Designing social living labs in urban research

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Abstract

Purpose – *The purpose of this paper is to develop a more socially centred understanding of living labs for urban research questions by reflecting on current technologically centred and innovation-driven approaches.*

Design/methodology/approach – *The paper takes the form of literature review complemented by conceptual knowledge from practical experiences.*

Findings – *Urban living labs, as they were introduced from a technological and economic point of view, have to be translated into the context of social sciences. By doing so, they may be a promising tool to stimulate co-creation and collaboration also in urban research projects that focus on social research questions and include diverse target groups. Socially centred living labs take into account the local context by developing a space of encounter for the participants in the urban living lab and by implementing a set of living methods that suit both the research design and the local requirements.*

Originality/value – *This paper argues that urban living labs can be a valuable tool in urban research to include researchers, politicians, local stakeholders and residents in an open concept of co-creation. It argues that a locally contextualised design in terms of space and methods is necessary to create an environment of trust and collaboration.*

Keywords *Living lab, Contextualised living methods, Social living lab, Spaces of encounter, Urban research*

Paper type *Conceptual paper*

1. Introduction

As urbanisation processes create ongoing population growth in cities, questions relating to the provision of energy, water, waste recycling, housing and transport have increased the relevancy of need-based and product-oriented research (Nevens *et al.*, 2013). As a result, urban research includes a significant proportion of research questions addressing the need for innovative urban solutions. Living labs have become a popular tool in current research designs, especially for innovation-driven technologically centred research. As cities became the nucleus of demographic and economic growth and social change, current research and urban policies aim to develop a sustainable use of limited resources to ensure and enhance urban quality of life. Within these framework conditions, the concept of living labs serves as an explorative and user-centred space, combining research with innovation processes through a cooperation of the "public-private-people partnership" (Nevens *et al.*, 2013, p. 115).

Despite the need for innovation-driven approaches in urban development, the current tendency towards product-based and user-centric urban research agendas might also be interpreted as an effect of the Lisbon strategy, which tackled Europe's lack of innovation performance in the mid-2000s (Katzky and Klein, 2008). As a consequence, innovation-driven approaches are embedded in a framework of societal relevant research tackling the grand challenges[1]. Their rationales are motivated by efficiency-driven perspectives to enhance potential innovation (Feurstein and Schumacher, 2008). After implementing the

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concepts of sustainable and smart cities in a predominately technical manner over the past decade, evidence shows that European research strategies have more recently fostered the inclusion of new paths of "social innovation"[1]. Not only economic crisis but also global challenges – such as demographic imbalances – affecting living quality in cities have proven a starting point for the idea of social innovation searching for new solutions and instruments in a collaborative manner (Edwards-Schachter *et al.*, 2012). This can be seen as an attempt to rescale future-oriented urban research away from technology and efficiency-centred approaches, and towards more social-centred ones. The main aims therefore can be found in civic involvement and co-creation that understand innovation as "[. . .] the collaborative development between two or more stakeholders, [. . .] including users, to co-create value that eventually leads to innovation" (Veeckman *et al.*, 2013, p. 6). This correlates with the recent trend towards participative planning approaches that increasingly value citizen engagement and resident-driven activities (Lokale Lente, 2014; Putters, 2013; UK Cabinet Office, 2010). User- and citizen-centred research designs include living lab approaches predominately in the field of technical innovation (Bergvall-Kåreborn and Ståhlbröst, 2009). In this context, living labs have the potential to be a promising instrument for the active inclusion of citizens in urban research projects investigating socio-spatial questions.

This paper examines the possibilities and limitations of using living labs in urban research which focuses on social research questions in the methodological design. It identifies current approaches and gaps in living lab concepts and contributes to a more nuanced and critical understanding of living lab design. As current research programmes show, there is a need for a conceptual design of social urban living labs that moves beyond technological terms, norms and the idea of socio-spatially isolated implemented labs. Therefore, this paper begins by providing an overview of living lab approaches. Based on that, it proposes a conceptual translation from technologically centred to socially centred living labs by using the Interethnic coexistence in European cities (ICEC) living lab as an example. This international, comparative research project in the field of urban studies is in the early stages of designing an appropriate living lab approach based on socially centred research questions. It aims at examining interethnic coexistence and neighbourhood embeddedness at the local level[2]. The paper concludes with structural and implementation challenges that need to be faced in future living lab debates.

