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Solving urban problems through co-creation: The LOOPER project

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Abstract

The aim of this paper is to present the LOOPER participatory co-creation methodology and platform developed in the Learning Loops in the Public Realm (LOOPER) project to demonstrate 'learning loops' i.e. new ways of decision-making which bring together citizens, stakeholders and policy-makers to iteratively learn how to address urban challenges. The methodology and platform are demonstrated in three Living Labs with different spatial, cultural and thematic contexts. The main issues are traffic and mobility in Brussels; traffic and green space in Manchester; and air and noise pollution in Verona. The paper discusses the LOOPER approach to support finding solutions to urban problems in a participatory co-creation process. The experiences from the LOOPER Living Labs show that combining offline and online participation tools is often necessary in co-creation and that online tools should have a low entry threshold. Furthermore, formal evaluation methods can be effective tools in ensuring stakeholder participation.

Keywords: co-creation; traffic safety; air pollution; urban living labs; public participation

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1. Introduction

The public realm is a place where urban stakeholders interact and come into conflict. Urban areas are coming under increased pressure caused by urbanisation that results in increased competition for the limited available space. Well-developed mobility systems are especially important for urban areas to function. Nevertheless, mobility often has negative external effects such as congestion, injuries and fatalities, greenhouse gas emissions, and noise and air pollution. In recent years, urban and mobility planners have therefore moved towards sustainable urban mobility instead of trying to satisfy the ever-increasing demand for road traffic.

Stakeholder involvement is a key aspect of sustainable mobility as it can reveal new values and knowledge, increases support for the outcome, and facilitates implementation (Banister, 2008; Larson and Lach, 2008). However, involving stakeholders in transport planning is far from straightforward as it challenges the often-used expert-led and top-down model (Booth and Richardson, 2001). Nevertheless, as urban problems are becoming more complex and citizens more vocal, policy-makers are turning towards new governance approaches like co-creation to involve citizens and stakeholders in finding solutions to urban problems (Puerari et al., 2018).

Co-creation is an umbrella term for a wide range of participatory and open-design processes that have been widely used in urban planning and design. In co-creation, stakeholders are often frequently involved throughout a planning process and are given influence in the decision-making process (Sarzynski, 2015). Co-creation in transport planning has rarely been applied, therefore we have little knowledge about the benefits of such approach to transport planning and the tools that can facilitate such a participatory approach. The Learning Loops in the Public Realm (LOOPER) project adopts the broad model of the urban living lab as an approach that enables solutions to be co-produced and explicitly learnt from in specific places (Evans and Karvonen, 2011).

The aim of this paper is to illustrate the LOOPER methodology by presenting findings from research undertaken in three LOOPER Living Labs in Brussels, Manchester, and Verona in which co-creation and transport planning have been combined to tackle urban problems such as traffic safety and air quality. This paper will answer the following questions:

- How can citizens and stakeholders be involved throughout a full planning process?
- How can formal evaluation methods be incorporated in a co-creation process?

2. Methodology

Planning and implementation to improve public spaces can be enhanced through co-creation. In the three LOOPER Living Labs in Brussels, Manchester, and Verona, co-creation has been used in the full planning cycle. A loop starts with collective debate on topical issues, then frames the problem and collects data. The platform visualizes the data and enables the co-design and evaluation of solutions. The selected solutions are then implemented, and the results are monitored with a second loop learning from the first. The LOOPER prototype platform integrates online and offline tools to facilitate learning in each stage of the co-creation process.

The LOOPER methodology is illustrated in figure 1. Each Living Lab will go through a full co-creation process twice during the duration of the LOOPER project.

