EUROPEAN COMMISSION

INNOVATION and NETWORKS EXECUTIVE AGENCY

HORIZON 2020 PROGRAMME for RESEARCH and INNOVATION

Reducing impacts and costs of freight and service trips in urban areas (Topic: MG-5.2-2014)

Grant agreement no: 635898

Deliverable 3.3a-3.3e

CITYLAB: lessons and experiences with living laboratories

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CITYLAB's Deliverable 3.3 has been updated twice a year during the project. This final version contains five document versions:

- Deliverable 3.3e, finalised in November 2017
- Deliverable 3.3d, finalised in May 2017
- Deliverable 3.3c, finalised in January 2017
- Deliverable 3.3b, finalised in July 2016
- Deliverable 3.3a, finalised in November 2015

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CITYLAB: lessons and experiences with living laboratories

Document Control Sheet

Project no.:	635898	**Acronym**	CITYLAB
Project Title	City Logistics in Living Laboratories		
Work Package	WP3	**Title:**	Living laboratories
Deliverable no.:	D3.3	**Title:**	CITYLAB: lessons and experiences with living laboratories
Version	1	**Revision**	0
Issue Date	23 November 2017		
Dissemination Level	Public		
Future references	CITYLAB Deliverable 3.3e (2017). CITYLAB: lessons and experiences with living laboratories.		

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Brussels	Brussels Mobility	Procter & Gamble Services	Vrije Universiteit Brussel
London	Transport for London	TNT Gnewt Cargo	University of Westminster University of Gothenburg
Oslo	Oslo kommune	Steen & Strøm	TOI
Paris	Mairie de Paris		IFSTTAR DLR
Randstat	Gemeente Rotterdam	PostNL	TNO
Rome	Roma Capitale	Poste Italiane MeWare SRL	Università degli studi Roma Tre
Southampton	Southampton City Council	Meachers Global Logistics	University of Southampton
Networking and outreach partner			
POLIS			

Executive summary

The objective of the CITYLAB project is to develop knowledge and solutions that result in roll-out, up-scaling and further implementation of cost effective strategies, measures and tools for emission free city logistics. In a set of living laboratories, promising logistics concepts will be tested and evaluated, and the fundament for further roll-out of the solutions will be developed.

The role of this deliverable is to report on the lessons and experiences from the Living Lab process in each city involved. This document is updated twice a year throughout the CITYLAB project. This document is the **fifth** edition finalised in **November 2017,** and is referred to as Deliverable 3.3e. This fifth version is a development of Deliverable 3.3a, 3.3b, 3.3c and 3.3d feeding into the final version of the CITYLAB Living Lab methodology in Deliverable 3.4.

Deliverable 3.3e aims to capture the more general empirical lessons from working with different living labs in seven European CITYLAB-cities and their potential contributions to the EU policy objective on urban freight. This deliverable also tries to capture the shared knowledge across the CITYLAB living labs and how the living lab form of collaboration relates to other existing collaborative practises in the area of urban freight.

Some of the main lessons from the living lab approach in CITYLAB lie in the increased stakeholder understanding, new knowledge on working networks and improved cooperation mechanisms and approaches for innovation support (CITYLAB, 2017b). In CITYLAB the living lab process started from defining a theoretical concept for city logistics living labs to the output of an empirically tested city logistics living lab concept. The key empirical contributions from the CITYLAB city logistics living labs are: i) enhancing existing and develop new mechanisms for stakeholder collaboration; ii) defining objectives for the living lab based on industry needs and city frameworks; iii) supporting policy frameworks and political interests in urban freight; iv) the need for formalised agreements on cooperation; v) the importance of participation of unbiased third parties; and vi) capturing how the CITYLAB living labs are set up, run and managed.
Linking this to Freight Quality Partnerships (FQPs) and Sustainable Urban Logistics Plans (SULP) the living labs are not a replacement of these, but they may have a role in going beyond the SULPs and FQPs to foster innovation and implementation of solutions for more efficient and sustainable city logistics.

1 Introduction

The objective of the CITYLAB project is to develop knowledge and solutions that result in roll-out, up-scaling and further implementation of cost effective strategies, measures and tools for emission free city logistics. Using Living Laboratories ("Living Labs"), promising logistics concepts are tested and evaluated, and the fundament for further roll-out of the solutions is developed.

A Living Lab is defined as a dynamic test environment in which stakeholders aim at achieving a long-term goal and where complex innovations can be implemented. In this environment, *citizens, governments, industry and research partners can co-design and co-create new policies, regulations and complex innovations through a shared long-term goal*. Using stakeholder collaboration defined in CITYLAB as a working approach towards city logistics Living Labs CITYLAB explores the benefit from facilitating the uptake and roll out of urban logistics innovations (CITYLAB, 2015).

A city logistics Living lab covers the overall guiding city environment and targeted real-life implementations of urban freight measures and solutions. There are seven cities in CITYLAB, these are Brussels, London, Oslo, Paris, Rome, Rotterdam and Southampton. Developing living labs is a way to provide action driven form of freight partnerships, fostering innovation deployment and improving communication and cooperation between different stakeholders of the urban freight transport system. The Living Lab approach is based on an idea that for successful up-scaling of city logistics innovations, a *supporting environment* on the city or neighbourhood level is needed.

Living Lab working relationships change the emphasis from the solution as an isolated object to the process of integration within its environment. This is why, within the CITYLAB project, we assess the existence and importance of a supportive external environment and cooperation between real-world stakeholders to form favourable conditions which speed up development and roll out of innovative solutions.

The Living Lab environment, at a city or neighbourhood level, encompasses ambitions, strategies, policies, scope, partners and cooperation structures necessary to be involved in urban freight issues. The contribution of CITYLAB is to assess the seven CIYLAB cities' work towards a cooperative environment, labelled a Living Lab and evaluate how different factors of the living lab environment in place in each city can act a facilitator to increased development of innovative urban freight implementations. CITYLAB maps and studies this environment in each city to increase the understanding of how policies and cooperation structures at the city level may facilitate or hinder the development of urban freight initiatives. CITYLAB also supports implementation of specific urban freight initiatives within the cities. The CITYLAB implementations are urban freight initiatives involving the private sector, expected to contribute to the overall city ambitions. One such implementation action is studied and supported in each CITYLAB city (CITYLAB, 2016b).

In this version of Deliverable 3.3 we look across the collected data on the living labs in CITYAB and try to extract generalised findings between the cities valuable for other cities who aim to implement a city logistics living lab. Also, this work will feed the final CITYLAB living lab Handbook (Deliverable 3.4). Finally, the identified knowledge from city, industry and research are summarised to draw conclusions on the value of the CITYLAB Living Lab process and important lessons learned in developing and working in such an environment.

1.1 Role of this deliverable

This deliverable is a part of WP 3 of the project, which is oriented towards the Living Lab environment on city or neighbourhood level. This fifth version of Deliverable 3.3 aims to look across the previous 3.3 deliverables and identify important lessons learned to feed the upcoming deliverable 3.4.

Deliverable 3.3 has been updated twice a year throughout the CITYLAB project. This document is the **fifth** edition finalised in **November 2017**. The rest of this document is organised as follows. In Chapter 2 we introduce the process evaluation approach that is being used, while Chapter 3 summarises the lessons from the CITYLAB living labs. Chapter 4 assesses the living lab cooperation in light in other existing collaborative practices. Finally, Chapter 5 concludes with the main findings.

2 Process evaluation approach

The overall role of the process evaluation is to extract the lessons learned from the different Living Lab processes in each CITYLAB city and use this as input to the Living Lab methodology. It is useful to systematise this information as part of the documentation of the progress of the Living Lab activities. Frequent updates make it possible to identify challenges early and propose measures that can mitigate problems that are discovered.

The process evaluation complements monitoring of the implementation actions that take place in WP 4 of the project, and the evaluation of them in WP 5. While WP 4 and WP 5 deliverables give details on the status and effects of each of the seven implementation activities, Deliverable 3.3 deals with the overall Living Lab processes.

The main objective of the process evaluation is to capture how CITYAB has contributed to the Living Lab city environment using the implementations and discuss the importance of policy and political support in a Living Lab, to see how a Living Lab environment on the city level supports the development of innovation.

2.1 Information collection

The main sources of information used for this deliverable are:

1) The CITYLAB deliverables 3.3a – 3.3d;
2) Information collected from questions to research partners;
3) Available information from semi-structured interviews with city and industry partners and
4) Public source search for additional information and other CITYLAB deliverables.

The information used in this deliverable is mainly secondary data bringing together information from existing deliverables and previously collected interview transcripts. The purpose of using this information is to look across the available information and identify patterns or common elements across the CITYLAB cities. In addition to this previously collected information questions regarding cross-living lab sharing of experiences has been sent out to research partners in the project.

2.2 Overview of contributions

Table 1 details the information sources used as a basis for Chapter 3 and 4, while Table 2 gives a detailed overview of the process forms received.

Table 1. Information sources used.

Document version	Sources of information
Version a – Nov 2015	Fact sheets collected October 2015 describing each implementation and city reports on urban freight status collected as part of task 2.2.
Version b – Jul 2016	Process evaluation forms collected May 2016 describing each city's Living Lab experiences.

Document version	Sources of information
Version c – Jan 2017	Bilateral Skype calls with research partners and selected city partners describing current Living Lab city environment experiences. Information collection on implementation action stakeholder collaboration by research partners.
Version d – May 2017	Bilateral Skype calls with city partners and industry describing their experiences with the Living Lab city environment using the CITYLAB implementation. Process evaluation forms on the activities undertaken in the CITYLAB Living Lab completed by research partners (appendix A).
Version e – Nov 2017	Previously conducted interviews with research partners, industry and cities together with updated information from these three parties. Questions asked during project meetings and the deliverables 3.3a to 3.3d has been important sources of information.

Table 2. Process evaluation forms received and Skype calls completed.

