Innovation in the Public Sector: Exploring the Characteristics and Potential of Living Labs and Innovation Labs

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KEY WORDS: Living Labs, Innovation Labs, Public Sector, Open Innovation, User Innovation, Collaborative Innovation.

ABSTRACT

Living Labs and innovation labs share a lot of common traits and characteristics and are both linked to the public sector, but appear in separated literature streams. Both concepts can be regarded as coping mechanisms to deal with contemporary changes in the innovation landscape and within society as a whole. Both also build further on past initiatives and practices, but both concepts are also struggling to find their own clear identity and *raison d'être*. As they are largely practice-driven, the theoretical underpinnings and foundations are mostly established 'post hoc', making sense of current practice, rather than carefully researching and planning the further development. Starting from a review of the current issues and challenges with innovation in the public sector, we look for links between both concepts by analyzing the current definitions, the predecessors and the state-of-the-art in terms of empirical research into both concepts. Based on these findings, we summarize a set of similarities and differences between both concepts and propose a model towards more collaboration, mutual exchange and integration of practices between innovation labs, that can be regarded as initiators of innovation, and Living Labs, that can be regarded as executors of innovation. By doing this, this paper adds to the conceptual development of both concepts and proposes a roadmap for the further integration of both theory and practice of Living Labs and innovation labs.

Introduction

In the private sector, the rapid development of technology has provided opportunities for firms to launch new products, transform their production processes, and do business in new ways. Different paradigms and frameworks have been developed to assist private organizations to deal with innovation, such as open innovation (Chesbrough, 2003), (lead) user innovation (von Hippel, 2005) and distributed innovation (Sawhney & Prandelli, 2000). This has led to different innovation management approaches and organizational forms to cope with these new innovation models. However, the public sector has for long been regarded as an environment that is more resistant to innovation, not willing to embrace and implement new principles and *modi operandi*. In recent years, the general point of view with regards to innovation in the public sector has changed, but compared to innovation in the private sector, scholars as well as practitioners are still lagging behind in terms of practical and concrete organizational structures and forms to organize and implement innovation. Therefore, within this paper we look into two promising concepts related to public sector innovation: Living Labs and innovation labs. Whereas Living Labs involve public sector organizations and can result in public sector innovation, but are also dealing with other forms of innovation, innovation labs in the public sector are specifically created to foster public sector innovation. As in current literature and debates, both concepts are sometimes mixed and used interchangeably, we perform a comparative literature review and meta-analysis into the nature and outcomes of both organizational forms that are put forward as facilitators and generators of public sector innovation. We outline the similarities and differences between both approaches and propose a model that integrates both into a more longitudinal vision on public sector innovation.

Innovation in the public sector

Whereas in the private sector innovation is regarded as essential for the survival of organizations, public sector innovation for long has been regarded as a *contradictio in terminis*. Borins (2002) mentions three main issues why public sector innovation has long been regarded as an oxymoron. First, the fact that public sector agencies are usually monopolies, with no competitive pressure to

innovate, second, the 'fishbowl management' effect as powerful impediment to innovation, where the media and opposition forces are constantly pursuing the exposure of public sector failures, and third, the fact that public sector organizations are usually large bureaucracies structured to perform their core tasks with stability and consistency, fostering resistance to change or disruption of these tasks. Therefore, public organizations are mostly characterized by a culture of risk aversion, and a focus on short-term delivery pressures (Mulgan & Albury, 2003). However, in recent years this vision has shifted, as in more recent literature, there is consensus that innovation should be a core activity of the public sector (see the review of literature in De Vries et al. 2016). Furthermore, there is pressure from politicians who push for public sector innovation for both efficiency and popularity gains with the general public (Potts and Kastelle 2010). Borins (2002) indicates the public sector has faced challenges such as driving down costs to reduce the debt burden and encountered opportunities such as applying information technology. Therefore, public sector innovation helps public services to improve performance and increase public value, respond to the expectations of citizens and adapt to the needs of users while increasing service efficiency and minimizing costs (Mulgan & Albury, 2003).

