to development work due to their schedules. Ordinary development projects at edu-

cational institutions do not cover the whole innovation process but pieces of it, and consequently, the educators did consider the participation of all actors to be as critical as did the stakeholders. The educators mainly focused on the collaboration with users unless they realized that service production requires enterprises and providers as well. As one of the interviewees put it: "If only users and developers meet each other, nothing comes into existence."

All stakeholders and educators shared the viewpoint that creating networks with users and user segments is critical for successful living lab activity. However, it is important to not only connect with users but also to recognize and distinguish users' real needs from superficial ones. In the long-term collaboration, the inhabitants' real needs became evident. For example, a neighbourhood association in Suurpelto was set up for organizing urban gardening and leisure activities in collaboration with several actors, and it became one of the key partners in the area. There were resourceful new inhabitants in Suurpelto who had a wide array of expertise and who were eager to participate in the area development. From time to time, relationships between the educational institutions and inhabitants, however, became complicated due to the intensive collection of user-experience data in the small area. Some inhabitants felt that the data collection was of no value to them and only served the interests and objectives of the educational institutions. The educators concluded in the interviews that development work should be based on the real needs and strengths of inhabitants and that university-driven development activities should only add value to users through high-level expertise.

Theme 2: Experimenting as a bottom-up process

As implicated above, the needs analysis of residents was the primary research process in the living lab. It became evident that traditional methods such as surveys remained superficial and did not work in the small region. In order to gather valid user feedback, different unconventional methods were developed. Data collection took place through joint action at local events and workshops where participants were personally invited. Most importantly, students arranged different types of service experiments, such as health consultation hours and the cafeteria for parents of small children, in order to receive immediate user feedback. Even though the inhabitants' needs were charted in advance, it was almost impossible to forecast which service experiments would attract them. User feedback was used to shape

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service concepts. Difficulties, however, arose when the students tried to find business partners: most of them considered Suurpelto to be too small an area for investments.

Even though most service experiments followed public guidelines for social and healthcare policy, city officials were not interested in investing in area-based services. Nevertheless, some enterprises and non-governmental organizations were anticipating the future growth of the population and were thus interested in developing user-friendly products and services. Despite these difficulties, the stakeholders agreed that small-scale experiments that draw on the needs of users and inhabitants are the most effective way to advance innovative products and services as well as social innovations.

Theme 3: Students as innovators

Students played a crucial role in the living lab activities, mainly due to the pedagogical approach of Laurea University of Applied Sciences, which emphasizes "learning by developing" in different kinds of projects. From the students' viewpoint, living lab activities are interesting because they enable studies in a real-life environment. However, not all students were enthusiastic about real-life projects, and forcing their participation can cause more harm than benefit in the area. According to the educators, less motivated students should be placed "on the back stage" to carry out routine tasks. A more central role should be given to highly motivated students: they usually possess novel and even surprising knowledge that can be used in innovation processes.

The stakeholders pointed out that students are potential future entrepreneurs whose innovation ideas should be nurtured in the living lab environment. Living labs should provide possibilities for students to develop existing businesses and even start new enterprises. Living lab activities call for new competences that traditional educators may not possess. Educators as well as students must learn to tolerate uncertainty, search for knowledge from diverse sources and people, and think critically. Developing persistence is important, because development work can also be very frustrating when brilliant ideas are not always realized.

Theme 4: Long-term development

The ongoing construction process in Suurpelto will take decades to complete, which implies that there is a need to establish living lab activities over the long term.

The enablers ensured that Suurpelto could be further developed as an innovation platform. As the first step, the City of Espoo was ready to employ a community coordinator to integrate development activities and to enhance networking among various actors. A community coordinator would host the local meeting place and information office, which had already been built and financed by Suurpelto Marketing. In addition, students would be recruited to do development work as interns on a regular basis. The enablers regarded the role of the educational institutions as crucial for pushing development. From the enablers' perspective, the Koulii project had brought a welcomed "buzz" to the area, enhanced community development, and contributed to place branding, which has made it easier and more attractive for others to become involved. Development should cover healthcare, wellbeing, and recreation services in order to make the area more convenient and attractive to people. Suurpelto would serve as a living lab for different kinds of pop up experiments, mobile services, and take-home services.