Partner	D3.3a - Nov 2015	D3.3b - July 2016	D3.3c - Jan 2017	D3.3d - May 2017	D3.3e - Nov 2017
TOI	n.a.	x	x	x	x
OSLO KOMMUNE	n.a.	x	x	x	n.a
UNIVERSITA DEGLI STUDI ROMA TRE	n.a.	x	x	x	x
ROMA CAPITALE	n.a.	x		x	n.a
UoW	n.a.	x	x	x	x
TFL	n.a.	x		x	n.a
VUB	n.a.	x	x	x	x
BRUSSELS MOBILITY	n.a.	x		x	n.a
TNO	n.a.	x	x	x	x
ROTTERDAM	n.a.	x		x	n.a
IFSTTAR	n.a.	x	x	x	x
PARIS	n.a.	x		x	n.a
SOUTHAMPTON UNIVERSITY	n.a.	x	x	x	x
SOUTHAMPTON CITY COUNCIL	n.a.	x	x	x	n.a

3 Lessons from the CITYLAB living labs

Based on several different CITYLAB deliverables the main lessons, the evolvement of the living lab process and the experiences from the seven real-life CITYLAB living labs are discussed. From the living lab approach in CITYLAB some of the lessons learned lie in the increased stakeholder understanding, new working networks and cooperation mechanisms and approaches for innovation support (CITYLAB, 2017b).

3.1 The different elements of a city logistics living lab

A City Logistics Living Lab can be described as an environment where the city authorities and other public sector organisations, research institutions, local industry and logistics providers agree to work together to better understand their individual and collective freight problems, and develop new ways to solve them for their area. Living labs have been used in other industry sectors as a way for different stakeholders to initially research individual and collective business problems, investigate possible solutions and trial and implement these for shared gain. In a logistics sense, these can range from quite specific local issues (such as freight vehicle access to retail areas) to broader, city-wide concerns (such as improving air quality).

Throughout the project and with increasing amount of knowledge and shared experiences from the CITYLAB living labs, the concept has evolved, however, there are some key characteristics which have been present through the process. In the start-up phase of the project key city characteristics necessary to facilitate the start-up of city logistics living labs were defined to be (CITYLAB, 2015, 2016b):

- existence of an urban freight policy with clear depicting ambitions, goals and specific objectives on urban freight;
- existence of measures that back up implementation of policy;
- active stakeholder cooperation platforms, including key players such as, the municipality, industry and research institutions;
- monitoring and evaluation of actions and measures.

Following these, it was, at a second stage, specified that the elements of urban freight strategy or plan and existence of measures/implementation cases were necessary to guide the collaboration. Policy and political support together with cooperation between research, industry and the city were identified as invaluable for developing new urban freight innovations (CITYLAB, 2017b). Also, the monitoring needs should be related not only to the actions and measures but to the whole process of a living lab (CITYLAB, 2016a).

After further work on the living lab characteristics, at a later stage in the concept development process, the project identified that for a city environment to be favourable for a living lab it requires:

- An existence of political and policy support, defined within urban freight strategies/plans and supported with a specific set of priority measures, creating ‘a window of opportunity’ for the innovations increasing the chances for wider uptake and roll out;
- Established regular cooperation and communication between the main stakeholders involved in urban freight innovations, including, at least: local authorities, research institutes and industry;

- Continuous monitoring and analysis of data on urban freight, that facilitate the decision-making process.

Having this in place, a Living Lab environment can act as a facilitator to increased uptake of innovations, as it creates an environment beneficial for implementation of innovations. These elements have finally been adjusted as the process of monitoring and establishing living labs in the seven CITYLAB cities has progressed and the key elements of a city Logistics Living Lab are now:

- Existence of an urban freight policy and political support defined within urban freight strategies and plans with clearly defined ambitions, goals and specific measures on urban freight;
- Establishing a process to continually consult and involve different stakeholders and user groups in identifying freight issues and developing practical solutions for their mitigation (municipality, industry and research).
- Enabling the implementation of a number of the identified solutions through initial pilot studies, moving to full-scale implementations.
- Evaluating the costs and benefits of the solutions, disseminating the findings back to the stakeholder group.
- Continuously learning and improving through this iterative process of consultation, concept development, testing and evaluation.

Ultimately there needs to be an incentive for all those taking part which may be financial, environmental, social, or contributing to improved reputation. City authorities may benefit from better meeting their policy objectives; business and industry may be able to operate more efficiently and reduce their costs; citizens may directly benefit from better air quality; researchers can enhance their reputation and standing in the academic community.

There is still time to further develop the concept of a city logistics living lab and the final conclusions and findings will be included in the CITYLAB Living Lab Handbook.

3.2 The empirically developed living lab concept

The living lab concept has evolved through the project since we are working with real-life city logistics living labs in seven CITYLAB-cities and the work here is constantly progressing. Based on the empirical input from the CITYLAB living labs and the cities experiences the theoretical definition of a living lab has been developed to fit the needs of those practicing or testing this approach. A comparative study of the experiences of the living lab approach in seven different CITYLAB-cities, as this deliverable aims to achieve, requires that contextual or background factors of the individual cases are excluded. If not, a case-specific finding might drive the results leading to generalisation of findings which might only apply to a limited number of cases. To limit this problem Table 3 compares key characteristics of the seven cities.

Table 3. Comparative characteristics of the CITYLAB living labs.

	Population	*Population density km²*	*Congestion level %*	*Living lab mechanisms before CITYLAB*	*Living lab mechanisms after CITYLAB*
Brussels	1,187,890	7,360	38	To some degree	Improved, more work needed
London	8,477,600	5,518	40	Yes	Yes
Oslo	658,390	1,450	30	To some degree	Improved, more work needed
Paris	2,229,870	21,000	38	Yes	Yes
Rome	2,863,322	2,232	40	No	To some degree
Rotterdam	623,652	3,043	19	Yes	Yes
Southampton	243,700	4,686	24	To some degree	Yes

Source: CITYLAB Dashboards (CITYLAB, 2017a) and TomTom Traffic Index (TomTom Traffic Index, 2017).

Table 3 captures the evolvement of the living lab approach in the seven CITYLAB-cities compared to key characteristics in each city. Based on these characteristics it is possible to group the cities and their experiences based on the city size and on whether they had established living lab mechanisms before CITYLAB.

The largest cities in terms of population Paris, London, Rome and Brussels are also the ones with the highest level of congestion. London and Paris share several similarities in terms of population, congestion level and the experiences of collaborative mechanisms. Rome is the exception from this with low population density and with no established living lab mechanism. It is the deviant case in this group and Brussels lies between with high population density, high congestion and some existing collaborative mechanisms to work with establishing the living lab approach. In summary, it seems that two of the largest cities had established a city logistics living lab mechanism before CITYLAB. This might indicate that the larger cities are more advanced in such collaborative approaches, however, the exception to this is Rotterdam. Overall, it seems that Rotterdam is a deviant case since it is relatively small, with comparatively little congestion, but still with an established living lab approach. It is therefore important to investigate why Rotterdam has come to this stage. Some explanations can be that:

- The city logistics living lab approach has evolved from the way the City of Rotterdam included industry as “front runners” and research in the city’s work with urban freight.
- Urban freight and congestion has for a long time been on the political agenda in Rotterdam.
- In the beginning of a concept development, such as a city logistics living lab, working in a smaller city and later comparing this to the collaborative mechanisms existing in the larger, often more advanced, cities might be beneficial (CITYLAB, 2016b).

Among the smaller cities in terms of population, Oslo, Rotterdam and Southampton, the results vary making it difficult to provide generalised findings. The congestion level varies, with Oslo having the highest of the three, however, it is lower in these cities compared to the ones categorised as large cities. The population density is higher in Southampton than the other cities, but the overall population in the other two is then again higher than in Southampton. The

main difference between these cities is that the living lab mechanisms are better developed and have been practices longer in Rotterdam compared to the other two.

Therefore, it is uncertain whether city size and congestion level can be linked to the degree of presence of collaborative city logistics living lab mechanisms in a city.

Towards the end of CITYLAB it seems that all of the CITYLAB-cities have established some form of collaborative living lab mechanisms which they can work with, however, there are two key developments. First, Oslo and Brussels, somewhat similar to their status at the beginning of the project, could further utilise the living lab approach. This does not mean that there haven't been any developments in these cases, but the approach can be further developed. The reason for this might be that:

- Difficulties in broadening the knowledge of the living lab within the municipality and across municipal agencies.
- Challenges in linking and working with all three key stakeholder groups in a living lab e.g. municipality, industry and research. Especially in connection to the CITYLAB implementation action, which in both cities have a more private nature.
- The collaborative mechanisms existing in these cities has taken time to influence and steer towards the idea of a living lab (CITYLAB, 2017b, 2017c).

On the other hand, Southampton and Rome have throughout the project established and substantially developed their living lab mechanisms. Explanations for this can be that it is:

- Framed within national policy clean air and sustainable urban mobility plans, i.e. there is political support
- Established a good working relationship between all three key stakeholders in a living lab; municipality, industry and research
- Moving from individual meetings between stakeholders to networks (CITYLAB, 2017b, 2017c).

Also, the cities which had elements of a working living lab at the start of the project are further working in line with this methodology implying that this is a fruitful way to develop and implement innovative city logistics solutions. Table 4 shows the status of CITYLAB cities concerning main elements of the living lab approach, elaborated in section 3.1.

Table 4. Key elements of a living lab in the CITYLAB-cities.

