URBAN EUROPE

Project number: 7123420

LOOPER

LEARNING LOOPS IN THE PUBLIC REALM

WP4. Implementation and monitoring framework for the living labs
T4-1. Development of guidelines for implementing the urban living labs

Deliverable D 4.1
GUIDELINES FOR THE LIVING LABS

Version: 0.51

Date: 24th July 2018

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The project is supported by the Brussels Capital Region – Innoviris (Belgium), Ministero dell'Istruzione dell'Università e della Ricerca (MIUR) (Italy), the Economic and Social Research Council (UK) and the European Union.

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Document change record

Version	Date	Status	Author	Description
0.1	29-09-17	Draft	JR	Draft for internal discussion
0.19	22-11-17	Draft	JR & JE	internal draft with comments
0.2	28-11-17	Draft	JR & JE	internal draft
0.31	09-02-18	Draft	JR with JE & JA	First complete draft for consortium review
0.4	09-03-18	Near final	JR	Major revisions following partners comments, for near final consultation
0.5	18-04-18	Near final	JR	Near final version for partner approval
0.51	24-07-18	Near final	JR	Citations updated for distribution.

Colophon:

This report version v0.51 is a near final report, for consortium approval.

It contains four main sections, together with a Summary and Annex

- Overview of the Looper Living Lab
- Setting up the Looper Living Lab
- Running the Looper Living Lab
- Typical interventions of the Looper Living Lab

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SUMMARY

What is a Looper Living Lab?

The Looper project is setting up Looper Living Labs in three cities (Brussels, Manchester, Verona).

Each city is the site of a '*Urban Living Lab for Learning Loops in the Public Realm'*: this is called from now on, a **'Looper Living Lab'** (or just **'Lab'** for short). These Labs are similar to other Urban Living Labs, such as those on energy or smart technology, but here there is a particular focus on the Learning Loops, which enable good ideas to transfer or scale up.

- An ***Urban Living Lab*** is a new model for experimental design and innovation at the urban and community level. It can address practical problems such as air quality, road safety, noise, crime or greenspace.
- A ***Learning Loop*** is the process of turning problems into solutions. The Learning Loop is a cycle which transforms information into knowledge: knowledge into learning: learning into action: and action into feedback. This works with citizens and communities, and with policy-makers and other stakeholders.
- Each of these works well in the local ***Public Realm,*** i.e. the local neighbourhood or built environment: where community development and social enterprise can best show their potential, to help create cities which are more sustainable, prosperous and liveable.

How to set up a Looper Living Lab?

The Looper Living Lab is an overall structure and program of action. Inside the Lab, we can have any number of loops, for different kinds of problems, from the purely technical to the wider social. For the Lab as a whole, we aim to learn from what goes on inside, in order to improve.

Each Lab generally includes six main components (i.e. a '6P model'):

- ***Place***: we need to define the *place* (a local neighbourhood, landmark, landscape, or other area on the ground), where the lab is to be based. Future versions might look at other kinds of units, such as organizations or supply chains.
- ***People***; we need to gather the *people* to be involved (networks, organizations, groups or communities). We need ways to mobilize their energy and commitment, to mediate conflict, and to turn problems into opportunities.
- ***Priorities***: we work with the *people* in the *place*, to explore their *priorities* (problems, issues, challenges, risks, opportunities, etc). There are many negative issues, but we need to keep in mind the positives which can inspire and motivate.
- ***Platform***: we develop a system for the exchange of information, learning, debate, analysis and insight. Such online platforms see new and exciting technology every day, but the real purpose of the platform is about human interactions.

- ***Process-setup***: we set up the Lab as an experimental *process*, which includes all the above, within the resources and time available.
- ***Process-evaluation***: we look for the overall learning and insights, which come from the whole experiment, in order to improve and transfer to others.

How to run a Looper Living Lab?

To run the Lab, we select the 'interventions' to work on (e.g. air quality, greenspace etc), and plan the phases of work:

- A problems & opportunities phase, sets the scope and gathers data.
- A Co-design & evaluation phase, creates design options and decides which to go forward.
- An implementation & feedback phase, makes interventions (physical or social) and measures the results of the experiment.

The 'experiment' in this case is not only the solution to a particular problem: the experiment is about how people, communities and organizations 'learn' about this problem or solution along with others. In practice, there are different levels of learning loops (with a scheme based on organization learning theory):

- ***Functional*** or 'single loop' **learning**, is about how to directly solve specific problems with technical solutions: (e.g. how to fix a street light).
- ***Strategic*** or 'double loop' **learning** is about wider and deeper problems or opportunities, (e.g. how to make the streets safer). By learning the community can gain empowerment, and policy-makers can gain insight.
- For the Lab as a whole there is a kind of ***research*** or 'multi-loop' **learning**: on how the loops work, and how they can improve and transfer and scale up.

All this is sketched in the graphic below (Figure 1):

- The setup of the Lab: this is shown on the left and right hand side.
- The running of the Lab: inside there are functional loops and strategic loops. Each leads from 'problems/opportunities', to 'co-design / actions'.

In the next section, this sketch is turned into a flow diagram, and also a working template, so that the details in each Lab or each intervention can be compared and analysed.

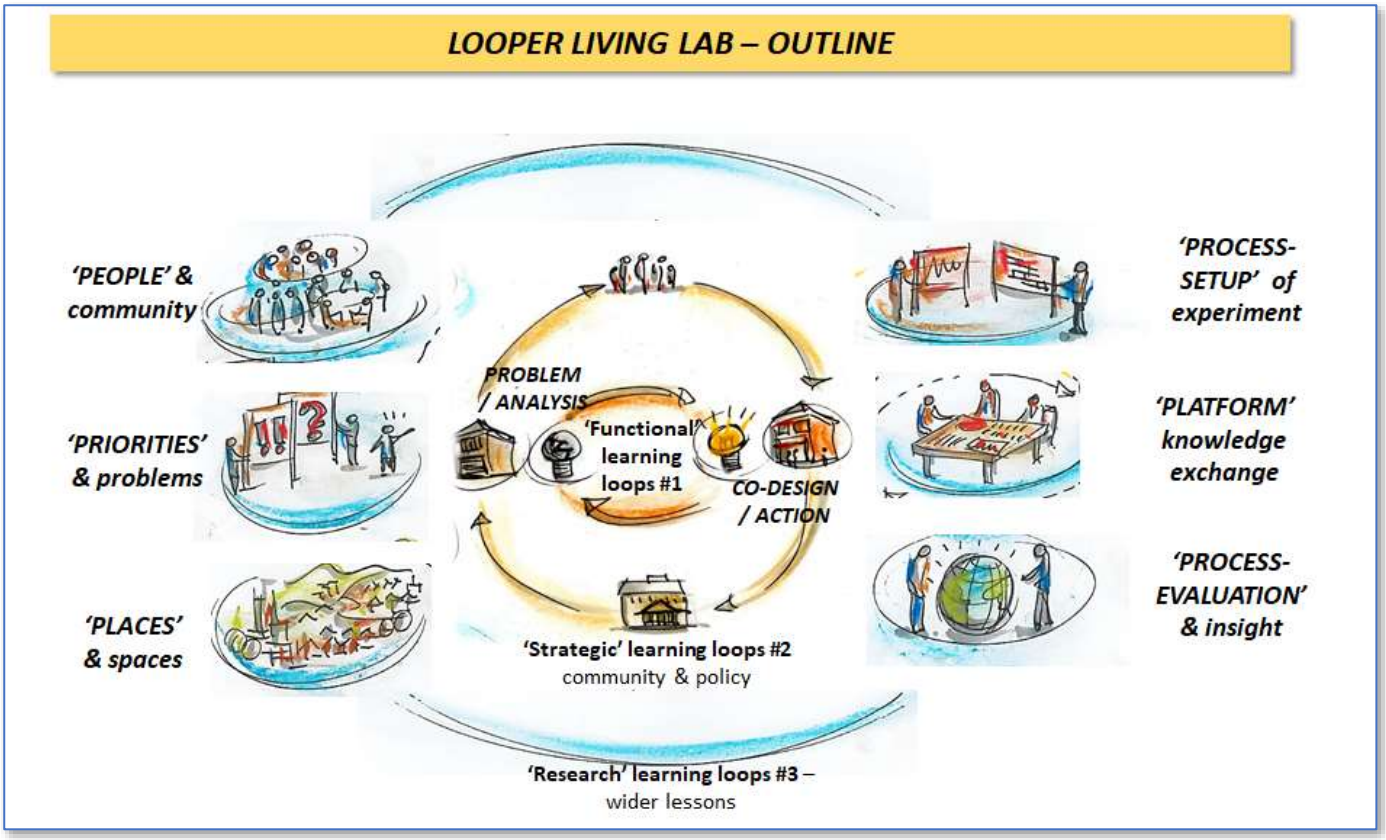


Figure 2: Looper Living Lab - Outline

What is the program and timescale?

Within the overall Looper project timescale, the Lab work program is designed for a timescale of 19 months:

Problems / opportunities phase:

- Months 4-9: Inception of Lab & scoping of problems
- Months 10-13: Participatory data collection & visualization

Co-design & action (implementation) phase

- Months 13-17: Co-design & evaluation of alternative solutions
- Months 18-23: Implementation and monitoring

Months 24-31: a second cycle then runs (as far as possible) up to the co-design stage.

After the Looper project is complete, we aim for other users to build on the gathered experience, and set up similar Labs in other places, at other levels, for other purposes. For these, the timescale will depend on the resources available, but the general guidelines should be useful.

What are typical interventions?

The Looper project is working with a range of interventions and 'use-cases', i.e. common examples of practical problems and responses in urban communities. Each one has a different set of problems, opportunities, design issues, political pressures etc. Each one

has some combination of 'functional' loops for technical considerations, and 'strategic' loops for social / political considerations. In these guidelines, we use the Lab Summary Template and Implementation Template to analyse the components of each (details in section 4). First, here are some brief notes:

a) **Air quality:** to analyse the problem, citizens can use hand-held monitors, compare their data with official measurements, and analyse with mapping and visualization. For the co-design of responses, there are some local actions (planting trees, sealing of buildings), and social innovations (public health info, travel adaptation). But major progress would require city-wide policies for industry and transport. This points to a 'strategic' learning loop: getting information into the hands of the community enables and empowers them to argue their case.

b) **Road safety & parking:** the community can map the problem with technical data and other media, and compare with official data. For the co-design of actions, the options include technical responses (traffic calming etc.), policy responses (regulation, enforcement), or social responses (a 'walking bus' or helping kids to cross the road). There are also strategic issues raised by parking by outsiders, in the context of gentrification etc. Here a strategic learning loop should help to empower the community, mediate conflict and guide policy.

c) **Noise pollution:** this may be a local issue, which calls for local data and participative debate. The co-design process will look at social innovation for collaboration between neighbours or different parts of the community. Also it may be an issue coming from outside the community, from roads, industry, sports or leisure. This might call for physical solutions (barriers, traffic calming etc which can be expensive), and/or policy solutions (regulation, enforcement etc).

d) **Crime and security:** this involves several kinds of problems and responses: perceived insecurity, harassment, and anti-social behaviour which calls for social mediation and/or enforcement; property & personal crime which needs physical action and/or law enforcement; organized crime / terrorism needs higher-level intelligence & enforcement (generally outside the Looper scope). In each case, the technical data (crime incidents etc) needs to go alongside social deliberation and co-design for possible solutions.

e) **Greenspace:** this often shows problems of anti-social behaviour, conflict between users, or local pollution, for which data can be gathered and mapped. Greenspace also brings many creative opportunities, not only for physical works, but including nature conservation, education, health, local food, cultural events and festivals. For community participation in co-design of the built environment, greenspace is a good place to start.

f) **Technical services:** this covers a range of activities or services in the public realm like street lights, holes in the road, broken fences etc. Each has a clear definition of problem and solution, with a functional learning loop. Such loops are suitable for 'smart' technologies which can greatly improve monitoring and technical decision making.

What will be the results?

The Lab in each city will make direct contributions to solving practical problems like air quality, noise, traffic safety, security and greenspace.

It should also help local empowerment by community learning and capacity building. And it should help with local governance by policy learning and strategic policy intelligence.

It will also help to advance the state of the art, with knowledge transfer and scaling up to other cities. It will do mapping and analysis of the learning loops at all levels, with new insights on barriers and opportunities ('multi-loop learning').

Overall this will contribute to 'urban innovation', both for technical problems and social opportunities, for policy-makers and providers, for analysts and researchers, and most of all for citizens and communities.

