Designing Future Sustainable Cities through a Living Labs Approach

A Case study of "Väsby Labs"

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Abstract

Title - Designing Future Sustainable Cities through a Living Labs Approach – A Case study of “Väsby Labs”

Purpose - The purpose of this study is to analyze the contributions of the Living Labs research and innovation methodology to the planning process of designing future sustainable cities as well as its main shortcomings. Additionally, this study intends to provide possible solutions to improve the model in the future. The Living Labs model focuses on creating platforms for communication, innovation and long term development by inviting different stakeholders to an open planning process before public places are defined, houses built and schools developed. Interaction between developers, inhabitants, social services, and political and financial systems is the key element of this model.

Research questions - What are the main contributions of the Living Labs Model to the process of designing future sustainable cities and which are its main limitations? How can these limitations be addressed to improve the process in the future?

Methodology - Qualitative research consisting of a literature review and an empirical case study based on semi-structured interviews with key individuals as well as secondary data gathered from the web and from participating in workshops and exhibitions in the project’s site.
**Research limitations/implications** – Due to time limitations this study is a mere analysis of a project being developed on a Swedish municipality and does not contemplate its final results, only the ones reached on the date of the current study. The language is also a limitation, due to some of the literature related to the case study, and the conferences and workshops being in Swedish.

**Originality/Value** - This study is the first attempt to analyze the contribution of a methodology such as the Living Labs to the planning process of designing future sustainable cities.

**Key words:** Planning Process, Sustainable Development, Sustainable Cities, Innovation, Open Innovation, User-Driven Innovation, Living Labs, Väsby Labs.
Abbreviations

FW  Future Workshop
LL  Living Labs
VL  Väsby Labs
ENoLL  European Network of Living Labs
RDI  Research, Development and Innovation
PPPP  Public Private People Partnerships
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1 Introduction

This thesis had its starting point in the researcher's will to combine her previous background in architecture and urban planning with the innovation management field and her interest in the inherent complexity of city planning, as well as the necessity of approaching the process in an innovative and sustainable way.

The paper consists of a review of several theories regarding the planning process, sustainable development and innovation, giving special attention to the Living Labs Methodology. Furthermore, the study comprises an empirical background focusing on a project called “Väsby Labs”, being developed in a municipality outside Stockholm. A theoretical and empirical background helps understand which are the main benefits and limitations of applying this model in a real urban planning situation.

This study will be of interest to urban planners and developers, as well as consultants in the city-planning field and the community of students and scholars engaged in higher education and research that might find useful information in this dissertation by looking at the benefits and limitations of an innovative model like the Living Labs and its contributions to designing future cities.

1.1 Background

“Cities are the foundation of modern civilization; they are the engine of economic growth and the centers of culture, entertainment, innovation, education, knowledge and political power” (Robert and Kanaley, 2006) The process of planning cities is a complex one; it requires the effort of a wide variety of stakeholders, from the population to the politicians, planners and developers. The range of opportunities to develop future sustainable cities increases significantly if they all work together to seek solutions. Different spheres of activity and knowledge must therefore meet to make this happen. (MISTRA, 2011) A more opened and well-informed planning process contributes to the creation of shared strategies in order to attain a more sustainable urban development. It is very important to foster this collaboration and joint knowledge in order to achieve better results.

Joint knowledge production is a very complex program to achieve, thus there is a need for innovative methods and models that help foster it. One of these methods, which will be the main focus of this study, consists on the Living Labs methodology, commonly used for technological innovation and ICT research. The European Commission states that “Living Labs are examples of useful open innovation environment
in real life settings. User driven innovation is also fully integrated in the co-creative process of new services, products and societal infrastructures” which is the case of city planning.

1.2 Research questions and purpose of study

The purpose of this study is to analyze the contributions of the Living Labs research and innovation methodology to the planning process of designing future sustainable cities as well as its main shortcomings. Additionally, this study intends to provide possible solutions to improve the model in the future. Therefore the research questions are:

• What are the main contributions of the Living Labs Model to the process of designing future sustainable cities and which are its main limitations?

• How can these limitations be addressed to improve the process in the future?

1.3 Delimitations

The following subsections briefly describe the theoretical as well as the empirical delimitations of this study.

Theoretical delimitation

The literature review begins with an overview of general literature about the planning process, sustainable development, open and user-driven innovation. This overview is subsequently narrowed down to focus on living labs, its origins and methodology.

Empirical delimitation

The empirical material is limited to one suitable case study - the Swedish project “Väsbys Labs” being developed in the suburbs of Stockholm. This project was chosen as an example of the Living Labs innovatively applied to the urban context. It focuses on designing an open innovation process where a key element is the interaction between developers, inhabitants, social services, and the political and financial systems.
2 Methodology

The present chapter starts by introducing the conceptual model that originated the subsequent study. Following, the main research methods, approaches as well as the strategies for conducting this study will be described.

2.1 Conceptual Framework

The idea for this study had its origin in the attempt to combine both the planning process of future cities with the concept of sustainability, taking into account all the stakeholders involved. The conceptual model that originated this study is presented in the image below (figure.1) and intended to match concepts of sustainability with the planning process, as well as some of the key individuals able to make it happen. By matching those three elements, the idea of studying the Living Labs Model came naturally, since it is a real platform for communication between different stakeholders that aims at planning and co-creating new strategies, products and services.

Figure 1. Conceptual Framework: Planning Process, Sustainability and main Stakeholders involved
2.2 Research Paradigms

A paradigm is a way of thinking about and conducting a research question. It is not strictly a methodology, but more of a guiding philosophy on how the research is to be conducted. (Gliner and Morgan 2000) The most relevant research paradigms are Interpretivism and Positivism. Interpretivism, also called qualitative method is considered more subjective because it builds up theories and produces the findings, while Positivism refers to a quantitative method, is seen as being objective and statistical (Corbin and Strauss, 1990). In this study a qualitative research is adopted.

2.2.1 Qualitative research

The choice of engaging a qualitative research is connected with the aim of the study – the aim to seek out what the main benefits and limitations of a new model of planning are and how they contribute to the planning process. Furthermore, a qualitative research is also an effective method for obtaining the essential theories in order to explain the phenomenon more in depth rather than examining superficial features (Collis, J. et al., 2009).