Mulgan & Albury (2003) point out to the fact that it is crucial to foster continual development and improvement within public sector organizations, as only half of all innovations are initiated at the top. Therefore, maintaining a diversity of staff, paying attention to the needs and expectations of users and frontline staff, and promoting formal creativity techniques are all valuable tools to this end. Managing risks and incubating new ideas means that there is a need for prototypes, as well as the willingness to invest time and resources for their evaluation. The replication of successful pilots and prototypes is often achieved centrally through legislation, or through the dissemination of evaluations, but in contrast to these 'idea-push' models, the private sector literature has emphasized 'diffusion' rather than dissemination. Therefore, the 'push' model of public sector organization contradicts with the more organic 'diffusion of innovation' model that is dominant in private sector innovation. Hartley (2005) identifies an important lesson for policy, practice and research: the need to develop an understanding of innovation which is not over-reliant on the private sector manufacturing literature but reflects the distinctive contexts and purposes of the public sector. There are some similarities in innovation processes and outcomes (from which it is important to learn), but also distinctive and important differences between innovation in private firms and in public service organizations. The private sector literature still focuses mainly on technological innovation, especially new product development, and as innovation in the private sector is driven primarily by competitive advantage—this tends to restrict the sharing of good practice to strategic partners. By contrast, the drivers in the public sector are to achieve widespread improvements in governance and service performance, including efficiencies, in order to increase public value (Moore, 1995). Hence, while public sector can be indirectly the producer of technology (e.g., Internet etc.) as part of being an 'entrepreneurial state' (Mazzucato 2013), it is rarely, if ever, at the core of public sector activities. Public sector innovation is rarely about bringing new products to the market, but covers a wide continuum of process, service, governance, conceptual and also product innovations (De Vries et al. 2016).

Overall, these features suggest that the transfer of theory and empirical findings from private firms to public services is far from straightforward. Accordingly, there is a need for robust theory and evidence derived directly from the public sector. Bommert (2010) states that one might readily accept that the public sector faces complex challenges, which are unmet. However, one might less readily accept that a different form of innovation constitutes a convincing alternative. One reason for this doubt is that research about public sector innovation is rather thin and the level of conceptualization low (Hartley, 2005). For example there are various definitions of what counts as an

innovation in the public sector (Moore, 2005; Kattel et al. 2013, 5-7). In this research environment it is difficult to distinguish innovation from change and clearly establish what is different about the alternative forms of innovation and to claim that one form possesses characteristics which make it more suitable. Consequently, it is very difficult to find a single best way to organize innovation in the public sector (Bekkers et al. 2011).

In accordance with a lot of public sector innovation scholars, Bommert (2010) claims that there is a need for a new form of innovation in the public sector because bureaucratic (closed) ways of innovating do not yield the quantity and quality of innovations necessary to solve emergent and persistent policy challenges (Borins, 2014: 5-7). Modern debates about how to organize innovation in the public sector outline the importance of public sector entrepreneurs, boundary crossing networks, empowerment of citizens and experimental policies – these are issues for which traditional bureaucracies are not well-equipped. Based on these shortcomings the article defines a set of criteria, which a suitable form of public sector innovation needs to fulfill. The article shows that collaborative innovation meets these criteria because it opens the innovation cycle to a variety of actors and taps into innovation resources across borders, overcomes cultural restrictions and creates broad socio-political support for public sector innovation. Collaborative innovation, or the idea to include a broad variety of internal and external actors, can be connected to the concept of networked government (the third mode as discussed by Hartley, 2005), but also refers back to the notions of open innovation (Chesbrough, 2003) and user innovation (von Hippel, 2005) that were conceived primarily in a private sector setting. By means of two case studies, Bommert (2010) illustrates the potential of collaborative innovation for the public sector. However, there is a lack of practical organizational forms that facilitate collaborative innovation. And although innovation in the public sector has received considerable academic interest, most studies have focused on detailed, and sometimes comparative, case studies (Borins, 2002; De Vries et al. 2016).

Therefore, within this paper, we will introduce and discuss two contemporary innovation approaches with links to public sector innovation. Both Living Labs and innovation labs are ways of dealing with innovation without relying purely on the mechanisms and insights from innovation in the private sector. While there is a lot to learn from product and service development in the private sector, policy-makers, managers and researchers in the public sector need to recognize their own contexts more explicitly. Both Living Labs and innovation labs are linked to open and user innovation (Schuurman, 2015; Tõnurist et al., 2015), but have been conceived in a public sector context. However, both concepts seem to be mainly practice driven and are sometimes used interchangeably. Therefore, in the remainder of this paper we will investigate the definitions of both concepts, their main predecessors and the research that has been carried out with regards to their characteristics and outcomes. This will enable to compare both concepts, illustrate similarities and differences, and propose a theoretical and practical link between both, as the literature streams have been strictly separated until now.