1. INTRODUCTION

This report constitutes Deliverable D4.1 Implementation handbook for the urban living labs. The goal of this deliverable is to develop an integrated framework for implementing, the urban living labs in the LOOPER project. The guidelines are based on best practice to enable partners to set up and implement living labs in ways that enable formative and summative learning. Guidelines for the monitoring and evaluation of the living labs are provided in Deliverable D4.2 Report on the framework for monitoring and evaluation of the urban living labs.

This document provides guidelines for the research partners inside the Looper project and for other researchers outside the Looper project, who want to set up other versions of the Looper Living Lab in other places[1].

This report also aims to contribute and coordinate with other deliverables:

- D3.1: Guidelines for the co-design of alternative solutions (M4) (VUB)
- D3.2 Report on the methodology to include hard-to-reach groups (M7) (VUB)
- D3.3 Report on the specifications for integrating evaluation tools in the LOOPER platform (M10) (VUB)
- D3.4 Scientific publication on the integration of evaluation tools into the co-creation process (M35) (VUB)
- D4.2: Framework for monitoring & evaluation
- D4.3: Design of technical platform.
- Deliverables D5.1,D6.1, D7.1 from each partner city.
- D8.1 Learning loop synthesis report and guidelines for the future intervention of the LOOPER methodology in living labs (M35) (UoM)

The report first gives an introduction to the concept of living labs and learning loops. Then in Section 3 specific isntructions are given on how to set up a lab. In Section 4 guidelines for running the lab are provided. Section 5 provides examples of typical interventions i.e. interventions of the labs in diferent contexts. A template for the Living Lab implementation plans (Deliverables D6.1, D7.1 & D8.1) are provided in the Appendix.

Note on updates: the project proposal of 2016 contained 7 steps in three phases (problem identification, co-design, implementation). After consideration we have inserted one further step, 1d, 'problem analysis and assessment'.

[1] This report will be revised at the end of the Looper project in order to provide guidelines which are not specific to the LOOPER Living Labs.

2. OVERVIEW OF THE LAB

This section provides guidance for 'Urban Living Labs for Learning Loops in the Public Realm' (the 'Looper Living Lab'). This material is a non-technical practical manual, aimed at researchers and key partners in each Lab. A separate document will be produced for citizens and other participants.

2.1.What is a Looper Living Lab?

The Looper project is setting up pilot Looper Living Labs in three cities (Brussels, Manchester, Verona).

Each city is the site of an '*Urban Living Lab for Learning Loops in the Public Realm'*. This is called from now on, a **'Looper Living Lab'** (or just **'Lab'** for short). These are similar to other Urban Living Labs, such as those on energy or smart technology, but here there is a particular focus on the Learning Loops, which may be the key to transfer or scaling up of good ideas.

- An ***Urban Living Lab*** is a new model for experimental design and innovation at the urban and community level. It can address practical problems such as air quality, road safety, noise, crime or greenspace.
- A ***Learning Loop*** is the process of turning problems into solutions. The Learning Loop is a cycle which transforms information into knowledge: knowledge into learning: learning into action: and action into feedback. This works with citizens, communities, or organizations.
- Each of these works well in the local ***Public Realm,*** i.e. the local neighbourhood or built environment. Here community development and social enterprise can best show their potential, to help create cities which are more sustainable, prosperous and liveable.

2.2.Why set up a Looper Living Lab?

Overall, the Lab aims towards improvement in the working of cities in general, and local neighbourhoods in particular.

For public services with scarce resources, the Looper Lab aims to help *'do more with less'*. For business, it generally aims to be *'responsive and responsible'.* For citizens and communities, often marginalized and excluded, it aims to *'engage and empower'*. For researchers and knowledge-based sectors, summed up as a 'multi-versity' or 'triple-helix', it aims towards collective '*insight and intelligence'.*

All this is summed up with the words ***'urban innovation'*** – meaning not only innovation for new technology, but new ways of organizing governance, local economies, social policy and cultural institutions.[2] This *urban innovation* then applies to all sectors:

a) Urban innovation in local communities and citizens.
b) Urban innovation in policy & civil society.
c) Urban innovation in research and development, with links to policy & business (some call this the 'triple helix' or 'multi-versity' effect).

[2] (Evans, Karvonen, & Raven, 2016)

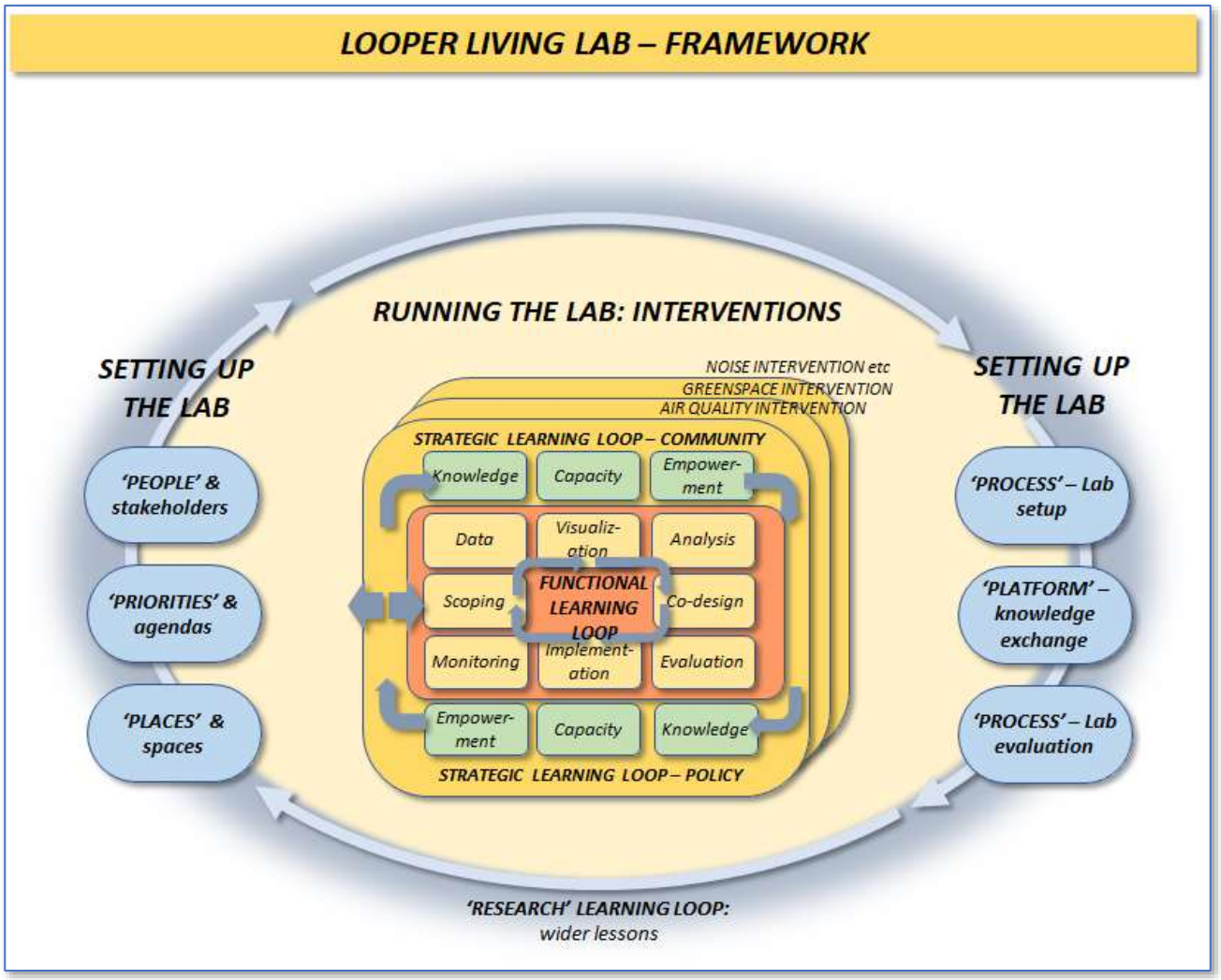
2.3.How is the Lab set up?

The general framework for the Lab is shown here in Figure 2.1. Inside the Lab, we can work on any number of interventions and learning loops, from the technical to the social. For the Lab as a whole, we aim to learn from what goes on inside, both successes and failures, in order to improve and transfer the learning effects.

Each Lab includes six main components (i.e. a '6P model'), with details in Section 3:

- ***Place*** and location of the Lab.
- ***People*** and stakeholders involved.
- ***Priorities:*** or issues and challenges to be worked on.
- ***Platform***: a system for exchange of information and knowledge.
- ***Process setup*** of the Lab as an experiment within the resources and time available.
- ***Process evaluation***: overall learning and insights which come from the whole experiment.

Figure 2: Looper Living Lab - framework



There are different types of learning loops (based on organization learning theory and participation theory, with further details in D4.2.[3],[4]

- ***Functional*** or 'single loop' learning, is about how to directly solve specific problems with technical solutions: (e.g. how to fix a street light).
- ***Strategic*** or 'double loop' learning is about wider and deeper problems or opportunities, (e.g. how to make the streets safer). By learning the community can build capacity and gain empowerment. On the policy side, by learning the policy-makers or providers can gain knowledge and insight for future policy improvements.
- For the Lab as a whole there is also a ***research*** or 'multi-loop' learning. This looks at how the inner loops are working, and how they can improve and transfer and scale up.

2.4.How does the Lab operate?

Each of the loops inside the Lab has a 'problem/opportunity' phase, a 'co-design' and 'action' phase, as in Figure 2:

1) **problem and opportunity**: including scoping, data gathering, visualization, analysis and evaluation;
2) **co-design** of responses and options and their evaluation; and
3) **action** (i.e. 'implementation'): including co-design of options, evaluation of options, implementation on the ground, monitoring and feedback.

When the Lab is set up, the participants can work on any number of interventions, each with its own learning loops (e.g. air quality, noise, street crime, greenspace etc, as outlined in Section 5). Each intervention will follow a more or less similar process, with the typical steps including (details as in Section 4):

1. Problem and opportunity phase

- ***1a. Scoping problems & opportunities:*** exploring the key issues, negative or positive
- ***1b. Data collection:*** gathering data and evidence, both hard or 'soft'
- ***1c. Visualisation:*** seeing the results in maps, graphs, or other arrays
- ***1d. Analysis of problems:*** assessing the priorities for action, targets, & resources needed.

2. Co-design phase

- ***2a. Co-design of responses & options:*** participative design of physical, economic or social interventions: with a cycle of design, from concept to detail.
- ***2b. Evaluation of options:*** generate alternatives, set criteria, decide which to act on.

3. Implementation phase

3a. Implementation: mobilize the interventions, physical, economic or social

- ***3b. Monitoring and feedback:*** measure the results & feedback to a next cycle.

2.5.Template for setting up the Lab

Table 1 is an overall summary template for each of the Labs, including the '6P' components, and a range of possible interventions.

[3] (Argyris & Schön, 1978)
[4] (Ravetz, J, 1995); (Ravetz, 1999)

Each Lab will contain one or more interventions (e.g. air quality, crime, greenspace), using a separate 'Interventions Template' (see Section 4).

A more detailed template is shown in the Annex: this will contain full information for the Implementation Plan for each Lab, i.e. Deliverables D5-1, D6-1, D7-1,

Table 1: Looper Living Lab Summary Template

Components	***General theme***	***Details of each Lab***
PEOPLE		
	the *people* to be involved (networks, organizations, groups or communities).	
PRIORITIES		
	priorities (problems, issues, challenges, risks, opportunities, etc): not only negatives, but positive opportunities	
PLACE		
	the *place* (a local neighbourhood, landmark, landscape, or other area on the ground), where the lab is based.	
PLATFORM		
	a system for the exchange of information, learning, debate, analysis and insight: both online & offline	
PROCESS SETUP		
	Summary of the *process*, of setting up and implementationabove, within the resources and time available	
PROCESS EVALUATION		
	overall learning and insights, which come from the whole experiment, in order to improve and transfer to others.	
INTERVENTIONS		
	Air quality	
	Noise	
	Traffic	
	Crime	
	Greenspace	
	Other…	

2.6.Timeline for the Lab

Within the Looper project's overall timescale of 36 months, the pilot Labs in each city have a work program with timescales of 27 months (including the second round). For the pilot Labs in each city, this includes:

Phase 1: Problems / opportunities:

- Months 3-9: Inception of Lab & scoping of problems: (1a),
- Months 10-13: Participatory data & visualization: (1b, 1c, 1d),

Phase 2: Co-design:

- Months 13-17: Co-design & evaluation of alternative solutions: (2a & 2b),
-

Phase 3: Implementation

- Months 18-23: Implementation and monitoring: (3a & 3b).

Second round: this will run in months 24-31, from problem stage to the co-design stage.

After the Looper project is complete, we aim that other users can build on the experience, and set up similar Labs in other places, at other levels, for other purposes. For these, the timescale will depend on the resources available, and all the other components. These Guidelines will be updated at the end of the Looper project so that others can make use of them.