This research consists of a literature review and semi-structured interviews with key individuals, where a triangulation technique is used to process and compare the different answers as well as secondary data gathered from the web and from participating in workshops and exhibitions in the project’s site. The following sources, which have been dominant in the process of this study, are discussed more in depth below.

2.2.1.1 Literature Review

The case study starts by introducing a theoretical background in order to obtain a better understanding of the literature used for answering the research question, as well as other literatures connected to the main topic and its context.

2.2.1.2 Interviews

Semi-structured interviews were used in this study. In this type of interviews the interviewer has a sequence of questions that are generally equal in content but in which the order of inquiries can vary. The questions are often slightly more general in their frame of reference from those typically found in a structured interview schedule. Moreover, the interviewer usually has the autonomy to ask additional questions in reply to what are considered as significant responses. (Bryman, 2008)
The primary data consists of six semi-structured interviews with key individuals involved in the Väsby Labs Project: Urban sociologist and Project Manager of the Väsby Labs; the City Mayor; City Director and City Developer Manager of Upplands Väsby, a Real Estate Developer and an Architect. The main goal of these interviews is to understand the different stakeholders’ perspective on the project, with an emphasis on their opinions on how this project is innovative, and what the main benefits as well as the main challenges and risks are, considering an urban experiment of this kind. They were also asked about the positive results up to the time of the interview. All the information gathered will be filtered and synthetized in a table in order to understand and compare the different perspectives of the six stakeholders.

2.3 Research Approach

There are three main strategies or approaches to research: deductive reasoning, inductive reasoning and abductive reasoning. Deductive reasoning occurs when a researcher goes from the more general information to the more specific. This reasoning is also called the “top-down” approach because it starts with a very broad range of information and then narrows down the general theories to the specific practice.

Inductive reasoning is the opposite of deductive. It moves from specific observations to wider generalizations and theories. It is also called a “bottom up” approach. (Collis, J. et al., 2009) Abductive reasoning is the combination of both deductive and inductive reasoning. It is an inference mechanism where given a knowledge base and some observations the researcher tries to find hypotheses, which together with the knowledge base explain the observations. (Barral, 1999)

This study adopts the abductive reasoning approach.
3 Theoretical Background

This chapter will provide the reader with an overview of several theories that will contribute to a better understanding of all the concepts examined and used for answering the research question. These concepts are illustrated in figure 2. The chapter starts with an overview of Planning Process theories, communicative and collaborative planning, as well planning as an experiment. Secondly, a summary of Sustainable Urban Development is presented, with an overview of its importance and how citizen empowerment and multi-stakeholder dialogue can help in the planning process of designing more sustainable cities. The third section is dedicated to Innovation theories. Here, concepts of Innovation, and Open and User-driven Innovation are discussed due to its relation and contribution to the creation of the living labs model. The fourth and last section regards the Living Labs as a new research and innovation methodology. After reading this chapter the reader will have a comprehensive knowledge of the main topics that are researched and discussed in this thesis before entering the empirical sphere.

![Figure 2. Theoretical Framework: Innovation, Open and User-driven Innovation, Sustainable Development, Planning Process and Living Labs](image)

3.1 Planning Process

It is very difficult to find an agreed definition for planning, since its nature, as well as the role of planners, has been continuously changing. In addition the way planning has been analyzed and practiced has also been changing in different professions,
circumstances, academic disciplines and ideologies throughout the years. Nevertheless, despite the wide diversity of definitions in the literature dedicated to capture the meaning of the term, there is one common feature to all descriptions of planning, which is its positioning towards the future. (Madanipour, 2010) According to Cullingworth and Caves, "one generally common element in these definitions is that planning is forward-looking; it seeks to determine future action". This description is also seen in other definitions as "Planning is action laid out in advance" (Sawyer), "Planning denotes thinking about the future" (Bolan); "Planning is the design of a desired future and of effective ways of bringing it about" (Akoff), all cited in (Mintzberg, 1994). These definitions express the causal and temporal nature of the relations that planning aims to create between decisions made in the present and desired outcomes in the future. Planning, consequently, includes developing a set of determined and solid networks throughout time.

3.1.1 Collaborative Planning

For the development of this study it is essential to mention collaborative planning, since that is the core of the Living Labs Methodology. Collaborative planning aims to be an interactive process of community-focused participatory governance with the goal of improving the quality of territories and space in general. "Researchers on communicative processes in the planning field are exploring the conditions in which processes with the qualities of comprehensibility, sincerity, legitimacy and truth, as well as other qualities, such as openness, inclusivity, reflexivity and creativity, seem likely to arise" (Healey, 2003), in order to pursue this collaborative ideal. Communicative planning is an ideal of planning process, based on attempting to achieve accurate, open, community-based discussion and consultation that finishes in the voluntary and consensual agreement of all actors involved, before the beginning of any agreed spatial or social intervention.

3.1.2 Planning as an Experiment

As mentioned above, a feature inherent to all definitions of planning is its position towards the future. When planning, not everything can be measured or predicted, therefore the concept of planning as an experiment takes place. The concept J.Hillier promotes in her article Plan(e) Speaking: a Multiplanar Theory of Spatial Planning, is connected with the idea of strategically experimenting with a direction. In order to keep development along an intended direction, "strategic planning" must align not only the short term, tangible goals such as detailed development plans or land use regulations, but also the more vague and broad visions like the “sustainability” matter, when relating to a local-municipal-regional context (Hillier, 2008). The Living Labs are
examples of communication platforms for co-creation of innovation that promote this type of strategic experimenting.

3.2 Sustainable urban development

The World Commission on Environment and Development affirmed that “humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs” in the 1987’ Bruntland Report. Since then, a growing debate around the concept of sustainability and the importance of sustainable development for building a better future has emerged. Cities have always been providers of economic, environmental and social functions and sustainability can only be attained by the equilibrium of these three functions.

