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# Social Innovation Living Labs as Platforms to Co-design Social Innovations

## ABSTRACT

**Objective:** The aim of the research is to develop a new original concept of social innovation lab based on the concept of living labs seen from the perspective of design-led approach to management and innovation.

**Methodology:** The research was carried out with use of non-empirical (theoretical) framework. The existing knowledge was the source of reasoning leading to solve the scientific problem. It was rather implicit two-stage process of reasoning. The first stage was to reframe the conceptual framework, which was based on the analysis of the living lab concept seen from the perspective of the unique nature of social innovation and its limits. In the second stage, prototyping of a new concept of social innovation living lab was built on the conceptual framework developed at the first stage.



**Findings:** The original theoretical model of social innovation living lab and its operationalization have been developed. It is based on the concept of living labs regarded as long term environments for open innovation that are being developed with real users in real contexts, and framed from the perspective of design-led approach to management and innovation.

**Value Added:** The literature review has revealed the significant lack of research studies on the processes of generating social innovation. The proposed original model of social innovation living lab helps fill this gap. Social innovations as successful exploitation of new ideas to meet social problems and needs are essential in social and economic life. However, the conventional approaches to innovation are not sufficient to develop social innovation due to its nature. The proposed approach describes the operation of the social innovation living lab as an effective way to develop such innovations and at the same time the methodology useful in the further research.

**Recommendations:** The proposed original approach to the processes of designing and accomplishing social innovation can help to develop such innovations in a more intentional and goal-oriented way, which is difficult using traditional laboratories due to the nature of such innovations.

**Key words:** Social innovation, living labs, co-design, design-led approach

**JEL codes:** M10, O35

## Introduction

The research is aimed at building a new concept and an experimental model of a social innovation living lab that can facilitate social innovation. The literature review has proved the significant lack of research studies on processes of creating and developing social innovation, particularly the lack of research on the potential use of research laboratories in which such innovations could be designed as it is done in technological innovation laboratories.

The analysis of current knowledge on social innovation revealed that social change results not as much from an innovative solution as from its impact on the change of social practices and relations (Howaldt & Schwarz, 2010; Murray et al., 2010; Neumeier, 2012). Although social innovation can be triggered by innovative products, services or processes that enable novel solutions to social problems (Olejniczuk-Merta, 2013), they are

mostly related to changes of social practices (Howaldt & Schwarz, 2010; Caulier-Grice et al., 2012).

Numerous researchers underline more the social innovation's consequences and its impact on the future societal development than its novelty (Caulier-Grice et al., 2012; Neumeier, 2012). Consequently, social innovations cannot be successfully generated in technical labs isolated from the real world. It is still little known about the mechanisms behind the emergence of social innovation and how to manage their design and accomplishment. As both a component and a cause of social change (Olejniczuk-Merta, 2013; Howaldt & Schwarz, 2010), social innovations need a completely different approach.

Consequently, the aim of the research was to develop a new original concept of social innovation lab based on the concept of living labs within a broader conceptual framework based on the design-led approach to innovation. The concept of living labs regarded as long term environments for open innovation that enable experimentation with real users in real contexts (Hillgren, 2013; Leminen et al., 2012; Følstad, 2008) was taken as the conceptual framework for the research. While using digital solutions, living labs can bring research closer to those places where such innovations arise and then rearrange how things are accomplished.

## Materials & Methods

While reviewing the worldwide literature, the significant lack of research on the design and accomplishment of social innovation was found. Consequently, research efforts were aimed at building the concept of a social innovation lab. It is based on the concept of living labs framed from the perspective of design-led approach to innovations.

The research was carried out with use of non-empirical (theoretical) framework. This means that the existing knowledge was the source of reasoning leading to solve the scientific problem. In such a research, new knowledge arises in a complex and mostly implicit reasoning process involving: analysis

and abstraction of the current knowledge, challenging the assumptions in existing theories (Alvesson & Sandberg, 2011) and reframing the context to create a new synthesis based on in-depth insight that is used to interpret and explain (theoretically) observed facts.

The reasoning process is rather implicit and difficult to explicitly present in the form of a systematic methodological approach (Dubois & Gadde, 2002). It was two-stage process of reasoning. The first stage of the reasoning process was to reframe the conceptual framework. The insight resulted from the analysis of the living lab concept from the perspective of the unique nature of social innovation and its limits. The analysis was carried out in a broader context of the design-led approach to innovation and its capabilities.