	Urban freight strategy/plan	*Continually stakeholder consultation*	*Implementation of solutions*	*Evaluation and monitoring process*	*Continuously learning and improvement*
Brussels	The Strategic Plan for Goods Traffic	Regional Mobility Committee arranges stakeholder meetings	Several measures implemented as part of the plan. CITYLAB implementation not part of this	Evaluation of the measures in the strategic plan and through European projects	The Strategic Plan is updated in collaboration with stakeholders
London	The Mayor's Transport Strategy and the London Freight Plan	Central London Freight Quality Partnership and The London Freight Forum	Several solutions are implemented and planned as part of the existing freight strategies. CITYLAB	Limited but measures and indicators exist, and some evaluation are done in European projects	The Freight Forum is a way to monitor, measure and evaluate innovations. Advanced

	Urban freight strategy/plan	*Continually stakeholder consultation*	*Implementation of solutions*	*Evaluation and monitoring process*	*Continuously learning and improvement*
			implementation included.		consultation processes
Oslo	Some included in the Climate and energy strategy	Forum for urban freight with selected stakeholders participating	Several new solutions are considered due to the car-free inner-city project. Elements of the CITYLAB implementation relevant	Limited evaluation which is often research, project based or nationally driven	This work can be further improved
Paris	The Paris Charter for Sustainable Urban Logistics	Working groups formed in the Paris Charter	Several areas of interests and solutions were defined in the Paris Charter. CITYLAB implementation included	The Paris Charter consists of 16 projects which are being monitored within working groups, providing important knowledge to the City of Paris on urban freight	
Rome	Included in the Mobility Master Plan and the ongoing Sustainable Urban Mobility Plan	The stakeholder consultation has been limited but it is now increasing	Work done to up-scale and improve the CITYLAB implementation as part of the living lab. Defined several areas of interests and are discussed to be included in the SUMP (incl. CITYLAB implementation)	Limited evaluation which is often research, project based or nationally driven	This work can be further improved
Rotterdam	No formal policy but a roadmap, The Green Deal Zero Emission City Logistics	An industry group facilitated by the municipality	Several solutions outside of CITYLAB – zero-emission logistics	Limited evaluation which is often research, project based or nationally driven	"Front runners" are continuously consulted to develop new ideas
Southampton	Included in the air quality strategy and Local Transport Plan	A clean air network is under development	Linking student assignments to industry needs is an opportunity for new solutions	Limited but completed in cases with national interest	The potential for new solutions is constantly investigated

Developed from CITYLAB, 2016b, 2017b, 2017c and updated with additional information

After the CITYLAB living labs have been monitored throughout the project this table can be specified as above. Each of these headings will be discussed separately in the following section.

Urban freight strategy/plan and political support

Having a long-term urban freight strategy or plan containing politically accepted measures targeted at urban freight reduce the concern of the impact of a changing political context on urban freight transport. Especially since the limited time in office gives the politicians an excuse not to promise long-term solutions or to follow up on other parties promised solutions. The

perception that freight is largely a private sector issue, without any political support, makes it difficult to come up with and implement innovative ideas. However, the increased governmental attention to environmental issues has somewhat reduced this challenge (CITYLAB, 2017b).

Policy and plans e.g. environment and climate strategies, urban freight targets and regulations reduces uncertainty for municipal and industry employees acting as a framework for the decision to be made. Climate and environmental issues are high on the political agenda, which acts as an opportunity to work on these issues. This can be used as an argument to bring together industry, research and the municipality to reduce vehicle emissions. One challenge, which can be solved with plans having a clear list of policies, is the complexity in rules and, as different agencies within a municipality and boroughs are in charge of this planning. It would be beneficial to have an overarching body coordinating these rules. Recently, political changes are seen less as a challenge for urban freight solutions since issues such as air quality, climate and environment are on the agenda regardless of political party (CITYLAB, 2017b).

Despite the majority of cities and industry stakeholders in CITYLAB finding urban freight plans valuable, there are mixed signals on the importance of freight plans. The importance often depends on the solution being developed or implemented. Often the views of the customers are more important in guiding the investments. Political decisions and policy are less important for the industry when deciding on innovations since they adjust to the policies which are being implemented. However, environmentally-friendly politicians in government and policies can push the issue of further sustainable urban freight solutions and improve the innovative solutions. Also, the importance of urban freight plans depends on the degree of cooperation with the municipality. If there is little interaction between the municipality and the freight industry the urban freight strategies, plans and regulations have little impact on the implemented solutions (CITYLAB, 2017b).

Among the CITYLAB cities the urban freight plan, Paris Charter for Sustainable Urban Logistics, can provide valuable inspiration and experiences on how to guide the work on urban freight on a city level. In developing this plan, the industry and research had the opportunity to contribute to a city's planning processes, policy-making and urban freight transport planning. The charter brought together 47 partners (shippers, senders and recipients, stakeholders from the rail and waterways sectors, goods carriers, institutions, chambers of agriculture, skilled occupations, trade and industry). It is built around shared principles and specific commitments of the partners to preserve the city's commercial activities while optimising and modernising the transport and delivery of freight in order to limit its adverse environmental impacts (Mairie de Paris, 2013).

From the 3.3 deliverables, the findings on the importance of urban freight plans and policy suggest that the topic of urban freight is sensitive to political support. Municipal and political support will definitely speed up the innovation process and policy can force the industry to think differently to improve economic, environmental and social efficiency. The challenge is more, from both industry and city administration perspectives, that the politicians goal of being re-elected overshadow the implementation of a long-term urban freight strategy. Having an overall long-term vision for urban freight policies reduces the investment risk and creates opportunities for new and innovative solutions (CITYLAB, 2017b).

Continuous stakeholder consultation

The most frequently used ways to invite stakeholders to collaboration meetings in the CITYLAB cities are open invitations or inviting people who have signed up to a specific mailing list. If many participants attend these meetings there might be a need to consider the balance of broad participation against decision-making efficiency. However, it is difficult to tell what the suitable number of people is - in the CITYLAB cities since the number of participants differ

from 30 to around 100 people. The number of such meetings and the use of stakeholders to formulate policy varies across the cities. The organisational structure of the existing meetings is relatively similar where the topics under discussion are decided by politicians and depend on the planned policy initiatives, which are changing. Interactions between the local authorities and the stakeholders are mostly for information and reflection purposes, but it is also the case that their views have resulted in policy changes. It is viewed as an opportunity for the stakeholders to raise their issues (CITYLAB, 2017c).

Due to the private-public-research collaboration in the living labs, the researchers are much more accepted as persons dealing with freight than in the beginning when urban freight related issued started surfacing. More stakeholders, especially those less interested in politics with a voice otherwise not heard, are included in developing the city's urban freight policy. Hence, the acceptance and representativeness of a developed policy has increased. Another benefit is that the barrier for cooperation has been reduced resulting in more informal talks on nearly all subjects regarding urban freight (CITYLAB, 2017c).

In most of the CITYLAB cities the living lab collaboration has been continuous since the stakeholders find it beneficial to continue the cooperation between research, industry and local authorities on urban freight development and solutions. Often all three parties are valuable - researchers have broader knowledge, and some degree of public authority support is needed for a successful outcome of the implementations. Relating to the degree to which there are a broad incorporation of stakeholders, the owner of the Living Lab can impact the number of actors participating. In Brussels, the implementation is driven by private stakeholders rather than local authorities resulting in a smaller group participating in the development process (CITYLAB, 2017c).

Implementation of solutions

The CITYLAB implementations had different roles in the living labs in each city. In some cities the involvement of local policy makers and the municipality was not crucial, while in other implementations close cooperation was needed. Overall, from CITYLAB it seems that if the solution was industry led there is less need of a living lab, but if it was municipal or research led it was core of the living lab (CITYLAB, 2016a). Including these industry led implementations would probably benefit the living lab. For example, in Amsterdam, Oslo and Brussels a limited living lab approach was practiced, between researchers and the industry, when setting up the implementation, and the direct role of cities was more limited. In Southampton, Paris, London and Rome, the implementations developed as a result of the cooperation between all three CITYLAB partners. Another finding from implementation of solutions is that the stakeholders directly impacted by the implementation are more often consulted compared to the other stakeholders outside of the planning group. As mentioned, it might be the case that the specific industry driven implementations to a larger degree are organised as closed meetings, particularly, compared to implementations which are publicly driven (CITYLAB, 2017c).

A living lab is about finding and developing new innovative solutions, and there has also been exchange of knowledge across the living labs. In the Oslo Living lab they are now considering delivery and servicing plans after seeing the results of such plans from Southampton. Also, they are investigating the opportunities of retiming of deliveries after inspiration from the workshop in London and the presentations from TfL. Consolidation has for a long time been a priority for the city of Oslo and many other cities, but one issue has been to find a suitable location for a central depot. Lessons from the CITYLAB implementations in Paris and Amsterdam may help on that. Also, the Rotterdam living lab explored some of the other CITYLAB implementations, in particular London and Paris.

Evaluation and monitoring process

Overall, in the seven CITYLAB cities it seems that evaluation of urban freight measures and policies are rarely completed. There is a lack of concrete research evaluating the impact of the ongoing urban freight measures. It is also the case that the estimated impact of current trends in traffic and pollution is theoretical. Despite this some evaluation is completed:

- Several evaluations have been financed through European projects such as the urban freight pilots in STRAIGHTSOL and LAMILO.
- Pilots and trials are mostly evaluated either by the municipality, research or consultants, however, the initiative is often driven by other than the municipality themselves. It is seen as more research driven than policy driven.
- Although not all projects are evaluated the projects with national interests are often an exception.
- In terms of air quality there is ongoing national monitoring of the polluted areas and whether the pollution has been reduced against the national target.

It is a tendency that research partners ask the local authority for evaluation rather than the other way around. However, in Brussels the municipality initiated an update of *"The Strategic Plan for Goods Traffic"* in collaboration with stakeholders. The administration presented the conclusions from the evaluation at a stakeholder meeting for input. The evaluation of the measures in the plan are done mostly ex-ante rather than ex-post.

Evaluation and monitoring are key aspects in a living lab to adjust the implemented measures or develop new innovative solutions. Limited after assessments might come from the political need for quick attention and impact of policy. One challenge and barrier to increase the policy and measure evaluation present in several of the CITYLAB cities is that it is expensive and that the city does not have enough funding to finance such activities. Therefore, it is necessary to apply for other funds (e.g. regional or national projects) and the realisation of the evaluation depends on the funding decision. It is also often the case that evaluation is suggested by research rather than the municipality themselves e.g. the research partner in Rome suggested to evaluate the limited traffic zone policy in the city. It is a perception that the municipalities should require that more quantitative evaluations of impact and transferability analyses could be completed.