From the economical point of view it’s imperative to enhance long-term resilience, employment, competitiveness and rational distribution of resources. Considering the environmental aspect there is the need to reduce the impact on the environment and resource use to sustainable “levels” and improve its quality and safety. Concerning society, the demand is to develop health, education, diversity, cohesion, equity, security and life quality. Each of these functions is influential to the others – economic development is necessary for environmental protection, while environmental defense is essential for humankind, and social growth is key for a stable economy. (Ravetz, 2000)

3.2.1 Multi stakeholder participation for sustainable cities

In order to be sustainable, cities must base their development on the coordination of sector policies. The creation phase of projects, as well as their implementation (monitoring and evaluation) must be based on a multi stakeholder dialogue. These processes/phases must always be carried out with a social, economic and environmental inclusion approach. The relation between local authorities, which are closest to the needs of communities, and the main stakeholders for sustainable urban development, need to be strengthened. (UNCSD, 2012)

A key factor for sustainable development is citizen empowerment in decisions determining social and environmental settings. Across a wide range of settings, community participation has been found to affect sustainability prospects. (Koontz, 2006) This statement is supported by the Brundtland Report on sustainable development (WCED, 1987), which argues that, in order for communities to express and implement their common interests in sustaining natural resources, community
members need to effectively take part in decision making. Furthermore, it concludes that including affected individuals in legislation regarding resources is also crucial for sustainable human-environment systems (Ostrom, 1990).

3.3 Innovation

Innovation is the introduction of new goods, new methods of production, the opening of new markets, the conquest of new sources of supply and the carrying out of a new organization of any industry (Schumpeter J. 1912). Following the Schumpeterian definition, academics and researchers throughout the years have formulated several others. Another consistent definition is that innovation is a perceived new idea, practice or object. The level of this perceived newness determines peoples’ reaction to it: If an idea seems new to the individual, it is considered an innovation. (Rogers, 2003)

Historically, innovation has been seen as a linear process, controlled and compelled by industry and its markets. However, it is progressively being comprehended as an enabler for growth and competitiveness in the society of information and has been actively encouraged at regional, national and international levels and integrated in the new policy formulation. Innovation has been evolving from a linear model towards a more network-oriented model involving partners supporting innovation and often dedicated to cycles of innovation activity. These interactive partnerships might take different forms. For example, a model that is increasingly being used is the triple-helix model of engagement, where industry, government and academia are the three types of stakeholders involved. (Etzkowitz, 2003)

These models and its variations work well within the concept of network economy, enabling temporary or permanent partnerships, dedicated to problem solving and commercial exploitation of intellectual property and the development of know-how. The most curious aspect of these types of models for engagement is the active participation of academia, which is strengthening the entrepreneurial role of universities in innovation activities that are becoming progressively influenced by concepts of network economy. (Mulvenna, 2010)

One of the biggest changes concerning the innovation concept is Open Innovation. This term stands for the ability of innovation to succeed when an organization uses a network of partnerships beyond its conventional internal resources. (Chesbrough, 2003)
3.3.1 Open Innovation

The open innovation concept was introduced by Professor Henry Chesbrough in his book: *Open Innovation: The new imperative for creating and profiting from technology*. This concept assumes that companies should be able to use their internal knowledge and ideas but also make use of external ideas in order to gain competitive advantage and to improve and advance their technology. (Chesbrough et al, 2006)

This paradigm can be understood as the use of external sources of innovation such as customers, competitors and universities, but it can also be a change in the practice, management and implementation of intellectual property. In this sense, open innovation can be seen as a methodical encouragement and exploration of a broad range of internal and external sources of innovative opportunities and the integration of this exploration with a company’s competences and resources, as well as the utilization of these opportunities through several other channels. (West, J.; Gallagher, S. 2006)

The fact that the open innovation concept invites all members of an organization to be part of the innovation process, inevitably leads to distinctive results that go beyond the R&D department achievements and strategies. Moreover, innovating with an organization’s partners, customers and competitors will almost certainly bring new perspectives and open new horizons, compared to innovating only internally. The economic crisis makes open innovation even more solid because companies are forced to cut costs and open innovation allows companies to save overheads in R&D. However, despite all open innovation benefits, this methodology still has certain potential negative effects because it may not suit every firm and business model. Companies should pay special attention when implementing open innovation because of possible strategic threats. (open-innovation.net)

The previous sections on innovation and open-innovation have described how innovation has evolved and how more network-friendly cyclical models of innovation suggest promise. The utilization of models such as triple-helix clearly highlights the value of partnerships and the inclusion of different stakeholders and their roles in enabling and backing up innovation. However, there is a stakeholder who has rarely been completely involved in innovation processes around product and service conception and development, but who was recently recognized as one of the most important stakeholders in these processes. That stakeholder is the user/customer/citizen. The succeeding section describes user-driven innovation. (Mulvenna et al., 2010)
3.3.2 User-driven Innovation

User driven innovation consists of innovations created and developed by customers and end users, rather than manufacturers. It is also described as a methodical approach to the development of new products and services, built on investigation or adoption of users’ lifestyle, individuality, praxis and needs, including undisclosed needs. (Per Christiansson et al, 2008). Eric von Hippel from MIT realized that are the users who give ideas to manufacturers for improving most products and services. This phenomenon happens because products are created to meet the broadest possible needs. When individual users face issues regarding a product that the majority of other customers do not, they have no choice but to develop their own adjustments to the existing product, or to create an entirely new product in order to solve their issues. (von Hippel, 1986)

Involving users in innovation and development has been the norm for about thirty years within the ICT field in the Scandinavian countries. Nowadays almost every firm involves users to a certain degree in these processes for democratic reasons. This view has its background in participatory design and changes occurring in users, employees and their working conditions. The working unions have struggled to give employees the opportunity to express their opinion and needs and this practice has continued to include people in deliberate contexts. Today, involving users is an accepted procedure, although is not always easy to understand how or when to involve them. (Iltoolbox.eu)

3.1 The Living Labs

The Living Labs are real-life test and experimentation platforms for the co-creation of innovative solutions and strategies concerning a certain project, where all stakeholders involved are invited to participate and share their ideas. It consists of a user-driven open innovation environment for the creation, design, development and experimenting of new strategies, products and services. (openlivinglabs.eu)

3.1.1 Background

The term Living Lab was implemented in 1991 to define the use of co-operative partnerships and live field-tests (Lasher, 1991), but the concept itself had been previously explored under the Future Workshops model that emerged in the late eighties and that will be later discussed in this paper. However, William J. Mitchell, Kent Larson, and Alex Pentland at the Massachusetts Institute of Technology took the Living Lab concept into a more practical sphere. A Living Lab is characterized by being a user-
driven research methodology for the detection, prototyping, evaluation and improvement of complex solutions in several real life contexts. (Mitchell 2003).