The second stage was to build the original approach to social innovation lab and its operation. Prototyping of a new model of this approach was based on the conceptual framework developed in the first stage, and the existing knowledge on social innovation and living labs. The next stages of the research in the future was assumed, which provide feedback from the implementation of this approach; to reframe the conceptual framework in the next iteration of the reasoning process and to improve the prototyped approach. Such a scheme of research results from the assumption that in management sciences research are not only to verify the scientific beliefs, but to make continuous improvement of created solutions and the quality of knowledge they are based on.

## Current state of knowledge

### The concept of social innovation

The subject and fundamental context of the undertaken research are social innovations. In the context of the identified research problem, processes of designing and creating social innovations are particularly important. Consequently, the presentation of current state of knowledge includes a concept

of social innovations and the processes of their creation and development. Other theoretical components which were used to build a conceptual framework of the social innovation living labs were presented in the next section (as a source of premises for the inference).

Social innovations are so important for both management sciences and social life because they can radically change the world we live in for the better (Mumford, 2002; Pol & Ville, 2009; Howaldt & Schwarz, 2010; Neumeier, 2012; Olejniczuk-Merta, 2013). They can improve our lives by better use of novel technologies, methods and tools, introducing new patterns of practices, interactions and social relations, and even new structures, organizational forms and social institutions (Baran, 2018). What is more, most of what we now take for granted in social life began as social innovation (Mulgan, 2006). Although, the majority of research and policies have been focused on technological innovation, we need social innovation to effectively utilize that knowledge for human empowerment and development (Caulier-Grice et al., 2012). As Caulier-Grice et al. rightly note, „social innovation has also emerged as a response to growing social, environmental and demographic challenges – often called ‘wicked’ problems because they are complex, multi-faceted, involve a range of stakeholders and are, by their nature, impossible to solve (Caulier-Grice et al., 2012, p. 5).

It is not easy to word a clear definition of social innovation. There are several reasons for this. First, as Pol & Ville write, „the term ‘social innovation’ has entered the discourse of social scientists with particular speed, but there is no consensus regarding its relevance or specific meaning in the social sciences and humanities” (Pol & Ville, 2006, p. 878).

Secondly, despite many cases of successful social innovations in numerous fields (from health care, hospices and online self-help health groups, through microcredits, consumer cooperatives, fair trade movement, to zero-carbon housing development and community wind farms), the processes of social innovation remain understudied and are described at the level of anecdotes and vague generalizations (Mulgan, 2006, p. 146). While reviewing the scientific

literature it was found the evident shortage of systematic theoretical and empirical research in the field of social innovation (also in the area of solid methodological background of such research).

Third, despite the growing scientific interest in social innovations, which is pointed out by a number of authors (Mulgan, 2006; Pol & Ville, 2009; Cajaiba-Santana, 2014), this term still seems to be treated as a buzz word. The vastness and ambiguity of this term (Mulgan, 2006; Olejniczuk-Merta, 2013; Cajaiba-Santana, 2014) means that there is still not even a relatively common view of what this type of innovation exactly is (Pol & Ville 2009; Caulier-Grice et al., 2012).

Recently, scientists have offered a number of definitions of social innovation, which underline various aspects of the term and present varying degrees of specificity (Mumford, 2002; Mulgan, 2006; Bergman et al., 2010; Olejniczuk-Merta, 2013; Manzini, 2014; Kwaśnicki, 2015). First, social innovations are still innovations. Consequently, there are not social innovations without an aspect of novelty. One of the most concise definition of innovation was formulated by Steward et al. as „successful exploitation of new ideas” (Steward et al., 2009, p. 7). To paraphrase Schumpeter, social innovations (like any other innovations) cannot be just minor changes that each unit can carry out, adapting to the changes taking place in its environment and not going too far from the beaten path (Schumpeter, 1960, pp. 128-129). The aspect of novelty, which distinguishes social innovation from other changes, is noted by the majority of authors dealing with social innovation (Mumford, 2002; Mulgan, 2006; Olejniczuk-Merta, 2013; Manzini, 2014; Cajaiba-Santana, 2014).