Concerning available urban freight data, the Southampton Living lab discovered that delivering and servicing plans (DSP) have collected data on the freight impact of particular businesses.

In summary, there is a need for a policy that is monitored and quantified, but it is being perceived as challenging to suggest this to the politicians. Compared to now, more work could have been completed within this field of urban freight (CITYLAB, 2017c).

Continuous learning and improvement

This element of the living lab approach has so far been the most challenging in the CITYLAB-living lab cities. Especially since implementations and solutions which are identified as unprofitable are ended. However, there are several learnings from these CITYLAB collaborations. From an industry perspective increased stakeholder understanding, data management and innovation support through knowledge, experiences, awareness and attention are valuable lessons learned. The city partners highlight increased stakeholder understanding, the exchange of practices, evaluation of implementation, a European network and the practical lessons learnt. From a research perspective, increased stakeholder understanding, new opportunities for research and network possibilities are learned.

One interesting case where collaboration has continued after meeting challenges in an implementation process is the Southampton living lab. There, the stakeholders in the living lab have learned from one development process and used this to move forward to start the next development process focusing on a different solution (CITYLAB, 2017d). For example, research by the University of Southampton on electric vehicles performance persuaded the Southampton City Council to move in that direction.

3.3 Contribution of living lab to EU policy objectives

To reach the EU policy objectives of reducing impact and cost of urban freight and service trips you need sustainable and innovative urban freight solutions. The living lab methodology is a way to convince stakeholders that a solution is viable and to adjust solutions to their needs. In other words, the living lab methodology can contribute to the EU goals since it facilitates for increased uptake of such solutions providing a place where measures are drafted, implemented and evaluated together with all stakeholders. Also, the living lab is easily replicated regardless of city size and complexity since it can be done at a low organisational cost. The bottom-up and European-wide cooperative structure between research, industry and authorities is necessary for future growth of sustainable solutions in urban logistics. The living lab contributes to the EU policy objectives by placing urban freight on the political agenda among local authorities which in the end have the opportunity to change the way goods are moved within the city. The living lab focuses on networking, discussion, consultation and visibility of urban freight issues, which is crucial for finding solutions related to reducing urban freight impacts. The living lab approach positively impacts the knowledge and understanding of the heterogeneous interests characterising the various stakeholders involved in urban freight operations. This is a critical component of a jointly shared long-term strategic change in policy making and adoption in an urban freight policy context. It is also a way to identify and test innovative solutions reducing the risk of investment faster achieving a sustainable urban freight solution and promoting the successful ones.

In summary, it contributes to the EU policy objectives by providing a dynamic method of consultation and experimentation between parties involved in logistics operations to help design and implement better systems.

3.4 Key contributions from the CITYLAB cities to the living lab concept

This timeline, Figure 1, summarises the key empirical contributions to the concept of city logistics living lab from the process of working with this in the CITYLAB cities throughout the project. It maps the process staring from definition of a theoretical concept for city logistics living labs to the output of an empirically tested city logistics living lab concept.

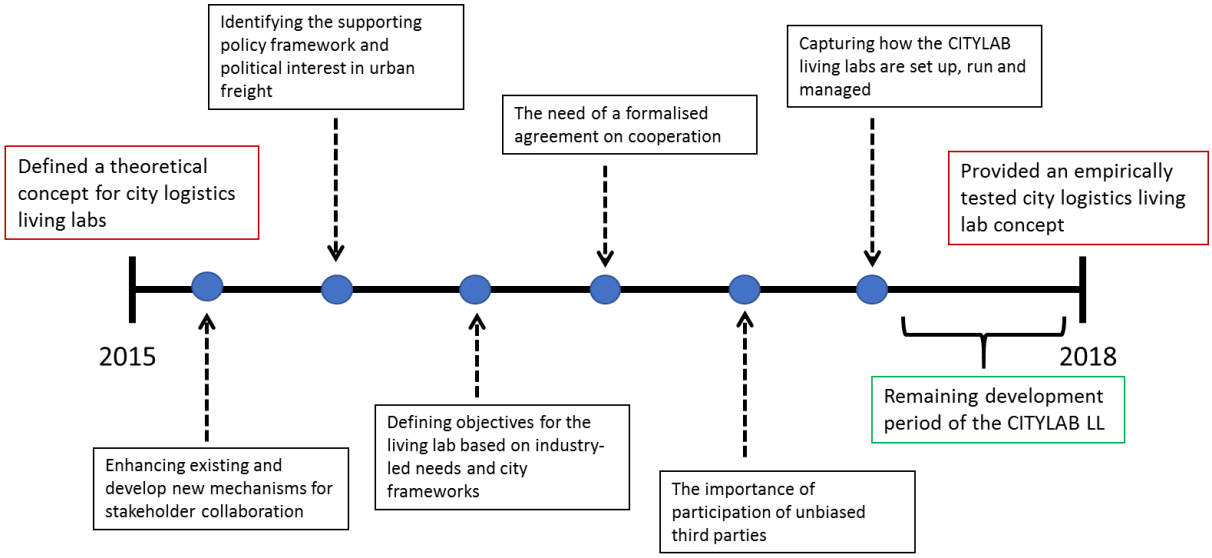

Figure 1. Key empirical contributions from the CITYLAB city logistics living labs.

Enhancing existing and develop new mechanisms for stakeholder collaboration

At the start of the project the work mainly focused on establishing city logistics living labs in the CITYLAB cities and exploiting existing collaboration mechanisms in cities where this was present. All the cities recognised the importance of the stakeholder perspective in developing and implementing innovative urban freight solutions, however, the impact of this collaboration and the degree to which it is practiced varies among the cities. The living labs has throughout CITYLAB resulted in relationships which provides links between the councils and the industry. Furthermore, it has established groups who regularly engage in sharing experiences and knowledge. This approach provides the researchers with connections in the municipality and insight to important experiences from the industry, however, it is important that the work done is mainly in the interest of the municipality and industry where research is just observing and guiding. The CITYLAB living labs has increased the awareness of urban freight issues which to a larger degree now is present in the city and municipality itself. These positive experiences have resulted in more formal talks, workshops, meetings and collaboration on nearly all subjects regarding urban freight, which might indicate that the barriers between research and public policy has been reduced (CITYLAB, 2017c).

Supporting policy framework and political interest in urban freight

As discussed in section 3.2 an urban freight policy framework is key for a living lab to function effectively and for objectives to be clarified, however, industry is also capable of steering the innovative work themselves. Successful Living Lab collaborations require that all partners see a potential benefit from participating (CITYLAB, 2017c).

It can also work the other way around, in Oslo the living lab approach can be a way to frame all the rather ad hoc policies implemented in this field. In Oslo the living lab for city logistics can frame, formalise and streamline the several different ongoing plans and alternative policies related to deliveries in the city centre. If the LL approach was linked to the car-free inner-city project and the working group on urban freight it could provide a structured way for stakeholders to share their knowledge and opinion on suggested solutions from the municipality.

Objectives for the living lab based on industry-led needs and city frameworks

Identifying a shared understanding of goals and defining problems from different stakeholder perspectives were achieved in CITYLAB to act as a guide for the collaboration needed in this project. The objectives were developed between the city, researchers and industry, thus contributing to exchange of knowledge and experiences. How extensive this ambition is and the time-perspective of it is different for the city and the industry and with elections it is difficult to plan longer than 4-5 years ahead. The findings suggest that working together on a common defined ambition has created an opportunity to build knowledge on a specific area of urban freight in the CITYLAB cities. The degree to which this has been done depends on whether the stated ambition focuses on the city level or on a specific private implementation. Similar to the discussion in section 3.2, it seems that the private initiated urban freight implementation has other objectives and targets compared to a government initiated process. A public Living Lab often have several ambitions, targets or interests to satisfy overall city ambitions of liveability while private initiated solutions in the end often depends on if the companies find the results economically viable (CITYLAB, 2017c)

A formalised agreement on cooperation

There are several different ways to formalise an agreement on cooperation, however, the key is to find a way that works for the living lab in each city. Having a formalised agreement is important to make this a priority among stakeholders and secure continuity in those who participate. Also, this is a way to clearly define roles and responsibilities within the living lab, partnership or network.

One way of doing this, as done in Southampton, is to create a Memorandum of Understanding (MoU) between local authorities and key stakeholders (in this case large municipal organisations such as Southampton General Hospital and the University of Southampton) on sustainable logistics (or a broader related topic). This included a main objective of reducing overall vehicle emissions and improving air quality standards by encouraging them to sign up to the MoU and to actively engage in the types of measures, such as freight consolidation, that are expected to benefit citizens (CITYLAB, 2017c).

Another alternative is to create working groups within the local freight plan, with each group working with different topics and measures within the plan. In Paris the logistics hotel's Living Lab is organised as one of the constituted working groups of the Sustainable Logistics Charter of Paris. It represents a partnership between the City of Paris, the Paris Region and SOGARIS (a logistics real estate investor and manager whose majority of capital is owned by the city of Paris) (CITYLAB, 2017c)

Participation of unbiased third parties

During the project it was highlighted that an unbiased third party could be beneficial to manage the living lab reducing the possibilities for conflicting interests. This person or institution can have the role as an instigator in setting up and operating the Living Lab. In other words, acting as the main co-ordinator to bring the stakeholders together at regular intervals and encourage initiatives to be taken forward. This person could be a researcher/academic, organisation, someone from a different municipal agency than those responsible for urban freight, businesses with limited personal interests, or a citizen with interest in running such networks. The reason why it is important to have an unbiased third party is that they can contribute to neutral knowledge and ideas for solutions, manage data, provide background literature, undertake scoping studies and provide independent evaluation of results.