For reference, an updated project gantt chart (as of April 2018) is shown in the Annex.

Table 2 tracks the main components of the Lab setup, through each of the main phases of the work. Each of these is linked to the project Deliverables, as listed in the Annex.

Table 2. Components and Phases of the Lab

Phase	***1a: Scoping problems & opportunities***	***1b, 1c, 1d: Data, visualization, analysis***	***2a, 2b: Co-Design & evaluation***	***2c, 2d: Implementation & monitoring***
First round	***Month 3-9***	***Months 10- 13***	***Months 13-17***	***Months 18-23***
2nd round	***Month 24-26***	***Months 27-29***	***Months 30-31***	-
PEOPLE	Engage & motivate citizens & stakeholders	Mobilize people for participatory data	Mobilize people for co-design & evaluation	Build synergies between community & policy
PRIORITIES	Explore the challenges, policies, opportunities	Focus down on tangible problems for which data can be found	Explore design options which respond to the priorities	Implement the best options, monitor, review the results & feedback
PLACE	Identify the place or territory	Gather data & analyse the place in detail	Explore design options based in that place	Feedback to place-based policies, programs etc
PLATFORM	Develop technical & social platform	Test the platform for monitoring	Test the platform for co-design	Evaluate and feedback for improvements
PROCESS – Lab setup	Setup experimental program			Evaluate & revise the setup guidance
PROCESS – Lab evaluation	criteria & methods for monitoring & evaluation			Overall evaluation of the Lab and its learning loops

2.7.Reality check

In an ideal world everything in the pilot lab runs as planned:

- ***Place***: a suitable neighbourhood is identified with clear boundaries.
- ***People***: residents and stakeholders are easily mobilized, & happy to work with researchers.
- ***Priorities***: problems and opportunities are identified, which are suitable to work on.
- ***Platforms:*** are set up as planned, with a steady flow of information and exchange of participants.
- ***Process***: an experiment is set up, problems are monitored, options are designed, and results are evaluated.

Then we can compare the ideal model with the common realities:

- ***Place***: local problems are caused by external forces, such as inequality or austerity.
- ***People***: there is tension or conflict between different groups and communities.
- ***Priorities***: problems and responses don't match the available resources.
- ***Platforms***: the information is patchy, technology doesn't work, participants are not satisfied.
- ***Process***: the stages get all mixed up, there are many barriers and gaps, expectations are disappointed.

Many community issues do not fit easily into the templates and loops shown above. Practical problems such as parking may be the result of gentrification and lack of public transport, and problems in housing may be the result of privatization. As for policy responses, these are often under-resourced, under-informed, patchy, and local government often gets the blame for problems it cannot solve. Behind many efforts at community participation is a power relation, between community and policy, or between experts and citizens (these are reviewed in the co-design section below).

These similar issues are summarized in the 'Risk Register' Matrix below (Table 3). This also contains suggestions for mitigating the risks and gaps.

Table 3: Looper Living Lab Risk Register

	RISK	***PROBABILITY***	***IMPACT***	***RESPONSE***	***OWNER***	***DEAD-LINE***
PLACES	An appropriate place to host lab can't be found.	Low	High	Delivery partners identify part of neighbourhood and communicate benefits of involvement.	DPs	M4
PEOPLE	Different groups not represented adequately.	Med	Low	Refer to D3.2 (VUB) on engagement strategy for hard-to-reach groups.	DPs and Rs	M6
PRIORITIES	Priorities for action cannot be agreed.	Low	Med	Refer to D3.1 (VUB) on co-creation of alternatives. Focus on areas of consensus.	Rs and DPs	M8
PLATFORM	Technology is a distraction from social learning	High	High	Create redundancy with parallel social and technical tracks for monitoring & co-design	Rs and DPs	M14
PROCESS-SETUP	Interventions cannot be monitored.	Low	Med	Create redundancy by having multiple monitoring processes. Co-create monitoring plans with residents. Use student projects.	Rs and DPs	M16
PROCESS-EVALUATION	Effective learning cannot occur.	Low	High	Ensure monitoring collects data that relates to desired impacts. Include learning loop stakeholders in process. Use delivery partners to magnify learning through their networks.	Rs and DPs	M24

(DPs = Delivery Partners: Rs = Research teams)

2.8. Example: urban air quality

Finally, here is an example of a very practical urban problem – air quality (more detail is in Section 5). Air quality is a challenge in most urban areas. In spite of much policy and scientific effort, there are huge knowledge gaps and uncertainties. The details are different in each location, but generally, the Lab will aim to set up a ***'functional loop'***. This includes:

- Citizen monitoring of air quality (in coordination with official monitoring).
- Analysis of pollution peaks, hotspots, thresholds, risk margins etc.
- Co-design of options, e.g. planting, traffic management, or travel planning.
- Put the most viable options into practice.
- Monitor the results, and compare before/after, and evaluate the actions.

In reality this is not only a functional problem/solution, (as many local problems need national solutions); this also involves ***a 'strategic loop'***, for communities and/or for policy:

- ***Citizens and communities*** can be empowered by taking an active role in air monitoring and analysis. They can build knowledge and know-how for a complex situation, confidence in dealing with experts and policy-makers, and inclusion of the more vulnerable people in the community.
- ***Policy-makers and other stakeholders*** (businesses, landowners, service providers etc.) can gain insight through strategic learning. They can learn, not only about functional problems/ solutions: they can learn how to manage open data, empower their communities, make better decisions, anticipate risks and opportunities, and put pressure on national governments or technology providers.

The Lab aims to learn from the whole process of working on air quality, with a ***'research loop'***. This would ask, how did the functional or strategic loops work, what were the factors of success, and how could they transfer or scale up? Then the Lab can provide useful lessons for other cities, other sectors, other levels of government, and other research communities.

2.9.Conclusions

Generally, a Lab cannot solve all the problems of all cities. But it can help with some practical responses, and it can help to mobilize creative energy and positive thinking. There is huge potential for community development and community empowerment, for creative solutions which bring people together, with social cohesion and inclusion and positive thinking all around.

It is also essential to include policy-makers and other stakeholders in the learning loops, in order to monitor problems and solutions which are most significant for them. In this way the solutions developed by Looper can be adopted widely, transferred and scaled up in policy and practice. When the results get through to the research and knowledge community, then the Looper project will begin to achieve its wider goals.[5]

In the next section, we set out practical guidance for setting up a Lab, with 6 main components, each with practical tasks and 'Frequently Asked Questions'.

[5] (Voytenko, McCormick, Evans, & Schliwa, 2016)

3. SETTING UP THE LAB

This section is a guide to each of the '6P' components, i.e. places, people, priorities, platforms, process-setup and process-evaluation. There is a task list and FAQs for each.

3.1.'Places' and spaces

Looper Labs work best in clearly bounded areas and settings, with a boundary on a map. If possible, they should also be 'institutionally bounded', with a clearly defined set of organisations. Where possible, boundaries should reflect areas that people understand, and/or existing political areas, or areas in which large-scale regeneration or improvement programmes are focused, such as estates or inner urban neighbourhoods. Because Looper Labs aim at generating solutions in real world settings, suitable places are those with clear challenges, and/or rapid changes planned or in progress. Such changes can be driven from different directions, by top-down, bottom-up, or lateral forces:

- ***'Top-down' forces***: places with official regeneration/renewal/development programmes. For these the Looper Lab can work along with official organizations.
- ***'Bottom-up' forces***: places with tangible needs & demands, but no official programmes. For these the Looper Lab would start with a more grass roots approach.
- ***'Lateral' forces***: places where change is driven by other forces, e.g. urban infrastructure, gentrification, CBD expansion etc. In many such cases (e.g. inner London) there may be strong arguments about who are the stakeholders, who is allowed into the meetings, what is their objective, etc.

While the focus here is on urban communities, rural communities are equally in the picture. Other non-spatial units, such as organizations, markets, knowledge or cultural communities, can also benefit from the Looper Lab approach, with some practical differences.

Tasks:

The process and justification for selecting the place of the Looper Labs in each city should be described and they should be shown on a map in the Living Lab implementation plans, using the full implementation template in the Annex (D5.1. D6.1, D7.1). The following details need to be given:

- Area (sqm) & geography
- Population & socio-economic profile
- Density, urban form & infrastructure
- Units & levels of government
- Ongoing regeneration/renewal/development programmes (if relevant)
- Any other relevant factors

Frequently asked questions:

- ***How big should the place be?*** There is no fixed rule, but for a critical mass a population of over 1000 is a good idea and a population of less than 20,000 will be more practical.
- ***What about places in very rapid development or change?*** If the place is an empty construction site, a different kind of Lab may be needed. If there is rapid regeneration or gentrification, there may be conflict between 'winners' and 'losers', and the Lab will need to pay attention to this.
- ***Should the area be mainly residents or mainly businesses?*** Either is ok, but the methods needed to engage with businesses may be different to that of residential areas.
- ***Can we study local problems (social, economic) which are not local or spatial in origin?*** Actually, most local problems are driven by outside forces. Some (not all) can benefit from local solutions.
- ***How best to use digital mapping & spatial analysis?*** As in the 'Platform' section below, there are standard products and apps (e.g. 'geo-mapper'). These help with mapping and analysis of the problems: sometimes they can help with responses and solutions. In deprived neighbourhoods, not everyone is familiar with digital mapping. One example from Manchester is a combination: a large size aerial view printout (from Google Earth), with a table top system, i.e. 'Ketso' (details in D3.1: *Methodology for Co-Design*). Spatial analysis is also part of the LOOPER platform that will offer functionalities to visualise and analyse data collected by the Labs or imported from external sources. Please see *Deliverable D2.1: Report on data collection procedure framework* for details.

3.2. 'People' and stakeholders

The success of a Looper Lab depends on engaging 'the people'. Four key groups should be included: community members, stakeholder organisations, government and public services, and broader beneficiaries.

- ***Community members*** are the people who are most affected by actions in the Looper Lab area and are mainly residents and workers (in some areas there are visitors or travellers, for instance shoppers, or parents of local schoolchildren).
- ***Stakeholder organisations*** include: property or business owners of local assets, service providers, other interests with a stake in the decision-making process, and knowledge holders/experts who are involved in some way, e.g. consultants, local NGOs, civil society.
- ***Policy and public service organizations***: local government or other organizations with some formal responsibility.
- ***Broader beneficiaries*** include those organisations who will benefit from the lessons developed in the Looper Lab. This may include national authorities and other policy-making bodies, e.g. professional institutes, academic networks, NGOs etc. It is essential to involve these groups early to ensure wider impact.

Where possible, we look for ways to transfer the ownership of the Lab to the participants, so they can take more responsibilities in the co-creation process. This is an essential part of the 'strategic' learning loop of empowerment and capacity building. This is covered in Section 4, as 'community learning' and 'policy learning'.

Table 4: stakeholder mapping & planning

Group	(a) mapping the actors	(b) planning the process
Community members: citizens, groups, networks, local projects	understanding the area's demographic and ethnic composition as well as the existing groups that operate	Clear timeline of online and offline engagement activities throughout the lifecycle of the Looper Lab
Local stakeholder organisations: housing managers, landlords/ owners, small businesses, health/ education, service providers, local media	Mapping the organisations who are involved in the Lab area, and who can help with interventions.	Clear timeline of engagement in parallel with the community side. Early introductions to project and regular updates, plus invites to attend relevant events
Local government officers/ politicians, public agencies, public service providers	Mapping the organisations who are involved in the Lab area, and who can help with interventions	Early consultation on the policy cycle and program of interventions, and to get political commitment
Broader beneficiaries: national government, civil society, knowledge brokers, academics	Mapping the organisations who may benefit from the lessons generated by the Looper Lab.	Clear timeline of online and offline engagement activities, through the lifecycle of the Looper Lab

Tasks:

Each Lab should provide a summary of the main types of stakeholders, with size, composition, interests, resources and any other relevant information:

- Community members
- Stakeholder organisations
- Policy and public service organizations
- Broader beneficiaries

A summary of the expected 'engagement strategy' for each should be provided.

Specific & more detailed 'engagement plans' will then be developed for each of these groups in the *Living Lab implementation plans* (D5.1. D6.1, D7.1). An engagement strategy starts by mapping and identifying the key groups to be represented in the Lab. Then the strategy looks at how these groups can be engaged positively, with a plan for the project duration. This is shown for each group in Table 3.1.

It may be useful to map the different organizations with a 'Mendelow Matrix' or similar: e.g. 'level of power' versus 'level of interest'.[6] (e.g. (Hemmati, 2002).

Tools which help with engagement of communities can be found in Deliverable D8.2: *Outreach and dissemination guidelines*.