However, some authors agree that social innovations may be based on the idea or solution not necessarily new et all, but rather, perceived as such by the relevant unit of adoption (Caulier-Grice et al., 2012). As Caulier-Grice et al. note, „this means that a social innovation does not necessarily need to be new per se, but rather, new to the territory, sector or field of action” (Caulier-Grice et al., 2012, p. 9). Other researchers underline more the impact than the novelty of social innovation (Caulier-Grice et al., 2012). According to

Neumeier, in Gillwald's definition, social innovations are described as „societal achievements that, compared with already established solutions, provide improved solutions that are to a lesser extent defined by their absolute novelty more than by their consequences” (Neumeier, 2012, p. 51). By those consequences Gillwald understands mainly how social innovation affects society and future societal development (Neumeier, 2012).

Secondly, most researchers and authors of publications on social innovations agree that they arise as a result of social motivation that is caused by the desire to meet social needs (Mumford, 2002; Mulgan, 2006; Pol & Ville, 2009; Caulier-Grice et al., 2012; Olejniczuk-Merta, 2013; Manzini, 2014; Kwaśnicki, 2015). According to OECD, „the key distinction is that social innovation deals with improving the welfare of individuals and communities through employment, consumption and/or participation, its expressed purpose being to provide solutions for individual and community problems.” (OECD 2011, p. 21). According to Olejniczuk-Merta, the effects of all social innovations contribute to improving the quality of life, regardless of the scale of occurrence of these effects and whether they appear directly or indirectly, intentionally or unintentionally (Olejniczuk-Merta, 2013, p. 29).

Third, social innovations are mainly regarded as a change of social practices (Howaldt & Schwarz, 2010; Murray et al., 2010). As Howaldt & Schwarz note, „with social innovations, the new does not manifest itself in the medium of technological artefacts, but at the level of social practices” (Howaldt & Schwarz, 2010, p. 26). Social innovation like any other innovation is not merely a new idea or invention but must be put into practice to be innovation (Schumpeter, 1960; Mulgan et al., 2007; Bergman et al., 2010; Kwaśnicki, 2015). Mulgan et al. describe (social) innovation as new ideas that work (Mulgan et al., 2007, p. 8).

Olejniczuk-Merta recall the definition developed by National Centre for Research and Development (NCBiR, 2012). According to this definition, social innovations are solutions that simultaneously respond to social demand, as well as cause lasting change in given social groups. These solutions can be associated with innovative products, services or processes that enable dif-

ferent solutions to typical social problems (Olejniczuk-Merta, 2013, p. 30). This means that social innovation is something more than an innovative solution to a social problem. This social novelty must ultimately relate to change at the level of practices and social relationships. According to Olejniczuk-Merta and Howaldt & Schwarz, social innovation is both a component and an important cause of social change (Olejniczuk-Merta, 2013, p. 27; Howaldt & Schwarz, 2010, p. 28). Social innovations as intentional and goal-oriented actions can establish new social practices also in a partly unintentional way (Howaldt & Schwarz, 2010, p. 28).

Based on the above findings, it is apparent that social innovation is clearly different from other types of innovation. Although scientific interest in social innovation is growing, we still know very little about the processes of their creation and development (Mulgan, 2006, Pol, Ville 2009; Howaldt, Schwarz, 2010; Caulier-Grice et al., 2012; Neumeier, 2012). According to Mulgan, „today most discussion of social innovation tends to adopt one of two main lenses for understanding how change happens” (Mulgan, 2006, p. 148). In the first, change is driven by a very small number of heroic, energetic, and impatient individuals. In the second lens, individuals are the carriers of ideas rather than originators, and those ideas initiate a bigger social movement (Mulgan, 2006, pp. 148–149).

In the both outlines, the crucial factor of change is a role of novel ideas and visions of how things could be better. According to Mulgan, „every successful social innovator or movement has succeeded because it has planted the seeds of an idea into many minds. In the long run, ideas are more powerful than individuals or institutions” (Mulgan, 2006, p. 149). Both strategies also confirm the importance of „the cultural basis for social innovation - the combination of exclusion, resentment, passion, and commitment that make social change possible” (Mulgan, 2006, p. 149).