How the CITYLAB living labs are set up, run and managed

Summarising the above empirical contributions we can identify how a city logistics living lab in CITYLAB can be set up, run and managed. First it is necessary to define the need and complete a problem statement ending up in common objectives for the living lab. Second it is important to identify all relevant stakeholders potentially impacted by the problem. E.g. retailers, industry and trade associations, public sector bodies, academic institutions, government and members of the public. Third it is important to identify the potential benefits to stakeholders and collective benefits for the society from participating in the City Logistics Living Lab. Forth it is crucial to convincing stakeholders to participate. Finally, starting the living lab work is often done through a kick-off meeting. At this point the agreement need to be formalised. This can range from being quite informal where a basic Memorandum of Understanding is drawn up, to legally binding charters including data sharing, dissemination and management agreements.

3.5 Important learning points from CITYLAB

Working with currently changing theory-testing empirical cases means that the theory on city logistics living labs can be developed. This also means that the understanding of the city logistics living lab and the living lab process has been developed throughout the CITYLAB project. Table 5 lists some of the main topics which could have been approached differently in CITYLAB.

Table 5. Important learning points from CITYLAB

Topic	CITYLAB practices	Advice for future living labs
Living lab city environment and living lab implementation.	Emphasise the importance of having a supportive environment at the city level to foster the growth of new innovative urban freight solutions.	These two elements need to be seen in the light of each other as an implementation is an important part of the living lab.
Closer relation between the stakeholders to be involved in a living lab and within the municipality driving the process.	In some cities the stakeholders involved in the implementation were different from the ones in charge of the living lab. This created challenges for how to fully embrace the city logistics living lab approach.	Ensure that all three driving stakeholder groups are engaged in the living lab approach and find it beneficial. If one of the three benefits more than others or one party is constantly providing information to the other two, the collaboration is insufficient and stakeholders might find limited value of participating.
Have political support before setting up a city logistics living lab valuable for developing new urban freight innovations.	The interest of urban freight has been increasing among politicians throughout the life of the project but if the political push of working with these issues in a collaborative framework has been present it could have been easier to implement this approach. However, the degree to which government support is needed	Cooperation in urban planning and political awareness creates an opportunity for urban freight solutions. It can therefore be valuable to get the necessary attention or mandate from politicians to set up a city logistics living lab and for it to be successful and feel beneficial for the participants.

Topic	CITYLAB practices	Advice for future living labs
	depends on the nature of the implementation.	
Adjust the living lab approach to the context of each city and their needs.	In CITYLAB it was foreseen that the seven cities would follow the living lab methodology. However, as the project moved forward the methodology did not fit perfectly to all the cases. Instead of adjusting the methodology or allow for case-specific changes it was tried to find ways to change the direction of the living lab in the cities.	Cities are contextually different and the legislative, governmental and regulatory and framework varies. It is therefore important for each city looking into this collaborative approach to choose the elements which fit the needs of your city and to leave out those which are unnecessary.

In summary, the main topic under discussion resulting from the CITYLAB practices was the importance of a methodology and how the cities could use this predefined approach. Other important topics which could have been handled differently is the relationship between the stakeholders involved in the living lab and further worked on improving the political support of the living lab in those cities where this was limited.

4 Relation to other cooperation practices in city logistics

In this chapter we discuss the relation between city logistics living labs and other existing collaborative practices and terms used in the city logistics domain. We do so by briefly introducing the concepts Freight Quality Partnerships (FQPs), Pilot Projects (PP) and Sustainable Urban Logistics Plans (SULPs), and relating the living lab approach to those.

A **Freight Quality Partnership (FQP)** can be defined as "*a long-term partnership between freight stakeholders concerned with urban freight, that on a formal or informal basis meet regularly to discuss (and sometimes find solutions to) problems and issues that occur in the urban area*" (Lindholm & Browne, 2013). FQP aims at bringing stakeholders together to discuss challenges and potential solutions, and there are many successful examples in Europe (see e.g. Lindholm & Browne, 2014). However, Lindholm and Browne (2014) also highlight some of the challenges of FQPs, which include slow implementation of solutions, a lack of understanding of the other stakeholders' interests and perspectives, and a lack of resources to fund, but also attend meetings.

Pilot projects (PP) means that individual measures are being tested, normally on a limited scale, to assess the effects before a larger scale or permanent implementation is considered. Within the city logistics domain, various projects and initiatives have supported demonstrations and pilot projects of new technologies, solutions, and practices. The European project STRAIGHTSOL[1] (Strategies and measures for smarter urban freight solutions) implemented and evaluated promising urban freight transport concepts. The final report of the project[2] concluded that most of the pilot projects contributed to reduced emissions and increased benefit to society, but in most cases the solutions did not appear to be financially viable. It was found that in many cases, the path to financial viability lies in the interchange between the operator and other private sector stakeholders, or through supporting policies from the public sector. Another challenge with pilot projects is that there has been a lack of systematic evaluation, which has hampered the transfer of knowledge between cities and companies.

Finally, the concept of **Sustainable Urban Logistics Plans (SULPs)** can be defined as "*a holistic planning strategy for urban freight that ensures efficient and sustainable logistics operations within urban areas*" (Fossheim & Andersen, 2017). The idea of SULPs is to ensure a coherent approach to urban logistics, and it can be seen as a logistics component of a Sustainable Urban Mobility Plan (SUMP). Several European cities and city regions are now working on Sustainable Urban Logistics Plans (SULPs), bringing together local actors, improving planning, and initiating actions needed to improve the situation. The Intelligent Energy Europe project ENCLOSE[3] was an early contribution to the SULP idea, yet emphasising individual solutions more than comprehensive planning. More recent initiatives include the Interreg project SULPiter[4] as well as the NORSULP[5] project set to develop guidelines for Sustainable Urban Logistics Plans in Norwegian cities.

[1] www.straightsol.eu

[2] Available from http://cordis.europa.eu/result/rcn/157981_en.html

[3] www.enclose.eu

[4] www.interreg-central.eu/Content.Node/SULPiTER.html

[5] www.norsulp.no (in Norwegian)

The living lab approach of CITYLAB contains elements of all the approaches described above. Many solutions to increase efficiency and decrease negative impacts of city logistics solutions are found in the interchange between multiple private and public-sector actors. Based on previous pilots, knowledge exists on how operations can be improved, but, permanent and large-scale deployment is often hindered by many different stakeholders having different and sometimes conflicting interests and a lack of cooperation. This was also observed in the STRAIGHTSOL project. A stakeholder rarely has an overview of the system, the effects of actions or policy measures. Hence, as pointed out by Quak, Lindholm, Tavasszy, and Browne (2016) there is a lack of shared situational awareness (SSA), meaning that the perception of the urban freight system and how actions will fulfil one's goals varies between stakeholders. This was also among the issues highlighted as challenging in the review of FQPs (Lindholm and Browne, 2013).

One way to make transitions in the urban freight system and to grow the number of lasting demonstrations is to increase the SSA of the relevant stakeholders generating cooperative joint actions, shared values and the ability to adapt to unforeseen situations. In other words, ensuring that urban freight transport stakeholders are aware of what information is required and understand how their action affect the urban freight system. Increasing the SSA can be done through joint knowledge production (JKP), which has taken place in the CITYLAB living labs. The living labs have also improved the possibility to meet and discuss, so there is evidence to claim that the living labs have been able to take a broader role than what is normally served by a FQP.

Moreover, the integration of implementation of specific solutions within the collaborative environment is the key difference between FQPs and living labs. This is crucial in living labs and in that sense, it is useful to relate living labs to pilot projects. There are however significant differences between these two, and one is, in the living labs, the linkage to a broader living lab environment, supporting policies and involvement at city level. Another difference is the long-term perspective towards permanent implementation and the multi-stakeholder collaborations which are often not present in pilot projects.

Finally, SULPs can be seen as an important step for creating a long-term, permanent and holistic approach to urban logistics issues, and there is no conflict between SULPs and living labs. Even though SULP and SUMP development emphasise user involvement and bottom-up development, SULPs can yet be perceived as "top down" in terms of the role in setting out policies and long-term targets. This fits well with the need for the creation of a supporting city environment to facilitate a living lab. Living labs can be seen as more bottom-up type of supplements to SULPs – focusing more specifically on solutions and measures that contribute to reaching the goals of SULPs.

In conclusion, the living labs are not proposed to replace sustainable urban logistics plans (SULPs) and freight quality partnerships (FQPs), but they may have a future role in going beyond the roles of SULPs and FQPs to foster innovation and implementation of solutions for more efficient and sustainable city logistics

5 Conclusion

Based on several different CITYLAB deliverables, D3.3e discusses the main lessons, the evolvement of the living lab process and the experiences from the seven real-life CITYLAB living labs. In summary, from the living lab approach in CITYLAB some of the lessons learned lies in the increased stakeholder understanding, new knowledge on working networks and improved cooperation mechanisms and approaches for innovation support (CITYLAB, 2017b).

One key finding, especially from CITYLAB and as discussed in section 3.2 and 3.4, is that it seems that private or industry initiated living labs organised to produce certain innovative urban freight implementations has other objectives and targets compared to a government initiated living lab process. There are also differences in the number and variety of the stakeholders included and the importance of policies and political support. Where these elements are less pressing in a privately organised living lab where the focus is more on the customers and end-users. Overall, in the seven CITYLAB cities the cooperative living lab approach has been valuable, however the exact impact of this collaboration is difficult to determine.

Working with currently changing theory-testing empirical cases means that the theory on city logistics living labs can and have been developed. This implies that the understanding of the city logistics living lab and the living lab process has evolved throughout the CITYLAB project.

In CITYLAB the living lab process started from defining a theoretical concept for city logistics living labs to the output of an empirically tested city logistics living lab concept. The key empirical contributions from the CITYLAB city logistics living labs are: i) enhancing existing and develop new mechanisms for stakeholder collaboration; ii) defining objectives for the living lab based on industry-led needs and city frameworks; iii) supporting policy framework and political interest in urban freight; iv) the need of a formalised agreement on cooperation; v) the importance of participation of unbiased third parties; and vi) capturing how the CITYLAB living labs are set up, run and managed.