2. Overview of living lab approaches

The living lab idea originally emerged during the European re-positioning in the mid-2000s towards a competitive and innovation-based economy. The Finnish presidency of the European Union put a strong emphasis on living labs, pioneered their use not only in urban research but also more widely (Pascu and Van Lieshout, 2009). Ever since, living labs have been considered as a new and innovative instrument for tackling the demand to transform "[. . .] advanced levels of research into measurable economic growth" (Katzky and Klein, 2008, p. 2). Living lab approaches started with the testing of new products (Markopoulos and Rauterberg, 2000) and have continued to gain popularity since the launch by the Massachusetts Institute of Technology (MIT) in Boston or the urban labs by University of Chicago. The MIT living lab sought to create a technical research methodology for real-life complexities (Feurstein and Schumacher, 2008), while the University of Chicago urban labs provide a space for expertise on any urban-related questions such as crime, education or poverty. In Europe too, living labs have been established such as the Philips Homelab or Fraunhofer inHaus (Schuurman, 2015). Since then, living labs have become more and more prevalent in product-based tech laboratories, creating an artificial living environment to involve users as testers for new products and services. Universities also aim to benefit from living labs through involving university staff and students both as active researchers and tester[3].

Living labs aim also to involve citizens in innovation development as a new element of the decision-making process by connecting research with the actual living environment. The rare examples of successfully implemented living labs being used in urban research aim to translate research into real-life needs through the inclusion of actors at various levels, representing not only citizens and researchers but also stakeholders, municipality and community actors. Recent examples have focused on the implementation of smart technologies into urban citizens' living environments with the aim of creating resource-efficient and low-carbon cities for the future[4]. In this context, the governmental interests and stakeholder interests are clear. On the one hand, future urban challenges should be met with adaptation strategies, and on the other hand, new technologies should be implemented to foster innovation and new markets. As both interests carry the risk of implementation failures, living labs serve as an instrument to test and improve new technologies, using potential future users to help shape and create new products and services that are both successful and competitive.

More recently, the living lab approach has been increasingly utilised in socially oriented urban research agendas, as the Joint Programming Initiative (JPI) "Urban Europe" shows. Living labs in a social environment are used to identify relevant topics of urban research and measure the relevance of specific research questions for the socio-spatial context. The implementation of context-based and socio-spatially appropriate methods aims to translate research for use in civic society and improve the collection of insightful data at the local level. However, the conceptual and methodological understanding of living labs remains focused on technology-based innovation processes rather than socio-spatial research questions.

Literature on living labs refers largely to project publications or innovation-based technology research[5]. For a very comprehensive literature overview on mostly technological living lab publications, see Følstad (2008), who demonstrates the evolution of the living lab debate from a technologically centred approach focusing on innovation research. Within this framework, living labs serve as an integral instrument to transform a product-based economy into an innovative service economy by the integration of users as co-creators in real-life environments (Pascu and Van Lieshout, 2009; Mulder, 2012; SmartIES, 2014; Feurstein and Schumacher, 2008). In this context, innovation mainly refers to open innovation processes in which the results of an end product or new service are based on a scope ranging from testing and validating to developing and co-creating (Pascu and Van Lieshout, 2009).

In the European research context, however, the notion of innovation is clearly linked to a necessity for European cities to remain successful in a global city competition (Noll, 2011) that might be created in product and service development processes. According to the European Network of Living Labs (ENoLL, 2014), "[. . .] [a] Living Lab is a real-life test and experimentation environment where users and producers co-create innovations". The key components of living labs are co-creation, exploration, experimentation and evaluation that involve both producer and user in the process. However, it can be considered a user-centric research methodology, as it includes user-centred living methodologies in a real-life environment (Mulder, 2012), placing the user at the centre of the analysis. Included actors are – generally speaking – stakeholders interested in the production and implementation of innovation-based technologies. On the other hand, users can also include citizens as potential users and consumers. The new or adapted products or services resulting from the process aim to attract higher acceptance through an integrative process of co-creation between stakeholders and potential users.

Although living labs are considered to be a valuable instrument contributing to the concept of pioneer cities as centres of innovation and social participation (Noll, 2011), academic debate on living labs in urban studies remains underdeveloped. As Bergvall-Kåreborn and Ståhlbröst (2009) point out, theories and methodology, as well as analysis and reflection, are limited. Both the theoretical framework and methodology require further elaboration.

Even less literature can be found for social living labs, as few living labs have dealt with social topics. Amongst them, for instance, the living labbing in Rotterdam that aims particularly at "[. . .] living methodologies to address the social dynamics of everyday life" (Mulder, 2012). Living labs oriented towards social research questions evolved from the idea of co-developing cities and urban living environments. The general approach includes catchwords such as empowerment, participation or co-creation and provides an open, participatory and do-it-yourself environment that includes citizens (users) and local actors (producers) as agents in processes of co-creation and improved living spaces. However, project insights, minimum standards and requirements remain unclear with regards to distinct living lab conceptualisation, including contextualised methods for place-based needs and questions of research (Table I).