However, research indicates that a large part of the changes related to social innovation are unintentional (Howaldt, Schwarz, 2010; Olejniczuk-Merta, 2013). Consequently, social innovation as both a component and an impor-



tant cause of social change cannot be created in laboratories along the lines of those known in the field of technological innovation. The research of social innovation should be carried out where such innovations arise and then rearrange how things are accomplished. This is a starting point for the research of creating social innovations.

## Living labs

While reviewing the literature on living labs it was found that this concept is still in the initial stage of development (Eriksson et al., 2005; Følstad, 2008; Klimowicz, 2015; Keyson et al., 2017). The concept of living labs originates from Professor William Mitchell at MIT. It was initially used to observe the living patterns of users in smart homes, where real people was observed in their usage of emerging technologies in the setting of a real home (Eriksson et al., 2005). As Bergvall-Kåreborn et al. note, „today, there is an ongoing trend in Europe to tailor a living lab concept in wider use to enhance innovation, inclusion, usefulness and usability of ICT and its applications in the society” (Bergvall-Kåreborn et al., 2009).

Building on numerous studies, living labs can be regarded as long term environments for open innovation that enable experimentation with real users in real contexts (Hillgren, 2013; Veeckman et al., 2013; Leminen et al., 2012; Følstad, 2008). Veeckman et al. describe living labs as an emerging open innovation approach that involves multiple stakeholders (including users) to co-create value that eventually leads to innovation. This is possible as living labs offer a new way of structuring research through validation and testing in real-life contexts (Veeckman et al., 2013, p. 6). According to Leminen et al., living labs provide networks that support creating innovations that better meet user needs (Leminen et al., 2012). As Romero Herrera note, living labs offer a socio-technical infrastructure to support user-centric innovation processes. They offer collaborative platforms for professionals from different disciplines to work together with future users and other stakeholders

to develop solutions that are rooted in the daily life practices. Users play an active role in arising and applying contextualized practice-based knowledge in the innovation processes (Keyson et al., 2017, p. 9).

Consequently, living labs can reconstruct the interaction space. Leminen et al. cite the interview with one of living lab participants: „by living labs, we mean reconstructing the interaction space. It can be any space, anywhere, suitable for collaborative design, the application of knowledge for empowerment, uplift, and development of people and communities for the use of innovation” (Leminen et al., 2012, p. 6). Reconstruct in the context of social innovation can also mean to reframe and rebuild what has been lost in search of economically measured development. Rebuild the interaction space in that sense would mean developing conditions for cooperation, human empowerment by co-creating and sharing knowledge, development of people and communities for the creativity and use of innovation. This means that living labs can be a means of management reframing and reconstruction (Klimowicz, 2015; Leminen, 2015), which is very promising as social innovation’s purpose is considered.

Klimowicz presents the main features of living labs (Klimowicz, 2015, p. 188):

- They are innovation platforms that connect and engage all stakeholders (end users, scientists, industry people, policy makers) at an early stage in the innovation process.
- They are designed to experiment and gain the participation of users in real life, thus becoming a value for both users and society.
- They create opportunities for cooperation.
- Users play a significant role by identifying needs and formulating demand, bringing innovative ideas to solve current and real world problems in a unique and integrated way.

As Leminen et al. write, „successful innovation development is nowadays dependent on understanding both existing and emerging user needs, through which business opportunities are developed” (Leminen et al., 2012, p. 6). According to Romero Herrera, „innovative sustainable solutions in living

and working setups need to embrace users' appropriation of technologies in their daily life practices" (Keyson et al., 2017, p. 9). This is in line with the conclusions from the analysis of social innovations presented in the previous section. As long as social innovations are both a component and a cause of social change, their research should be carried out in users' daily life practices.

While an increasing number of managers are interested in living labs as a way to transform their conventional R&D into open-innovation model (Leminen et al., 2012, p. 6), the living labs and open innovation concepts seem to be the only alternative for intentional and goal-oriented development of social innovation. As long as social innovations may trigger unintentional social changes, they have to be researched, designed and accomplished in the context of users' daily life practices. Thus, living labs can be regarded as a user-centric innovation milieu built on every-day practice and research (Bergvall-Kåreborn et al., 2009). While that concept facilitates user influence in open and distributed innovation processes engaging all relevant partners in real-life contexts (Bergvall-Kåreborn et al., 2009), it could offer significant support in researching and designing social innovation.

