

## **Co-creating Affordable Housing with the Houseless in Brussels: Recognition and Inclusion of the Needs, Daily Practices and Skills of Vulnerable Users**

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### **ABSTRACT**

In Brussels, there is an acute shortage of affordable housing: more than 44.000 families are on waiting list for social housing. In parallel, the overall number of homeless people has almost doubled in 8 years (+ 95,8%)(La Strada, 2017). Furthermore, in majority of social housing projects, the particular needs, lifestyles and daily practices of the vulnerable populations are not represented and addressed sufficiently. In this context, there is a need for inclusive and creative solutions for the development of alternative living forms adapted to vulnerable target groups.

This paper will reveal the results of the SWOT-Mobile Project funded by the INNOVIRIS, the Brussels-Capital Regions' Research Agency, which aims to address the affordable housing problem by developing, testing and refining a resilient model for the co-creation of solidary living in mobile homes in vacant lots in Brussels. Through the co-creation of eight affordable housing units, this project tests (1) alternative ways of co-developing and co-building solidary homes, (2) how those homes can form an interactive and resilient community and (3) how it can interact in, and with, the neighbourhood aiming at social sustainable urbanism. Co-creation in this context involves the full active participation of all partners (the users, linked NGO's, the researchers and designers) in the entire research and innovation process, from conceptualization to the exploitation of the results.. Co-creation in this context involves the active participation of the users and linked NGO's in the entire research and innovation process, from conceptualization to the exploitation of the results.

In line with Conference Call Theme 1, this paper will discuss the ways in which co-creation enabled the recognition and inclusion of the needs, everyday practices as well the skills of the vulnerable users and its shortcomings in this venture. The project has brought various stakeholders (NGOs, university students, researchers, designers and eight houseless) together in a series of participatory living labs. Through innovative "infrastructuring" solutions involving mobile structures, movable panels and flexible sanitary units, the houseless have been empowered to make and remake their homes during the design and after the completion of the project as a response to their ever-changing needs.

**KEYWORDS:** Affordable Housing, Participatory Design, Living Labs, Houseless, Co-creation

## **1. INTRODUCTION: THE PROBLEM OF AFFORDABLE HOUSING**

The first program of state-supported housing was initiated by the Belgian government in 1889 with the aim to secure the constitutional right for decent housing for everyone. Over the years this 'social housing' program was further developed, amongst others through the establishment of 'social housing companies'. In 1980, following the second State reform, the provision of affordable housing accessible to people with a modest income became a regional responsibility. From the start, the Belgian social housing policy was focused more on private house ownership, e.g. by providing cheap social loans, than on housing rental. This explains why today only 7% of homes in the Brussels-Capital Region (BCR) are owned by social housing companies (Anfrie & Gobert, 2016), compared to almost 19% in France and 31% in the Netherlands.

This situation has led to an acute shortage of affordable housing in the BCR. More than 44.000 families are on waiting list for social housing, which means less than half (44.9%) of the demand is met. When applying for social housing, applicants are to expect very long waiting times. Meanwhile, they are dependent on the private market, where the rents are not adapted to their financial possibilities (fonds.brussels, 2015). When they finally qualify for a social housing, a refusal of the proposed property could lead to a removal from the waiting list, after which they have to start their application all over again. As a result, many citizens are living in overly expensive, unadapted or even unhealthy houses with little or no influence on their own housing situation. Besides the qualitative and quantitative housing shortage, homelessness is on the rise. In the last 8 years, the overall number of homeless people has almost doubled (+ 95,8%) in the BCR (La Strada, 2017).

At the same time, the involvement of the homeless in the planning, design, construction and management of social housing in the BCR today is very limited (De Decker, 2012, p.11). As a result, the particular needs, lifestyles and daily practices of vulnerable populations are not sufficiently represented and addressed sufficiently in the majority of social housing projects. However, the homeless service sector is evolving towards doing things "for" or "to" homeless people with the goal of empowering service users to reach their own goals (De Decker, 2012, p.12).

