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HSB Living Lab: A new habitat of innovation within Urban Development

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HSB Living Lab: A new habitat of innovation within Urban Development

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Executive Summary

Science and Technology Parks and Areas of Innovation, thanks to their openness and multi-stakeholder nature, constitute a platform of a great range of talents and technologies able to drive collaborative innovation creation in real-life environments.

FabLabs, design centres, co-working spaces, accelerators, corporate incubators, living labs are some examples of new habitats of innovation that many of STPs and AOI around the world have already developed in an effort to generate solutions sufficient enough to solve today's multiplex challenges.

Such open innovation ecosystems facilitate multi-stakeholder participation and value co-creation as well as rapid prototyping or validation to scale up innovation and businesses.

The current paper describes the case of a 3rd generation living lab created by Johanneberg Science Park and a number of partners with the aim to facilitate and foster collaborative innovation between citizens, researchers, companies and public organizations and to build a physical arena where innovative solutions are generated and tested in real-life environment. The living lab has also received the award for 'first-class innovative project' in 2014 at the 31st IASP World conference in Doha, Qatar.

In 2011, Johanneberg Science Park together with Chalmers University of Technology and one of its real estate partner companies, HSB, decided to co-create within the Open Arena of Urban Development the HSB living lab (HSBLL) where owners, partners and inhabitants will not only participate in research and development, but also contribute to the whole innovation process of future living.

With this initiative, Johanneberg Science Park's aim is to start a connection between Open Arenas and Living Labs which lies in the labs full value chain and encompasses the creation of ideas in workshops. Workshops, in which the different stakeholders (and end users) have input and create ideas based on common interests or purposes and different viewpoints and knowledge. These ideas are then prototyped in the Living Lab, where they are used and tested, on which the academics report. Improved prototypes and iterative processes with the involved stakeholders will then lead to tested and validated products.

Background and History

The idea of HSB living lab generated in 2011 at Delft, Holland during an inspirational kick-off for an EU-project about development of infrastructures of living labs in Europe and testing of new sustainable techniques in Europe. There, professor Greg Morrison from Chalmers University, presented how researchers at Chalmers fit in the context while Irene Svensson representing Johanneberg Science Park described the park's work with business, academia and society.

After the event, a discussion started on how it would be possible to develop a living lab in Gothenburg. The first vision to create a living lab in connection with Chalmers and Johanneberg Science Park was now a reality! At that time HSB, one of the biggest Swedish real estate companies became member of JSP as this would give them the opportunity to work together with other companies and universities towards the development of more sustainable homes. HSB expressed its interest to get involved in the project and it was decided that the living lab will be situated in Chalmers campus area. Thereafter, the concept started developing gradually over the years so that today 12 partners with varied expertise are involved in this cooperation.

Objectives of the Living Lab

HSB Living Lab is a journey to develop housing of the future. It is one of a kind in the world and completely unique research project for future housing and living.

Figure 1: Assembly of HSB Living Lab; placement of 44 modules constructed by Swedish Modules company within 10 days.

In specific, it is a collaboration project between industry and academia. The purpose of HSB Living Lab is to create sustainable housing of the future, and the goal is to speed up the process of introducing accommodation innovations from the current 10 years to just two years.
This collaboration project is referred to as the third-generation of Living Labs because it is a real-world environment where target-users participate in both testing and development of innovative products and services. This is where students and researchers of all ages and nationalities will live as research on innovative technology, sustainability, architecture and social connections will be conducted simultaneously and around the clock. Its main goal is to identify and study the barriers and, thereby, to optimize the interface between human behavior and technological systems.

"HSB Living Lab is a good example of exactly what we must provide, to network actors while creating the conditions for the emergence of joint development projects with demonstration and testing facilities. In addition, this endeavor, strengthens our ambition to put the area on the map and show the potential for cooperation across borders that creates innovation for sustainable growth" says Maria Ådahl, Director of Open Arena - Urban Development at Johanneberg Science Park.

HSB Living Lab offers a real-life environment to develop, test and demonstrate clean building methods, processes and systems in a co-creation setting, with real estate owners and developers, construction companies and end users. With this approach, its day-to-day performance and actual climate impact can accurately be assessed. The realistic setting ensures that the solutions developed meet market needs, providing the real estate industry with innovative, financially attractive and viable building solutions.