## Results

The research undertaken is ultimately aimed at building the new concept and an experimental model of a social innovation living lab. This presents the initial phase of the undertaken considerations, which leads to the outline a prototype approach to the operation of such laboratory within a broader conceptual framework, which is depicted in this section.

Analysis of current knowledge on social innovations (which was synthetically presented in the previous section) allows to draw some conclusions about the nature of these innovations. In the case of social innovations, not only the novelty of the implemented solution is important, but also its long-term impact on society and its development (Caulier-Grice et al., 2012; Neumeier, 2012). That social change does not result directly from the novel

solution itself, but from the change associate with the successful implementation of this solution at the level of social practices and interactions, and thus established patterns of social behavior (e.g. change of established habits, patterns of action, social relations). This is in line with the findings of numerous researchers who claim that social innovations are related to a change of social practices (Howaldt & Schwarz, 2010; Murray et al., 2010).

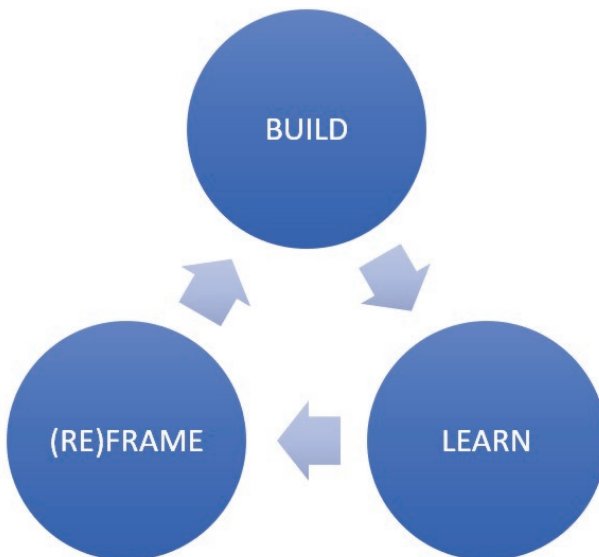
In this sense, social innovation can also be caused by technological innovation. For example, the option of paying by phone (as a technological novelty), which begins to gradually change the way payments are made and the relationships between social actors involved in this system. Although social innovation is often related to innovative products, services or processes that enable fresh solutions to social problems (Olejniczuk-Merta, 2013, p. 30), they should deliver something more than the intentional and goal-oriented solution to a single problem. Consequently, little is still known about the mechanisms behind the emergence of social innovation and how to manage their design and implementation. As social innovation is both a component and a cause of social change (Olejniczuk-Merta, 2013, p. 27; Howaldt & Schwarz, 2010, p. 28), they cannot be created in technical labs isolated from the real world and real users.

The concept of social innovation living labs suggests the foundations of a completely different approach based on the design-led approach (Simon, 1969/1996; Braha & Maimon, 1997; Aken, 2004; Bucolo & Matthews, 2010). Such an approach uses design qualities as a way of thinking and acting, but also methodology, culture and the working environment. According to Braha & Maimon, design „as problem solving is a natural and the most ubiquitous of human activities. Design begins with the acknowledgment of needs and dissatisfaction with the current state of affairs, and realization that some action must take place in order to solve the problem” (Braha & Maimon, 1997, p. 146). Design as an approach to social problem solving is particularly relevant because its tools and methodologies are grounded in the authentic understanding of users’ experiences. It supports an organization in creating

a vision of likely future scenarios and exploring new emerging possibilities (Bucolo & Matthews, 2010, p. 176).

This theoretical prototype approach to social innovation living laboratories is modeled in the form of the sequence of three stage of activities leading to co-create social innovation and relationships between them (Fig. 1).

Figure 1. The theoretical model of social innovation living lab



Source: own elaboration.

The „(re)frame” stage is crucial both for the emergence of new knowledge and the creation of novel solutions. Design-led approach brings a different way of framing situations and possible problem solutions. Thus, it can trigger a cultural transformation of the way organizations undertake their businesses (Bucolo et al., 2012, p. 18). Consequently, the core ability of design thinking is to capture new knowledge to enable the possible futures (Bucolo & Matthews 2010, p. 180). To achieve this, the new knowledge must be created in a real world and with the involvement of real users, which is enabled by the next two stages: building and learning.