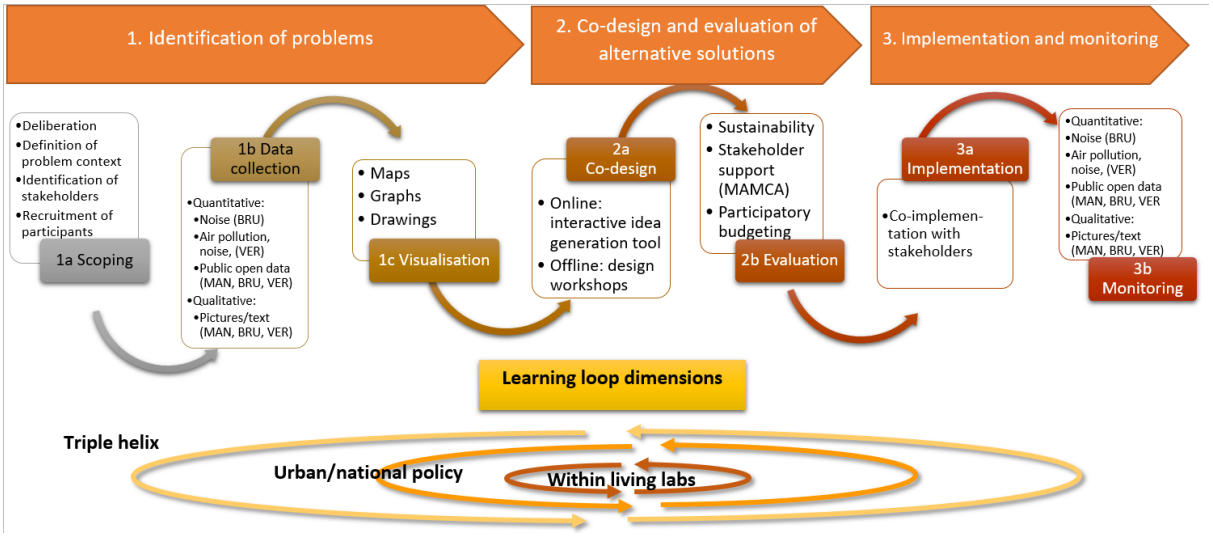

Fig 1. The LOOPER methodology

The aim of the first stage is to identify the problems of a local community through a three-step process. This stage can be framed positively, referring to opportunities rather than problems, and includes scoping of problems, data collection using participatory sensing, and visualisation of collected data.

The second stage of the LOOPER methodology aims to assess the problems identified in the previous stage, co-design and evaluate solutions, and select the solution(s) that will be implemented. Participants engage in qualitative and interactive online and face-to-face co-design activities to propose solutions. These solutions are then evaluated on sustainability using Multi-Criteria Analysis (MCA) and on stakeholders' preferences using Multi-Actor Multi-Criteria Analysis (MAMCA).

The implementation and monitoring of solutions is the final stage. Based on the previous results, stakeholders implement a range of solutions and monitor their efficiency, using the same or comparable data used for the problem definition (Stage 1). Implementation in the living labs involves citizens and stakeholders through their voluntary contribution. Monitoring the impact of co-designed solutions uses the same set of tools as in Stage 1. This may involve participants through participatory sensing and open data.

The three LOOPER Living Labs have different spatial, cultural and thematic contexts. The Brussels LOOPER Living Lab is situated in Helmet, a neighbourhood with many traffic safety problems such as speeding. The neighbourhood is located within the municipality of Schaerbeek in the north of the Brussels Capital Region. The Manchester LOOPER Living Lab is situated in the Brunswick neighbourhood, a former social housing estate close to the city centre that is undergoing regeneration. The neighbourhood has a diverse population and is bordered by major roads on three sides that form a barrier and a traffic safety hazard. The Verona LOOPER Living Lab is located in the south of the city of Verona and faces problems with air quality as European legal thresholds for air pollution are frequently exceeded. This problem is partly caused by the city's location in the Po Valley but is exacerbated by the emissions of old heating plants as well as mobility related emissions.

3. Results

The scoping of problems to be addressed in the LOOPER Living Labs was done together with local stakeholders and citizens. Living Lab organisers combined their knowledge of the area with input from stakeholders such as local authorities and schools. Residents were engaged through workshops, neighbourhood events, local newspapers, posters and leaflets. These outreach events resulted in the selection of traffic safety, greening and traffic calming, and air quality as the topic of respectively the Brussels, Manchester, and Verona LOOPER Living Labs.

Each Living Lab developed a plan to collect data on the identified problem. In general, residents were engaged to collect data on the problem that was identified in their Living Lab as it allowed them to have a practical contribution

to the project. The Labs had an online geotagging application[†] developed by IUAV at their disposal through which residents could identify places in the neighbourhood that they found especially good or bad regarding the identified problem. Allowing citizens to collect data is useful for engagement purposes but can impact the representativeness and accuracy of the collected data. In the LOOPER Living Labs, this caveat was overcome by giving citizens clear guidance in how to collect and interpret data.

In Brussels, residents collected data on traffic speed and traffic volumes using mobile sensors. The Manchester Living Lab collected data with residents on air quality using mobile Airbeam sensors and data from the fixed government air quality sensing station. Residents' preferences and remarks about the local area were collected using the online geotagging application and, where residents were either unable or unwilling to use the app, through offline consultation using maps and photos that were then uploaded to the online platform. In Verona, residents collected data on air pollution by using mobile (low-cost) and fixed (official body) sensors as well as data on noise pollution using stationary noise boxes built with a smartphone, an app and a calibrated microphone.

The collected data was visualised on each respective local LOOPER platform, which is a website in the local languages used as a communication channel towards citizens as well as providing a data collection, visualisation and idea generation platform for the whole co-creation process. In Brussels[‡], the platform showed the results of the speed measurements and traffic counts. The collected data showed that one in three cars go over the speed limit of 30 km/h and that a majority of the counted road users were either on foot or in a car. In Manchester[§], air quality was visualised to show the concentrations along main roads and around a local primary school. In Verona[**], the collected air quality data showed variations between places and times.