Innovation labs

Definition

Innovation labs are defined as hybrids of think tanks, digital R&D labs, social enterprises and charitable organizations (Williamson, 2015). Their mission is twofold: to foster ICT-enabled user-driven service production logic in the public sector as well as to cope with external changes (ICT change, austerity, demand for individualized services). Therefore, innovation labs can be defined as ‘islands of experimentation’ where public sector can test and scale out public service innovations. It

follows logically that experimentation assumes some level of autonomy from the existing structures and institutions, and one can understand innovation labs as an attempt to create independent change champions (experimental organizations) within the public sector. Building further on this argument, Tõnurist at al. (2015) define innovation labs as change agents within the public sector that operate with a large autonomy in setting their targets and working methods. They are structurally separated from the rest of the public sector and expected to be able to attract external funding as well as 'sell' their ideas and solutions to the public sector. However, depending on context their organizational build-up can considerably differ. Innovation labs typically have relatively low budgets, are generally small fluid organizations and are dependent on the resources (funds, human resources) they are able to co-opt to their activities externally.

Predecessors

Innovation labs as an attempt to structure (radical) change processes within public organizations are not an entirely new phenomenon (see, e.g., Thompson & Sanders (1998) on the US reinvention labs in 1990s). However, what is different in case of the current wave of innovation labs is the context and logic why these structures have emerged, that is, the combination of user-driven service production logic, the ever-increasing computing power and fiscal austerity. As public sector change is always contextual (Pollitt 2009), there is, thus, a need to gain better understanding on the nature and potential of innovation labs in public sector change. One of the organizational origins of innovation labs in the public sector can be seen in the think tank culture predominant in Anglo-American politics (Williamson, 2015). As such they have been described as purpose-driven do-tanks (Bellefontaine, 2012). They form a loose hybrid of the think tank, the social enterprise and the charitable organization, merged with aspects of the digital R&D lab (all of which are themselves contested, elastic and emergent organizational forms). Broad based characteristics of innovation labs are discussed in various reports and papers (e.g. Westley et al., 2011; Torjman, 2012; John 2014; Puttick et al. 2014; Williamson 2015).

Research

Although in recent years innovation labs have become relatively popular in the public sector – especially since 2010 –, the literature and studies on the subject are still scant. The available papers and reports remain descriptive and informative in nature; most of the provided evidence relying on insider ethnographies (e.g., Mindlab: Christiansen, 2014; Policy Lab: Kimbell, 2015) or document analyses (e.g., Williamson 2015). A report on 16 innovation labs was published in 2013 by the Parsons DESIS lab, whereas Nesta and Bloomberg Philanthropies have published a report on public sector innovation labs that covered 20 such units around the world (Puttick et al., 2014). These reports confirm the definition of innovation labs as hybrid forms, composed of characteristics of other organizational forms in the context of the public sector such as think tanks, R&D labs and social enterprises. Both reports note that what binds innovation labs, is the fact that they act as newly created organizations within the public sector. This way they do not reform existing organizational routines within the current public sector organizations, but also avoid to call on private organizations. With regards to the section on public sector innovation, this avoids the bureaucratic structures that characterize existing public sector organizations, and also avoids a pure implementation of private market innovation logic.

Other efforts to analyze innovation labs include categorizing them by their segment of specialism (e.g. design-focused, psychology-based or technology-based); by sector (e.g. healthcare or education), if they are government-led or -enabled or their potential level of change (incremental or systematic), (Armstrong et al. 2014; Parsons DESIS lab constellation, 2013), and based on their

operations: developers and creators of innovation (those who respond to specific challenges), enablers (those who bring in insights from outside the public sector), educators (transformers of processes, skills and culture) and architects (concentrating on system and policy level change) (Puttick et al. 2014). Most discussed innovation labs are on the city or national level (a minority on the regional level) and were established in 2000 or later.

However, the mentioned studies do not provide deeper insights into the way innovation labs function. This is done in the most detailed study by Tõnurist et al. (2015). Their study reports an empirical investigation of 26 innovation labs. Mostly based on interviews of the managers from the innovation labs, the specific characteristics are related to the envisioned outcomes and the specificities of innovation in the public sector. By having a self-generated income and low operating budgets, innovation labs do not illicit strenuous performance evaluations nor the need to collect quantitative metrics to make the output of the labs measurable. As innovation labs are relatively small and agile, this forces them to perform in a 'quick and dirty' fashion, resembling start-ups. However, when projects become too big, innovation labs run against existing structures and procurement rules which causes them to hand-over the projects to other departments, which can chose to continue or disband the project. Stakeholder engagement and co-creation with citizens is seen as key, but the outcomes of innovation labs are produced for ministerial departments and other government agencies. This relates to the fact that a large share of the innovation lab activities is funded by the public sector, so this potentially conflicts with the 'self-generated income', smallness, physical separation and autonomous from existing public sector structures key characteristics of innovation labs.