The details on the three stages of the proposed approach are presented in Table 1. It contains the tools and activities as components of those stages, which enable the operation of the social innovation living labs.

Table 1. Components of the presented approach to the operation of social innovation living labs

Reframe	Build	Learn
<p><b>Analysis and abstraction of current knowledge</b> (rather implicit process, partly intuitive, based on intellectual experiments, and trial and error thinking method)</p>	<p><b>Prototypes</b> (the early stage device, circuit or program designed and built to demonstrate the ability of target devices)</p>	<p><b>Users' and experts' feedback</b> (digital platforms facilitate collecting users' and experts' feedback opinions on their experiences with prototype solutions)</p>
<p><b>Problemization and challenging the assumptions in existing theories</b> (further in: Alvesson &amp; Sandberg, 2011)</p>	<p><b>Representations of prototype solutions</b> (e.g. models, schemes, diagrams, drafts, sketches, descriptions, storytelling)</p>	<p><b>Observation</b> (digital platforms provide mechanisms to observe real users in real contexts)</p>
<p><b>Systematic combining</b> (non-linear, non-positivist approach to theorizing based on case studies analysis; further in: Dubois &amp; Gadde, 2002, 2014)</p>	<p><b>Illustrations</b> (e.g. photo, audio, video, also those that present future users in interaction with prototype solutions)</p>	<p><b>Empathizing</b> (based on in-depth research on users' expectations and experiences)</p>
<p><b>Reframing the conceptual context</b> (to create a new synthesis based on in-depth insight that is used to interpret and explain observed facts)</p>	<p><b>Opportunities to experiment</b> (that enable users to interact with certain prototype's features)</p>	<p><b>Co-creating and co-designing</b> (user and other stakeholders involvement in co-creating prototype solutions)</p>
	<p><b>Analogies and metaphors</b> (that depict the features of prototype solutions that are difficult to present directly)</p>	<p><b>Experiments</b> (that enable learning based on interaction with prototype solutions)</p>
		<p><b>Learning from mistakes</b> (digital platforms provide mechanisms to test prototype solutions, detect fault and learn from mistakes)</p>

Source: own elaboration.

The logic of the presented approach is based on the following sequence of thinking and making: (1) reframe to build, (2) build to learn, and (3) learn to reframe. Thirst, we need a different way of framing situations and future possibilities to build more effective solutions to social problems. At the cognitive level, it relates to what Alvesson and Sandberg's conclusion that making a theory interesting and influential requires challenging our assumptions in some significant way (Alvesson & Sandberg, 2011). Especially that the reframed conceptual framework is then the basis for building a prototype of a specific solution for real users in a real world. It is particularly demanding stage because the reasoning process is implicit and difficult to explicitly present in the form of a systematic methodological approach (Dubois & Gadde, 2002; 2014).

In the second stage, we build a prototype of a future solution or some of its features with use of the conceptual framework developed in the first stage, as well as the existing knowledge and experiences (Tab. 1, column 2). Two functions of this process are here intertwined: (1) pragmatic that serves to make continuous improvement of the created solution, and (2) cognitive that serves to learn to improve the quality of knowledge.

Consequently, the learning stage is based on interaction with the users of built prototypes and other stakeholder to get feedback and gain valuable insights, which result in the improvement of designed solutions, and indirectly in the development of knowledge. As a result, the proposed methodology combines the pragmatic and cognitive dimensions, intertwining the empirical world with the world of scientific research. As it was said in the introduction, such an approach is based on the assumption that in management sciences research are not only to verify the scientific beliefs, but also to make continuous improvement of created solutions and the quality of knowledge they are based on.

## Final remarks

The literature review has revealed the significant lack of research studies on social innovation and especially the processes of its generating. Thus, the research study was aimed at creating a new approach to designing and accomplishing social innovation in more intentional and goal-oriented way. Consequently, the theoretical model of social innovation lab and its operationalization have been developed.