In urban research especially, fields of analysis relate to the socio-spatial environment, living together and urban policies that affect those fields. The question therefore arises of how far living labs can be used as a supporting instrument in those processes of connecting research with civic society and involving residents to gain knowledge at the neighbourhood level? Recent living labs that have come closest to addressing this question can be found in Rotterdam (Mulder, 2012), where the emphasis was placed on co-creation by citizens. Here, visual ethnography, prototyping and the co-creation of public services were implemented as a set of living methodologies to "[. . .] extract richer insights about what drives people" (Mulder, 2012, p. 40).

The examples drawn from the literature and recently implemented living labs refer mostly to living labs as a new methodology, including a set of methods and actors to create something – for instance a product, process or activity – commonly. However, the concept of living labs in urban studies needs further elaboration. Mulder (2012) demonstrates that the remaining potential has not been fully exploited both in technical living labs and social living labs. Mulder (2012, p. 42) identifies a need for living methodologies as a core element "[. . .] that makes a living lab an outstanding methodology for user-driven and co-creative

Table I Characteristics of general, technically and socially oriented living labs

Living labs in general (Pascu and Van Lieshout, 2009)	*Technically oriented living labs*	*Socially oriented living labs*
Initial situation		
Service improvement	Product/service development and evaluation	Co-development of city and living environment
Aims		
Improving development of useful services through interaction in "daily life" setting between developers and users	Higher acceptance of product or service through co-creation	Involvement of affected people to create higher acceptance of, e.g., policies and public services; gaining richer insight information
Approach		
Mutual shaping – user-centred innovation	User interface design – user acceptance – co-design – service and product creation	Empowerment – participation – co-creation
Actors		
Citizens, firms	Stakeholders and users/consumer/citizens	Local actors, citizens
Environment		
Geographically bounded innovation environments	Collaborative, multi-contextual and multi-cultural real-world environments	Open, participatory, do-it-yourself
Outcome		
Co-created and improved services	New/adapted products or services	Co-created and improved living spaces

Note: Own illustration based on current living lab projects and Pascu and Van Lieshout, 2009

innovation". In addition, the key component of involvement requires further analysis, as Bergvall-Kåreborn and Ståhlbröst (2009, p. 368) "[. . .] found [. . .] it [. . .] difficult to recruit user groups that reflect the variety of the society [. . .]". As this quotation shows, further work is required to ensure the representativeness of living lab analysis. It further indicates that a paradigm shift from technological to social science guided terminology might be needed to shift the perception of future living lab participants to citizens rather than users. This is of particular importance, should living labs gain importance, as a methodological tool in social sciences.

3. From technologically centred to socially centred living labs

Transferring the advantages of living labs to social research seems appealing. It not only provides the chance to rethink established research approaches but also offers the opportunity for more comprehensive analysis and application-oriented results. It is not only the current European research agenda that serves as the impulse for research to include living labs as a tool for generating interaction, co-creation and social innovation at various levels. It is also the need for answers to the societal challenges and for a paradigmatic shift to transdisciplinary collaboration in research. The sustainable and the smart city require collaborative and inclusive approaches to meet the need for both technological and social analysis.

The use of living labs in urban research has special relevance in the new funding stream JPI "Urban Europa" that supports interdisciplinary research for new approaches in future urban development and urban governance (Noll, 2011). JPI Urban Europe not only influences future urban research but also seeks to create real solutions developed in conjunction with, and tested by, relevant stakeholders and urban citizens (Noll, 2011). The programme mission gives various options for interpretation; however, it hints at a non-exclusively technologically centred research to shape urban research. As a consequence, real solutions may also refer to adapted processes or policies as additional contributions to former product and service-oriented aims. It becomes obvious that the translation of current living lab terminology and concept is necessary to implement a living lab successfully to a social-scientific research project. Therefore, this paper proposes to adjust the technologically centred approach dedicated to economic and technological innovation for a socially centred approach in three steps:

1. translation of existing terminology;
2. specification and contextualisation with regards to space (lab) and (living) methods; and
3. phases of interaction.