Each LOOPER Living Lab held workshops with residents and stakeholders to present and explain the collected data and to start the second stage of the LOOPER co-creation methodology: the co-design and evaluation of alternative solutions. Using their local knowledge, residents could submit solutions to the problem identified in the previous stage via the online local LOOPER platforms where an idea generation tool was set up as well as through face-to-face co-design workshops.

A total of 113 ideas were submitted by citizens in the three Living Labs: 43 in Brussels; 36 in Verona; and 34 in Manchester. The co-designed solutions in Brussels included changes in the infrastructure, awareness campaigns, and stricter enforcement of traffic laws. In Manchester, residents' solutions responded to a desire to enhance the appearance of the neighbourhood. In Verona, the ideas submitted by citizens included temporary road closures, implementation of cycling lanes, and greening of public spaces.

Following a workshop in which the submitted ideas were discussed, merged and rewritten, a shortlist of solutions was created in each Living Lab. The potential impact of the proposed solutions on sustainability was evaluated using MCA and the stakeholder support using MAMCA. In Brussels, the sustainability MCA showed that none of the co-designed solutions would have a negative impact on the sustainability of the neighbourhood. Moreover, the MAMCA showed that none of the stakeholders (municipality; public transport operator; regional ministry of mobility; local cycling association; citizens) would be negatively impacted by the co-designed solutions. A similar result of the MAMCA was found in Verona. In Manchester, MAMCA resulted in a consensus on the main street in the Brunswick neighbourhood that was seen to be the most problematic element of the neighbourhood and thus the element that would produce the greatest benefits from targeted improvements.

The last stage of the LOOPER co-creation methodology includes the implementation of (a) co-designed solution(s) and the monitoring of their impacts. In the Verona Living Lab, street closures and crossing islands for pedestrians have been implemented. In Brussels, an awareness campaign using a temporary road painting made by children has been implemented and the redesign of a dangerous intersection is currently under review by the relevant authorities. Speed measurements taken before and after the implementation of the road painting showed there was no impact on the average speed of cars. In Manchester, a set of interventions focusing on Brunswick Street have been implemented in June and July 2019, with traffic speeds, resident perceptions and preferences, and car drivers' perceptions and preferences being monitored to assess the effectiveness of the overall treatment of the street and satisfaction with each specific intervention.

[†] www.loopertagging.eu/verona
[‡] brussels.looperproject.eu
[§] manchester.looperproject.eu
[**] verona.looperproject.eu

4. Discussion

The aim of the research is to show the usefulness and applicability of the LOOPER methodology in improving participation in transport planning through co-design, participatory sensing, and participatory evaluation. The three Living Labs have finished the first loop and are nearing the end of the second loop. Several learnings have been identified in the co-creation process and will continue to be researched in the second loop. The three most important aspects being explored are the application and usefulness of online and offline tools, the combination of co-creation with analytical evaluation methods such as MCA and MAMCA, and the role of co-creation in social learning.

One of the learnings from the living labs is that online tools should have a low entry threshold in terms of previous knowledge of similar tools and in terms of access (e.g. need to register). Moreover, online participation tools can but do not always replace offline participation. A combination of online and offline participation is therefore necessary to involve as many people as possible. Furthermore, whereas lively discussions about traffic safety and air quality took place during physical meetings, this was not the case online. Citizens used the online idea generation tool to submit ideas and view ideas of others but did not use the commenting function.

While co-creation is a loosely structured, bottom-up method, MCA and MAMCA are very structured but can be perceived as complicated by those unfamiliar with it. Nevertheless, the potential added value of using MCA and MAMCA for evaluation is to show to what extent the co-designed ideas are sustainable taking into account 16 criteria of economic, social and environmental sustainability (Keseru et al., 2016); and to determine to what extent they would be supported by a wider range of stakeholders (e.g. public transport operator, police, municipality) beyond the citizens' group. The MAMCA and the MCA was only carried out fully in Brussels, as the method was perceived as time-consuming and requiring a lot of stakeholder input in the other living labs. Nevertheless, the process of engaging stakeholders through a value mapping process in advance of the MAMCA workshop proved to be exceptionally effective in ensuring stakeholder participation.

The high level of participation of citizens in the different stages of the co-creation process is intended to result in learning loops. In the Living Labs, citizens have been actively discussing, collecting data, and finding solutions to improve traffic safety and air quality. Whereas the Living Lab coordinators have observed an increase in knowledge among participants on air quality and traffic safety as well as their capabilities to organise similar campaigns, objective evaluation of learning is currently taking place to identify the role of co-creation in social learning.

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