Therefore, Tõnurist et al. (2015) conclude, based on the interviews, that innovation labs operate in a constant tension between the potential to disrupt the existing organization and the necessity to deliver value for their 'sponsors'. They do this by jump-starting and show-casing user-driven service re-design projects, specializing on quick experimentations without having the capabilities and authority to significantly influence upscaling of the new solutions or processes, focusing on prototyping without too much worry for IT capabilities. However, they are not yet an organic part of public sector and its change. The main source of autonomy as well as survival is high level political and/or administrative support, meaning that once an innovation lab loses its sponsors the survival chances diminish radically, creating an interesting paradox and tension, where smaller innovation labs are easier to close down, whereas larger ones face the risk of losing flexibility and freedom to act.

Living Labs

Definition

Living Labs refer to user-centered, open innovation ecosystems based on a systematic user co-creation approach integrating research and innovation processes in real life communities and settings (Ballon & Schuurman, 2015). Living Labs are both practice-driven organizations that facilitate and foster open, collaborative innovation, as well as real-life environments and arenas where both open innovation and user innovation processes, can be studied and subject to experiments, and where new solutions are being developed. This unique capability enables Living Labs to generate concrete, tangible innovations based on user and communities' contributions, and at the same time to advance the (academic) understanding of open and user innovation principles and processes.

Leminen (2013) defines living labs as: "physical regions or virtual realities, or interaction spaces, in which stakeholders form public-private-people partnerships (4Ps) of companies, public agencies, universities, users, and other stakeholders, all collaborating for creation, prototyping, validating, and testing of new technologies, services, products, and systems in real-life contexts". This definition is complemented with Schuurman (2015) who sees Living Labs as an organized approach (as opposed to an ad hoc approach) to innovation consisting of real-life experimentation and active user involvement by means of different methods involving multiple stakeholders, as is implied in the Public-Private-People character of Living Labs. Ståhlbröst (2012) also acknowledges this point of view by referring to Living Labs as both an environment and as an approach, characterized by five main principles: value (delivered to all participating stakeholders), sustainability (of the Living Lab organization), influence (of participating stakeholders on the innovation outcome), realism (integrating real-life context into the innovation process) and openness (towards the contribution of different stakeholders).

Predecessors

At least three important predecessors for the living labs-movement as we know it today can be discerned (Schuurman, 2015). The cooperative design movement, or the Scandinavian tradition of user involvement in IT design processes (Ehn, 1989), can be traced back as far as the 1960s and 70s. Next to the active user involvement, this cooperative design also introduced the facilitation of trial use situations as part of the design process, so as to stage users' hands-on experience with future applications, which puts the focus on the real-life context. In the 1980s there were the European 'social experiments' with IT (Oestmann & Dymond, 2001; Qvortrup, 1987), when all over Europe, various social experiments with IT were started. Social experiments originated in the field of psychology and refer to experiments taking place outside of laboratories and therefore with less physical isolation of subjects and materials, less procedural standardization and longer-lasting treatments when compared to experiments in laboratory settings. From the 1990s onwards 'Digital City'-projects started to blossom (Paskaleva, 2011). The digital city concept took hold in Europe and elsewhere, referring to a number of digital initiatives undertaken by cities, especially related to digital representations of the city, digitally related economic development and urban regeneration initiatives and the provision of Internet access for citizens. Then, towards the end of the 1990s, the proper living lab concept came into use, first in a US setting, which mostly Følstad (2008) refers to as 'living labs as testbeds'. Soon primarily in a European setting, living labs were more regarded as a research concept dealing with the context of the innovation, focusing on co-creation, which is in line with Følstad's second archetype of living labs. These predecessors all had their impact on the current Living Lab movement, with elements still present in current Living Labs (cf. Schuurman, 2015).