In this paper, these three steps will be applied to the ICEC project that serves as an example for a research project that attempts to implement a socially centred urban living lab. ICEC identifies and will implement urban living labs in three ethnically diverse neighbourhoods in Amsterdam, Stockholm and Vienna[6]. The project provides a systematic comparison of the aims, structural features and outcomes of neighbourhood development programmes targeting interethnic coexistence. The core of the research is framed by a policy analysis of selected local measures provided by the city government and municipalities (top-down) or organised by private institutions or citizens (bottom-up). It aims to gain an understanding of whether the measures are noticed by local residents and how local policy measures do or do not affect the interethnic coexistence of residents in super diverse neighbourhoods. Referring to current living lab terminology, the producer will be represented by the public sector and the users by local residents. For this research, policy analysis goes beyond established methods of evaluation. It uses socially centred living lab to their own advantage by integrating residents who participate or do not participate in these locally anchored measures. As locally affected people, they provide a valuable source of insight and information. In combination with neighbourhood activities

that already take place in the respective neighbourhoods, current and future fields of improvement of interethnic interaction and social cohesion may be identified and communicated as real-life recommendations to city government and intermediate actors.

3.1 Translation of existing terminology

Referring to ENoLL's (2014) description, in which a living lab is characterised by real-life testing, experimental environment, interaction between users and producers, co-creation processes and innovations as a result, the description by Frissen and Van Lieshout (2002) goes into more details while defining a living lab:

> [. . .] [as] a consciously constructed social environment in which the indeterminate and uncontrollable dynamics of everyday life are accepted as part of the innovation environment which enables designers and users to co-produce new products and services.

Several work definitions (see, for instance, Alcotra, Living Lab Project[7]) follow a similar path. To compile the current terminology in the living lab discourse in a comprehensive way, literature on user centrism, co-creation and innovation would specify the notions of living lab when it comes to the design, methods and impacts that living labs may have (Somerville and Nino, 2007; Almirall and Wareham, 2008; Russo-Spena and Mele, 2012; Karvonen and Van Heur, 2014). Although this literature is not included specifically in this paper, it serves as background knowledge for identifying the core elements in the living lab terminology:

- real-life and experimental environment;
- users and producers; and
- co-creation and co-production.

As Edwards-Schachter *et al.* (2012, p. 681) point out, the involvement of users in the development of products and services through living labs has to reach beyond being a participant or lead user. It should rather focus on including users as co-creators for new services or products through connecting them with urban stakeholders in public–private partnerships. The aim of the ICEC urban living lab is to gain an insight from residents into how far the measures and activities implemented by the city or civil actors affect neighbourhood belonging and identity. For ICEC, the real-life and experimental environment to test these measures can be found in so-called *"spaces of encounter"*. Instead of creating a lab setting that implies a rather top-down approach, ICEC attempts to go where the targeted residents already are and interact. These locations then serve as spaces of encounter for both the participants and the researcher, facilitating access and encounters with local residents who may not be able to reach using conventional research designs. The experimental environment has to be translated into an open concept where the overall outcome is not predefined in the research process. ICEC attempts to achieve insightful knowledge and feedback on selected local measures by participants and non-participants. This insight may be defined as minimum result. However, the space of encounter leaves it open as to how much more can be created in this setting.

Speaking about producers and users in a socially centred research project does not meet the sensitivity that the research question requires. In the context of ICEC, producers will be represented by the public sector, namely, the city and the municipal body. Users will then be the local residents who are either affected or not by locally implemented policy measures. As a result, ICEC considers the public sector as initiator and producer of local policy measures and the private individual as participants or non-participants in local policy measures.

The notion of co-creating new services or co-producing new products as a collaborative process between residents and local stakeholders is also inherent to ICEC's open concept approach. Although the emphasis may be on co-creation as the project focuses on policy measures, the potential of developing these measures further is included in the space of

encounter. However, it turned out to be over ambitious to start the ICEC urban living lab with an attempt of co-creation at a high level, for instance the development of an online application for mobile devices. As the case studies are located in super diverse neighbourhoods, collaboration between researchers and residents may already be considered a successful complement of standard research results being conducted in a standardised way rather than the collaborative way. Also, the outcome and range of co-creating elements is highly depending on the methods applied in the urban living lab (Table II).

Concluding the first step of translating the existing terminology, it must also be emphasised that a translation within the project design itself is necessary. Referring to ICEC as an example, the conceptual scale of the ICEC urban living lab is positioned at two levels:

1. the theoretical level dealing with research questions, aims and envisaged outcomes with regards to an academic policy analysis and real-life feedback from residents; and
2. the implementation level that raises the question of how to gain access to residents in the neighbourhoods under study without choosing a top-down and non-contextualised approach.

At both levels, the translation of academic results into understandable real-life questions has to take place. In doing so, the ICEC urban living lab is clearly aiming at contributing to the development of social living lab approaches (Figure 1).