Living labs can be seen as a bottom-up supplement to Sustainable Urban Logistics Plans (SULPs) – focusing on solutions and measures that contribute to reaching the goals of SULPs. The living labs are not a replacement of SULPs and freight quality partnerships (FQPs), but they may have a role in going beyond the SULPs and FQPs to foster innovation and implementation of solutions for more efficient and sustainable city logistics.

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EUROPEAN COMMISSION

INNOVATION and NETWORKS EXECUTIVE AGENCY

HORIZON 2020 PROGRAMME for RESEARCH and INNOVATION

Reducing impacts and costs of freight and service trips in urban areas (Topic: MG-5.2-2014)

Grant agreement no: 635898

Deliverable 3.3d

CITYLAB: lessons and experiences with living laboratories

Document Control Sheet

Project no.:	635898	**Acronym**	CITYLAB
Project Title	City Logistics in Living Laboratories		
Work Package	WP3	**Title:**	Living laboratories
Deliverable no.:	D3.3	**Title:**	CITYLAB: lessons and experiences with living laboratories
Version	1	**Revision**	0
Issue Date	31 May 2017		
Dissemination Level	Public		
Future references	CITYLAB Deliverable 3.3d (2017). CITYLAB: lessons and experiences with living laboratories.		

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CITYLAB consortium by Living Lab			
Living lab	**Municipal partner(s)**	**Industry partner(s)**	**Research partner(s)**
Brussels	Brussels Mobility	Procter & Gamble Services	Vrije Universiteit Brussel
London	Transport for London	TNT Gnewt Cargo	University of Westminster University of Gothenburg
Oslo	Oslo kommune	Steen & Strøm	TOI
Paris	Mairie de Paris		IFSTTAR DLR
Randstat	Gemeente Rotterdam	PostNL	TNO
Rome	Roma Capitale	Poste Italiane MeWare SRL	Università degli studi Roma Tre
Southampton	Southampton City Council	Meachers Global Logistics	University of Southampton
Networking and outreach partner			
POLIS			

Executive summary

The objective of the CITYLAB project is to develop knowledge and solutions that result in roll-out, up-scaling and further implementation of cost effective strategies, measures and tools for emission free city logistics. In a set of living laboratories, promising logistics concepts will be tested and evaluated, and the fundament for further roll-out of the solutions will be developed.

The role of this deliverable is to report on the lessons and experiences from the Living Lab process in each city involved. This document is updated twice a year throughout the CITYLAB project. This document is the **fourth** edition finalised in **May 2017,** and is referred to as Deliverable 3.3d. This fourth version is a development of Deliverable 3.3a, 3.3b and 3.3c feeding into the final version of the CITYLAB Living Lab methodology in Deliverable 3.4.

The Living Lab city environment can facilitate or act as a barrier in the implementation of policy measures using the Living Lab approach. Deliverable 3.1 and 3.2 identified how city characteristics can facilitate implementation of urban freight transport living labs. These characteristics are: existence of an urban freight policy with clear depicting ambitions, goals and specific objectives on urban freight; existence of measures that back up implementation of policy; active stakeholder cooperation platforms, including key players such as, the municipality, industry and research institutions; monitoring and evaluation of actions and measures.

Deliverable 3.3d aims to capture the importance of urban freight transport planning, policy and transfer of knowledge within city logistics Living Labs together with the contributions of CITYLAB and the Living Labs or cooperative structures occurring because of CITYLAB.

The findings suggest that the policy and political support together with cooperation between research, industry and the city is valuable for developing new urban freight innovations. However, the degree to which government support and the involvement of all three stakeholders is needed depends on the nature of the implementation. Cooperation in urban planning, creating an opportunity for urban freight solutions, is considered more valuable in some CITYLAB cities than others.

An added value of the CITYLAB project lies in the increased stakeholder understanding, working relationships and new cooperation mechanisms. From an industry perspective innovation support through knowledge, experiences, awareness and attention is also valuable while the city partners highlight the exchange of practices and the practical lessons learnt. From a research perspective, the new opportunities and network possibilities are valuable.

1 Introduction

The objective of the CITYLAB project is to develop knowledge and solutions that result in roll-out, up-scaling and further implementation of cost effective strategies, measures and tools for emission free city logistics. Using Living Laboratories ("Living Labs"), promising logistics concepts are tested and evaluated, and the fundament for further roll-out of the solutions is developed.

A Living Lab is defined as a dynamic test environment in which stakeholders aim at achieving a long-term goal and where complex innovations can be implemented. In this environment, *citizens, governments, industry and research partners can co-design and co-create new policies, regulations and complex innovations through a shared long-term goal*. Using stakeholder collaboration defined in CITYLAB as a working approach towards city logistics Living Labs CITYLAB explores the benefit from facilitating the uptake and roll out of urban logistics innovations (CITYLAB, 2015).

A city logistics Living lab covers the overall guiding city environment and targeted real-life implementations of urban freight measures and solutions. There are seven cities in CITYLAB, these are Brussels, London, Oslo, Paris, Rome, Rotterdam and Southampton. Developing living laboratories is a way to provide action driven form of freight partnerships, fostering innovation deployment and improving communication and cooperation between different stakeholders of the urban freight transport system. The Living Lab approach is based on an idea that for successful up-scaling of city logistics innovations a supporting environment on the city or neighbourhood level is needed. This favourable city environment requires:

- An existence of political and policy support, defined within urban freight strategies/plans and supported with a specific set of priority measures, creating 'a window of opportunity' for the innovations increasing the chances for wider uptake and roll out;
- Established regular cooperation and communication forms between the main stakeholders involved in urban freight innovations, including, at least: local authorities, research institutes and industry;
- Continuous monitoring and analysis of data on urban freight, that facilitate the decision-making process.

Having these in place, a Living Lab environment can act as a facilitator to increased uptake of innovations, as it creates an environment beneficial for implementation of innovations. Living Lab working relations changes the emphasis from the solution as an isolated object to the process of integration with its environment. This is why, within the CITYLAB project, we assess the existence and importance of a supportive external environment and cooperation between real-world stakeholders to form favourable conditions which speed up development and roll out of innovative solutions.

The Living Lab environment on a city or neighbourhood level encompasses ambitions, strategies, policies, scope, partners and cooperation structures necessary to be involved in urban freight issues. The contribution of CITYLAB is to assess the seven CIYLAB cities' work towards a cooperative environment, labelled a Living Lab and evaluate how different factors of the living lab environment in place in each city can act a facilitator to increased development of innovative urban freight implementations. CITYLAB maps and studies this environment in each city to increase the understanding of how policies and cooperation structures at the city level may facilitate or hinder the development of urban freight initiatives. CITYLAB also supports implementation of specific urban freight initiatives within the cities. The CITYLAB implementations are urban freight initiatives involving the private sector, expected to contribute to the overall city ambitions. One such implementation action is studied and supported in each CITYLAB city (CITYLAB, 2016b).

This version of Deliverable 3.3 uses the CITYLAB cities and their respective implementation actions as a case study to capture, from both industry and city perspectives, the importance of governmental support for urban freight implementations and how policy and/or the municipality can facilitate increased uptake of urban freight innovations. Finally, the identified knowledge from city, industry and research are summarised to draw conclusions on the value of the CITYLAB Living Lab process and important lessons learned in developing and working in such an environment.

1.1 Role of this deliverable

This deliverable is a part of WP 3 of the project, which is oriented towards the Living Lab environment on city or neighbourhood level. The policy and planning support for urban freight implementations and the transfer of this knowledge is fundamental in a Living Lab set-up. This fourth version of Deliverable 3.3 therefore has a thematic emphasis on how public policy or the City Council can facilitate for increased urban freight innovations and whether this has facilitated the CITYLAB implementation actions. This version also considers stakeholder collaboration in the implementation actions as the link between these two (environment and implementation) which is the core of the WP3

This document is being twice a year throughout the CITYLAB project. This document is the **fourth** edition finalised in **May 2017**. The rest of this document is organised as follows. In Chapter 2 we introduce the process evaluation approach that is being used, while Chapter 3 summarises governmental support, planning and policy from both a city and industry perspective in each CITYLAB city. Finally, Chapter 4 discusses the lessons learned when it comes to important knowledge and added value of the Living Lab approach in CITYLAB. Additionally, it empirically discusses the overall importance of political planning and policy support when making a successful Living Lab.

2 Process evaluation approach

The overall role of the process evaluation is to extract the lessons learned from the different Living Lab processes in each CITYLAB city and use this as input to the Living Lab methodology. It is useful to systematise this information as part of the documentation of the progress of the Living Lab activities. Frequent updates make it possible to identify challenges early and propose measures that can mitigate problems that are discovered.

The process evaluation complements monitoring of the implementation actions that take place in WP 4 of the project, and whose progress is being reported in Deliverables 4.1 and 4.2. The main outcomes of WP 4 will be data and information that will serve different evaluation activities in WP 5. The WP 4 deliverables will give details on the status of each of the seven implementation activities, while Deliverable 3.3 deals with the overall Living Lab processes.

The main objective of the process evaluation is to capture what CITYAB has contributed to the Living Lab city environment using the implementations and discuss the importance of policy and political support in a Living Lab, to see how a Living Lab environment on the city level supports the development of innovation.

2.1 Information collection

Four main sources of information were used for this deliverable:

1) semi-structured interviews with city and industry partners together with supplementary information collected through e-mails;
2) public source search for additional information;
3) previously written CITYLAB deliverables and
4) process evaluation form distributed to research partners.

The interview information is collected within an open framework allowing for focused, conversational, two-way communication. Not all questions were defined ahead of the interview; some were developed during the sessions. Furthermore, the questions were adjusted to fit the context of each city, what has been reported in Deliverable 3.2 and previous versions of Deliverable 3.3. The information collected contain the reason for the answers not only the answers themselves, thus helping us to obtain insights to the specific issue on the importance of municipal planning and public policies for urban freight innovations in the Living Labs (Grønmo, 2004).