This building provides the ideal environment to develop and demonstrate low-carbon solutions for new buildings as well as renovation projects. This allows a much faster market uptake of sustainable building innovations. At the same time, this collaboration project aims to reinforce Chalmers University research and provide students with a brand new area for collaboration. "Thanks to the ability to test new wall systems as well as insulation and cladding materials for periods of up to ten years, we now have the best conditions for the successful development of sustainable solutions for the future. For me as a researcher, the interchangeable wall modules in HSB Living Lab are equivalent to the idea that we must have access to 120 houses to test on. It is a great opportunity." Angela Sasic Kalagasidis, Associate Professor of Civil and Environmental Engineering at Chalmers University of Technology.

Structure of HSB Living Lab

Physical Structure

The HSB Living Lab is a habitation infrastructure for students, in the form of a four-story modular building which consists from 44 steel modules. The building has a temporary building permit for 10 years and will be dismantled and moved in another location in the city after this period. It is in many respects the traditional architectural contrast. It is a house that symbolizes change, innovation, portability and reconstruction. Most of building's installations are also visible in the ceilings and walls so visitors can have a better view of all the research ongoing in the house. HSB Living Lab's tenants live in a unique and dynamic environment, while at the same time as they get a modern living, they also connect with students, researchers and business. Their behavior and experiences of research and testing are also providing us with invaluable input to develop future housing.

Figure 2: Outside view of HSB Living Lab at Johanneberg district, Gothenburg

The building's temporary nature does not mean it gets a free pass on functionality, though. It must still meet the needs of everyone who lives here. It is a building that takes a new approach to design, using smart "cubic" solutions, instead of the traditional 2D mind-set with focus on function, flexibility and adaptability.

Figure 3: Tenants gathered at the shared living room

HSB Living Lab has four student clusters. Two on the 2nd floor and two on the 4th floor. Each cluster consists of six apartments and a generous communal area. All apartments are located at almost 47 cubic meters, i.e. 3.6 x 3.6 x 3.6 meters. They all have their own kitchenette, toilet and spacious sleeping loft. In the common area there are double kitchens, two bathrooms and showers, a living room and a balcony to share. The 3rd floor consists of five "normal" private apartments with a ceiling height of 2.6 meters.

Figure 4: One of the of 50 cubic meters' student apartment

Figure 5: The "White room" in the bottom floor where new products are generated

In specific, HSB Living Lab is an infrastructure with residential and research sections of a total net floor area of 1720 m^2 which includes:

- 29 apartments, out of which 23 are rented out to students and 6 to guest researchers and doctoral students
- Meeting rooms, where project group meetings and workshops are taking place
- A showroom for project results
- A multifunctional laundry room
- A prototyping lab - The White room
- 12 adaptable wall sections, which can be removed and replaced to enable testing of various innovative façade materials and assembly techniques
- An extensive network of 2000 sensors and 15,000 meters data cable, providing precise measurements and data for research, development and innovation projects

Figure 6: Sensors and meters data cables installed in HSB Living Lab

Partnership and Financing

HSB Living Lab is a collaboration project within the Open Arena of Urban Development of Johanneberg Science Park. The project's partnership consists of 3 main partners, Chalmers University of Technology, HSB and Johanneberg Science Park and 9 business partners (Akademiska Hus, campus building manager, Bengt Dahlgren, technical consulting firm with broad knowledge on energy issues and climate in housing, Electrolux, leading manufacturer of professional cleaning equipment, Elfa, offering customized storage solutions, Göteborg Energi, energy company of West Sweden, Peab, construction company, Tengbom, architectural company, Tieto, IT services company, Vedum, kitchen and bath supplier, KONE, product sponsor). The building is also part of Climate-KIC's Flagship project Building Technologies Accelerator (BTA).

Figure 7: The two partner levels of HSB Living Lab

Companies are active within different sectors and have both shared and individual aims. To gather all of them within a single organization is a challenge, but this is also one of the main objectives of the project.

The uniqueness of this project lies on the fact that a number of partners with different backgrounds are gathered within a single organization, enter into a 10-year partnership agreement and get involved to a joint research and development project. The reason is that they are looking for long-term collaboration, in which the partners depend on each other and are involved in both research and development within the HSB Living Lab.

"Being a partner in HSB Living Lab means that we open our borders even more, both internally and externally. Users are in focus and we can test new solutions and allow residents to influence development at a very early stage." says Linnea Källgård, co-creation manager at Tieto.