The model is based on the concept of living labs as long term environments for open innovation developed with real users in real contexts, and examined from the perspective of design-led approach to management and innovation. The operationalization of the model includes the open proposition of tools and activities divided into three stages of the proposed conceptual model: reframing, building and learning, which enable the operation of such a social innovation living lab.

The uniqueness of this proposal is also determined by some properties of the social innovation lab. First, the operation of the social innovation living lab was depicted as the sequence of three stages: reframing, building and learning. This sequence actually has an evolutionary nature and the real process is shaped by the results of consecutive activities. Secondly, the aforementioned process is a kind of iterative movement: from the theoretical background (reframing) to the real empirical world (building within the reframed theoretical framework and the feedback from the learning), and back again (reframing with use of the feedback). Consequently, the proposed approach serves both practice and theory in the same process. Those two spheres are interdependent: scientific cognition serves to create a better base for building future solutions, and learning in the process of improving the current solutions generates new knowledge.

Finally, the proposed approach describes the operation of the social innovation lab, but at the same time the same methodology was used in the conducted research that resulted in the creation of this proposal. The first two



initial methodological stages were carried out in that research: reframing and building the model of social innovation living lab. However, it was assumed that future empirical research will be carried out that will provide data for the subsequent iterations aimed at improving subsequent prototypes of such a laboratory and developing the related scientific knowledge background.

## References

**Aken, J. E. V. (2004).** Management research based on the paradigm of the design sciences: the quest for field-tested and grounded technological rules. *Journal of management studies*, 41(2), 219–246.

**Alvesson, M., & Sandberg, J. (2011).** Generating research questions through problematization. *Academy of management review*, 36(2), 247–271.

**Baran, G. (2018).** Design-led Approach to Social Innovation. *Przedsiębiorczość i Zarządzanie*, 19(9), part 3, 467–482.

**Bergman, N., Markusson, N., Connor, P., Middlemiss, & L., Ricci, M. (2010).** Bottom-up, social innovation for addressing climate change. In *Energy transitions in an interdependent world: what and where are the future social science research agendas*. Sussex, 25–26 February 2010.

**Bergvall-Kåreborn, B., Ihlström Eriksson, C., Ståhlbröst, A., & Svensson, J. (2009).** *A Milieu for Innovation: Defining Living Labs*. In *2nd ISPIM Innovation Symposium*. New York City, USA, 6–9 December 2009 (p. 12): ISPIM.

**Braha, D., & Maimon, O. (1997).** The design process: properties, paradigms, and structure. *IEEE Transactions on Systems, Man, and Cybernetics-Part A: Systems and Humans*, 27(2), 146–166.

**Bucolo, S., & Matthews, J. H. (2010).** Using a design led disruptive innovation approach to develop new services: Practising innovation in times of discontinuity. In *Proceedings of the 11th International CINet Conference: Practicing Innovation in the Times of Discontinuity* (pp. 176–187). CINet.

**Bucolo, S., Wrigley, C., & Matthews, J. (2012).** Gaps in organizational leadership: Linking strategic and operational activities through design-led propositions. *Design Management Journal*, 7(1), 18–28.

**Cajaiba-Santana, G. (2014).** Social innovation: Moving the field forward. A conceptual framework. *Technological Forecasting and Social Change*, 82, 42–51.

**Caulier-Grice, J., Davies, A., Patrick, R., & Norman, W. (2012).** *Defining social innovation. A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe"(TEPSIE)*. European Commission–7th Framework Programme, Brussels: European Commission, DG Research.

**Dubois, A., & Gadde, L. E. (2002).** Systematic combining: an abductive approach to case research. *Journal of business research*, 55(7), 553–560.

**Dubois, A., & Gadde, L. E. (2014).** "Systematic combining" – A decade later. *Journal of Business Research*, 67(6), 1277–1284.

**Eriksson, M., Niitamo, V. P., & Kulkki, S. (2005).** *State-of-the-art in utilizing Living Labs approach to user-centric ICT innovation-a European approach*. Center for Distance-spanning Technology. Lulea, Sweden: Lulea University of Technology.

**Følstad, A. (2008).** Living labs for innovation and development of information and communication technology: a literature review. *The Electronic Journal for Virtual Organizations and Network*, 10 (Special on Living Labs), 100–131.