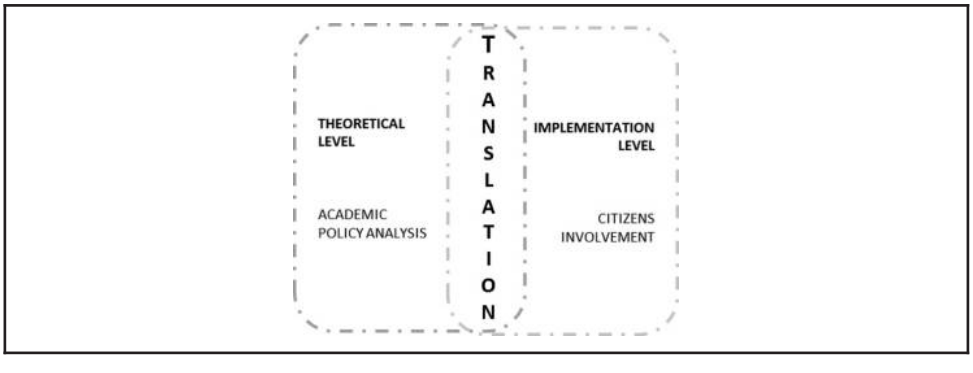
3.2 Specification and contextualisation with regard to space, methods and outcomes

Each research project requires a set of preconditions while implementing a living lab as a methodological tool. Within an interdisciplinary and transnational research project, comparability remains crucial when considering the local specifics and resources. The two poles between local contextuality and transnational comparability pose a challenge towards the implementation of living labs. As indicated earlier, the conceptual design of ICEC urban living labs relies on a contextualised framework that considers the socio-spatial differences of the respective case study neighbourhoods in Amsterdam, Stockholm and Vienna, as well as the research capacities of each project team. However, flexibility should not be overworked to avoid idiographic results in each neighbourhood case study. To

Table II Shift in living lab terminology (own illustration)

	Established living lab terminology	*ICEC living lab terminology*
Spatial characteristics	Real-life environment Experimental environment	Space of encounter Open concept
Main actors	Producer User	Public sector Private individual
Process design	Co-creation and co-production	Collaboration and co-creation

Figure 1 Conceptual translation in living lab designs (own illustration)



ensure valid analysis and comparison amongst all three project cities, a common base is needed that applies to each neighbourhood, despite any differences in the socio-spatial make-up in terms of ethnic diversity and local policies. To do so, the ICEC project defines a common understanding on:

- the set of local policy measures to be analysed;
- groundwork and a locally contextualised version of urban living labs to be implemented;
- a collaboration with local stakeholders to ensure access to local residents;
- the sample of residents to be activated in each neighbourhood with regards to local conditions; and
- the already existing space of encounter for collaboration between researchers and residents.

First, the selection of local policy measures was based on criteria such as education, liveability and housing, participation and empowerment to support a cross-city comparison. Second, the approach for a compulsory groundwork and a locally contextualised version of the urban living labs is in reference to the diverging research capacities within the project team. Depending on the research budget and existing collaborations with local stakeholders, the design and intensity of urban living labs varies within the ICEC project. However, comparability has to be ensured to gain valid research results. Therefore, the ICEC urban living lab concept consists of a first phase of groundwork covering the mandatory elements in each neighbourhood for comparable data collection and analysis. It includes established methods, for instance a comparison of existing statistics, a common evaluation matrix for the local policy measures and a questionnaire guide that can be asked to (non-)participants in local measures. These qualitative interviews are applied to engage local residents and gain an in-depth understanding of interethnic coexistence in the respective neighbourhood. This stage of the ICEC urban living lab aims to ensure a cross-city and cross-country analysis. However, the opportunity for in-depth qualitative interviews with (non-)participants most likely arises from informal conversations and interactions in the space of encounter.

As for the intended outcomes, the ICEC urban living lab expects to gain knowledge at two levels: first, in methodological design; and second, in policy analysis. For the methodological design, a high degree of flexibility is required to engage with local residents in the designated spaces of encounter. The methodological design must be able to shift and change the spaces of encounter between researcher and (non-)participants whenever the need occurs. This might be one of the major differences to technologically centred living labs that can remain in one distinct space throughout implementation of the living lab. In the case of the ICEC living lab, spaces have to be changed whenever (non-)participants can be approached more efficiently. In terms of policy analysis, we expect to gain insight into local policy measures and mechanisms that reach beyond the traditional results. The ICEC urban living lab as space of encounter is able to engage with affected residents over a long-time and based on trust-building activities. As a result, openness to informal conversations and formalised semi-structured interviews seems to be more likely compared to similar research designs that do not allow the long-term interaction between researchers and (non-)participants. This outcome is different to technologically centred approaches that may also apply user-centric approaches in the users' social environment. However, the ICEC urban living lab clearly benefits from its localised character and is therefore able to move with the local residents quickly and easily.