Research

Ballon & Schuurman (2015) mention a five year gap between the first Living Lab projects (mainly EU-funded, from 2000 onwards) and the first scientific publications that defined the notion of living labs (Ballon et al, 2005; Eriksson et al., 2005), which they see as evidence of the practice-driven nature of the phenomenon. While there is now a certain body of literature that attempts to clarify and analyze the concept (Følstad, 2008; Almirall et al., 2012; Leminen et al., 2012), living lab practices are still underresearched, and a theoretical and methodological gap continues to exist in terms of the restricted amount and visibility of living lab literature vis-à-vis the rather large community of practice (Schuurman, 2015). Schuurman (2015) proposes to make a distinction between three different levels of analysis within Living Lab phenomena, as Living Labs are complex entities with various activities and interactions taking place between different actors. This model for Living Labs is based on a

practical and theoretical assessment of different Living Labs and helps to define more precisely to what activities or phenomena one is referring to.

The three layers that can be distinguished are the following: a macro level (the Living Lab constellation), the meso level (consisting of a Living Lab innovation project) and the micro level (consisting of the different methodological research steps). On the macro level, a Living Lab is a set of actors and stakeholders that are organized to enable and foster innovation, typically in a certain domain or area, often also with a territorial link or focus. The various assets and capabilities manifest themselves at the micro level, which consist of the different research steps and activities that are carried out within the Living Lab projects. The different projects that are carried out within these Living Lab organizations by means of their methodological toolbox are regarded as the meso level. These projects are aimed at generating and advancing specific innovations or relevant knowledge that enables innovation.

Regarding the different actors active within Living Labs, Leminen (et al., 2012) distinguishes between providers, enablers, utilizers and users. Providers provide the other actors in the Living Lab organization or project with their product or service portfolio. They take care of the (material) infrastructure used for the Living Lab-operations. Providers are mainly private companies that enter into Living Labs to co-develop new products, services, and solutions to their own business or industry needs, and focus more on long term results. To attain these goals through their involvement in general Living Lab operations and (possibly) in the Living Lab cases, driven by utilizers. Enablers can be various public sector actors, non-governmental organizations, or financiers, such as towns, municipalities, or development organizations. This actor provides (financial) resources or policy support in order to start-up and maintain the Living Lab operations. They enable the sustainability of the Living Lab organization and/or setting-up Living Lab projects. Utilizers are 'users' of the Living Lab organization who aim to develop their businesses. Their focus is on developing and testing new products and services. These utilizers use Living Labs as a strategic tool to collect data on test-users of their products or services and collaborate with other stakeholders in the Living Lab ecosystem. These actors drive short-term Living Lab projects and can be regarded as short-term, ad hoc 'consumers of the Living Lab'. They do this in Living Lab projects. Users are the 'end-users' that are being involved in the Living Lab-operations and in the (short-term) Living Lab projects. In some Living Labs, existing user groups or user communities are involved, while in others the Living Lab-operations themselves facilitate the formation of a (Living Lab) user community. Depending on the actor that drives the Living Lab organization, and the focus of the activities, this leads to different 'types' of Living Labs, such as (1) research Living Labs focusing on performing research on different aspects of the innovation process , (2) corporate Living Labs that focus on having a physical place where they invite other stakeholder (e.g. citizens) to co-create innovations with them , (3) organizational Living Lab where the members of an organization co-creatively develop innovations , and (4) intermediary Living Labs in which different partners are invited to collaboratively innovate in a neutral arena. Due to the constant development of the concept other types of Living Labs certainly exists. This illustrates the broad diversity of Living Lab organizations, as well as innovation outcomes.

Discussion & conclusion

Although innovation in the public sector has for long been regarded as a *contradictio in terminis*, contemporary scholars and practitioners agree that innovation is necessary in order to deal with contemporary societal challenges. However, innovation in the public sector requires specific approaches and adaptation of frameworks, tools and 'best practices' from the private sector, as

literature and research reveal that the circumstances and needs for innovation are sometimes fundamentally different. Collaborative innovation approaches are put forward as a response to the specific challenge of public sector innovation, although the current literature mainly deals with case studies and fails to concretely transfer and adapt the insights from innovation theories in the private sector. Within this paper, we investigated Living Labs and innovation labs as possible solutions for public sector innovation.

Both Living Labs and innovation labs are mainly practice-driven concepts which started to blossom around the turn of the millennium. Both can be regarded as ways of dealing with the changing environment and the changing role and nature of innovation. The turn of the century also coincides with new paradigms and frameworks for innovation, such as Open Innovation, User Innovation and mixed forms of both, that are mainly linked to private sector innovation. In the specific context of public sector innovation, the literature also points out to the necessity of innovation, bearing in mind the specific context of the public sector. Therefore, the 'private sector' concepts cannot be imposed and introduced directly in a public setting, but require adaptation. One main issue was the definition of innovation, which should be extended in the public context beyond product and service innovation towards other forms such as process innovation. The literature puts forward collaborative innovation as best practice and necessity in the public sector, but fails to deliver concrete and practical frameworks to facilitate this.