**Hillgren, P. A. (2013).** Participatory design for social and public innovation: Living Labs as spaces for agonistic experiments and friendly hacking. In E. Manzini, & E. Staszowski (Eds.), *Public and Collaborative – Exploring the Intersection of Design, Social Innovation and Public Policy* (pp. 75–88). DESIS Network.

**Howaldt, J., & Schwarz, M. (2010).** *Social Innovation: Concepts, research fields and international trends*. Aachen: Aachen University, [www.internationalmonitoring.com](http://www.internationalmonitoring.com).

**Keyson, D. V., Guerra-Santin, O., & Lockton, D. (2017).** *Living Labs. Design and Assessment of Sustainable Living*. Netherlands: Springer.

**Klimowicz, M. (2015).** Żywe Laboratoria jako innowacyjne narzędzie zarządzania miastami. In A. Wiktorska-Święcka (ed.), *(Re)organizacja w zarządzaniu miastami w Polsce w kontekście wyzwań rozwojowych (pp. 186–197)*. Wrocław: Oficyna Wydawnicza ATUT.

**Kwaśnicki, W. (2015).** Innowacje społeczne – nowy paradygmat czy kolejny etap w rozwoju kreatywności człowieka? In W. Misztal, G. Chimiak, & A. Kościański (eds.), *Obywatelskość wobec kryzysu: uśpieni czy innowatorzy? (pp. 1–23)*. Warszawa: Instytut Filozofii i Socjologii PAN. Access: <http://kwasnicki.prawo.uni.wroc.pl/todownload/InnowacjeSpoleczneWK.pdf>.

**Leminen, S., Westerlund, M., & Nyström, A. G. (2012).** Living Labs as open-innovation networks. *Technology Innovation Management Review*, 9(2), 6–11.

**Leminen, S. (2015).** Q&A. What Are Living Labs?. *Technology Innovation Management Review*, 5(9), 29–35.

**Manzini, E. (2014).** Making things happen: Social innovation and design. *Design Issues*, 30(1), 57–66.

**Mulgan, G. (2006).** The process of social innovation. *Innovations: technology, governance, globalization*, 1(2), 145–162.

**Mulgan, G., Tucker, S., Ali, R., & Sanders, B. (2007).** *Social innovation: what it is, why it matters and how it can be accelerated*. Oxford: Skoll Centre for Social Entrepreneurship. Said Business School University of Oxford. The Young Foundation.

**Mumford, M. D. (2002).** Social innovation: ten cases from Benjamin Franklin. *Creativity research journal*, 14(2), 253–266.

**Murray, R., Caulier-Grice, J., & Mulgan, G. (2010).** *The open book of social innovation* (p. 2). London: National endowment for science, technology and the art.

**NCBiR (2012).** *Program Innowacje Społeczne*. Warszawa, available at: [https://www.ncbr.gov.pl/fileadmin/user\\_upload/import/tt\\_content/files/opis\\_programu\\_is\\_1.pdf](https://www.ncbr.gov.pl/fileadmin/user_upload/import/tt_content/files/opis_programu_is_1.pdf).

**Neumeier, S. (2012).** Why do social innovations in rural development matter and should they be considered more seriously in rural development research? – Proposal for a stronger focus on social innovations in rural development research. *Sociologia Ruralis*, 52(1), 48–69.

**OECD (2011).** *Fostering Innovation to Address Social Challenges*. Workshop Proceedings, Paris: OECD.

**Olejniczuk-Merta, A. (2013).** Innowacje społeczne. *Konsumpcja i rozwój*, 1(4), 21–34.

**Poi, E., & Ville, S. (2009).** Social innovation: Buzz word or enduring term?. *The Journal of Socio-economics*, 38(6), 878–885.

**Schumpeter, J. A. (1960).** *Teoria rozwoju gospodarczego*. Warszawa: PWN.

**Simon, H. (1969/1996).** *The Science of the Artificial*. Massachusetts: MIT Press.



**Steward, F., Liff, S., & Dunkelman, M. (2009).** *Mapping the Big Green Challenge*. NESTA Research Report, London: NESTA.

**Veeckman, C., Schuurman, D., Leminen, S., & Westerlund, M. (2013).** Linking living lab characteristics and their outcomes: Towards a conceptual framework. *Technology Innovation Management Review*, 3(12), 6–15.