### 3.1.1.1 Future Workshops and the beginning of a new model

The Future Workshop is a method created by the Austrian writer and journalist Robert Jungk’s in the 80s. The original idea is that a group of people should cooperate in order to create new ideas and strategies for the future. This idea later evolved into a method, called “Zukunftswerkstätten” meaning Future Workshop in German. FW is a widespread method used in very different situations by many different entities, from municipalities, small firms to even NGOs, but unfortunately most of its applications have not been reported in accessible publications. (Vidal, 2004)

The classical FW consists of five phases. The Preparation Phase, where the workshop coordinators establish the ideas, schedules and rules, as well as deciding on the participants of the workshop; the Critique Phase that consists of the critical review and discussion usually using the brainstorming technique; the Fantasy Phase where the participants try to work on a utopic project and draw an exaggerated picture of the future, the Implementation Phase, where the generated ideas are checked and evaluated regarding their practicability, and where an action plan is elaborated. The final phase is the Follow-up phase, where the action plan is monitored, eventual changes are performed and if needed new FW’s are planned. (Jungk and Müller, 1987).

The results of these workshops are used as a source of information and knowledge production. After being properly filtered they become a foreseeing tool/method for the management of productive knowledge workplaces. It informs about the user experience and also works as an assisting method for employees to adjust to new situations. (Vidal, 2004) The future workshop is believed to be in the foundation of a number of other similar methods created to foster a more open process in innovation and creation of new ideas in different fields, like Open Space Technology, Future Search, BarCamp, Unconferences and the Living Labs, which is the subject of this study.

### 3.1.1.2 The foundation of the Living Laboratory Concept

The Living Laboratory Concept was created and developed by William J. Mitchell, an architect and academic who was extremely interested on researching how city inhabitants could be more actively involved in urban planning issues and city design. This idea of citizens’ participation in the design process was consequently developed into what is today’s Living Labs model and different research communities are
increasingly adopting it in Europe. (Mitchell 2003) The first US living lab consortium was founded in 2010 with the goal of bringing together interdisciplinary professionals to develop, implement and experiment - in real-life environments - new technologies and strategies that would respond to a changing world. The LL dimension extends in scale from the individual to the urban, and addresses challenges related to health, energy, and creativity. (livinglabs.mit.edu)

3.1.2 A new research and innovation methodology

Over the years, this concept has developed an increasing popularity, which led to the creation of numerous different LL all over the world but especially in Europe. The concept has been also recognized by the European Commission, which actively supports its development as a useful methodology for innovation. In 2006 the European Network of Living Labs was created with the aim of contributing to the creation of a dynamic innovation system in Europe but with a global reach. This network – ENoLL, aims to support user-driven, co-creative and human-centric research, development and innovation in order to better fulfill people’s needs.
The ENoLL brings together a diversity of approaches, covering a broad range of innovation fields such as energy, health and care, media and publishing, as well as spatial development and consumer services. (Budweg, Schaffers et al, 2010) In this real living environment, the users co-create and co-design, experiment and test their ideas, products and services with businesses, researchers, and public authorities. User driven solutions and social innovation processes bring new forms of productivity and competitiveness as well as a transformation at the sustainable behavior level. (Oliveira, 2011)

**Living lab’s Key Activities**

1. Co-Creation: Consists of the cooperation between all stakeholders in the design of strategies, products or services.

2. Exploration: Discovery of emerging practices, behaviors and trends.


4. Evaluation: Appraisal of concepts, products and services considering socio-ergonomic, socio-cognitive and socio-economic aspects. (openlivinglabs.eu)
4 Empirical Background

The empirical chapter comprises the information gathered regarding the Väsby Labs Project. This information consists of secondary data gathered from the web and from participating in workshops and exhibitions in the project's site, as well as the results of six semi-structured interviews with key individuals that are summarized in two tables, which can be found in the appendixes. In order to process and compare the different answers a triangulation technique was used.

4.1 Background

The municipality of Upplands Väsby is developing a new model for urban planning called Väsby Labs. The starting point of the project is to incentivize inhabitants, businesses, politicians and social services, to collaborate much earlier and in new ways that challenge existing structures and conventional ways of planning. This project takes place in Upplands Väsby city center, on a strategically located area, which will be transformed into a sustainable prototype for the future city. The project has won the "Innovation of the Year 2012" award, as an innovation in social and urban planning.

Upplands Väsby is a small municipality outside of Stockholm. It was developed during the 20th century, strongly influenced by existing planning ideals throughout the development of the Swedish welfare state and the famous Swedish model. The central area of the municipality resulted from a Housing Program, called Million Housing Program in the 1970s with 900 housing units. The area is now going through further development, which includes adding 1200 new housing units and also reusing existing buildings. A close collaboration between the municipality and the Swedish government between the ’60s and the ’90s resulted in an international housing fair in 1985. This fair had great success at the time and resulted in a neighborhood called Carlslund. As a consequence, Upplands Väsby is a compilation of different planning periods, and is a very interesting case regarding development and urban planning experiments during the 20th century.

The Municipality of Upplands Väsby initiated the Väsby Labs Project in 2010. The initial idea was to create a concept for a housing fair in 2015, (thirty years after the international fair Bo85), which was the first of its kind in Sweden after the world famous Stockholm Exhibition in the 1930’s. However, the project transformed into a planning experiment, which focuses its efforts not only on housing issues, but also on social and urban development as a whole, updated to current and future needs. (vasbylabs.se)
The Väsby Labs is a project that serves more than one goal. According to City Director, the main reasons behind the development of this project are to renew the city and to achieve diversity; create a city center where people can live and meet, not only one where they sleep. The goal of the project from a business perspective is to make Upplands Väsby more attractive to developers and inhabitants. From a methodological perspective the goal is not only to raise questions and challenges regarding urban planning and development but also to answer them and create the tools to do so in order to generate a larger interest for a more sustainable development of cities. These results are to be exhibited at the end of the process in an international exhibition in 2015.