Frequently asked questions:

- ***Who should be involved: local residents, businesses, community groups?*** All of these, with priority given to those with the most commitment and presence in the area.
- ***What are the best ways to recruit and mobilize them?*** The best way is 'active outreach', i.e. meeting them on their ground and in their activity space (if we call a community meeting some groups may not come).
- ***What if there is conflict between social groups?*** A careful task of mediation and management is needed, where the researchers/Lab organizers are interested but neutral.
- ***How to include 'hard to reach' groups?*** This is essential, again the 'active outreach' is the only practical way. Specific guidelines for how to include hard-to-reach groups are developed in D3.2: *Methodology for the inclusion of hard-to-reach groups*.
- ***How to maintain interest through a long process?*** A staged program will include events, festivals, publicity, competitions in schools, faith buildings, community centres and public spaces etc.
- ***What about public participation in urban planning?*** There may be overlap with official consultation on urban planning. If so the Looper Lab should find problems/opportunities which are not addressed in the normal urban planning process.

[6] (Hemmati, 2002)

3.3.'Priorities' and issues

The Looper Lab needs to be representative of different groups, including hard-to-reach groups, to ensure that the priorities to work on are those of the community as a whole, as far as possible.

'Priorities' are the first stage of identifying a range of problems (negative situations), and also potentials (positive opportunities). In the operational stage (Section 4) we get into more definition and detail. There are different levels of priorities, each with its learning loop:

- ***Functional priorities:*** these are practical problems or solutions, suitable for functional (single loop) learning. Examples: street lighting, holes in the pavement, or traffic congestion.
- ***Strategic priorities:*** these are more systemic problems or opportunities, for strategic learning. Examples: crime hotspots, road safety, space for children and youth.

These priorities are often on the surface level of deeper challenges. It is typical for a deprived community to feel 'side-lined' and 'out of the loop' due to structural conditions. On the other side, a local municipality is often 'distrusted' by the community, 'traumatized' by internal contradictions, or 'bypassed' by powerful forces of politics and money. The Lab might not be able to solve all such deeper challenges, but a positive approach to turning problems into opportunities can help, on both community and policy sides.

Again, these priorities should include both problems and opportunities. However bad the problems are, highlighting the possibility to make interventions and actions is important in order to avoid 'problematizing' communities, and to enable pathways towards positive change.

Here are some practical guidelines for identifying and mapping priorities. Note these activities will overlap into the first steps of the interventions, as in Section 4 (air quality, greenspace etc):

- Take the project to the people. The most effective way to engage is through the community's own channels and groups, i.e. the 'active outreach' approach.
- Make it easy to understand and fun. People's time is precious, and the project needs to be exciting to build trust and get buy-in from the community (especially where many such communities have a history of 'initiatives' or 'research' which does not benefit them).
- Use online and offline engagement tools. The Looper Lab uses a shared platform to host data, but the precise tools for engagement can be chosen based on the requirements of each site.
- Generate a variety of data, including visual, geo-located and opinion based data. Also if possible, include creative/experiential forms of knowledge, e.g. visual arts, audio/video, narratives, cultural heritage mapping, etc.
- Involve stakeholder organisations, to help identify interventions and understand the feasibility of different kinds of interventions.
- Update the list of stakeholders to reflect the priorities and interventions. For example, traffic may be a bigger issue than first thought, which might need further discussions with transport planners and public providers.

Tasks:

Each Lab should provide a summary of the general priorities and issues, in the shape of a 'shopping list' for the whole Lab. (e.g. pollution, poverty, gentrification, traffic etc).

This should be done in collaboration with stakeholders on the ground, using the methods for engagement, and especially with hard to reach groups.

This should be compared with official data, where available.

Differences of priority should be noted, between different parts of the community (e.g. shopkeepers or residents may see traffic in a very different way).

Priorities may be not only in the present, but concerned with future trends, projections and risks: for instance if the neighbourhood is threatened by major road plan, or rapid social change. Where that is the case then a scenario method would be very useful in the consultation.

The process to identify issues and the description of the issues should be documented in the report on the outcomes of the problem identification phase (Deliverables D5.2, D6.2, D7.2).

Frequently asked questions:

- ***How to engage with residents/stakeholders on their priorities?*** An open mind and listening attitude is essential.
- ***What if there is disagreement or conflict within the community?*** In many cases there is not one 'community' but a set of overlapping groups and networks: therefore, conflicts can be quite natural and a sign that people are committed. This calls for a process of mediation, with techniques of consensus building.
- ***How to balance priorities which are 'problems' with those which are 'opportunities'?*** Mapping and analysis of problems is very important, particularly for those who are excluded by the system. However, it is important that problems lead to opportunities, and also to recognize that some opportunities are there all the time: e.g. greenspace and urban food, childcare and social exchanges, community sport or social events etc.
- ***Can we use 'multi-criteria analysis' to decide the priorities?*** Priorities here are generalized areas of concern or opportunity, which are usually quite fuzzy. At the operational stage, where priorities are coming into clear focus as 'problems', and in a list which is agreed by stakeholders, then 'MCDA' tools or software can be very useful (e.g. the NISTO toolkit).
- ***What if the priorities are about poverty and exclusion, which may be the result of national policies?*** The Looper Lab cannot solve national problems. But it can help, by mapping the problems in detail, or by enabling creative responses, in community mutual aid, unlocking resources, or social innovation of many kinds.

3.4.'Platforms' and knowledge exchanges

The Platform contains an online digital knowledge system for storing and exchanging information. It is also an enabler or catalyst, a hub and marketplace for information and learning. So the Platform combines technical hardware and software with social practices, with a range of templates, guidance, protocols, methods & tools. Full details are in *Deliverable D4.3: Looper platform user guide*.

For the ***technical online platform***, we look for a combination of citizen data, public open data, geo-location, multi-criteria functions, info-graphics, and discussion forums. Specialist data such as air quality, noise or traffic can then fit in. There are many new innovations, e.g. 360 degree images, data clouds, social network analysis, virtual cities. It is important to keep the focus in view, i.e. whether the Lab is basically testing hi-tech hardware and software, or whether these are there to support the human process.

For the ***social platform i.e. interaction in the Lab sessions***, we look for a program of meetings, discussions, forums and other means of cross-fertilization and exchange. Specific guidelines for the local communication can be found in *Deliverable D8.2 Dissemination and outreach guidelines*. Here a low-tech and low-cost arrangement might be the most suitable, e.g.

- Noticeboard and pinboard, accessible in one or more community spaces.
- Regular drop-in sessions or forums, e.g. bi-weekly or monthly, in one or more community spaces.
- Regular walks with interest groups, with or without hi-tech monitoring.
- Typical social media i.e. Facebook or Whatsapp group

For specific offline and online methods for the co-design of solutions, see *Deliverable D3.1 Guidelines for the co-design of alternative solutions*.

Overall, the Looper platform would be designed around the specific interventions and use-cases which are selected for the operations (next section).

Tasks:

Each Lab should collaborate with the community on the local version of the platform, to be adapted from the Looper project platform, with local information and in its local language.

On this, local data can be collected and visualised, online discussion can be initiated, specific tools for each phase of the co-creation process will be implemented.

Lab coordinators should use the local platforms as a communication and engagement platform to implement the living labs through news items, discussions, votings, use of online co-creation tools, advertisements for events etc.

Lab coordinators will be responsible to update the local platforms through an easy-to-use user interface, and will be trained in a workshop on how to use the platform.

Deliverable D4.3: Looper platform user guide will provide detailed instructions on how to use the platform.

Specific guidelines for the local communication can be found in *Deliverable D8.2: Dissemination and outreach guidelines*.

Frequently asked questions:

- ***Should a platform be more social or more technical?*** This depends on the intervention and the community for typical inner city neighbourhoods, the social platform is likely to come first, supported by a technical platform.

- ***Should the social platform be a membership organization?*** This depends on the community dynamics: if there are existing neighbourhood organizations, then the Lab can link to these. It may be necessary to identify an active core group of committed residents who can be called on.

- ***Should the technical platform include new hi-tech innovations?*** These may be very useful, and deserve some testing and development, but experience shows that the social platform should generally come first.

- ***Should the technical platform be general purpose, or for specific problems?*** A general purpose platform is being developed for the whole Looper project. Specific interventions (e.g. for data collection on and visualisation for air quality) will be linked to the general platform.

- ***Is security an issue for the technical platform?*** The platform has four levels of access: viewer, contributor, website content editor, and website administrator. Standard measures such as login with passwords will be implemented for all groups other than viewers (for details see section 4.4 of *Deliverable D8.2 Dissemination and outreach guidelines*). Moderation may be needed for the forums, depending on who uses them and how they are used.

3.5. Process-Setup of the Lab

The Looper Living Lab process is about setting up and operating a series of experiments in the real world, observing and learning at each level.

The setup and experimental design evolves in parallel with the above: engagement of People, identification of Place, and mapping of the Priorities. Much will depend on the actual details of People, Place and Priorities, so here are very general guidelines.

- The setup needs to match the commitment of People, the resources of the Place, and Priorities which are important but practical.
- If the Lab setup is very narrow, then it may miss some very interesting social issues (e.g. a Lab focused on street-lights).
- If the Lab setup is very broad, (e.g. a Lab for 'alternatives to capitalism'), it may be difficult to focus enough to get tangible data and co-design practical interventions (however there are some Labs which aim to do this, e.g. in Greece).
- The Lab setup should enable and encourage the learning loops, in a way which is transparent and open as far as possible. It could include for interested members of the community, to be engaged as a 'core group' to help with the monitoring and analysis, acting if necessary as paid research assistants. This would hardwire the 'co-production' into the Looper Lab process and upskills/empowers community members.
- In a similar way, the action/implementation stage might include physical designs, securing funding and permissions, and planning and managing the works. Here, stakeholder organisations should be fully engaged, with physical and human resources, as part of the co-design and co-production.

Tasks

In the Looper project, the Lab setup in each city is scheduled in Months 5-9.

Each Lab should set up with a cycle of consultation and discussion, from People to Place to Priorities, going round several times.

When the People/Place/Priorities are all agreed, then the Platform can be developed and configured.

In the Looper project, the setup phase goes in parallel with the development of guidelines, methodologies, platform development etc. Other Labs in the future should be able to go ahead in a more logical and efficient process.

Frequently asked questions

- ***Should the Lab be co-designed with residents/stakeholders?*** As far as possible yes: experience shows that the 'research loop' can be co-designed alongside the 'functional loops' and 'strategic loops' which have more tangible priorities and problems.

- ***Should we lever in other resources,*** e.g. from urban planning, transport systems etc? In principle this could be a good idea, if we can avoid extra complexity (however, each kind of funding usually brings its own objectives, timescales, conditions etc). This suggests the co-design would aim towards low or zero-cost solutions such as social innovation or service innovation.

3.6.Process-Evaluation of the Lab

This final part of the Lab Process involves standing back, with the participation of all stakeholders and beneficiaries, and reviewing the implications of all the learning loops. Full details are included in Deliverable D4.2: Report on the Framework for Monitoring and Evaluation of the urban living labs.

- For functional (single) learning loops, we aim to evaluate how the learning loop worked overall, what were the factors of success or failure, and ways to improve.
- For strategic (double) learning loops, we aim to evaluate how the community learning/ empowerment worked overall. Then we also consider if and how the policy learning/insight worked overall.
- For the 'research' (multi) learning loops, we can evaluate how the whole Lab worked, factors of success, ways to improve, and ways to transfer or scale up to other levels.
- The monitoring and evaluation of the three Labs should provide evidence of the environmental, social and economic benefits from the co-creation process and the eventual differences due to the different spatial, cultural and thematic contexts.

Tasks

During the setup phase, design the Lab and the engagement of stakeholders, as far as possible, to include monitoring/evaluation of the learning loops, at the end of the project.

During the operation phase, discuss how the different learning loops can be monitored/evaluated at the end of the project.

Frequently asked questions

- ***How to report failures?*** It can be expected that many of the above experiments may fail: most projects tend to ignore these because success is needed to justify the funding. The benefit of the Looper approach is the overall evaluation which should enable a critical viewpoint. In this case, failure is then a cause for improvement., which can be facilitated in the second learning loop.

- ***How to evaluate a 'learning loop' in a large organization?*** Many such organizations already have the aim of learning, so a critical approach is needed, to see the difference between the aim and reality.

- ***How to evaluate a learning loop in a complex community?*** Not so easy or simple, but we can look for signals and proxies. These can include the different types and domains of learning (see D4.2 for more detail:

  - ***Social learning*** - networks and forums for deliberation and exchange:
  - ***Technical learning*** - information flows and feedbacks
  - ***Entrepreneurial learning -*** unlocking hidden resources and creative energy
  - ***Policy learning -*** feedback channels and evaluation processes for continuous improvement
  - ***Cultural learning -*** organizational attitudes and cultures of innovation, exchange etc.