In this context, there is a need for inclusive and creative solutions for the development of more and alternative living forms adapted to vulnerable target groups. The project 'Solidary Affordable Housing for the Houseless: A Mobile model in the Brussels Capital Region project' (SWOT-Mobile) (promoters: Burak Pak & Yves Schoonjans) aims to answer this need by developing, testing and refining a resilient model for the co-creation of solidary living in mobile homes in vacant lots in the BCR. This paper will reveal the (intermediary) results of this project, mainly funded by the INNOVIRIS Research Agency. In line with Conference Call Theme 1, in this paper we will discuss the ways in which co-creation enabled the recognition and inclusion of the needs, daily practices and skills of the vulnerable users and its shortcomings in this venture.

## **2. WAITING SPACES, TEMPORARY USE AND INFRASTRUCTURING**

In the Brussels-Capital Region (BCR) an abundant amount of un(der)used spaces are waiting to be developed (GSSO, 2006; ADT/ATO, 2016). The majority of these sites such as West Station, Tour & Taxis and the Canal-zone are located in a privileged position, near large urban

areas, and have a surface area between 5000 to 20.000 m<sup>2</sup>. But also many smaller areas are vacant and function as waiting areas for future urban development. The territorial development agency has identified several sites as areas that would be very useful for temporary use until future projects are realised (ADT/ATO, 2016).

These un(der)used urban spaces can thus be public or private sites, large or small scale and built or unbuilt. However, a common feature is that these are spaces that have been abandoned by the previous use(r) and for which a future function still has to be determined or for which the installation/realisation of an already defined future function is being delayed. Although the reason for this delay can vary from lengthy planning processes, to financial complications or unexpected technical issues, the result is always that the affected spaces all seem to be 'temporarily out of use'. They end up in some sort of interval, a 'waiting period' in their functionality, hence we are calling them 'Waiting Spaces' (Faraone & Sarti, 2008; Studio Urban Catalyst, 2012; De Smet, 2013).

As vacant lots and leftover spaces often create a negative atmosphere and are associated with speculation and possible dangers, many cities are already employing 'temporary use' as a method for sustainable valorisation of the city. Previous research has shown that practices of temporary use of Waiting Spaces can play an important role in the (re)development of the city (Overmeyer, 2007; Bishop & Williams, 2012; De Smet, 2013; Oswalt et al., 2013) and offer an alternative approach to the bottom-up creation of collective spaces (Ferguson, 2014).

The SWOT-Mobile project is an exploration of alternative forms of housing, that would take advantage of this potential of the abundant amount of derelict and/or un(der)used spaces that can be found in the BRC. This brings the discussion to the agency of these spaces and their potential as "infrastructures".



**Figure 1.** Waiting Space in the BCR  
(Photograph: Aurelie De Smet)

Particularly in the last two decades a new understanding of urban infrastructures has emerged (Amin, 2014)(Graham and McFarlane, 2015). This school of thought rethinks infrastructures beyond their material and technical limits and critically reframes them as a part of the “urban social” and collective culture and space (Amin, 2008). Building upon Neumann and Star’s (1996) and Star and Bowker’s (2002) work on making infrastructures, Karasti and Syrjänen (2004) coined the term “infrastructuring”. Infrastructuring is a process which involves infrastructure design for participation “along with mediation, interpretation, articulation, actual design-in-use such as adaptation, appropriation, tailoring, redesign and maintenance.” (Bannon and Ehn, 2013, p.57).

Recent research introduced the ideas of participatory design as an infrastructuring activity and design products as infrastructure (Pipek and Wulf, 2009; Le Dantec & DiSalvo, 2013). Early examples exploring alternatives for infrastructuring in design are (Pak, 2016): Fun Palace by Cedric Price and Joan Littlewood, La MéMÉ by Lucien Kroll and Habraken’s (1972, 1999) *infrastructure* and the *infill* solutions as *an alternative to mass Housing*. Reflecting on these in the context of the SWOT-Mobile project different modes of intervention becomes evident: infrastructuring *in* and *through* design (Pak, 2016). The use of these modes of intervention in the context of the SWOT-Mobile project will be elaborated further in Sections 4.1, 4.2 and 5.