4.2 An innovative model for planning

As previously stated, this project has won the prize for public innovation in social and urban planning in the year 2012. This prize aims to stimulate more premium quality innovations. VL aims at turning current perspectives on the urban planning process upside down and to start developing a more organic and step-by-step form of planning. Inviting local inhabitants and other partners into an open process of dialogue about their needs and future expectations, will result in a powerful tool that will enable policy formulation and planning strategies. (vasbylabs.se) With this initiative, the municipality of Upplands Väsby presents an innovative model for urban planning based on an organic structure and focusing its efforts on stakeholder participation. “The proposed model addresses innovation in terms of both process innovation and organizational innovation, in line with the OECD definition. The proposed model clearly indicates strong learning and novelty aspects as well as a deep customer oriented approach.” (siq.se/Quality-Innovation.php)

The Väsby Labs focus is on designing an open innovation process where interaction between developers, local inhabitants, social services, and political and financial systems is a key element. It regards the creation of platforms for communication and long term development by inviting different interests in an open planning process before houses are built, schools are developed, and public space is defined. According to the Project Manager of the Väsby Labs, the methodology behind the project is still under development. It is still not a method but an experiment. Väsby Labs is an urban experiment that challenges existing structures and the conventional way of planning. It is about turning the established processes upside down and questioning everything. This methodology can be seen as a very useful pallet or a toolbox, where politicians and planners can find useful tools in order to solve problems and generate new ideas for future planning.

The main goal of VL is to explore an organic way of planning. Consequently its intention is not to present finished solutions, but rather to invite all different partners in an open process. In parallel, financial structures have been set to support the further
development and implementation of the emergent ideas. Taking in consideration the interviewed stakeholders’ statements, The VL consists of several activities that are illustrated in the appendixes. These activities include:

- **Workshops**

These workshops serve not only the function of asking questions, but also to increase the engagement of people into the planning of their municipality. Once these answers have been gathered, they will guide architects and planners on how to develop public space. An example of one of these activities is a workshop that involves young students and encourages them to share their own ideas on what they would like to be built in the heart of the city. The most interesting of these ideas will be selected by public voting in order for it to be built in time for the exhibition. Another example is the urban farming project. This project has the goal of testing and understanding if the inhabitants of Väsbys are interested in growing vegetable gardens in their city and subsequently making neglected green areas in the municipality more attractive.

- **Exhibitions and public talks**

The exhibitions and talks have the role of showing the workshops’ results and all the other interventions happening on the site, as well as to open a dialogue between the municipality and its citizens. At these public talks, citizens are informed of the activities that will take place hereafter on the site and the purpose of these is explained. This way, not only do citizens get the chance to give their opinion, but they also have the opportunity to learn something more about a new way of planning and facing urban issues. These events are usually made public in the city mall during the winter, since it is a place where citizens from Väsbys frequently go and where they gather. During spring and summer the same activities are done outdoors at the intervention site.

- **Evaluation and briefing**

A crucial step in this model is to coordinate and balance all these different initiatives, to collect the information and learn from all stakeholders participating in them. New ideas continuously emerge from the activities initiated there, so there is the need to be prepared in this investigation process. It is about exploring and using Upplands Väsbys city center as a test site for making the municipality more attractive. With the results from the workshops, step by step, the Lab develops.

To summarize, the municipality of Upplands Väsbys is aiming to reshape the model of urban planning in order to develop its own city. The project has been gaining media attention since it started. In the center of the municipality the process has generated already more than thirty business opportunities for new housing, as well as other opportunities to the benefit of different stakeholders. People’s interest in living in Upplands Väsbys has increased more than in the surrounding communities. Taking in consideration the pros and cons, this project may result in a standard business model for the future, which generates a larger interest for cities’ sustainable development.
5 Analysis

This chapter will provide the reader with an analytical overview of the theoretical and empirical background. The analysis consists in defining the main benefits and limitations of the Living Labs methodology in a general and theoretical sphere, and the benefits and limitations of the Väsby Labs, from a more practical and real perspective. This strategy was chosen in order to compare both and understand how they contribute to the process of designing future sustainable cities. This chapter is essential for a better comprehension of how this model can be used in an urban planning context and therefore for answering the research question. The table below illustrates how the analysis was thought out and structured.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Living Labs</th>
<th>Väsby Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Knowledge formation;</td>
<td>- Learning process for all stakeholders;</td>
<td></td>
</tr>
<tr>
<td>- Bringing together communities of practice and expertise;</td>
<td>- Creation of an open platform for developing businesses and ideas together</td>
<td></td>
</tr>
<tr>
<td>- Acceleration of innovation adoption;</td>
<td>- Reduced risk of citizens opposing the project;</td>
<td></td>
</tr>
<tr>
<td>- Tool box creation;</td>
<td>- Sharing of and reduction of risk, and therefore of financial investments between all stakeholders</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Limitations</th>
<th>Living Labs</th>
<th>Väsby Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Lack of a solid and clear business model</td>
<td>- Apprehension and distrust among developers and citizens;</td>
<td></td>
</tr>
<tr>
<td>- Absence of efficiency and standardization;</td>
<td>- Difficulty in delivering/fulfilling people’s expectations;</td>
<td></td>
</tr>
<tr>
<td>- Stakeholders opinions and needs not always lead to innovations;</td>
<td>- Impossibility of taking everyone’s opinion into consideration;</td>
<td></td>
</tr>
<tr>
<td>- Skepticism and apprehension towards innovative models</td>
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</tbody>
</table>

Figure 4. Analysis Framework
5.1 Benefits and Limitations of the Living Labs

The analysis of the Living Labs Methodology was predominantly based on the literature review, as well as on the European Network of Living Labs website, (ENoLL) for its updated data concerning this new model.

5.1.1 Benefits

• Knowledge formation

The LL promote users’ participation in the project through a process of experimentation, where their opinions and needs generate new ideas for the creation of innovative strategies, products and services. (Oliveira, 2011) LL promotes co-learning in innovation as well as it’s an enabler for co-design and co-creations.