3.3 Phases of interaction

At this stage, the principle of the ICEC urban living lab as an open concept for co-creation elements is clear. The question of appropriate methods and how those become living

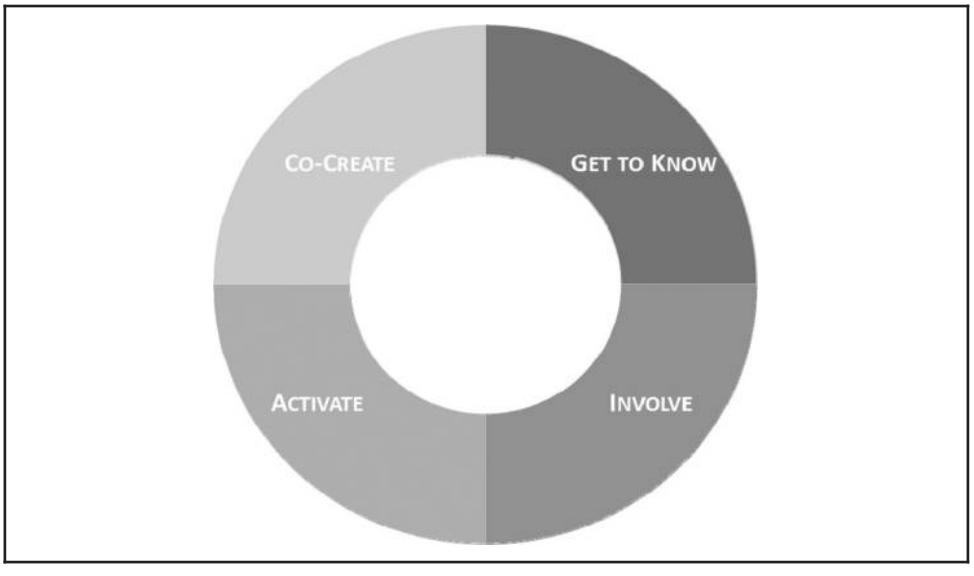
methods is highly debated in existing literature (Higgins and Klein, 2011). However, the characteristic of the living lab as a concept of mutual shaping and cooperation requires a certain level of flexibility and sensitivity when it comes to the implementation of methods. This paper argues that certain stages of evaluation within the process are necessary to reflect on the present level of interaction between researchers and participants and how to further increase it. Also, the processual design of living labs requires several stages of interaction between researcher and participants. These stages may refer on the one side to process periods to allow project management. On the other side, the level of interaction has to be considered and reflecting on the next steps to be taken in the living lab process.

As ICEC is a pioneer project using an urban living lab to involve residents in evaluating local policy measures at the local level, no established conceptual research design can be referred to. As a result, ICEC chooses an approach that puts the needs of residents in terms of interethnic coexistence at the centre of the analysis in the specific neighbourhood. Local stakeholders, such as urban renewal offices or local community groups, are involved as intermediate actors to gain authentic access to local residents and avoid a top-down approach. Both getting to know the local needs and creating access to relevant residents groups are part of the "Get to know" phase.

In the next step, neighbourhood programmes are assessed by residents who either did or did not participate in established neighbourhood activities ICEC accesses through the spaces of encounter. ICEC thereby attempts to assure a real-life environment crucial for living labs dealing with social topics. During those place-based activities in the "Involve" phase, the awareness and acceptance of selected local policy measures amongst residents is identified through, for instance, face-to-face conversation or a group discussion (for qualitative data) that can be followed by a neighbourhood questionnaire for the collection of quantitative data.

In addition, follow-up meetings or co-created activities on specific issues that have been revealed during first interactions with residents might contribute to a better understanding of interdependencies between local measures and neighbourhood belonging in ethnically diverse neighbourhoods ("Activate" phase). The stimulation of co-creating measures is possible where interaction between the two levels of research, interest-driven analysis and the local needs-driven implementation, is successful. In this phase of "Co-Creation", blind spots between local policy measures and local needs can be addressed through suggestions for adaptations to local policies (Figure 2).