Different questions are asked to different stakeholder groups with some city-specific variations depending on the state of the Living Lab in each CITYLAB city.

The questions/topics used as a starting point for structuring the discussion with the *city/local authorities* are the following:

- Any new urban freight-related plans, policies or activities in the city?
- On a general level are there any cooperation mechanisms where industry/research can contribute to a city's planning processes, policy-making and urban freight transport planning?
    - How is it/could it be done?

- How are the three parties (municipality, research and industry) cooperating in developing and identifying the CITYLAB solutions?
    - Cooperation with research beneficial – how?
    - Cooperation with industry beneficial – how?
- Has the CITYLAB implementation been supported by the municipality – how? Overall, how can the municipality facilitate for the industry to implement and research to focus on urban freight innovations?
- What new knowledge have the CITYLAB project delivered to you and how where you able to get this knowledge?
- What is your added value from participating in research projects in particular CITYLAB?

The questions/topics used as a starting point for structuring the discussion with *industry* are the following:

- Have the urban freight strategies, plans or policies had any impact/change on the work, in dealing with transport questions, done in your industry?
- On a general level are there any cooperation mechanisms where industry can contribute to a city's policy-making and urban freight transport planning?
    - How is it/could it be done?
- How are the three parties (municipality, research and industry) cooperating in developing and identifying the CITYLAB solution?
    - Cooperation with research beneficial – how?
    - Cooperation with industry beneficial – how?
- Has the CITYLAB implementation been supported by the municipality – how? Overall, how can the municipality facilitate for the industry to implement urban freight innovations?
- What new knowledge has the CITYLAB project delivered to you and how were you able to get this knowledge?
- What is your added value from participating in research projects and in particular CITYLAB?

All these questions aim at assessing urban freight transport planning, policy and transfer of knowledge within city logistics Living Labs. Other sources used for information are Deliverable 3.3b, the periodic reports and lessons and experiences from the city level Living Lab the previous six months. Deliverable 3.2 provided the baseline input on existing urban freight policies. A supplementary Google search was completed to provide information supporting the statements identified in the interviews.

2.2 Overview of contributions

Table 1 details the information sources used as a basis for Chapter 3 and 4, while Table 2 gives a detailed overview of the process forms received.

Table 1. Information sources used.

Document version	Sources of information
Version a – Nov 2015	Fact sheets collected October 2015 describing each implementation and city reports on urban freight status collected as part of task 2.2.
Version b – Jul 2016	Process evaluation forms collected May 2016 describing each city's Living Lab experiences.
Version c – Jan 2017	Bilateral Skype calls with research partners and selected city partners describing current Living Lab city environment experiences. Information collection on implementation action stakeholder collaboration by research partners.
Version d – May 2017	Bilateral Skype calls with city partners and industry describing their experiences with the Living Lab city environment using the CITYLAB implementation. Process evaluation forms on the activities undertaken in the CITYLAB Living Lab completed by research partners (appendix A).
Version e – Nov 2017	n.a.

Table 2. Process evaluation forms received and Skype calls completed.

Partner	D3.3a - Nov 2015	D3.3b - July 2016	D3.3c - Jan 2017	D3.3d - May 2017	D3.3e - Nov 2017
TOI	n.a.	x	x	x	
OSLO KOMMUNE	n.a.	x	x	x	
UNIVERSITA DEGLI STUDI ROMA TRE	n.a.	x	x	x	
ROMA CAPITALE	n.a.	x		x	
UoW	n.a.	x	x	x	
TFL	n.a.	x		x	
VUB	n.a.	x	x	x	
BRUSSELS MOBILITY	n.a.	x		x	
TNO	n.a.	x	x	x	
ROTTERDAM	n.a.	x		x	
IFSTTAR	n.a.	x	x	x	
PARIS	n.a.	x		x	
SOUTHAMPTON UNIVERSITY	n.a.	x	x	x	
SOUTHAMPTON CITY COUNCIL	n.a.	x	x	x	

3 Urban freight transport policy and planning within city logistics Living Labs and CITYLAB implementation actions

Within a Living Lab, urban freight is seen as an integrated part of the long-term city policy creating a 'window of opportunities for transport innovations'. Involvement of various stakeholders in the planning processes facilitates innovative solutions. In this section, the views of both cities and industry are presented where the city are the first subsection in each CITYLAB city. The information provided from both industry and city in this section are both on an overall Living Lab environment specified with critical examples from the CITYLAB implementation.

3.1 Brussels

The Brussels-Capital Region comprises 19 municipalities, one of which is the City of Brussels. The Brussels Capital Region is the authority in matters such as transport, economy, urban development and housing, environment, public works and energy policy and therefore is the appropriate authority level for urban freight transport policy making for Brussels. As a political authority, the 19 municipalities have autonomy to exercise power on their own territory. At the same time, they are subject to the control of the Government of the Capital-Region through the Local Authorities Administration. The municipalities can establish municipal regulations on very diverse matters (e.g. clean streets, planning permission, etc.) and can therefore also influence urban freight transport policy making (Belgian House of Representatives, 2014).

3.1.1 Urban freight transport planning and political support for urban freight innovations in Brussels

Urban freight plans and policy

Addressing congestion is a key challenge in the upcoming years. Brussels urban freight transport strategic policy is a part of the Mobility Plan (Iris 2, for 2015 – 2050) as the Strategic Plan for Goods Traffic (2013). This plan identifies priority axes and specific measures for urban freight to address until 2020. The main ambition of the plan is to progressively decrease the number of vehicle movements and emissions from freight vehicles in Brussels Capital Region, achieving 30% reduction in vehicles movements and 100% emission reduction by 2050. These targets are addressed through 5 strategic axes, which are further detailed with 36 actions (Brussels Mobiliteit, 2014).

The short-term targets in the urban freight plan are: improve the urban distribution structure; increase the use of the UCC; test new solutions that respond to the recent expansion of the pedestrian area in the city centre; implement a recognition scheme for sustainable logistics operators and develop more Delivery Service Plans (Brussels Mobiliteit, 2014). Altogether these political actions act as a 'window of opportunity' for transport innovations.

Urban freight planning

Research is important in the planning process or when evaluating the solutions as they are neutral. Also, they can provide experiences from other countries and they have experiences with big data, which has been a challenge.

In developing the Strategic Plan for Goods, a collaborative approach was used. The plan states that 'all 19 communes of the region will play a vital role in the implementation of this plan. All parties must make common and equitable efforts to increase transport management efficiency, improve deliveries reliability and – last but not least – limit the environmental impact and tend towards a better quality of life' (Brussels Mobiliteit, 2014).

Furthermore, the plans encourage research and innovation to adapt new urban distribution concepts to the Brussels context offering a multi-disciplinary think tank on urban distribution. This think tank will improve the information of the various goods traffic stakeholders and allow the development of innovative concepts making regional collaboration easier.

Municipal facilitation for urban freight innovations

When planning urban freight innovations, the municipality highlight the importance of political support. Providing partnership between cities and freight operations is in itself a way to facilitate for urban freight innovations in Brussels. It is very beneficial for the city – '*as a city you cannot influence as much as at the cooperation level'*. Other ways of supporting industry are by financial support in the start-up phase of a solution, however, the city has found it difficult to facilitate upscaling of solutions.

Another way to facilitate is through the work done on procurement in the city to begin a process of better and greener transport. Want to have recognition schemes, want a framework where we want to identify what has been done right.

Living Lab stakeholder cooperation - research, city and industry

There is cooperation between the CITYLAB industry partner and the municipality. Additionally, there are meetings with other industries their R&D department and the municipality. Working with different industry stakeholders on these matters often changes the role of private industry - they don't see each other as competitors but as partners working together to achieve a common goal.

On a general level in Brussels, the Mobility Committee on urban freight transport is organised two or three times a year inviting all relevant stakeholders, research industry and other city representatives, to participate. For example, this was used to formulate the ambition, scope and measures in the Strategic Plan for Goods Traffic. There are also commissions and working groups on urban freight transport which include e.g. freight operators, logistics service provider, local stakeholders, municipalities and shop managers. The recommendations of the Committee do not have binding powers but are accounted for in policies, measures and solutions. Apart from that, each solution tested and/or implemented by the authorities was developed and implemented together with private actors.

3.1.2 The impact of urban freight transport planning, policy and political support for the Brussels industry

The Living Lab is, for the Brussels industry, seen as a small entrepreneurial experiment and an innovation group adding value to the supply chain. For a large company, it is a way to identify which projects to finance. The size of the company is also an advantage giving increased flexibility to start small scale and later change the set-up.

Urban freight political and policy impact on industry

Political decisions and policy are not that important for the industry when deciding on innovations. What impacts the urban freight innovations for the Brussels industry is mostly the views of their customers. As an industry, they adjust to the policies which are being implemented. However, environmentally-friendly politicians and policies can improve the innovative solutions.

Urban freight planning involving industry

From the CITYLAB Brussels industry perspective, the industry is not really included in developing the freight plans. However, one reason for this it could be that the CITYLAB industry in Brussels is organised as a research and test facility rather a major transporter. Thus, they are therefore not invited to stakeholder planning processes. The Brussels industry partner has been to the Mobility Department meetings but view this as a cooperation opportunity rather than having direct impact on urban freight planning.

Municipal facilitation for urban freight innovations

Sharing of city specific data is critical for the industry to speed up innovations and a way the municipality can facilitate for increased uptake of urban freight solutions. The municipality can facilitate by listening since the interests of the industry and city are sometimes conflicting. Incentivising green behaviour and behaviour change in private industry, not only in terms of financial support, is valuable.

Living Lab stakeholder cooperation - research, city and industry

Together with its customers the industry partner in Brussels uses their version of a Living Lab methodology when developing new products e.g. consumer testing and customer interviews.

Since the industry partner is positioned as an innovation centre it naturally has strong links with research. When working with research, and to get the knowledge necessary for the industry, it is important to clearly specify proper research questions to get detailed answers.