The project has a structure where all partners make an annual payment into a joint research fund of at least € 0,25 MLN annually to deploy. This fund is being used for joint research projects, agreed between the partners. The structure offers good potential for attracting external funding for joint

research projects, due to the large number of partners and the available co-funding in the form of both time and money from the joint research fund.

HSB, Chalmers University of Technology and Johanneberg Science Park have great ambitions for HSB Living Lab. HSB expects to see multiple results in several different areas. These could be anything from experiences of using different types of materials, to the residents' views on indoor climatic conditions and comfort. The value proposition for the academics is that they create data that they can use for scientific papers and to attract research funds, for the involved companies that they get ideas from the open innovation processes and a testing facility for products, and for the inhabitants that they have a place to sleep and contribute to an experiment.

As the whole concept is built around the integration of different organizations, there's no simple costs-income table that shows a clear profit. It is in fact easier to see how each stakeholder makes a revenue generation mechanism that has a profit.

Experiences and lessons from the project will be shared with HSB's operations nationwide – the project will not have succeeded until the knowledge gained from the HSB Living Lab is utilized in everything built, managed and renovated by HSB. As there are so many partners involved, the partners expect the results to benefit the entire industry, as they will be spread outside HSB, Chalmers University of Technology and Johanneberg Science Park. This is particularly important now, as we are facing the challenge of climate change; there is not enough time for each of us to develop separate solutions. The challenges are too big and the time too short.

The project organization does not focus solely on current needs, but is also flexible enough to be able to meet the challenges of tomorrow and to include future partners.

Organization

For the organization and better coordination of the living lab, four groups with different functions each have been formed:

The Steering group, consisting from representatives of HSBLL's three main partners - HSB, Chalmers and Johanneberg Science Park. The group meets in a monthly basis and has the responsibility of setting the general lines on which the living lab's activities should be focused each year.

The Decision-making group consists of one representative from each involved partner and votes/decides which project proposals submitted in the online project database will get funded and run in the living lab three times per year.

The Project group, where representatives from each partner are taking part every two months. During project group meetings, forthcoming project proposals from partners are presented to the rest of the group in order to get feedback before they are handed over to the decision-making group. New project ideas are also discussed during the meetings.

The Communication group, in which communicators of each partner of HSBLL meet in a monthly basis and decide about communication plan and specific actions/events regarding HSBLL.

All group meetings are usually taking place at HSB Living Lab's meeting room. There are also cases where they take place at the premises of each partner combined with a tour to get to know their work environment and services better.

Figure 8: Project and communication group having a common meeting at HSB Living Lab

The purpose of HSB Living Lab is to be an open research pavilion where all partners can benefit from each other's research and where there is an exchange between the parties. For this purpose, as a background and a need to have regulation about the research result that could result in intellectual property protection (copyright or patent), an agreement structure including three types of agreements has been established:

- **Research Project Agreement**

This agreement is used when a partner in HLL starts a research project. The agreement must be signed between all the HLL parties and the specific partner before research commences in HLL. This agreement is part of the research process that all research has to undergo.

- **Participation Agreement**

This agreement is signed when a HLL partner wants to collaborate with an external partner for a specific project in HLL. Its purpose is to regulate the transfer of intellectual property rights and the use of the ideas, information and material generated through work / research within the framework of and about the project in question.

- **Confidentiality Agreement**

Confidentiality complicates the exchange of research between the partners. As a proposal, a confidentiality agreement has been signed by all partners of HLL. The confidentiality agreement applies only to third parties/external partners and not between members of the group.

Communication

Since its start, the strength of the project has been the common communication in line. Overall goal in the communication work is that HSB Living Lab is going to be a third generation research arena with focus on collaboration. Here we will research answers on how we can build and live sustainably in everyday life. On an overall level, we have set common key words to capture what the business stands for and its basic values:

- Research
- Sustainable housing
- Collaboration
- Changing

Our main message is that HSB Living Lab is a world-wide research arena where we, through collaboration between business, academia and society, develop new ways to build and shape the sustainable living of the future. Together with its partners, has HSB Living Lab several target groups. Communication is adapted depending on context; Local / regional / international.

Cornerstones of HSBLL communication strategy are the following:

- **Collaboration for greater impact:**

We apply guidelines that we have jointly developed for communication work. By being proactive, we can coordinate, prioritize and visualize each other and thus strengthen all communication efforts.