### 3. THE SWOT-MOBILE PROJECT

Through the co-creation of eight affordable housing units and one of more collective spaces, the SWOT-Mobile project aims at testing alternative ways of co-developing and co-building solidary homes and their interactivity in the neighbourhood. The final goal is to develop a model allowing to respond more quickly to the affordable crisis in the BCR by using readily available resources, i.e. temporary vacant spaces. This model intends to increase urban resilience by reactivating (temporarily) vacant sites and develop alternative housing types, collective & solidary as opposed to individual. In this way we want to help increasing the socio-spatial resilience of the BCR.

Co-creation in this context can be briefly described as the active participation of the future users and linked NGO’s in the entire research and innovation process, from conceptualization to the exploitation of the results. By taking part in every step of the conceptualisation and the construction of their own houses, the future users of the SWOT-Mobile project are not only co-designing and co-building their individual housing units, but they are also gradually co-creating a solidary living community, in interaction with the surrounding neighbourhood. Through this, besides regaining a grip on their own housing track, they will regain a grip on their whole life.

In the SWOT-Mobile project, co-creation is realised using the Living Lab method. In literature, it is possible to find various approaches to Living Labs (Dubé et al., 2014; Robles et al., 2015, Boelens et al., 2015). Different researchers describe it from different perspectives as a network, a platform, a context, a method, an interface or a system. Inspired by Higgins & Klein (2011), we frame the key characteristics of Living Labs as:

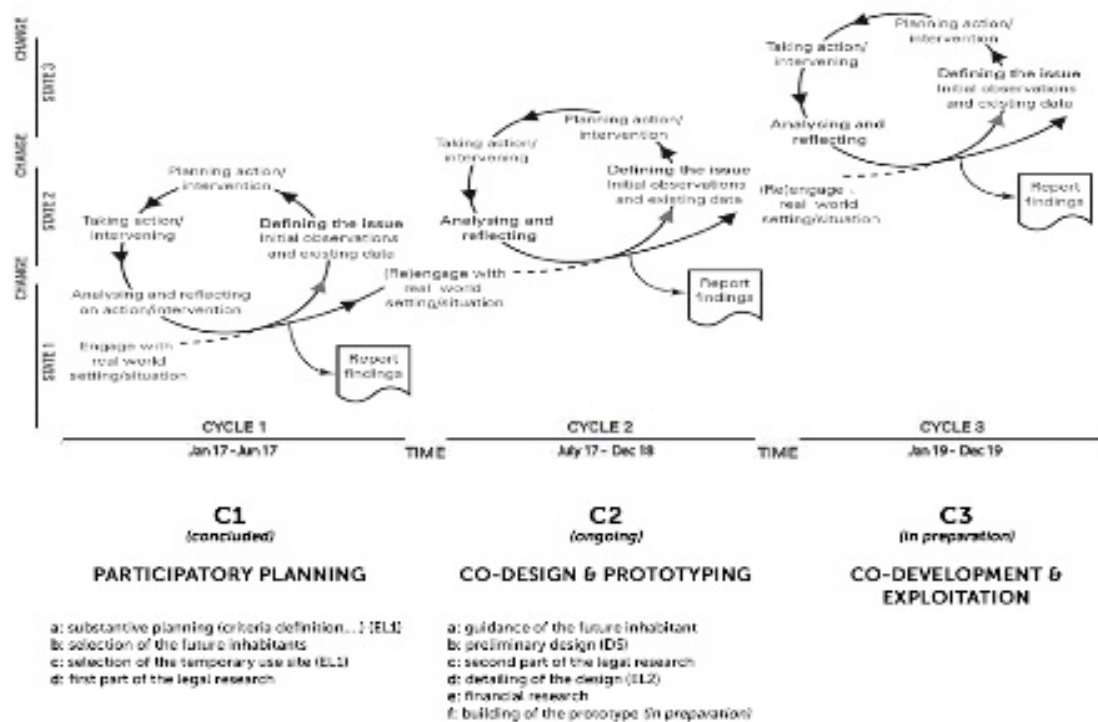
1. A laboratory focusing on the empowerment and inclusion of the users in the research and creation processes
2. A real-world setting aiming at real-world impact, involving multiple stakeholders from multiple organizations and enabling their interaction
3. The researchers observe and take part in the creation of an outcome