Overall questions for the setting up of the Lab

- ***What if the priorities/problems are not possible to solve at the local level*** (e.g. air quality)***?*** This is often the case, where then the local level can achieve community empowerment and policy insight, which together increase the capacity to respond, innovate, substitute, unlock resources etc.

- ***What if the priorities and issues are messy, controversial, political and divisive?*** This is also typical: in this case we would focus more on the strategic learning loop, and the deliberation and exchange between different groups in the community or stakeholders.

- ***What if the experiment goes beyond the time frame of the project?*** We look for ways to continue in partnership with stakeholders.

- ***How is the Looper Lab different to experiments in public participation from 30 years ago?*** As stated above, the Looper Lab brings new insights on communities and organizations, the learning loop concept the over-arching theories of collective intelligence, and it covers the whole co-creation cycle.

4. RUNNING THE LAB

This section looks at the Lab in operation, working on practical interventions. First we look at the main steps involved: then at the principles of scoping and co-design.

With the Lab now set up, we can get it running with a range of practical interventions, such as air quality, noise, or traffic. For each of these, there will be two kinds of loop:

- For the functional learning loop, the steps here include: scoping of problems, gathering data, visualization and analysis and then co-design, evaluation, implementation, and further monitoring and feedback[7].
- For the strategic learning loop, the steps are less clear cut, but they generally include capacity building and empowerment, for both communities and governance.

These steps are shown here, and in the centre of the key diagram (Figure 2) in a logical order. The reality may be more messy and unpredictable. The cycle may go around several times, especially at the co-design stage.[8] The search for funding may be at the centre of the picture, more than any design options.

For example, a road safety/traffic congestion problem may be controversial, where different groups (e.g. residents / businesses) have different views and look for different data to support them. We might have to wait for a new government fund, while local people gather more data or organize events with schools etc. The design of traffic calming is quite technical, and the engineers might need time to learn how to do community participation and co-design. When the official approval is given for funding & traffic management, there may be 3-4 design stages, from sketch to outline to detail, each needing participation, from both a core group and a wider community. There are social innovations which might be quicker and cheaper in parallel. Even if funding is difficult and little is achieved on the ground, there may be a positive effect on community capacity building.

Overall this shows the logic of the functional / strategic (single or double) learning loops.

4.1.Steps in the 'functional' learning loop.

Phase 1: **Problem and opportunity**

The general aim is to identify in practical detail, the problems of a local community, through a four-step process. 'Problems' here also includes 'opportunities' and pathways to go forward.

See the notes on problem scoping in the next section.

The timescale in months refers to the Looper work program, for both the 1st round and 2nd round.

1a. Scoping problems & opportunities:

(months 3-9; 24-26)

Following the broad Priorities for the whole Lab setup, here we focus or zoom in to particular interventions with problems/opportunities, for particular communities, with particular causes and effects. The problems will be framed in a way so that the tangible aspects can be identified

[7] Some of the titles have been revised from the original project proposal, as detailed in the Annex. Also there is one additional step proposed, i.e. '**1d**: problem analysis & assessment'.
[8] (Voorberg, Bekkers, & Tummers, 2015)

through data. Typical interventions are shown in Section 5, including: air quality, noise, traffic, crime, greenspace and public services.

1b. Data collection:

(months 10-13; 27-29)

Data to identify the scope, location and type of problems will be collected, as far possible, with the participation of stakeholders. This includes direct monitoring or participatory sensing, public databases, and qualitative data through face-to-face discussion. Official statistics will also be used where these are relevant.

1c. Visualisation:

(months 10-13; 27-29)

Visualisations of the collected data will be produced with tools such as *geomapping* and similar, together with other media such as audio, image, or video. These will be published on the Looper platform/dashboard in geo-spatial format. They can be compared where possible, with official targets, scientific thresholds, risk factors, impacts on special groups etc.

1d. Problem analysis & assessment

(months 10-13; 27-29)

The results of the visualization will be discussed by local stakeholders: and analysed in terms of thresholds, targets, priorities, opportunities. (E.g. technical data such as air quality can be matched to official risk categories). Social data such as greenspace can be prioritized for action. An assessment/evaluation process will decide which problems to work on, by who, with what resources, in which timescale, in which locations, etc.).

Phase 2 Co-design

This next phase is about responses to the problems and opportunities. This involves collaborative (co)-design and evaluation of the options,

The main issue with co-design is an iterative loop, i.e. from concept, to sketch, to outline, to detail etc. Each of these needs some form of participation between experts/citizens.

See the notes on co-design in the next section, and the Deliverable D3.1: Methodologies for Co-Design.

2a. Co-design of responses & options:

(months 13-17; 30-31)

Participants will engage in qualitative and interactive online and face-to-face deliberation activities to propose a range of solutions. This process depends on the use-case, e.g. air quality co-design may be quite different to greenspace co-design. In most practical cases, co-design is an iterative process, which can include many cycles, from concept to detail. It also involves a relationship of power between community and experts/policy-makers, which can be problematic, or if possible, can also be empowering. Activities include:

- 'Ideate': generate creative divergent visions, ideas, synergies, & possibilities
- 'Design': iterative process moving from vision, to concept, to outline, towards detail. Here the relationship is very important, between experts/providers, and community/non-experts.
- 'Resources': funding sources, other resources e.g. land

2b. Evaluation of options:

(months 13-17: 30-31)

Where possible this process generates more than one option, so that the positives/negatives (costs/benefits) of each can be compared. In most practical cases the first criteria will be cost/ funding or feasibility. Where possible, a multi-criteria analysis will be used to appraise the alternatives, with the Multi-Actor Multi-Criteria Analysis (MAMCA) to identify stakeholders'

preferences. VUB will adapt and integrate the NISTO evaluation toolkit (www.nistotoolkit.eu) into the LOOPER platform. Activities include:

- 'testing' the design prototypes/sketches at each stage
- 'options': generate clear alternatives where possible
- 'evaluation' of options/sketches & implications

Phase 3: Action

This last phase includes the implementation of the best option, and monitoring feedback of the results.

3a. Implementation:

(months 18-23: first round only)

This will be different for each intervention or use-case. Where there is physical action on the ground, it should be possible to involve the citizens and stakeholders through voluntary contribution. Where the action is mainly social innovation, or public service innovation, then the people may be at the centre of the plan, which can be risky, but also can be empowering. Activities include:

- Detailed/technical design & specification
- Contracts, service agreements, procurement paths
- Physical construction / service implementation / social innovation pilot

3b. Monitoring and feedback

(months 18-23: first round only)

The question is then, what are the results, impacts, outputs and outcomes? Where possible we will monitor the impact of the co-designed solutions, with the same set of tools as in Phase 1, with the input of stakeholders through participatory sensing and open data. This information would then go towards feedback for the next round of problem scoping and co-design. Activities include:

- Monitoring of the 'before & after' results, quantitative or qualitative
- Evaluation of the implications, e.g. did the co-design work, could it be improved etc.
- Feedback into the next round, and/or the policy system.

Tasks:

- ***Summary of actions:*** Each Lab should select from the general Priorities, the most suitable and practical interventions to work on. Each intervention would then start with step ***1a: scoping of problems & opportunities.***
- Each Lab should plan an outline of the 8 steps above, in close consultation with the community.
- For each intervention, a summary of the steps should be put into the Interventions Template shown below, to help with comparison and analysis.
-

4.2.Steps in the strategic learning loop

The strategic learning loop is more about indirect / unbounded / deliberative types of problems and interventions (as shown in Figure 2). As above, these steps are less specific, but equally important. Here are some general notes on how they work.

4.2.1. Community capacity (engagement)

Following the general 'engagement' for the 'whole ULL', the stakeholders involved in each use-case are gathered & mobilized. There follows a process of 'capacity building'. This can include:

- Training & skills
- Information & tools
- Social cohesion & trust building.

4.2.2. Community opportunities (co-design)

The potential opportunities follow: generally in double loop type problems, there are multiple possible solutions, with multiple conditions and side-effects. So the ways forward are not only in technical calculation but in 'opportunity' generation or co-design. E.g. the crime hotspot problem might be addressed by: - security lights, policing, neighbourhood watch, youth work, drug programs etc.

4.2.3. Community empowerment

For instance if a crime hotspot can be solved, with at least the intention and capacity to address it, this leads towards 'community empowerment'.

- This is most tangible in the 'bottom up' type of agenda, where a community which is marginalized & excluded from power can be 'empowered'. (e.g. the classic 'ladder' of participation.[9]
- It also works at every other level: e.g. the 'community' might be a cluster of academics, who gain a sense of 'empowerment', by defining a problem and the methods to work on it.

4.2.4. Policy resources

There follows a similar cycle on the policy side (not only public sector governance but corporate organizations, employers, providers, infrastructure etc.

The providers themselves are often in need of capacity building, e.g.

- Training & skills
- Information & tools
- Social cohesion & trust building.

4.2.5. Policy development

This mirrors the community opportunities: generally in double loop type problems, there are multiple possible solutions, with multiple conditions and side-effects. The process of policy development is often very opaque and indirect.

4.2.6. Policy evaluation / feedback

Here the policy cycle has to feedback and evaluate on what works, and why, and how to improve, with which resources etc.

[9] (Arnstein, 1969)

4.3.Template for the interventions.

We recommend that each Lab fill in a template for the most important interventions, (e.g. air quality & greenspace in Manchester), as part of the setup.

The template shown here (Table 5) is a matrix, with a format based on the centre part of the general Lab template shown in Section 2.

- The central area in the table (orange colouor), shows the more specific functional/technical (single) learning loops. The 8 steps shown here should work for problems which can be clearly defined, where data is available, and where co-design can lead to action in a short time at low cost.
- Above and below, (yellow colour), these show the strategic (double) learning loops, for communities and policy.
- The community strategic learning loop is mainly about building knowledge and capacity in the community, leading towards empowerment.
- The policy strategic learning loop is mainly about building policy resources, learning from the community for insights and policy development, leading to feedback for future policy.

One or more 'Intervention Templates' can be put with the main Lab template, as in Section 2. Together they provide a complete summary of the setup and running of each Lab. Later on, the monitoring and evaluation of the learning loops can also use this matrix to structure the information and analysis. This is discussed in detail in the next deliverable, D4-2.

Table 5: Looper Living Lab: Interventions Template

STRATEGIC LEARNING LOOP – COMMUNITY >>>		
Community knowledge & resources	*Community capacity & opportunities*	*Community evaluation & empowerment*
1b. Data collection	***1c. Visualization***	***1d. Problem analysis & assessment***
1a. Scoping of problems & opportunities	***FUNCTIONAL LEARNING LOOP*** 	***2a. Co-design of responses***
3b. monitoring & feedback	***3a. Implementation***	***2b. Evaluation of options***
Policy feedback & evaluation	*Policy insight & development*	*Policy resources / knowledge*
<<< STRATEGIC LEARNING LOOP – POLICY		

5. TYPICAL INTERVENTIONS FOR THE LAB

This section explores a series of typical interventions and 'use-cases', including

- *Air quality*
- *Road safety & parking*
- *Noise pollution*
- *Crime & security*
- *Public greenspace*
- *Technical services*

Each of these interventions involves both technical learning, and community / policy learning. Most are complex and controversial in some way (otherwise they would be solved already). Behind the surface problems are many deeper issues, for example:

- material factors of jobs, welfare, housing, health, poverty and deprivation of many kinds;
- underlying structural and socio-political issues: gentrification, austerity, globalization and so on.

Some of these can be brought to the surface as visible material problems above and then addressed with positive responses and interventions. But many deeper issues will be there, before and after this project.

In that case the only viable response is to build the empowerment of the community, mobilization of resources, resilience in the face of pressure, inclusion in the face of division, self-reliance in the face of dependency, etc. This all combines into an overall 'collective urban intelligence', to counter the forces of marginalization and exploitation.[10] Under the detail on the surface, this is the main direction of each of the use cases.

First we take the air quality problem in more detail, reflecting its over-riding importance in the urban environment.

5.1.Intervention #1: Air Quality

Air quality problems are a classic case of split level responsibility. The problems are often very localized, but policy & action are often not localized, i.e. there is no overall solution in sight, at the relevant level, with current powers and resources. In the UK for instance, the national government has resisted action for many years, in spite of mounting evidence of '42000 accelerated mortalities per year'. Under continuing legal pressure from the ECHR, the most recent move is to shift the responsibility from national to local authorities, but without the resources or legal powers to do much.