- **The more we communicate, the greater the impact:**

Collaboration between us and our partners not only is noticed in our joint research and development work. It is also evident in the communication strategy of HSB Living Lab. With HSB Living Lab's graphic profile as a sender, we are all motivated to use the project in our various communication efforts. Its unique identity makes it possible, in collaboration with each party's own brand, to highlight HSB Living Lab, thereby strengthening the impact of the entire project. Instead of a single sender, we invest in spreading through several players - increasing the value of the joint investment for all partners.

- **All communications about HSB Living Lab should be based on common vision and goals:**

To strengthen HSB Living Lab as a brand and achieve our vision and goals, we communicate based on the overall vision and strategy of the project. At the same time, we are taking joint responsibility to actively avoid cases where an owner's or a partner's trademark or message takes place in communication at the expense of another partner.

- **Increase knowledge about HSB Living Lab:**

We actively spread information about HSB Living Lab abroad in order to increase awareness of the project and get more input to the increased resources, greater emphasis on focus area of sustainable living in the future and to link key actors to the project. We translate also into English when is necessary and relevant.

- **Competitive intelligence:**

We conduct a continuous global monitoring to gain knowledge of "competitors", trends, current social issues and possible exchange of knowledge.

- **Spokespersons:**

To maintain the quality of the project, we ensure that our main and collaborative partners are always informed and offered the opportunity to make comments or proofread any statement related to the party's field of expertise. Moreover, we ensure that the relevant spokespersons are offered to the media actors for interviews and images.

Communication channels we work with are the following:

- The common website: www.hsblivinglab.se
- The Project Portal hll.livinglab.chalmers.se - displays ongoing projects as well as collects project applications, logged-in interface and workspace
- Youtube channel
- SoMe: Facebook, Twitter, Instagram with #HSBLivingLab
- Partners' channels

Figure 9: The common website: www.hisblivinglab.com

Innovation Processes

Partners of HSBLL have created the following 5 general project categories to secure receiving of innovative ideas from different directions:

- Scientific research project
- Development project
- Evaluation project
- Demonstration project; and
- Co-Creation Workshop

Chalmers University of Technology has built up an online portal (http://hll.livinglab.chalmers.se/) where every new project proposal aiming to be selected and run in HSB Living Lab should be submitted there. In this portal, a form including a list of criteria connected to innovation, co-creation, sustainability and market potential exists for the applicant to fill in. The portal is easy to navigate while the application form has been designed based on the feedback of all HSB living lab partners to stimulate their interest in the upcoming projects. In addition, important dates related to project proposal deadlines, decision group meetings as well as other project applications and projects already running or completed in the living lab are available in the portal.

In parallel, for facilitating the acquisition and the continuous evolvement of innovation is Johanneberg Science Park identifies links with other collaboration projects within its Open Arena and tries to connect them with HSB Living Lab. Johanneberg Science Park's role is also to connect external actors (i.e. companies, organisations, researchers) to the lab so that knowledge exchange occurs and generation of new ideas, technologies and businesses is continuously evolving.

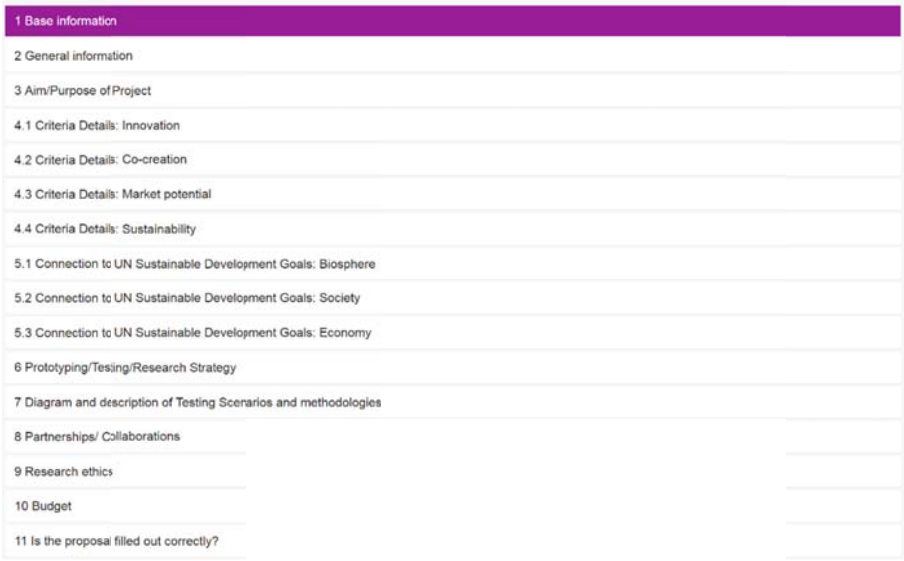

Figure 10: The form which enables selection process of new projects in HSB Living Lab