• Bringing together communities of practice and expertise

The cooperation between research centers, public authorities, user communities and businesses is key for the success of a project. This is only possible by sharing good practices through a flexible and adaptive design process based on real-life experience, which is promoted by the LL. This method not only allows a better access to ideas outside the organization but also facilitates the development of human capital and promotes a more sustainable culture, regarding a better and healthier society. (Oliveira, 2011)

• Acceleration of innovation adoption

Rogers (2003), in his book Diffusion of Innovations, explains that “the rate of adoption is usually measured by the length of time required for a certain percentage of the members of a system to adopt an innovation.” The LL method promotes the acceleration of innovation, speeding up the acceptance of early adopters by engaging all interested stakeholders in the project from a very early phase.

• Tool box Creation

The LL promotes the creation of useful tools for planning by providing a very strong platform for resource sharing and for the building of common standards and methods between networks of professionals. (Oliveira, 2011)
5.1.2 Challenges and Limitations

• Absence of efficiency and standardization

Each LL must develop its own competencies in user-centered methods and engage with the stakeholders. In terms of standardization, LL often carries out very similar practices of engagement, but because many of them have been developed from different areas of science, there is no common and agreed vernacular. (Mulvenna et al., 2010)

• Lack of a solid and clear business model

Defining practical business models that enable lucrative partnerships for all stakeholders involved might be a challenging task. (Mulvenna et al., 2010) Issues such as the ownership of the intellectual property of the product or service, or how to provide a profitable situation for every stakeholder involved, are sometimes difficult to solve.

• Stakeholders’ opinions and needs not always lead to innovations

The participation of all stakeholders in the creation process generates innovation and fosters the development of new products and services according to their needs. Nevertheless, some of them are not always able to articulate what they truly need before they see it, as Henry Ford’s famous quote, states: “If I had asked people what they wanted, they would have said faster horses”. It is therefore very important that informed and experienced individuals control the whole process. (leaderlab.com/open-innovation)

• Skepticism and apprehension towards innovative models

Some stakeholders may not wish to be involved in the project because of it being something new and experimental with no guarantees of success. Furthermore, the expectations of potential beneficiaries may be raised only to lead to disappointment. (wiki.rural-inclusion.eu)
5.2 Benefits and Limitations of The Väsby Labs Project

According to the testimonials of six important stakeholders involved in the project, it was possible to collect valuable data regarding the benefits and limitations of this project. The main benefits and limitations were carefully analyzed according to the different opinions.

5.2.1 Benefits

• Learning process for all stakeholders

Citizens’ references are very important, because inhabitants know exactly what happens locally whereas planners do not. They therefore contribute with ideas that architects and planners, who are usually locked into the traditional way of thinking, would never have thought of. The academic participation and expertise is also very important for the project to succeed. There is an advisory board from different universities around the world that is also part of the project, with the idea of further educating citizens, and also of advising the planners and technicians.

• Creation of an open platform for developing businesses and ideas together

All the interviewed stakeholders agree that a big benefit from this project is the development of a very strong platform of different participants, such as citizens, politicians, developers, construction companies, schools, farmers, and restaurants. This process of creating a new model in itself has already been generating new ideas. A fundamental element is probably keeping the process open as well as the possibility to engage inhabitants in every part and at all stages.

• Reduced risk of citizens opposing the project

In Sweden, citizens’ opinion has a very big impact on all political decisions. City planning is no exception, and by engaging citizens at such an early stage, they might be more receptive to the project when it will be presented. Thus the risk of them blocking it when is on the market is lower, states the City Director.

• Sharing of and reduction of risk, and therefore of financial investments between all stakeholders;

According to the Project Manager, another big benefit of this project regards risk sharing between different stakeholders. This fact allows an increased openness to business development and innovation that is beneficial to all stakeholders, even inhabitants in the long-term perspective. That is why engaging them at an early stage is
key and beneficial. The same thing happens with financial stakeholders, such as the municipality and developers. This fact reduces risk and thereby financial investments. Furthermore, keeping the process as open as possible allows the evaluation of new ideas and provides beneficial collaborations within existing projects or new ones.

5.2.2 Challenges and Limitations

- Apprehension and distrust among citizens and developers

Citizens and developers see the project with some apprehension and distrust because the former cannot understand how long the process takes, since they have never seen it, and the latter cannot get concrete images to show their customers, so they are initially slightly skeptical.

- Difficulty in delivering/fulfilling people’s expectations;

The process itself raises people’s expectations of what the result of their participation will be. Citizens give away their free time to give their opinion and help the community so they expect something in return. If that is not delivered, it might only lead to disappointment.

- Impossibility of taking everyone’s opinion into consideration

People’s contributions are usually connected to today’s lifestyle and how they view things nowadays, focusing mainly on local and present issues. The profession of city planning on the other hand must also deal with the next generation and how, for example, the actions planned will affect the global carbon dioxide levels at a local, regional and global level. There is the need to filter the information received by all stakeholders in a proper way.
6 Concluding Discussion

The information gathered from this study is very important, not only because it unravels a new and sustainable model for planning that will be able to solve issues such as disagreement between the stakeholders involved, but also because it provides a more open and democratic planning system to the municipalities adopting it, as well as a low investment solution for making cities more attractive. In the following sections the research question will be answered according to the theoretical and empirical background.

6.1 Contribution of Living Labs for designing future sustainable cities

The following sections provide a detailed explanation of how this model can contribute to the planning process, to the development of sustainable solutions and to the management of innovation. This study was developed in the Upplands-Väsby context but it can also be used in any Swedish or international city. According to the Project Manager, the application of this model/ framework could be very useful in some cities of countries affected by the crisis, such as Greece, Spain and Portugal, in order to make them more attractive for the creation of new businesses that would consequently generate working opportunities and invite new citizens to live there. This task requires bringing stakeholders together, as a way of using money and resources wisely, avoiding bigger investments.

6.1.1 Contribution for the Planning Process

After analyzing the model both from a theoretical and empirical sphere, it was possible to understand how it can contribute to the planning process of sustainable cities in the future. One very important contribution is the learning process of all stakeholders, consequently leading to knowledge creation.