- Multi-disciplinary research teams are actively involved in the research settings, confronted with the technical, social and political dynamics of innovation

The stakeholders included in the SWOT-Mobile Living Lab are:

- eight future inhabitants: houseless people who have lost their grip on their housing track,
- employees from the NGO Centrum voor Algemeen Welzijnswerk (CAW), an association providing personal support on general wellbeing,
- employees of the NGO Samenlevingsopbouw Brussel (SLO), an association focussing on community building,
- researchers and students from the Faculty of Architecture at KU Leuven, campus Sint-Lucas Brussel,
- employees from the NGO Atelier Groot Eiland, an association focussing on training and social employment,
- the surrounding inhabitants and neighbourhood organisations,
- the local and sub-local authorities (the local council, social services, the Housing and Urban Planning departments of the BCR, social housing associations, ...).

As shown in Fig. 2, the Living Lab methodology employed in the SWOT-Mobile project involves three big action research cycles (Kemmis & McTaggart, 2005), each with particular goals, to be realised through smaller steps. In this way, the action research approach provides us with an open framework enabling the use of different tools adapted to the particular goals of each cycle (e.g. focus group meetings, semi-structured discussions, surveys, participatory mapping).



**Figure 2.** Schematic Representation of the Three Big Action Research Cycles of the SWOT-Mobile Project and listing of the smaller steps included in each cycle.

(Image: Action research cycles by Kemmis & McTaggart (2005), adapted by Burak Pak)

In every cycle one or more participatory workshops and events are organised, bringing the different stakeholders together. Throughout the project, the SWOT-Mobile Living Lab is thus in fact taking on different forms with the aim of co-creating a learning environment with all the partners - including the houseless, a group that is usually not involved in this and that generally doesn't have much to say on their housing track.

In this context, during the first cycle an elective was organised at the K.U. Leuven Faculty of Architecture. In the 'Urban Projects, Collective Spaces and Local Identities, subtheme: Solidary Mobile Housing for the Houseless' (EL1), the partners worked out the substantive planning of the project together. Amongst others, this included setting up a method for the site selection, studying exemplary cases and defining the brief for the future design studio. During the second cycle, the partners worked on the preliminary design of the eight affordable housing units and one of more collective spaces in the 'Solidary Mobile Housing Design Studio' (DS), again organised at the K.U. Leuven Faculty of Architecture. This was followed by a second elective at the same faculty: the 'Co-Creation Building Technology Studio - Dissecting the building' (EL2), in which the partners worked out the further details of the final design.

#### **4. RECOGNITION AND INCLUSION OF THE NEEDS, DAILY PRACTICES AND SKILLS OF VULNERABLE USERS**

Until September 2018, several methods were used to get to know the houseless' lifestyles, housing needs, preferences and daily practices and to accommodate and facilitate the future users and linked NGO's involvement throughout the project.

##### **4.1. IN THE DESIGN PROCESS**

First of all, to maximise the exchange of knowledge and experiences between the partners and to ensure extensive documentation of the whole process, strong communication & collaboration structures were set up. To streamline the project process, **regular meetings** are organised between the different team members. These also include, monthly individual meetings between CAW+SOB and the future users, to discuss amongst others about the project, their involvement and the possibilities and restraints, and monthly group meetings with the future inhabitant.

Also, to ensure the future users and linked NGO's involvement in the different participatory workshops and events (EL1, DS and EL2), several methods were selected and/or developed depending on the specific aims of the workshop.