Table 1. Comparison of core characteristics

Innovation labs	**Living Labs**
Focus on ideation & 'quick & dirty' experimentation	Focus on innovation development & real-life experimentation
Multi-disciplinary team	Multi-stakeholder organization
Potentially citizen-centric	A priori user-centric
Public sector innovation projects	Public as well as private sector innovation projects
More agile and volatile due to their smallness and relative independence	More formal at the organizational level due to multi-stakeholder partnerships
Focus on problem and idea definition	Focus on methodology and knowledge generation
Initiators	Executors

Source: Authors.

Both innovation labs and Living Labs can be regarded as practice-driven concepts that provide a more structured way to implement collaborative innovation in the public sector, building further on the principles and notions of Open and User Innovation. There are certainly similarities and overlap between both concepts, but based on our exploratory literature review, we conclude that both are fundamentally different and can even be regarded as logical extensions of each other. Main similarities are the focus on experimentation, a strong link with ICT (both as enabler and outcome) and a collaborative, user-centric attitude. However, we also discovered major differences.

First, whereas innovation labs in this new wave of labs are conceived exclusively in a public sector or third sector context (especially in connection to social innovation labs), Living Labs have a broader application domain and are utilized for both private sector as well as public sector innovation. Therefore, innovation labs are slightly more easy to define, whereas Living Labs' definition is still more high level. However, this can also be due to the fact that innovation labs are much less studied compared to Living Labs and thus, their intricacies and differences have not been so extensively outlined.

This also related to the second point, as both innovation labs and Living Labs are multi-disciplinary, but in Living Labs this is the result of the multi-stakeholder nature of the organization (Living Labs are public-private-people partnerships), whereas innovation labs are smaller and consist of one team with people from different backgrounds. Thus, in public sector innovation labs the methodologies used tend to depend on the capabilities and background of the people involved, and are not a priori citizen-centric. In Living Labs the collaborative focus is a built-in characteristic of the organization.

Third, building further on the previous, whereas innovation labs are smaller and more agile, they are also shorter-lived and thus sometimes only operational for one or a few concrete projects; highly dependent on high level political or administrative patronage and not that interwoven with the traditional organizational structures. This makes public sector innovation labs more 'volatile'. Living Labs on the contrary are characterized by a multi-stakeholder organization set-up to conduct multiple innovation projects (cf. the sustainability principle). Interdependencies between different partners make these organizations more inert.

Fourth, the operating time frames of Living Labs and public sector innovation labs can differ considerably. While this is connected to the initiator-executor role of these organizations (see Table 1 above), the concept of a 'Living' Lab also often infers the collection of information and feedback for innovative solutions/policy measures over a period of time in a real life context. In innovation labs the long-term measurement efforts are rather unique (if present at all) and concentrate on the pre-design phase in the innovation process.

Fifth, in Living Labs the goal is to learn and grow as an organization by means of different innovation projects, where these projects also are more likely to cover a longer proportion of the innovation process. Innovation labs have thus far focused on the ideation and genesis stage of innovation, and then let go of the project afterwards. This is due to the fact most of these organizations do not control the implementation phase of the innovations as many responsibilities can be fragmented over different public sector organizations, thus, making it time-consuming for small teams to follow up on innovations. This is also related to the fourth point: as public sector innovation labs tend to have weaker ties with the surrounding organizations, it is more difficult to build up long-term partnerships, while for Living Labs the latter seems to be a precondition for their existence.

Therefore, we regard both concepts as very promising and valuable for public sector innovation. Both can be seen as operating on a continuum, where one might see Living Labs as the ideal structures to pick up the raw ideas or prototype solutions, delivered by innovation labs, and focus on the actual implementation and execution stage, including real-life testing. However, in practice both concepts seem to be part of different literature streams and (academic) debates. Furthermore, as innovation labs operate more in the public sector they encounter organizational and cultural barriers that may not be present in Living Labs where the partnerships between sectors are more balanced. Therefore we would argue for more studies and research regarding the nature, outcomes and possible integration of both concepts for public sector innovation. As next steps, we would foresee workshops and joint meetings with practitioners as well as scholars from both innovation labs and Living Labs to exchange current practices and outcomes, as a first step towards a conceptual and practical integration. This would also pave the way for further experimentation and data gathering to facilitate robust theory building regarding innovation in the public sector.

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