The ability to create new knowledge is often related to an organization's competitive advantage. Sometimes this matter is not taken into consideration on the knowledge management sphere, since it borders and overlaps with innovation management. (Wellman 2009) Knowledge creation is all about continuous transfer, combination, and conversion of the different types of knowledge, as users continuously practice, interact, and learn. There is a distinction between knowledge and knowing, and knowledge creation is a product of the interplay between them. (Cook and Brown, 1999)
Knowledge is created through routines, interaction, collaboration and education, as the different knowledge types are shared and converted. Taking these statements in consideration, one can say that the Living Labs Model fosters this kind of interaction through the participation of citizens, academics and experts.

It is important to consider that the theoretical connection between learning and innovation is problematic. The learning processes not always end up in creativity and change. Learning is frequently the process through which routines are transmitted within organizations and when learning activities contribute to change it is usually in an incremental way. Discontinuous innovations, those that destroy old structures and capabilities cannot be restricted to learning processes easily. (Laestadius, 2005) However, the Living Labs model is related to a more incremental planning process, thus learning and the creation of knowledge is key.

This knowledge creation process of resource sharing and of building common standards, later transforms into a useful toolbox for current and future projects. This toolbox comprises different strategies and ideas that planners, architects and the municipality itself can use in order to solve city-related issues and even more importantly, policy formulation.

6.1.2 Contribution to Developing Sustainable Solutions

As previously cited in the theoretical chapter, in order to be sustainable, cities should base their development on the coordination of sector policies, as well as on a multi-stakeholder dialogue during the creation phase of projects and during their implementation (monitoring and evaluation), while keeping a social, economic and environmental inclusion approach.

The LL contribute to the development of sustainable solutions by connecting and networking communities of practice and expertise, as well as by creating an open platform for the joint development of businesses and ideas. According to the city developer manager’s testimonial, with this new model there is the possibility to build a broad surface of contacts towards the public, which promotes participation and social capital in the long-term. This participation generates a larger interest for a sustainable development of towns.

With that being said, the innovation that comes behind this method is very much about sustainable solutions for urban development. These statements match once again the previous ones mentioned in the theoretical chapter, which argue that a key factor for sustainability and sustainable development is citizen empowerment when it comes to decisions determining social and environmental settings. Community participation has been found to affect sustainability prospects.
6.1.3 Contribution to the Management of Innovation

Innovations always create some uncertainty in the minds of potential adopters (mainly because of its expected consequences). By reducing uncertainty, the motivation that drives an individual to want to learn about innovation, increases. The innovation-decision process is essentially an information-seeking and information-processing activity in which the individual is motivated to reduce uncertainty balancing the advantages and disadvantages of the innovation. (Rogers, 2003)

From this point of view, the LL method promotes the reduction of uncertainty by engaging all the interested stakeholders at an early phase and making them part of the whole process of co-creation and development of their own city. This fosters the acceleration of innovation and of the whole planning process. Therefore, considering once more the City Director’s statements, it is possible to affirm that by engaging citizens at such a premature phase and involving them in the whole process of planning, they will naturally be more receptive to the project when it will be presented. The risk of the project being blocked when on the market will consequently be reduced.

The example of the VL and the different stakeholders’ statements show that setting up and coordinating technical working groups that bring together the municipality, design teams, citizens and the contractors, contributes to the acceleration of the creation and adoption of stronger, more integrated and effective planning solutions.

6.2 Major Limitations of the Living Labs Model and Possible Solutions for future enhancements

Considering the previous analysis, it was possible to distinguish the main limitations of the model and draw guidelines for overcoming these and for making a better use of the method in the future.

As previously stated in the paper, the fact that the LL model is an innovation in the planning process in which events occur differently from what people are used to, generate some insecurity and distrust towards the whole project. As a confirmation, we have Upplands Väsby City Director’s testimonies, arguing that the fact of it not being possible to prove to inhabitants that the project is evolving makes them question its success. He further adds that doing things in a new way, makes people who are used to the “classical way” feel somehow threatened.
According to the city developer manager, a possible solution for people's apprehension and distrust is to have a more “hands-on” perspective at technical, physical, process and experimental levels in order to bring in a virtual reality rather than the reality itself. Moreover, being persistent enough to keep the process always open and maintain continuous interest in the project is crucial because citizens, developers and businesses want to see results and solutions. Stakeholders are constantly asking questions about the project and its materialization in order to feel comfortable and safe, but when the process is about continuous public research there are no ways of illustrating it in a tangible way. Therefore, it is urgent to build strong relationships with stakeholders and to always organize events where they can both participate and be informed of how the project is evolving. That openness is needed within the project in order to give space for innovation.

Connected to the first limitation there is also another one associated to the people's interaction and participation in the project. The fact that all stakeholders are engaged from the beginning of the project may increase their expectations of what the outcome of their previous contribution will be. If by any case people are not able to see the project turning out how they expected, or if that is not made sufficiently clear from the beginning, it might lead to the disappointment of some of the stakeholders.

One of the solutions for the previously stated issue is to make sure that everyone involved in the project is properly informed about its conditions and what their precise role is in the project from a very early phase. Stakeholders need to be aware that their individual ideas may not end exactly as they imagined in the final project because the planners and politicians will consider some of their ideas but not all of them.