Example Projects

1. *Innovation Contest HSB Digital Living Challenge*

Figure 11: Innovation challenge co-creation workshop aiming to identify HSB Living Lab's challenges that need to be met

HSB Living Lab is an innovation hub, characterized by a dynamic mix of stakeholders, including industry, researchers, students and tenants. To further enhance the mix of innovation actors, an innovation contest is being staged to meet some interesting challenges identified in the Living Lab.

The innovation challenge selected for the contest is “How to use digital services to stimulate sharing of resources and spaces in multi-family housing in order to increase sustainability and social inclusion”. It is envisaged that solutions will help to reduce environmental impact of daily life and improve social sustainability in neighbourhoods.

The contest invites participants from all parts of society, including professionals, students, researchers and private individuals from all over Europe. The winners will be invited to implement and test their solutions in the Living Lab as pilots.

The housing co-operative HSB operates almost 4 000 housing associations in Sweden, with a total membership figure of almost 600 000. This means that there is a very real potential for large-scale implementation of solutions that are favorably evaluated in the Living Lab.

The innovation contest will be managed by Johanneberg Science Park together with partners HSB and Chalmers University of Technology. The jury will also include the Living Lab R&D group with members such as Electrolux, Tieto and EU’s Climate-KIC.

2. The Social Laundry Studi

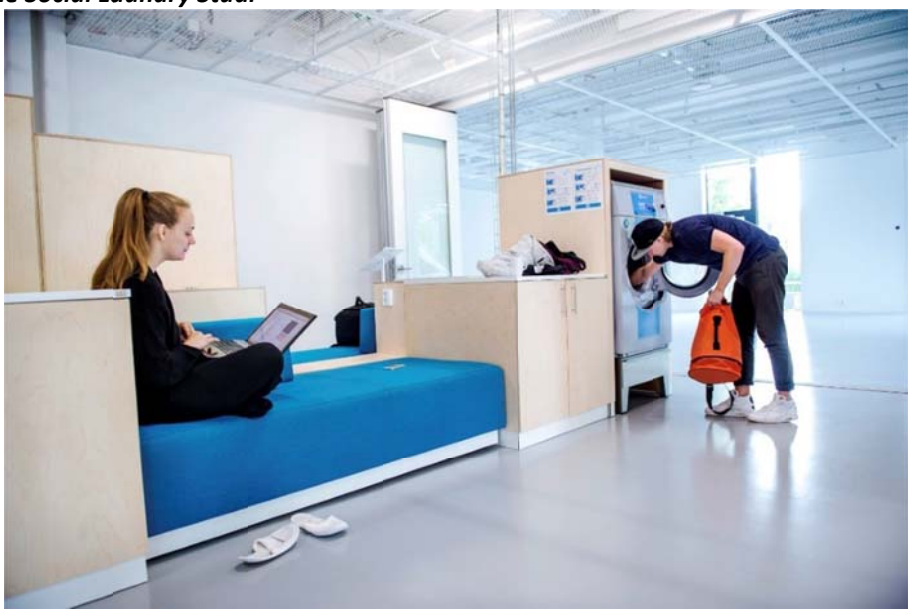

Figure 12: HSB Living Lab tenants using the social laundry studio

Traditionally, multi-family houses in Sweden are equipped with a communal laundry room, where tenants can wash and dry their laundry. In recent years, however, more and more families have turned to washing their laundry in their apartments in private washing machines, a solution which clearly has negative implications for sustainability.

The HSB Living Lab Social Laundry Studio is situated in the ground floor entry hall of the Living Lab, making it a popular place for lounging, meeting and hanging out while waiting for the laundry to finish. The Laundry Studio has been developed to challenge existing ways of handling textiles and to find new solutions that can make the daily textile care more efficient and more inspiring and to ensure that textile management has minimal environmental impact.

"Today there is a hesitation to share a washing machine with a neighbour. With the future laundry studio, we can wash together in a smarter manner. The time of the angry note in the laundry room is over, "says Sanna Edling, project manager HSB Living Lab.