The main aims of the '**Urban Projects, Collective Spaces and Local Identities, subtheme: Solidary Mobile Housing for the Houseless' Elective (EL1)** was to study similar (exemplary) cases and to start up the site discovery and selection process, together with the partners and students of the K.U. Leuven Faculty of Architecture. As the EL1 was organised from February 2017 until June 2017, the selection of the group of future users was still going on at that point. Therefore, to help with the selection and analysis of the cases and the definition of the criteria for site selection, within the framework of EL1 a **potential users inquiry** was developed, allowing to question potential users in reception centres for homeless people, while awaiting the finalisation of the **future users selection**.





**Figure 3.** Image of the potential users inquiry  
(Photograph: Aurelie De Smet)

This inquiry brought about exchanges about the lifestyles and preferences of the future users, first amongst the partners, while developing it, next with potential users, while using it. Besides this, as it helped to start up a discussion about the project and gauge people's reactions to this, the inquiry also turned out very useful in the process of future users engagement and selection. During this process, it helped to trigger conversations on peoples talents and ambitions and their potential contribution to the project.

Within the framework of EL1 also **thematic discussions** were held with representatives of SOB and CAW, based on the cases under study. This helped us to learn more about the lifestyles and preferences of future users in general, which contributed to the definition of locational and design criteria, necessary for the site selection and the design studio brief.

Next we organised '**urban safaris**', in which the partners visited the top 20 sites together. After they had been selected, the future users also joined these visits. This allowed us to 'experience the sites', adding soft selection criteria (atmosphere, neighbourhood,..) to the selection process. This helped us to learn more about the preferences of the future users in relation to the position of their home within the city (first through their representatives, next from them themselves). After this SOB started up negotiations for the 10 preferred sites, during these negotiations, we also learned more about external stakeholders' perception of the project.

In the next stage, the CAW-guided future users were invited to participate during 14 weeks in the **Solidary Mobile Housing Participatory Design Studio (DS)**. The studio coordinators Burak Pak and Ken De Cooman, interacted with the students on a weekly basis. Aurelie De

Smet took part in this as a participating observer, focusing on co-organizing, observing and documenting the overall process. Every week, Geraldine Bruyneel and/or Tineke Van Heesvelde from SOB and/or Dieter Vanden Broeck from CAW were also 'butterflying' in the studio to consult with the students and give them feedback. On a very regular basis internal and external experts were invited in the studio to give presentations on specific aspects related to the project (first half of the semester) and/or to give consultation on specific questions (second half of the semester). To accommodate the involvement of the future users and of the SLO and CAW representatives in the SMH Design Studio three main methods were used.

Firstly, during the second studio session, the six sites, selected for the design studio in the participatory project planning and site selection cycles, were visited together with the project team, the future users and the students. The aims of these **Participatory Site Visits** were to explore the sites and organize a first encounter between the future users and the project team, including the students. To facilitate the travel we rented a bus and to enable eating together as a convivial activity, we organised a picnic on one of the terrains during lunchtime. On beforehand the groups of students were asked to prepare leaflets, covering their first analysis of the sites using comprehensible communication techniques. We provided these leaflets to the future users, as a tangible memory of the trip and received feedback on their preferences.

Secondly, in the middle of the semester, a week-long **Participatory Hands-on Workshop** was organised. For the future users the aim was to think and talk about the notions public and private on the level of the units and the neighbourhood and to communicate ideas and needs to the students. Together with SLO and CAW they got involved in group conversations on this topic and they also used cardboard and tape to test out different spatial configurations for the interior of a small scale housing unit on 1/1. Also, a number of joint activities has been organized with students and future users. Among these were visits to other temporary housing projects such as Home for Less (Brussels) and Labland (Ghent). On the last day of the week, the broader network of project partners and stakeholders were invited to come and see the results of the workshop-week in a final exhibition. For the students the aim of this was to work intensively on the design studio project and become aware of the 'buildability' of their designs and the need for 'conscious use of materials'.