Figure 2 Phases of interaction with local residents (own illustration)



4. Field report: the ICEC urban living lab in Vienna

The contextualised urban living lab is comprised of more locally based and interactive methods to engage with local residents and foster an active environment of co-creation between residents, researchers and urban stakeholders. This becomes clearer by referring to an explicit example within the ICEC urban living lab. For instance, the first urban living lab started in Vienna as a pilot project in autumn 2014. It provides lessons and insights for the ICEC urban living labs in Amsterdam and Stockholm that followed. Here, the space of encounter is a community space located in a super diverse neighbourhood in the 16th district. This community space has been provided by a local stakeholder, the urban renewal office in charge for the Viennese districts 7, 8 and 16[8]. Located on the ground floor in a modest residential building, the former restaurant serves now as a low-threshold space for activities from and for the local community. The range of activities is broad and includes weekly sewing and cooking courses, peer-to-peer neighbourhood mentorship (Grätzeleltern) and information and consultation session in tenancy law.

With particular reference to the sewing course as a specific occasion in the space of encounter, the applied method is participatory observation at the first stage. The researcher acts as a participant and the role of the researcher is transparent as the person and the interest in the sewing course has been introduced to (the all-female) participants at the beginning of the course. Since September 2014, sewing classes have taken place in the new community space twice a week in the mornings. The 25 participants of the sewing group comprise a majority of female participants with Turkish as well as participants with Egyptian, Indian, Bulgarian and Austrian ethnic background. German language skills amongst the participants differ significantly. As a result, explanations and the instructions for sewing are provided in Turkish first, followed by a German translation. However, conversations amongst the participants are either in first language or German when participants with diverging ethnic background interact with each other. Those conversations embedded in an authentic environment of interaction, namely, the sewing course, are of great value for the ICEC project. During small talk, insights on living environment and living conditions already reveal potential missing links between local policies and local needs for interethnic coexistence. That kind of information serves as anchor point for the researcher to ask participants for their interest in providing an in-depth interview on the awareness and effects of selected local policy measures. Both, getting to know each other and regular interaction during the sewing course also help to develop trust between participants and researchers and to increase readiness for in-depth interviews.

Although the core method of participatory observation never becomes redundant, the nuances of participatory observation and in further consequence collaboration become more diversified. These growing opportunities for collaboration come under the umbrella of empowerment measures. For instance, the idea of organising a visit to the city centre for the participants who had mostly never been before due to time and financial constraints developed over time. The excursion was organised by the participants themselves, and the researcher was asked for insights on urban development. Again, small talk conversation helped to set the stage for more focused discussions on local policy measures. For instance, the visit of the main building of the University of Vienna opened the discussion on education chances and limitations for Turkish youths coming from working-class households. This discussion linked to possibilities of additional training at adult education centres (Volkshochschulen) that most of the discussants have not been aware of. This course of discussion already identifies a lack of communication between institution and local residents and a lack of awareness of local measures that are already in place.

A concluding example of empowerment is the closing event of the sewing course in December 2014. Participants' feedback showed that they had appreciated the opportunity to engage with participants from diverse ethnic backgrounds whilst sewing clothes for themselves. Co-creation starts in the sense that the initial sewing course is going to be extended into a space of higher interethnic interaction, mostly through word-of-mouth

interaction between participants, other local residents and urban stakeholders. In addition, job opportunities may be created either with workshop organisation or as collaboration with interested designers may develop into regular commission work. We found that societal innovation can develop where an open space of interaction is provided. It requires the openness of local stakeholders, such as the urban renewal office or the municipality, to provide a community space without strict targets and political interests. During research in the ICEC urban living lab, we identified the need for low-threshold and complimentary activities in a super diverse neighbourhood which foster participation and a sense of belonging within the neighbourhood amongst participants. It creates a space for mutual knowledge exchange and cooperative learning processes. Participants seem to develop an increased sense of becoming co-responsible for what happens in their living environment and the possibility of implementing own projects.

Referring to the theoretical concept of co-creation in the theoretical strand provided by Edwards-Schachter *et al.* (2012), the ICEC urban living labs prove the necessity of including local residents as co-creators in urban research. As we can see from our findings, policy analysis on interethnic coexistence becomes more insightful and target-oriented through the integration of participants in the analysis process. Especially, through long-term interaction, continuous knowledge exchange and new forms of collaboration, a better understanding on the residents' living environment and conditions can be achieved.

5. Conclusion

As the literature review and recent living labs have shown, a remarkable enthusiasm can be found for applying living labs as an interactive methodology in urban research for engaging with stakeholders and local citizens. Despite the need for further analysis and clarification on the general approach, applicable methods, definition of sample and valid outcomes, this paper attempts to contribute to a more nuanced understanding of the conceptual design of social living labs, particularly as regards to the processual character and locally based living methods. Future challenges might not occur only during the implementation phase. At this point in the research, conceptual challenges have already been identified with regards to methods, sample, outcomes and long-term strategic actions.