The Laundry Studio in HSB Living Lab should be a social place with room for meetings. There is space to sit in different constellations and the ability to charge phones and computers. The layout of the laundry studio means that we have a common space that will provide the same flexibility as if you have your own washing machine in the apartment.

Figure 13: Preliminary sketch of the laundry studio as designed by Tengbom

“Our ambition is to de-dramatize the laundry. We want to interact with the laundry studio in a social context and link it to the other functions of the house. With this solution, we move the boundaries between our own and the common, "says Sanna Edling.

Today, the laundry rooms are places where many people do not feel at ease. In the future's sustainable and social laundry studio, we want to turn it around

3. The Henhouse

Figure 14: The Henhouse committee

On average, a Swedish person throws away 74 kg of edible food every year. In HSB Living Lab, a detailed analysis of the rubbish bins was carried out, discovering that a lot of food that might have been eaten had in fact been thrown away. In the waste, there were also a lot of eggshells. With that, the idea of a henhouse was born. Much of the food that has previously gone to waste will now be used to feed the hens.

By showing the chain from food waste to feed, and eventually egg delivery, it is hoped that this will clarify the value of food for the residents. It is also hoped that it will inspire people to become involved and that the chicken project will create a community in the house.

The hens will live in a modular chicken house at HSB Living Lab for two months, where the 3D-printed brackets are made of corn and sugar starch.

Tenants

In June 1st, 2016, 26 students and researchers in total moved in HSB Living Lab. The age of the tenants ranges from 20 to 57 years old while there is a balanced mix of women and men from Sweden and other countries such as Italy, Iran and Canada.

An audition took place before the moving to inform the shortlisted participants about how it is to live in HSB Living Lab. Participants that could apply were students from Chalmers University of Technology and the University of Gothenburg as well as HSB members.

Figure 15: Move in day at HSB Living Lab, 1st June 2016

It is a fact that the most important part of HSB living lab is its tenants. They are the "heart" of the building since most of the research and projects in the lab are based on their feedback. The inhabitants take active part in the research done, and both quantitative and qualitative measurements are done continuously.

Tenants are also expected to be part of innovation generation in the living lab, therefore they were free from the very first moment to initiate innovative projects in the building. These initiatives can then be used as base for new projects or as a research topic by the HSBLL partners.

In the ground floor, there is a board with tenants' ideas that they would like to be developed in the living lab. Their ideas are used to inspire the partners for the development of new projects. “For me personally, it is important to be able to contribute to the research that will hopefully result in new innovations and solutions for the future of accommodation. The fact that they measure everything we do and how we move about does not bother me at all. It is just fun to be a part of it and do my part for a sustainable world.” says Rebecca Eurenius, student who shares a kitchen, bathroom, living room and balcony with five other students.

Based on the tenants’ need, a team of researchers from Chalmers together with living lab tenants have created the "Swap Cube" - a space where tenants can leave objects in usable condition that they wish to discard (e.g. books or clothes not wanted). The items left in this space become available for all the occupants of the living lab (and visitors) to take. The living lab tenants can reuse objects from the Swap Cube instead of buying new ones. The research team is now planning to develop an app to track the flow of items which goes through the space. When someone leaves an item in the Swap Cube, he or she takes a picture of it in the app and leaves it in the space. When someone else wants to take the item he or she clicks the item in the app as “taken”. The app will allow the users to see what items are available and will give information about the flow of items for research purposes.

Figure 16: The "Swap cube" is a new place located in the lab's ground floor hall. The idea come from the tenants who wanted to give away items they were not using in their everyday basis.

Conclusions

Even though much work remains to be done with HSB living lab as a new habitat of innovation, some conclusions may readily be drawn from the work described in this paper:

The HSB Living Lab was one of Johanneberg Science Park's earliest projects and presented a number of interesting challenges concerning, for instance how to secure commitment and interest for an ambitious and innovative project in a conservative sector, how to facilitate communication between researchers and builders and how to manage several stakeholders with diverse interests in the project.

As the building project now has been successfully concluded and the research phase is underway, the challenge will be to keep the active interest and involvement from the partners while still allowing external organizations such as innovative SME's to contribute and engage in the continued innovation process.

It can also be concluded that the role of a science park in projects such as this needs to be clearly and ardently communicated, since it is all too easy that it is obscured by the stories relating to the actual construction and the research being conducted in the building. The story of initiation, conceptualization and facilitation must be told over and over again not to be forgotten.