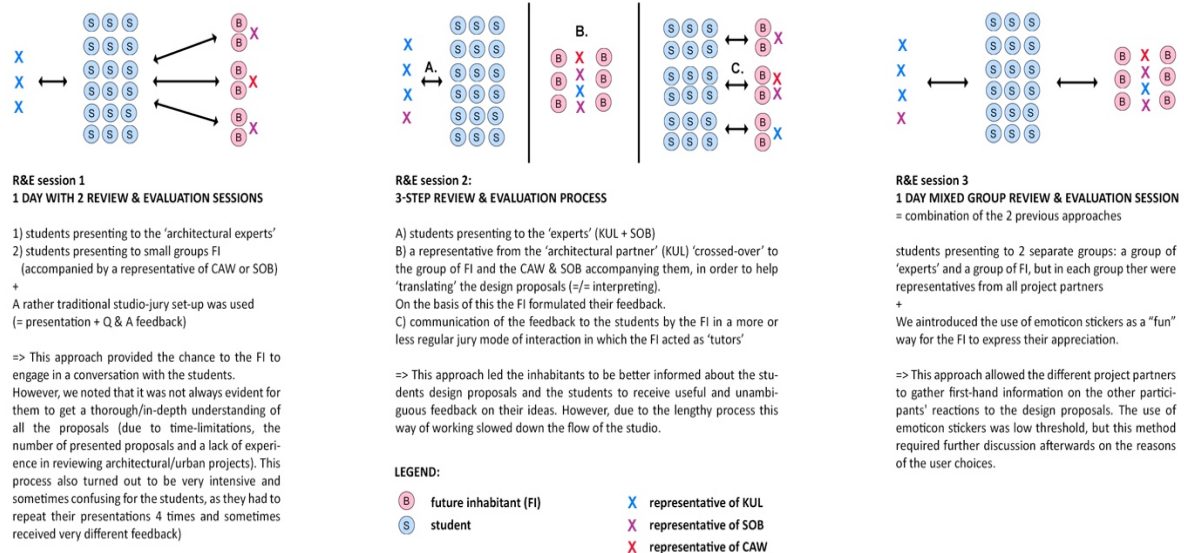
Thirdly, monthly **Participatory Review and Evaluation Moments** were organised to encourage the future users and the representatives of SLO and CAW to reflect on the work in progress.



**Figure 4:** Review & evaluation moments with the future users and representatives of CAW and SLO in the SMH Design Studio at the KU Leuven Faculty of Architecture (Photographs: Burak Pak & Aurelie De Smet)



For these review and evaluation (R&E) sessions, we tried out three different approaches to organise the knowledge exchange between the participants. As illustrated in figure 4, the involvement and role of the 'experts', the grouping of the participants and the interaction modes varied in each case.



**Figure 4:** Schematic representation of the three different approaches used to organise the knowledge exchange between the participants of the SMH Design Studio  
(Image: Aurelie De Smet)

The following cycle **'Co-Creation Building Technology Studio - Dissecting the building' (EL2)** involved the detailing of the final design through **monthly 'feedback sessions'**. In these sessions, we presented and discussed the construction system and building details in development with the future users. In this way we learned about their concerns, needs, preferences. Interestingly, these sessions also brought to light the future users skills, allowing us to recognise these and make use of them, for example in the co-building process. In these sessions we have also provided the future users images of their future houses, as well as immersive Virtual Reality visualizations and together with them we drew the floor plan of the units and collective space on the floor in a 1/1 scale, This helped us to receive their comments on the interior and exterior architectural expression of the design and on their ideas on how to appropriate this.