First, methods applicable for living methods must go beyond those already established and implemented in social research. In the case of social living labs, methods must be devoted to being interactive and engaging to fulfil the attribute of "living methods" and creating a real-life environment that is capable of stimulation co-creation. These elements require time and sensibility when a choice of methods has to be made. Further research and living labs are necessary to gain insight into the variety of methods and experience of applicability that can be used for future social living lab design and cross-living lab comparison.

Second, ensuring that participants in the living labs are a representative sample has to be reflected upon critically. How is it possible to ensure a representative sample of local people, rather than the most active residents? Is it possible to gain access to marginalised or under-represented voices in the community? It might be of special relevance in socially centred living labs to include an open concept approach to change spaces of encounter whenever distinct research questions require it. Ongoing discussion is also needed to inform a shift of terminology in living lab implementation. To ensure a contextualised and sensitive interaction, academic research must not apply established terms such as actors, sample or comparable data when referring to interactions with knowledgeable human beings.

Third, the open and process-oriented character of social living labs has to be an inherent component in current and future research to develop living labs as an applicable method

for more interactive approaches of urban research. This results in long-term involvement at several levels, between researchers and stakeholders, and also between researchers and local residents. The application of living labs requires well-designed implementation to gain in-depth information that goes beyond the quality of results that can be achieved using established research methods.

Finally, access to local communities through local stakeholders might be supportive in the first stage of research in which the academic field needs to adapt to real-life community needs. Local stakeholders are necessary as a translating institution and as valuable actors in the field into which the respective academic research is embedded. Critical reflection is however necessary with regards to dependency on stakeholder collaboration and the duration of research. Social living labs should ensure authenticity and credibility. Both cannot be assured as long as research is limited to the duration of a specific research project. To create a trusting and collaborative interaction with local citizens, a shift in research strategy towards long-term engagement is unavoidable.

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Notes

1. See Horizon 2020, Urbact, JPI Urban Europe for current strategies and discourses in (urban) research.
2. See JPI Urban Europe www.jpi-urbaneurope.eu/ and the project website http://icecproject.com/ for more information.
3. See, for instance, University College London, University Living Lab at University of Manchester, Campus as a Living Lab at Yale University for university-driven urban living lab examples.
4. See, for instance, SmartCity Living Lab at German Research Centre for Artificial Intelligence, ENoLL SmartCity Living Lab in the South of Paris, Aspern Smart City Research or The Transnational Nordic Smart City Living Lab Pilot.
5. See, for instance, ENoLL, Nordic Smart City Living Labs, Alcotra Innovation Project, Evolaris and others
6. "Interethnic Coexistence in European Cities (ICEC)". Funding period: September 2013 – August 2016. For more information, see: www.icecproject.com
7. See www.livinglabproject.org or www.alcotra-innovation.eu/ for more information.
8. See www.gbstern.at/ueber-die-gb/standorte/gb7816/16-bezirk/ for more information on the urban renewal offices in Vienna.

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Web Sites

A Transnational Nordic Smart City Living Lab Pilot: www.nordforsk.org/en/programs/prosjekter/a-transnational-nordic-smart-city-living-lab-pilotasof2014-12_30

ENoLL SmartCity Living Lab in the South of Paris: www.openlivinglabs.eu/livinglab/smart-city-living-labasof2014-12-30

Horizon 2020: http://ec.europa.eu/programmes/horizon2020/en/h2020-section/europe-changing-world-inclusive-innovative-and-reflective-societiesasof2014-12-30

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University of Chicago Urban Labs: http://urbanlabs.uchicago.edu/asof2015-04-19

Urbact: www.blog.urbact.eu/tag/social-innovation/asof2014-12-30

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Yvonne Franz is a Post-Doc Researcher at the Institute for Urban and Regional Research, Austrian Academy of Sciences. Her background is in economics and geography and her dissertation analysed gentrification processes in New York City, Berlin and Vienna as an inherent component in neighbourhood development by applying both actor and policy analysis. She is now involved in two JPI Urban Europe projects dealing with gentrification processes (Gentrification 2.0) and Interethnic coexistence in European cities (ICEC). Her research interests include urban and neighbourhood development policies, urban renewal as well as gentrification processes. In terms of methods, her current focus lies on assemblage theory, participative methods and living lab concepts. Yvonne Franz is the corresponding author and can be contacted at: yvonne.franz@oeaw.ac.at