At the local level, for some pollutants, there are mitigating actions: trees and green infrastructure, traffic regulation or street closures, and industrial/agricultural regulation (where this is relevant). This suggests that a key part of the Learning Loop is about generating knowledge resources, by & for the community. With this they can argue the case, get further funding, & begin to influence policy, both local and national.

In the example of Manchester, there is heavy air pollution by the adjacent urban motorway. The only way to rapidly reduce pollution would be to close or heavily regulate this road, but this could be very costly and controversial.

Technical potential: precision air quality monitoring is complex and costly, and at the scientific level there is continuing research across the whole chain: the many sources and pollutants, atmospheric

[10] (Ravetz & Miles, 2016); (Ravetz, J, 2017)

chemistry processes, exposure and vulnerability, and potential health impacts. There is little technical confidence in the citizen-level monitors: some include for upload to an online mapping platform. However, there are possibilities to improve the data quality, where large numbers of mobile monitors could be aggregated and calibrated against the fixed monitoring stations. There are also possible risks where information is taken out of context or confidence, e.g. in the handheld personal monitors / health apps which are taken as guidance for everyday life (e.g. for sufferers of asthma or bronchial conditions). However, the citizen monitoring has a huge value (Ravetz, 1999):

- Information & transparency, and possible empowerment of community to deal with the policy process
- Mitigation action (e.g. driving less)
- Adaptation or avoidance action (choosing a different route)
- Medical action (link with bronchial or asthmatic conditions)

The overall aim of Looper is to study the 'learning loops'. Air quality is a good example. So we aim to track the flow of knowledge and learning, through different loops: (a) single loop technical learning: (b) double loop strategic learning.

For air quality, there is a shortlist of local options in the direct 'single loop learning'.

- closing or limiting of road traffic
- planting of trees or hedges
- indoor air seals, filters, A/C
- public health campaign
- driver awareness campaign
- mitigation action (e.g. walking on the school run)
- adaptation or avoidance action (different cycle /walking route);
- medical programs, linking air thresholds with vulnerability to bronchial or asthmatic conditions.

Wider effects for the 'double loop learning': first for citizens and the community:

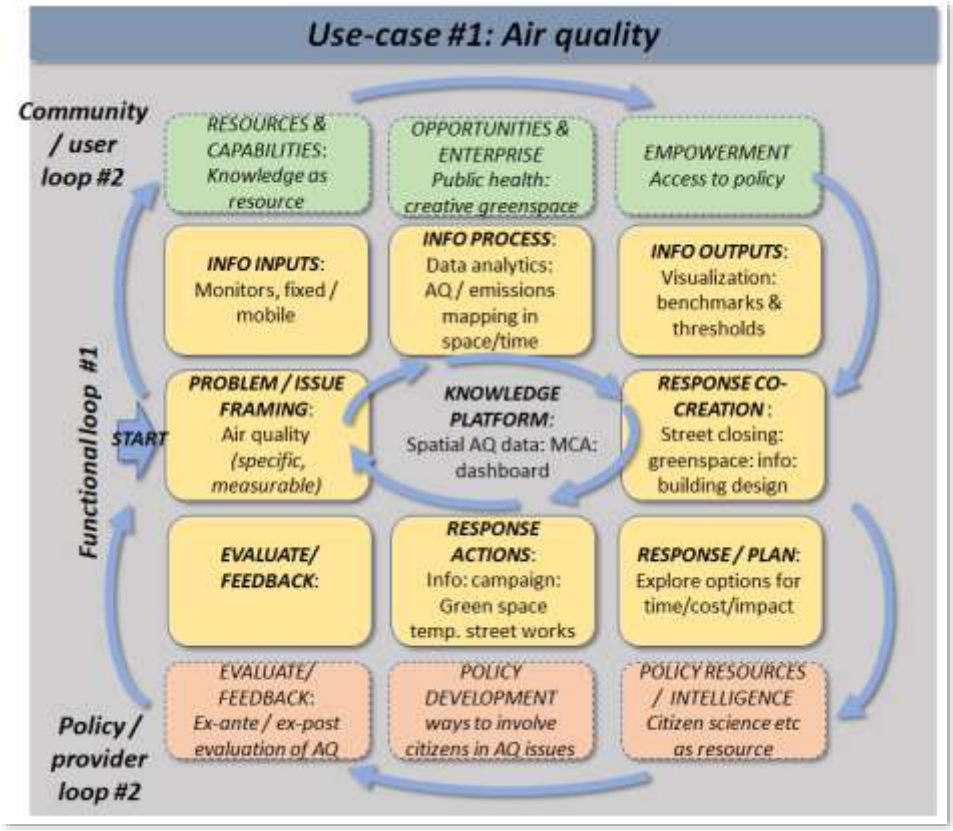
- positive role of information & transparency, and
- possible empowerment of community to engage with or campaign on the policy process;
- public health awareness, which links to diet, lifestyle etc.;
- travel awareness for all modes.

Wider effects for the 'double loop learning', for policy and governance:

- active Participation of citizens & communities, as part of open local government;
- open data principles, with scope for tech development;
- realizing wider benefits for public health policy & social issues;

realizing wider benefits for transport, built environment & economic development policy.

Figure 3: Use-Case 1: Air Quality



5.1.1. Co-design issues

This is a summary of the main co-design options in 'single loop learning' mode, which explores the issues of cost and complexity.

OPTIONS	CO-DESIGN ISSUES	COST / COMPLEXITY
Road closing or limiting of road traffic	Mainly regulation: some urban design.	High or low cost, high bureaucracy
planting of trees, hedges, greenspace	e.g. pilot trees: location & allocation questions	High cost – possible public subsidies
indoor air seals and filters / AC	Mainly technical, with some resident input:	high cost, some low tech
public health awareness campaign	Design for social innovation : could include arts, education, events,	Generally low cost
Mitigation action (e.g. walking on the school run)	Design for social innovation	Low cost
Adaptation / avoidance (cycle /walking / driving routes);	Design for social innovation: also, design of physical works	Behaviour change low cost: works high cost
Medical programs with health thresholds / targets	Link to public health service	Possible new tech innovations

5.2.Intervention #2: Road safety / parking

Road safety is a technical issue of engineering: it is also a political question, of why some locations & some residents get crossings & safety features and others do not. (e.g. the UK system is based on 'FSI': we need evidence of 'fatalities/serious injuries' before a crossing can be installed).

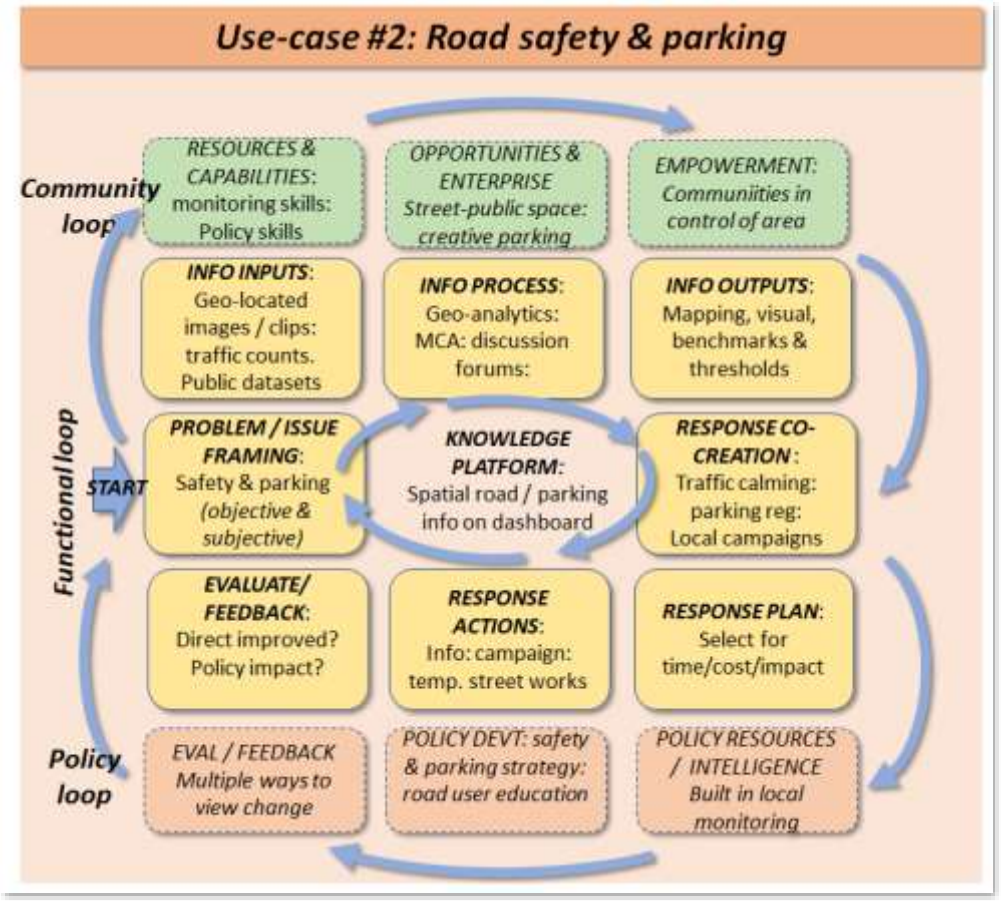
Local parking problems in residential areas are in 2 types:

a) From outside users, with issues of gentrification etc.

b) Internal competition for road space: ways forward could be by social mediation

For the Lab, the community can map the problem with technical data and other media, and compare with official data. For the co-design of actions, the options include technical responses (traffic calming etc): policy responses (regulation, enforcement): or social responses (a 'walking bus' or helping kids to cross the road). There are also strategic issues raised by parking by outsiders, in the context of gentrification etc: here a strategic learning loop should help to empower the community, mediate conflict, and guide policy development.

Figure 4: Use-Case 2: road safety & parking



5.3.Intervention #3: noise pollution

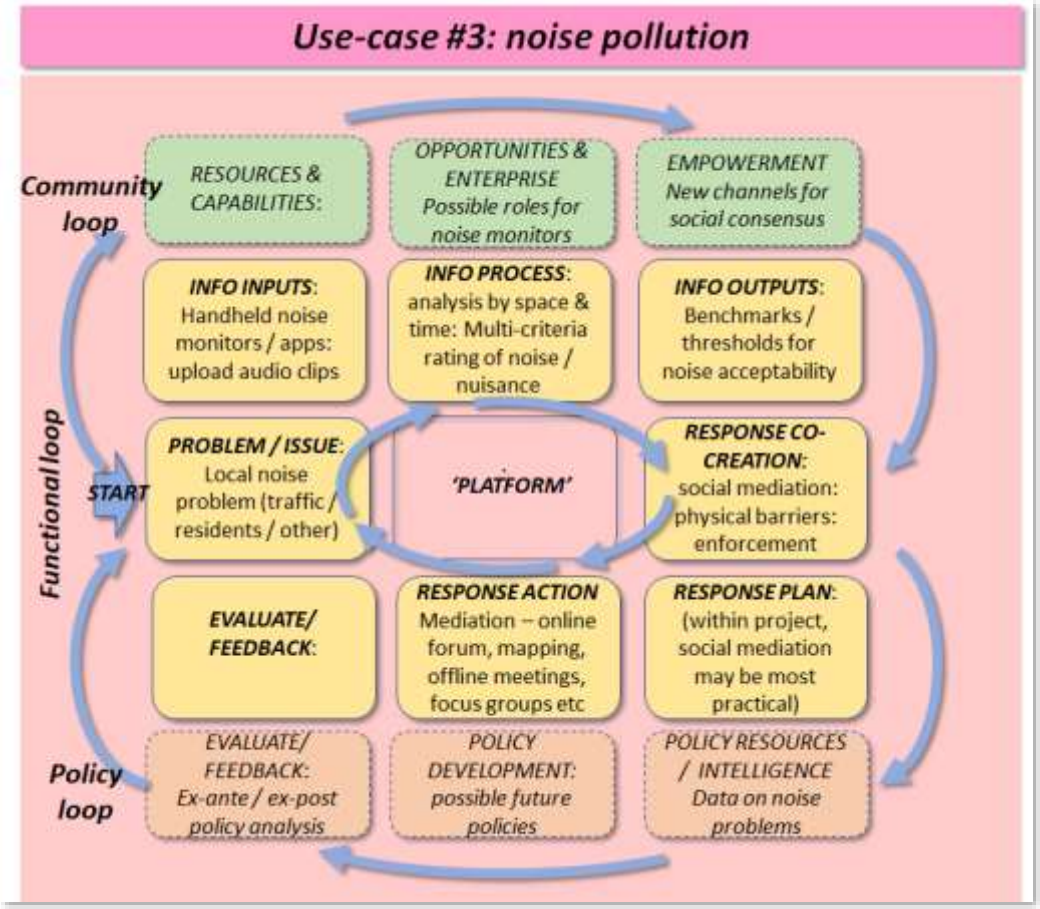
Noise problems are in 2 basic types, each with a different kind of learning loop.