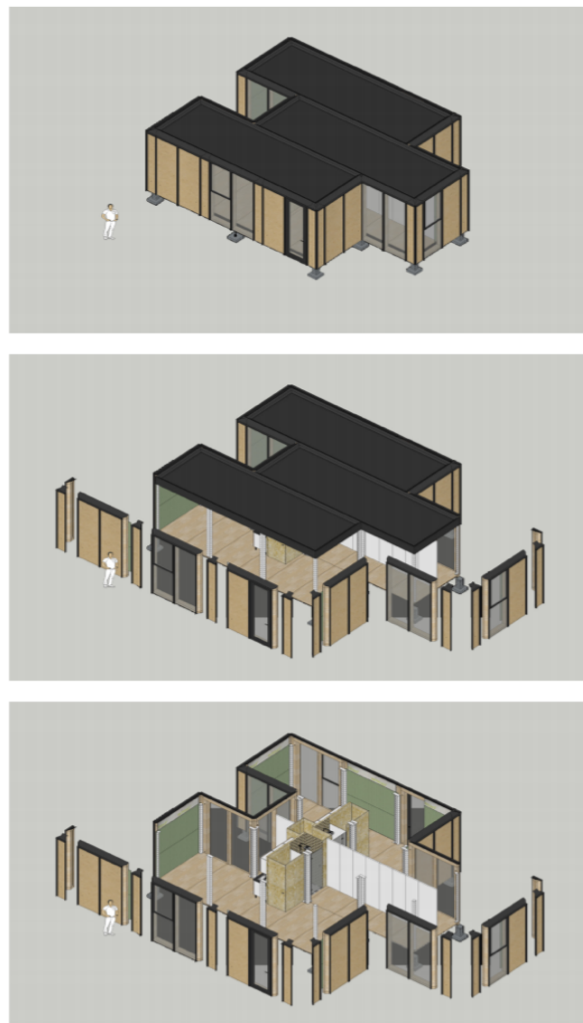
## 4.2. THROUGH THE DESIGN PRODUCT

This mode of inclusion of the needs, practices and skills of the users rethinks architecture as an ever-changing, incomplete and open infrastructure. It focuses on *design-in-use* such as adaptation, appropriation, tailoring, redesign and maintenance. **Architecture is considered as an infrastructure for participation to empower the communities to make and remake their own living environments.**

In the SWOT-mobile project, following this approach, through innovative "infrastructuring"

solutions involving mobile structures, movable panels and flexible sanitary units, the future users have been empowered to make and remake their homes during the design and after the completion of the project as a response to their ever-changing needs as well as the evolving urban context. This also allows the project to be built in different urban vacant lots and create altered neighbourhood interaction on these different sites.

Flexibility and openness are in the core of the architectural and technical design of the SWOT-mobile houses. These allow learning processes during design and construction as well as during the use of the buildings. For example, designing technical layout to be able to function as off-grid as well as with support of the supply grids allows for learning processes in how to behave in more or less off grid situations.



**Figure 5:** Sample design of two living units: This design highlights a possible arrangement of three modules to house two inhabitants, pooling one technical unit.  
(Images: Ken De Cooman)

The co-created design solution incorporates several modules which can be combined to generate endless open plan layouts. We developed boxes that can modulate to form new boxes: from tiny house boxes to open plan boxes, from trailers to loft surfaces. In this way we conceived of a **modular and adaptable construction system** which can respond to very

different implementation contexts. The use of prefabricated components helped in speeding up modular constructions.

The columns of different modules can be connected to become one column. In this way, infrastructuring through design stimulates auto-construction and incrementality. The construction leaves unfinished certain aspects to be auto-constructed by the future users in time, on their own tempo.

The open plan layout resulting from modulation and connecting different trailers, makes for the need to put internal walls to define studios of 22 m<sup>2</sup> net floor area per inhabitant. The internal wall system (Juunoo) metal frames can be adapted to any room height and width, and are filled in with insulation mats and closed off with plate material by means of velcro strips. The build-up of these walls are totally **reversible**, without any waste, and can be reused without loss of quality. This is an affordable solution and below normal internal wall market prices.

We maximized low-tech transport means thinking in as big components as possible which are transportable by a low-tech manner and (de) mountable in a low-tech manner. Prefabrication shortens construction site time, brings down construction costs and **opens up construction processes to future users and non-professionals in controlled environments**.

Another challenge tackled through infrastructuring were the regulations, which are being adapted as we speak. Our first permit will be for 2 years with possibility for extension until 5 years. In 5 years regulations will evolve. By generating an open design which can be modulated, the future users are empowered to respond to new regulations.