The ultimate issue, but not less important, is the fact that city planning is a very complex process and it is impossible to take everyone’s opinion into consideration because most of them are not experts or professionals and usually citizens/users’ feedback is based on their own individualistic present needs. In order to answer this problem, the planning profession has to critically review ideas and see what it is possible to do with them and which ones can be used for the project. This is also an assignment for planners and managers, to make sure that those discussions end up above the level of individual interests.
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Leader Lab

http://leaderlab.com/open-innovation/

SIQ - Institutet för Kvalitetsutveckling

http://www.siq.se/Quality-Innovation.php

Toolbox – For User-driven Innovation and Living Labbing
http://www.lltoolbox.eu/

Upplands Väsby Kommun
http://www.upplandsvasby.se/

Väsby Labs
http://vasbylabs.se/3

Interviewees

Andreas Angelidakis - Architect and Artist;
Björn Eklundh - Upplands-Väsby City Director,
Fredrik Drotte - Upplands-Väsby City Planner
Lina Brantemark - Developer agent;
Mia Lundström - Urban developer/sociologist and founder of the Väsby Labs;
Per Erik Kanström - Upplands-Väsby City Mayor;
## Appendixes

### Statements of the Main Stakeholders

<table>
<thead>
<tr>
<th>Benefits</th>
<th>City Mayor</th>
<th>City Director</th>
<th>City Developer Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The process of building the houses will be easier since the people living in the area have been in the process the whole time; 2. Planners profession and activity has been more in focus lately and that is very motivating; 3. Use the best parts of the model for the municipality’s planning toolbox.</td>
<td>1. Engaging the citizens in such an early stage, they will be more receptive to the project when is in the market; 2. The risk of the citizens blocking the project when is on the market is lower; 3. The developers get a better understanding of what the market wants and subsequently want to collaborate.</td>
<td>1. Is a learning process for everyone, including the public and the politicians; 2. Citizens feedback gained through this process; 3. Developers see it as different model that might have an impact on other projects and are interested in participating.</td>
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<table>
<thead>
<tr>
<th>Challenges and Limitations</th>
<th>City Mayor</th>
<th>City Director</th>
<th>City Developer Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The fact that is a new model, rises expectations and distrust from other stakeholders; 2. The inhabitants and the developers are conservative and skeptical about it; 3. The main challenge is to focus on the final goal to go from the suburb to the city and the creation of 1200 new dwellings in this area.</td>
<td>1. Keep the project “boiling” all the time and keep presenting ideas and showing current results; 2. Uncertainty; 3. Insecurity by the politicians and citizens; 4. Resistance to innovation by people engaged in the planning process</td>
<td>1. It’s very difficult to get the participation of people; 2. Gain the interest of developers and citizens for something that isn’t tangible for the moment; 3. Developers and citizens apprehension and distrust; 4. Not being able to deliver what people expect. 5. Impossible to take everyone’s opinion into consideration, they are the users not the experts.</td>
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</table>

<table>
<thead>
<tr>
<th>Results</th>
<th>City Mayor</th>
<th>City Director</th>
<th>City Developer Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Quality innovation of the year Award; 2. Media Attention</td>
<td>1. People’s interest to live in Upplands Väsby rate has increased more than the surrounding communities; 2. Innovation prize 2012</td>
<td>1. Broad surface of contact towards the public, which creates participation and social capital; 2. Generate a larger interest for cities sustainable development</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Innovation</th>
<th>City Mayor</th>
<th>City Director</th>
<th>City Developer Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In the Planning Process; 2. All stakeholders involved to plan everything together from the beginning.</td>
<td>1. The whole process of engaging developers, architects, citizens in an early phase of planning.</td>
<td>1. Putting a lot of effort in the beginning to gain market interest; 2. Gain a lot of connections in the early planning process;</td>
<td></td>
</tr>
</tbody>
</table>
### Benefits

<table>
<thead>
<tr>
<th>Project Manager</th>
<th>Real Estate Developer</th>
<th>Architect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reduce risk and thereby financial investments between all stakeholders; 2. This innovative model generates new ideas by itself.</td>
<td>1. Creation of this open process and platform where different stakeholders participate and give their opinions; 2. Great platform for developing businesses and ideas together</td>
<td>1. Getting valuable feedback from all stakeholders in a more spontaneous way; 2. The project pays for itself; 3. No big initial investment. 4. New way of developing the city.</td>
</tr>
</tbody>
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### Challenges and Limitations

<table>
<thead>
<tr>
<th>Project Manager</th>
<th>Real Estate Developer</th>
<th>Architect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The model is still under development; 2. To experiment and research at the same time that things are being produced; 3. Keep the process always open; 4. Apprehension and uncertainty.</td>
<td>1. Apprehension and distrust from politicians on the project and some developers; 2. Keep the process always open and “boiling”. Not letting it stop; 3. Adoption of the method by the municipalities not only in Sweden but also abroad, on the long-term.</td>
<td>1. To keep the process evolving; 2. If the process stops it won’t be possible to achieve the main goal.</td>
</tr>
</tbody>
</table>

### Results

<table>
<thead>
<tr>
<th>Project Manager</th>
<th>Real Estate Developer</th>
<th>Architect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. People’s interest to live in Upplands Väsby rate has increased more than the surrounding communities; 2. Innovation prize 2012</td>
<td>1. The synergies created in the process; 2. Knowing what all stakeholders want from an early stage.</td>
<td>1. Media attention on the project; 2. Developer’s interest increased; 3. The land value in Väsby has doubled.</td>
</tr>
</tbody>
</table>

### Innovation

<table>
<thead>
<tr>
<th>Project Manager</th>
<th>Real Estate Developer</th>
<th>Architect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Turning the whole process of planning upside down and keeping it an open process; 2. Focusing on not planning everything from the beginning and trying to find a good deal/business for all stakeholders involved.</td>
<td>1. Is an open process, with the early engagement of stakeholders and risk sharing.</td>
<td>2. Managing the ecosystem between businesses interests, ideas/concepts and people’s opinions/citizen’s participation; 3. The project is an experiment, a method where results are always being evaluating.</td>
</tr>
</tbody>
</table>

Table 1 and 2. Statements from Main Stakeholders

Tables 1 and 2 summarize all the information gathered during the interviews in order to understand and compare the different perspectives of the six stakeholders involved in the Väsby Labs Project. These tables were crucial to the construction of the empirical analysis. The table shows the main benefits, limitations and challenges of an urban experiment of this kind as well as the positive results until the date of the interview and the stakeholders’ point of view of what is innovation for them in this project.
Activities Held during the Project Development

The images below illustrate the activities organized by the Väsby Labs Project, such as workshops, exhibitions, public talks and conferences. It was very important for the development of this study to participate in some of the activities and understand how this interaction between stakeholders work from a real perspective and to analyze the dynamics of the events implemented in the Project.

Figure 5. Illustrative "collage" of the conferences and exhibitions held by Väsby Labs in which the researcher participated
Figure 6. Illustrative “collage” of the activities being held in Upplands Väsby by Väsby Labs (source: vasbylabs.se)