1. Noise generated from outside the community (e.g. a major road or industrial plant). For these there are some possible mitigations, but the main target would be the wider area urban policy. This might call for physical solutions (barriers, traffic calming etc which can be expensive), and/or policy solutions (regulation, enforcement etc).

2. Noise generated from inside the community (e.g. neighbours, anti-social, local business etc). For these a social mediation and social cohesion approach may be more effective, with less need for scarce funding.

Where the problem is mainly a local issue, this calls for local data and participative debate. The Lab co-design process will look at social innovation, for collaboration between neighbours or different parts of the community. There are very effective hand-held monitors (smart phone apps) which upload spatial data directly, as a good basis for discussion and debate.

Figure 5: Use-Case 3: noise pollution



5.3.1. Co-design issues

This is a summary of the main co-design options in 'single loop learning' mode, and the issues of cost and complexity.

OPTIONS	***CO-DESIGN ISSUES***	***COST / COMPLEXITY***
Road closing or limiting of road traffic	Mainly regulation: some urban design.	High or low cost, high bureaucracy
External sound barriers	Major landscape & urban design: potential participation	Probably high cost, high bureaucracy
Internal sound insulation, windows / doors etc	Need to integrate with maintenance / renewal program	Generally high cost,
Neighbour collaboration	Design for social innovation, supported by monitoring	Low cost, high uncertainty

5.4.Intervention #4: crime & security

Crime & security covers many things, each with different learning loops:

a) Perceived insecurity, harassment etc

b) Anti-social, disorder etc: social mediation and/or enforcement

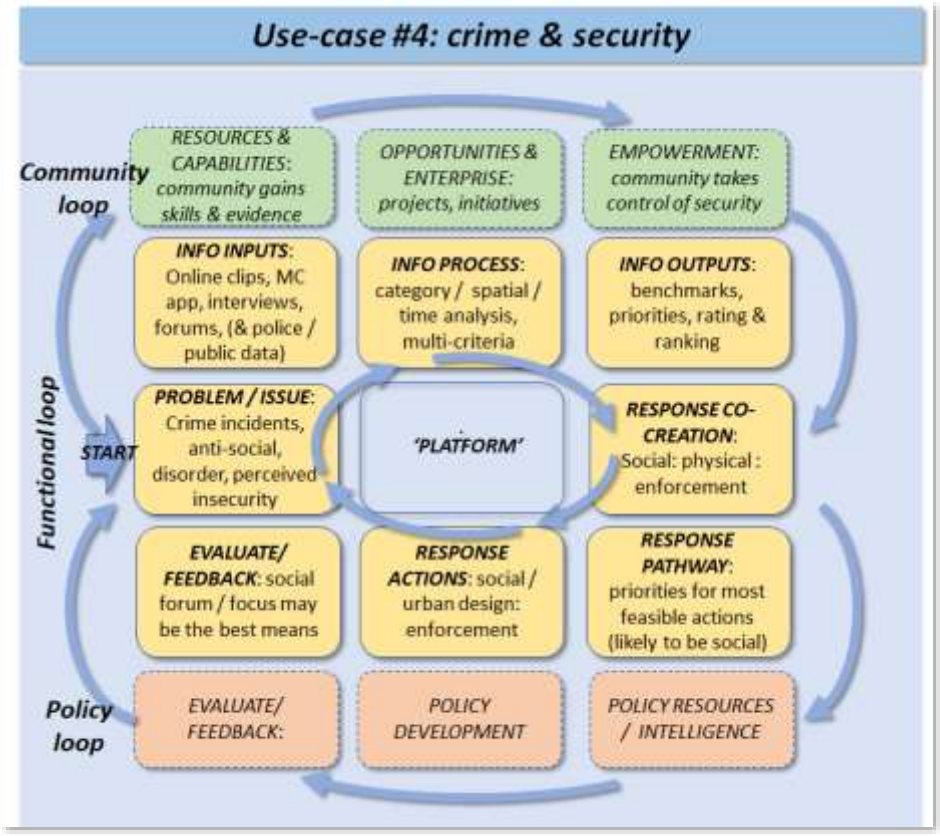
c) Property & personal crime: physical action and/or enforcement

d) Organized crime / terrorism: higher level intelligence & enforcement (outside project scope)

Police and/or insurance data could be very significant in each of these. Such data is very highly protected, but the community could discuss with policy on how to access this, as a service innovation.

In each case, the technical data (crime incidents, insurance data, etc) needs to go alongside social deliberation and co-design for possible solutions.

Figure 6: Use-Case 4: crime & security



5.5.Intervention #5: public greenspace

Green space is a very interesting combination of problems and opportunities. The balance can change rapidly, as new spaces or new uses, or new people, come or go.

Problems:

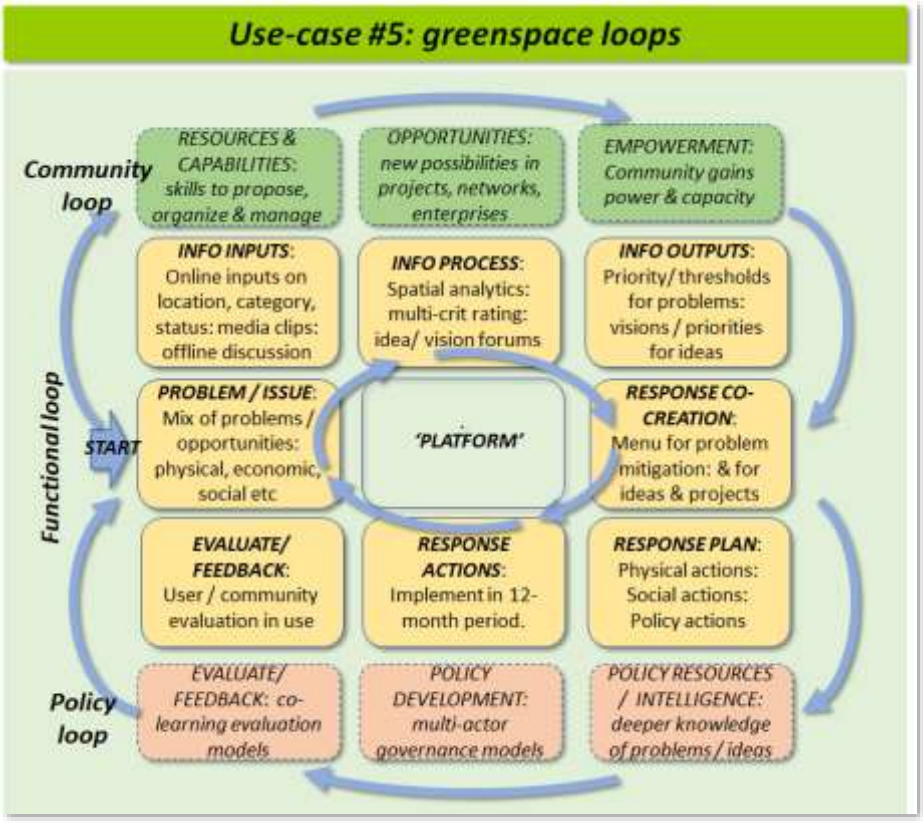
- lack of greenspace, litter / poor conditions, lack of maintenance,
- conflict between users, animal wastes, crime / security issues,
- noise/pollution issues, climate change effects…

Opportunities:

- New uses & users: resource for health, sports, leisure, events, education, ecology:
- Resource for gardening & urban food.
- Possible community self-help in planting/maintenance: crowd-sourcing for projects.

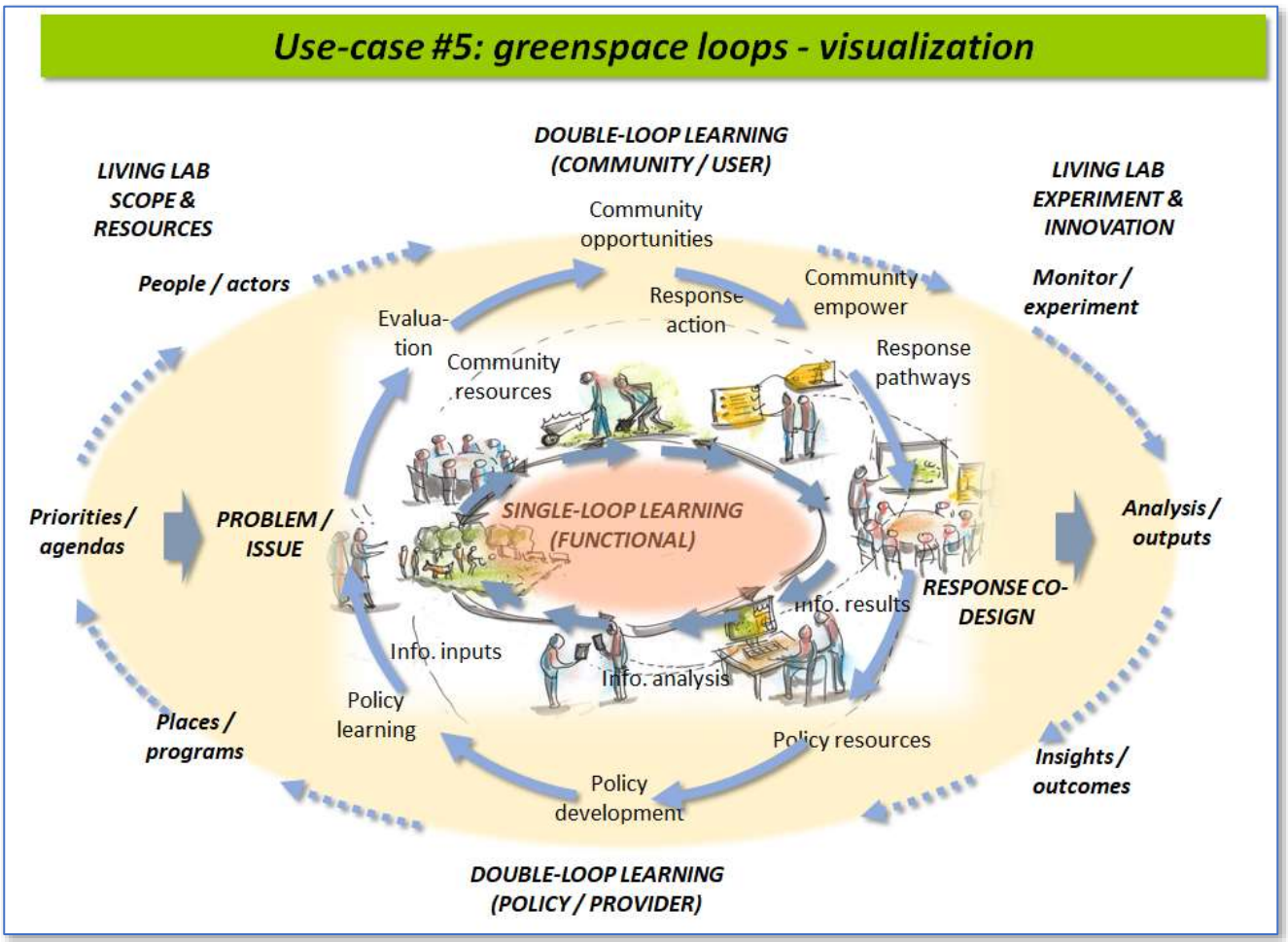
In this context, greenspace may be the best place to start with community development projects, capacity building and empowerment, temporary events and rapid results.

Figure 7: Use-Case 5: greenspace



For an alternative viewpoint, here is a visualization in graphic form (Figure 8). This approach could be useful in communications, or discussions with non-expert communities.