In this chapter, conclusions about the future challenges, results and lessons learned from HSB Living Lab are primarily described.

Future Challenges for the living lab

So far this unique habitat for innovation generation within the housing sector seems to work quite well. Plenty of innovative ideas have already entered the lab to be tested and formed into real projects, products or services. Nevertheless, we are aware that the lab reserves us with challenges in the short or long term.

One of the challenges is linked to living lab partners' engagement and commitment to this innovative umbrella project. It is a challenge to secure the interest and involvement of 12 different partners with diverse interests for a time of ten years in one project. To tackle this challenge, Johanneberg Science Park must continuously communicate the objectives of the living lab and remind the importance of each partner's role to this collaboration project.

A long-term challenge will be to attain an unceasing genesis of innovation throughout the ten years project period. The generation of new ideas, requires the involvement of new partners with new perspectives. In other words, we are aware that the existing partnership of the living lab should be formed in such a way so that is open to allow external organisations or other companies (i.e. SMEs) to get involved and contribute to the innovation process.

Finally, a challenge will be to ensure that technology innovations generated in the lab will be quickly adopted by the construction and building industry. We have succeeded to get new innovative ideas and test them in a real-life environment which HSB living lab is. All of them are still running in the lab and therefore we do not know yet how fast they will be out in the market and how easy will it be for companies to adopt them. Considering also the fact that the building sector is a rather slow adaptable and conservative one, the challenge of accelerating change in this industry is certainly an interesting one.

Results and Discussion

Even though the research phase of the living lab has been underway for less than a year, there are some interesting results about its research projects and the publicity it has gained.

Within almost one year we managed to receive a big amount of project proposals including new partners-expansion of network and therefore possibilities for innovation generation. At the moment, there are 18 active research projects in the lab connected to sustainable building materials, energy saving technologies, minimization of food waste etc. while 7 new project proposals are awaiting a review by the project group.

Results connected to the communication and publicity of the living lab have also been positive. A clear proof of the power HSB living lab partners get by working together is depicted in the 2016 adverts measurements. In specific, all the press that the project received during 2016 is valued at an advertising value corresponding to of € 1.3 million.

Figure 17: Publicity results for HSB Living Lab during 2016

Another positive result of the living lab's common communication in line has been already depicted in the number of study visits that the building has received so far. In specific, the lab has received:

- 675 visitors during 2016 (August 2016 - December 2016)
- 795 visitors during 2017 (January 2017 - April 2017)

Visitors, who have visited the living lab until today, include both national and international companies offering services to the housing sector, researchers, politicians and business delegations from other countries.

Last but not least, the lab has won prizes as a 1st class Innovative Project, a Building Technologies Accelerator living lab and a Smart Building by the International Association of Science Parks and Areas of Innovation (IASP), the Climate -KIC Organization and the European association for sustainable buildings and cities, Construction21, accordingly.

Lessons Learned

HSB Living Lab has been in place from September 2016 but its preparation had been actively ongoing from 2013. Subconsciously, there is several lessons learned during this journey that worth to be shared.

Collaboration is the key to innovation. Throughout the development of HSB living lab project we have learnt that in order a new habitat of innovation to be built within the housing sector, it is imperative to first detect the right stakeholders that should be the core part of it. As a second step, we had to convince and involve both private and public stakeholders that are directly or indirectly connected to the housing sector or being affected by it.

Collaboration and co-creation do not happen by themselves. To achieve deeper interaction between different actors, there needs to be a constant stream of networking and collaboration opportunities. Johanneberg Science Park works consistently with developing models for interaction and providing

these opportunities to HSB Living Lab's stakeholders by arranging a wide range of seminars, workshops, meetings and social events.

Common communication strategy in line is a cornerstone. The voice of each partner in a collaboration project like this one must always be heard. The creation of a common communication strategy and a communication group where communicators of each partner are part of was a keystone for facilitating the dialogue between project's different stakeholders. By adopting a common communication strategy not only helped as to fetch and stimulate the interest of each partner but also to increase the impact and awareness of the project.

Lastly, we have learnt that if we want to increase the power of innovation then we should constantly identify new ways to connect more actors (i.e. companies, organisations, researchers) to HSB living lab innovation habitat so that the generation of new ideas, technologies and businesses is continuously evolving. At the same time, it is also significant to connect this project with other collaborative projects of Johanneberg Science Park's Open Arena so that innovation is expanding.