The educators also stressed the importance of establishing a permanent living lab platform, but for rather different reasons. The educators tended to see project-based development work as unethical from the viewpoint of users who have invested their resources in development work without benefitting from the outcomes due to the short timescales of the projects. A permanent living lab would enable long-term commitment from users as well as from educators and students. Participation in a long-term process would be more rewarding for users than short-lived experiences. The educators pointed out that a living lab that is established and resourced as a part of regular functions would enable the educational institutions to fulfill their legal responsibilities in regional development. The educators also emphasized the significance of systematic knowledge creation and knowledge accumulation through a research process that helps to make development work more effective and efficient in the long run.

Actor roles in an urban living lab

Box 1 summarizes the main contributions of each actor role. Enablers have an important role in creating an inspiring vision and inviting other stakeholders to participate in city development and place branding. Given that enterprises have difficulties seeing gains in regional living labs (Leminen et al., 2012; timreview.ca/article/602), enablers should put more effort into building partnerships with them at the early stage of urban planning. Complementarily, enterprises and other service

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Box 1. Contributions from different actor roles in an urban living lab

City representatives as enablers

- creating the vision and allocating resources
- providing strategic leadership
- promoting networking

Firms and local service providers as utilizers

- producing place-based knowledge
- setting small-scale objectives
- creating suitable products and services

Educational institutions as providers

- engaging students as innovators
- providing innovative R&D methods
- augmenting knowledge systematically

Residents as users

- producing place-based user experience
- participating in experiments
- empowering citizens through co-creation

providers should consider the long-term benefits of investing in innovative urban areas. Universities and other educational institutions can offer innovative methodologies and guarantee long-term development work through systematic knowledge augmentation. Students as innovators and teachers as service experts provide extra resources for innovation processes that should be utilized more.

Last but not least, we highlight the role of user engagement, which fuels the activities of living labs. The roles of users as residents and citizens in urban living labs are more comprehensive than in other types of living labs. Users can act as informants and testers as well as contributors and co-creators (Leminen, Westerlund, and Nyström, 2014: forthcoming in Volume 9 (Issue 1) of the *International Journal of Technology Marketing*; tinyurl.com/mdug2zv). Citizens have a natural motivation to participate in shaping their environments, and this motivation should be utilized through the development of new methods of co-creation and participation in community development (Horelli and Wallin, 2013; tinyurl.com/kgjkb77). The multiple roles residents play in regional and urban living labs have not yet been fully understood and need to be scrutinized in future studies.

Conclusion

The present study investigated the characteristics and success factors of an urban living lab. In line with previous studies (Kallio et al., 2010: tinyurl.com/n8gt3lx; Leminen et al., 2012: timreview.ca/article/602), proactive networking among living lab actors was a key success factor for our case, the Suurpelto living lab. Other success factors identified were experimenting as a bottom-up process, using student innovators as resources, and committing to long-term development work. Experimenting leans on practice-based innovation processes, which aim to address urban problems of varying complexity. Because urban living labs are often under city development processes over several years, they require long-term commitment to reach potential outcomes.

About the Authors

Soile Juujärvi is a Principal Lecturer at the Laurea University of Applied Sciences and Adjunct Professor at the University of Helsinki in Finland. Her research interests include moral and ethical development and innovation processes, especially networking, in living labs. From 2010 to 2012, she worked as a researcher in the Koulii (Innovation & Integration in Education) project, which was funded by the European Social Fund. She holds a Doctor of Social Science degree from the University of Helsinki.

Kaija Pessa is a Principal Lecturer at the Laurea University of Applied Sciences in Finland. Her research interests include ethics and health promotion and innovation processes in living labs. From 2010 to 2012, she worked as a researcher in the Koulii (Innovation & Integration in Education) project, which was funded by the European Social Fund. She holds a Doctor of Health Sciences degree from the University of Tampere, Finland.

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