Figure 8: Use-Case 5: greenspace visualization



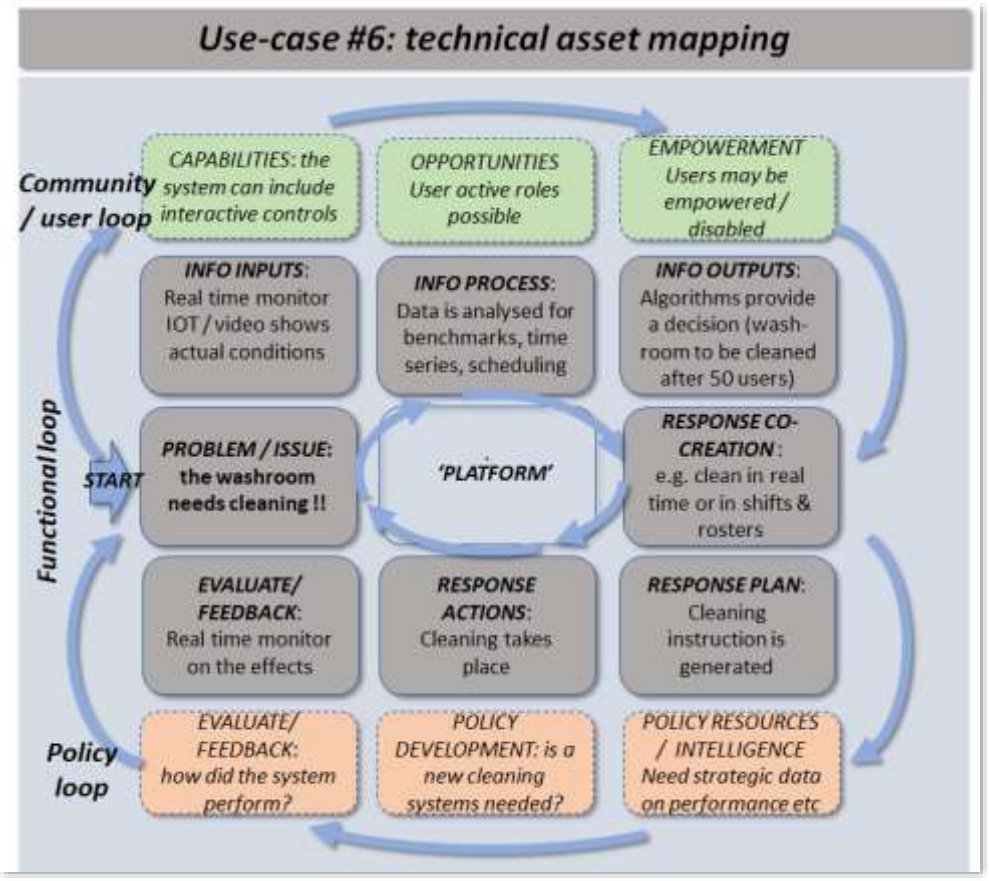
5.6.Intervention #6: Technical Services

This covers a range of activities or services in the public realm: e.g. street lights, holes in the road, broken fences etc. Each of these has a clear definition of problem and solution, with a functional learning loop. Such loops are often suitable for 'smart' technologies, which can greatly improve monitoring and technical decision making.

Such systems are designed for specific problems, where decision algorithms can generate specific targeted responses & solutions, with measurable outputs & outcomes.

Some of the Labs may look at such practical problems, e.g. broken street lights, and target them as examples of how to improve public services, (and as proxies for wider & deeper problems).

Figure 9: Use-Case 5: technical asset mapping



6. ACKNOWLEDGEMENTS

The support of Brussels Capital Region – Innoviris (Belgium), Ministero dell'Istruzione dell'Università e della Ricerca (MIUR) (Italy), the Economic and Social Research Council (UK) and the European Union is gratefully acknowledged

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8. ANNEX

8.1.Coordination with other deliverables

This report has strong links with

- ***'methodology for co-design',*** as in D3.1
- ***'methodology To Include Hard-To-Reach Groups,*** as in D3.2
- '***Frameworks for monitoring and evaluation',*** as in D4.2

The deliverables in WPs 5, 6 and 7 (the Urban Living Labs in different cities) should address the relevant tasks in these Guidelines. For these we recommend the use of the 3 templates in this report:

- Looper Living Lab summary template
- Looper Living Lab detailed template
- Intervention template.

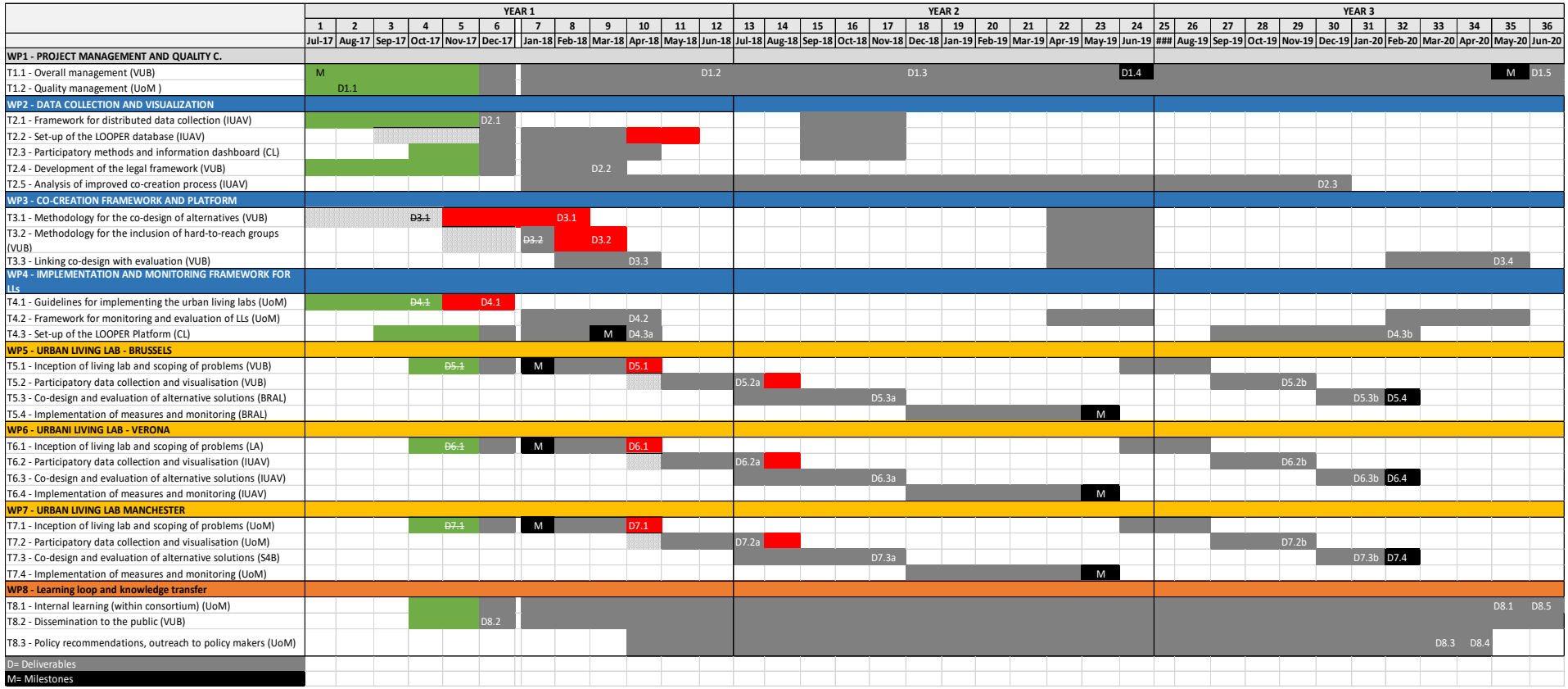
The table 6 below shows a full list of the relevant deliverables.

Table 6: Coordination of LOOPER Living Lab framework with project deliverables

Deliverable	***Title***	***Relevant stage of 6P model***	***Considerations***
D2.1	Report on data collection procedure framework	Process-setup	Includes both hard / quantitative, and 'soft' qualitative data.
D3.1	Guidelines for the co-design of alternative solutions	Process-setup Platform	The deliverable provides a more detailed methodology for co-design and suggestions of tools and approaches that can be employed to achieve the defined aims/needs of a Lab.
D3.2	Report on the methodology to include hard-to-reach groups	People	This will vary in each location
D4.2	Report on the framework for monitoring and evaluation of the urban living labs	Process-evaluation	
D4.3a & b	LOOPER platform user guide	Platform	This Deliverable is focused on the technical online platform: we need to include the 'social' platform alongside.
D5.1 D6.1 D7.1	Living Lab Implementation Plan (for each city).	Place People Process (all)	Justification for choice of location and delimitation of Looper Lab and description of process for engaging people in the lab
D5.2a D6.2a D7.2a	Report on the outcomes of the problem identification phase (for each city)	Priorities Platforms	Description of process of identifying priorities (problems) and the results, plus the specific use of online and offline platforms and the results of doing so as well as data collection and monitoring plan.
D5.3a D6.3a D7.3a	Report on the co-design and evaluation outcomes (for each city)	Process-evaluation	Description of process of co-design and evaluation of solutions and the results, plus evaluation of next steps regarding second iteration of learning loop.
D5.4 D6.4 D7.4	Living Lab evaluation report including learning outcomes and policy transfer (for each city)	Process-evaluation	Overall evaluation of the 'strategic' and 'research' learning loops.

8.2.Project timetable

(status 06 April 2018)



8.3.Comparison with other Living Labs

Here is a comparison of the Looper Living Lab framework, in the context of current guidance on Urban Living Labs: URB@exp and GUST (Governance of Urban Sustainability Transitions). (Table 7).

The most important difference is that the Looper Lab is focused on the 'learning loop' for policy & community (in contrast to others such as energy efficiency, service delivery, road improvements etc.)

Table 7: Comparison of Looper with other Living Labs

Looper Lab	***URB@exp***	***GUST***
	'Guidelines'	***'Key characteristics'***
Places / programs	Finding a position	Geographical embeddedness
Priorities / agendas	Aligning agendas	Leadership & ownership / Participation & user involvement
People / actors	Fostering plurality	Participation & user involvement
People / actors	Building the organization	Participation & user involvement
Monitor / experiment	Experimenting all the way	Experimentation & learning
Analysis / outputs	Maximizing learning	Evaluation of actions & impact
Insights / outcomes	'Continuing labbing'	Evaluation of actions & impact
Learning loops #1 & #2	Maximizing learning / Creating public value	Experimentation & learning
Looper Lab types in Looper		***'Types of Living Lab'***
Possible some specific interventions		Trial
Area-based projects but with open boundaries		Enclave
Demonstration of learning loops in action		Demonstration
Technical & social platforms are used		Platform

8.4.Looper Living Lab – Implementation Template

This shows the basic information required for each Looper Living Lab, to be included in the Implementation Plans, i.e. D5.1, D6.1, D7.1

Further information can be added below where needed. Official statistics should be used where available.

Table 8: Looper Living Lab: Implementation Template

	HEADINGS	***REQUIREMENTS***	***DESCRIPTION OF THE LAB***
1	***PLACE***		
A	**location, size, geographic features**	Area (sqm): geography: location	
B	**Population & socio-economic profile**	size of the population & socio-economic profile (distribution of by age, ethnicity, income, education, employment, etc.).	
C	**Density, urban form & infrastructure**	urban forms characteristic of the area (e.g. primarily detached houses/apartment building; land use mix [residential, office, industry, retail, services etc.])	
D	**Infrastructure**	relevant infrastructure (road, rail, waterways, utilities) iv.	
E	**Environment**	Major environmental issues (air, water, land, waste, biodiversity etc).	
F	**Local Governance**	Units & levels of government & public services	
G	**Regeneration / renewal / development**	relevant ongoing or planned projects (e.g. new infrastructure, other ongoing living labs, regeneration, etc.)	
H	**Map**	Provide a map of the Lab area	(provide link & attach below)
	Other…		
2	***PEOPLE***	*(see Section 3.2 in D3.1)*	
A	**Community & other stakeholders**	main types include: Community members, Stakeholder organisations, Policy & public service organizations, Broader beneficiaries. For each, indicate size, composition, interests, resources.	
B	**hard-to-reach groups**	specific hard-to-reach groups that are relevant in the living lab	
C	**Engagement strategy for stakeholders**	how the above groups can be engaged positively, with a plan for the project duration.	
	Other…		
3	***PRIORITIES***		
A	tangible priorities	Summary of priorities, e.g. air pollution, safety, traffic, security, etc.	

B	structural factors	Summary of underlying factors, e.g. gentrification, unemployment, housing shortage, etc	
C	key issues & concrete problems	Process for how the key issues will be identified (e.g. workshops, online consultation etc.)	
	Other..		
4	***PLATFORMS***		
A	**Online tools**	Which online tools will be used & who would use them (refer to D2.1)	
B	**Social tools**	How would the social platform work, i.e. structures of meetings, communications etc.	
C	**Data**	what data would be collected & how to collect it (refer to D2.1)	
	Other…		
5	***PROCESS – SETUP***		
A	**Setup stage**	Summary of process to setup the Lab, timescale & who is involved	
B	**Implementation & timetable**	Summary of key activities (e.g. workshops, data collection campaigns), with dates & responsibilities	
	Other…		
6	***PROCESS – EVALUATION***		
A		For each intervention, summary of data collection, for direct impact / functional loop / strategic learning & evaluation criteria for	
A		For each intervention, process	
B	**Evaluation of the Lab as a whole**	Summary of process & data for evaluation of Lab as a whole	
C	**Other…**		