## 5. CONCLUSION

Recognizing and including the needs, daily practices and skills of vulnerable users (in our case the houseless) are challenging tasks. In the SWOT-mobile project we attempted to tackle this challenge in different ways. Numerous methods following two main interactive approaches helped us through the process.

1. **Infrastructuring as a means for activating the self-organizational agency of derelict and/or un(der)used spaces:** This mode focuses on *design-before-use* through the design of methods, media and tools for the facilitation of participation during the co-creation processes.
2. **Architecture as an infrastructure for participation to empower the communities to make and remake their own living environments:** This mode rethinks architecture as an ever-changing, incomplete and open infrastructure. It focuses on *design-in-use* such as adaptation, appropriation, tailoring, redesign and maintenance.

Both of these approaches helped us to recognize and include the needs, daily practices and skills of the users in different ways. Some were more successful and some still need to be tested further.

As a part of **infrastructuring in design (1)**, **Participatory Site Visits** enabled student-designers to see the sites through the eyes of the vulnerable users. It led to informal exchanges between the participants, but the exchange depended greatly on the personalities and skills of the

participants. **Participatory Hands-on Workshops** empowered the users and students to get engaged in hands-on “making” activities. The future users participated in design conversations, searched for creative solutions, drew their own plan setting out 18m<sup>2</sup> with tape and cardboard. **Participatory Reviews and Evaluations** provided the chance to the users to engage in a conversation with the students. The process led the users to be better informed about the progress of the design proposals. We received useful feedback on their ideas and how they see themselves using the design product.

**As a part of the infrastructuring through design approach (2) the Participatory Design Studio** put some of the ‘traditional values and characteristics’ of architectural design into question. Designing for **design-in-use** invoked a dynamic understanding of space and use, and brought to the front other values and characteristics like mobility, demountability, reversibility, incrementalism, adaptability, flexibility, openness and informality.

Thinking about **design-in-use** stimulated the future users and students to establish a novel link between space and time, overcoming the past conception of programmatic statis by reframing the project as a ‘process of change’ (Boeri & Pak, 2017) in which (a) understanding space and everyday activities through time, (b) creating space-time scenarios for an urban project and (c) solid strategies and architectural solutions for time-based use are central. The liminality and envisioned performative nature of design in Waiting Spaces, the extensive appropriation of readily available, light and reversible materials combined with a respectful attitude towards the natural elements already present on-site brought in a new aesthetics.

The SWOT-mobile project also led us to reach several **critical findings**. First, we learnt that co-creation as a participatory design practice does not mean leaving your own field but joining knowledge (both professional and experience-based) from different fields together. As a result of this blending of knowledge which took place during designing, teaching, learning, facilitating and participating in design-in-use, we noticed that our roles as designers is shifting. The role of the architect has expanded towards transdisciplinarity and social practices with a stress on particular engagement strategies such as networking. This also resulted in truly welcoming and valuing the needs and daily practices of the users and NPOs in the design process, which was in a way a transfer of authority.

In addition we noticed that participation does not always and everywhere means the same thing for all. Although there was a consensus among the participants, who all were convinced that this project must come about in a participatory way, we noticed that language and terminology can represent barriers in this. As a result the studio itself served as a ‘space for negotiation’, through which the partners learned how to communicate with each other and in which they gradually develop a common “language”, by exchanging a lot amongst each other. However, if enough time is allowed for this, it can result in the recognition not only the needs, but also the skills and talents of the participants, offering them the opportunity to truly participate in the co-creation of the project.

At the moment we are working on the organization of skill-building workshops for the future users. The aim of these are developing their building skills (use of tool, safety, furniture design and building) but also their communication skills, work attitude and self-budget management skills. Negotiations with several constructors, in order to organize the building of the

prototype, where possible together with the future users are also in progress. In the near future (forthcoming 18 months) we will be co-building the housing units with the users, co-monitoring and evaluate the development and implementation of the model.

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