Cooperation with the municipality depends on the kind of innovation. The Brussels Mobility Department meetings is a valuable opportunity to understand the direction in which the city is going and to capture the industry perspective. Individual cooperation with the municipality usually occurs in the beginning of a new project. In CITYLAB they are currently following the project from the side-line since public support has not really been necessary. However, it is positive that the municipality are aware of what is going on but the three-party cooperation of the Living Lab is missing.

3.2 London

London is made up of 33 boroughs who have elected political bodies to manage local services including 95% of the Capital's road network. The Mayor of London is Head of the Greater London Authority that includes Transport for London (TfL) and is responsible for managing the remaining 5% of the Capital's roads and public transport. The Mayor's Transport Strategy (MTS) sets out the transport vision for London and details how TfL and partners, including boroughs, will deliver the plan over the next 20 years. A new MTS is currently in development (London Councils, 2017).

3.2.1 Urban freight transport planning and political support for urban freight innovations in London

Urban freight policy

There are a range of policies and strategies in London affecting urban freight operations in the city which is described in D.3.2. New planned developments include the expanded Ultra Low Emission Zone (ULEZ) and Direct Vision Standard for HGVs to improve safety (Roberts, 2017).

The new Mayor elected into office in May 2016 has identified air quality as a priority. With London as a CITYLAB city, projects and programs are planned to achieve a reduction in emissions from road transport. In particular, reducing the number of vehicles carrying out delivery and servicing activity by using consolidation techniques can help to reduce congestion, improve air quality and safety.

Urban freight activity from internet shopping deliveries has exceeded predicted levels and contributes to the increase in van traffic in Central London by making personal deliveries to workplaces. TfL has prohibited personal deliveries to its buildings to address congestion and demonstrate exemplary behaviour to other organisations.

Urban freight planning

All urban freight planning regulations and strategies in London go through a public consultation process prior to implementation. One example is the consultation for: 'the Direct Vision Standard' (Frohlich, 2017). The plan and the forthcoming consultation process is available publicly online providing an opportunity for all interested stakeholders to give their input.

The public consultation process and opportunities for research and industry to participate in the planning of London freight policy can take an extended period of time to complete. However, the benefits of implementing schemes that everybody has had the opportunity to provide input outweigh a quicker, less open procedure.

TfL facilitates the Freight Forum made up of 120-150 key decision makers involved in making and receiving deliveries in London. The Forum is held twice a year and is an opportunity for representatives from across the industry to find out what work is currently being undertaken by TfL. It also gives representatives the chance to discuss key issues which may affect them. It is an opportunity to network with peers and representatives from TfL and it also provides the opportunity for the industry to have a voice.

Municipal facilitation for urban freight innovations

For the city to facilitate urban freight innovations it needs to review it own assets as they are only responsible for 5% of the London road network. Also in London, a real challenge is finding centrally located premises suitable for urban freight activities. Where there are available sites, accessibility, noise and proximity to residential areas is often an issue.

Living Lab stakeholder cooperation - research, city and industry

In London there is an existing freight quality partnership (FQP) which operates as a Living Lab (CITYLAB, 2016b, 2017). Adding to this cooperation, in CITYLAB, the boroughs have been made aware of the project increasing the cooperation and awareness by involving additional stakeholders.

Working with this operative structure, as a Living Lab or in the London case a FQP, gives the opportunity to build a good relationship and an insight to how different stakeholders, particularly

industry, operate on a day-to-day basis. This information improves the knowledge at the municipality level and produces insight which can be brought/used in other projects. Such dialogue and innovation orientated forum gives evidence on whether the innovation is considered a success to be up-scaled; or changes are required; or new tests undertaken. It is a way to monitor and evaluate innovations, measuring their effectiveness. Solutions that continue are proof it is working. If unsuccessful the scheme ends and the collaboration provides lessons learnt of what went wrong to ensure that those mistakes are not repeated.

3.2.2 The impact of urban freight transport planning, policy and political support for the London industry

Urban freight political and policy impact on industry

Recent political changes are not seen as a challenge for the London industry in developing and further expanding their solution since the issues such as air quality, climate and environment are on the agenda regardless of political party. However, if environmentalists were present in government it could have pushed the issue of further sustainable urban freight solutions.

One challenge for urban freight industry operating in London is the complexity in rules and regulations as the boroughs are in charge of this planning. It would be beneficial to have an overarching body coordinating these rules.

Urban freight planning involving industry

From an industry perspective, it is valuable to be included in urban planning. The CITYLAB industry partner aims to be active in the planning processes, however, the company size might impact the opportunity to be involved in consultation processes. The industry partner can be summoned by government to speak about their issues to members of parliament.

Municipal facilitation for urban freight innovations

Municipal support is important for industry to have successful environmentally-friendly urban freight innovations. One element is the support through funding, especially for small businesses with new solutions. Authorities can also support urban freight by making land available, including kerb side space and electric vehicle parking spaces.

Living Lab stakeholder cooperation - research, city and industry

The existing Freight Forum and recognition schemes are working similarly to a Living Lab and the work done here are important. Today the London Freight Partnership involves several different groups with an intention to support urban freight. This cooperation is useful for sharing experiences, particularly as new challenges occurs with new trends such as e-commerce.

The collaborative approach for urban freight contributes to collate the ideas potentially solving the future urban freight issues, however, this is dependent on some quantifiable results. From an industry perspective, it is important to keep in mind that there is a balance between making actual physical changes solving specific issues and coming up with future innovative ideas. The City of London ask companies to help in achieving their policies and how the ultra-low emission zones affect freight and logistics. Overall these cooperation structures are positive, but a challenge is that businesses in the end rely on themselves, the authorities could be doing more material things e.g. saving sites to commercial activities.

3.3 Oslo

The City of Oslo is both a municipality and a region. It is made up of 15 districts, however, none of these districts are self-standing political bodies (Tvedt, 2017). The local transport planning is done in cooperation with the neighbouring region Akershus. Additionally, several of the main roads in Oslo are the responsibility of the National Road Administration making urban freight planning in this area complex (Norwegian Public Roads Administration, 2016; Oslo kommune & Akershus fylkeskommune, 2015).

3.3.1 Urban freight transport planning and political support for urban freight innovations in Oslo

Urban freight plans and policy

Oslo does not have an Urban Freight Transport plan; however, the red-green government have several climate- and environment-related initiatives (Oslo kommune, 2016). Related to urban freight the most important ones are:

- Installation of non-fossil energy stations, making it easier to “fill-up” vehicles
- There is an ongoing initiative of working out a policy and possible project using a consolidation centre in close distance to the inner city
- The use of mini-consolidation or a centrally located depot in central Oslo using e-cargo bikes for the last mile transport
- Urban freight transport is considered in the project of building a new Government Plaza Building.
- The need for an Urban Mobility plan is now specified in the Climate and Energy strategy.

Urban freight planning

The involvement of industry and/or research in policy planning is linked to specific plans or thematic areas where stakeholder input is needed. For example, when working with the Climate and Energy strategy, several stakeholder groups from all major fields of energy consumption were involved. In this case, the stakeholder collaboration was organised by the Climate and Energy strategy project which is now an established agency.

Still used by the Agency for Urban Environment for input in urban freight planning is the cooperation forum for city logistics. This forum, developed together with the transport industry, is under constant development and includes more and more stakeholders.

Municipal facilitation for urban freight innovations

The city is facilitating urban freight through increased use of ITS solutions and dedicating street space to urban deliveries. One tool to support industry innovations is a program led by the City of Oslo implemented to support start-ups and provide funds for hackathons. Another way the municipality facilitates urban freight innovations is through their obligation to make knowledge publicly available through media, seminars and projects.

Due to the privately initiated implementation in Oslo there has been little need for municipal support, however, there has been discussion with all stakeholders where the municipality was present.

Living Lab stakeholder cooperation in CITYLAB - research, city and industry

Overall, there is a tendency that the municipality and research institutions often participate together in R&D projects. More so than with industry but the city aim to further involve industry in projects, e.g. as the FREVUE project with Bring as a logistics operator testing Electrical Vehicles.

Within CITYLAB the continuous contact with research is beneficial since it can result in knowledge transfer and spill-over effects to other ongoing projects in the municipality or it can result in new project ideas and opportunities for further cooperation. In the CITYLAB project there has been little direct contact with industry, which could have been improved. From a municipal perspective, the city has to improve their participation opportunities for bettering the conditions for goods deliveries.

3.3.2 The impact of urban freight transport planning, policy and political support for the Oslo industry

Urban freight political and policy impact on industry

The Oslo environment and climate strategies, urban freight targets and regulations impact the industry's urban transport work. In particular, the need to understand societal and behavioural changes from both residents and offices are important for a business to thrive and be profitable. Within real estate climate changes and the developed climate strategies impact the way buildings are planned and constructed. Restrictions in vehicle use and transportation due to emissions impact parking alternatives, car use, the composition of the transport fleet e.g. more use of vans and therefore also there is a need for an increased number of delivery ramps etc.

Urban freight planning involving industry

On a general level, real estate developers and land owners are invited by the local municipality to participate in creating and discussing plans for future municipal development e.g. parks, walking and biking paths and green areas. However, when planning large freight generators e.g. shopping centres, in the outskirts of the city centre the planning related to major roads e.g. E18, E6 and the railway system in the city are a national responsibility. For large shopping centres the industry is highly involved in the planning process for the urban area/district where it is located.

Municipal facilitation for urban freight innovations

Municipal support is important when the industry decide to test a new solution or innovation, however, research and development are often more important to decide on the preferred strategy or solution. At the same time, R&D often increases cost, thus, there is an increased investment risk and private companies therefore choose the safer alternative. Having municipal support or national incentives makes choosing R&D a more viable option. Based on experiences a new solution which is tested and evolved through R&D often becomes the new business standard, thus incentives are no longer necessary.

Living Lab stakeholder cooperation in CITYLAB - research, city and industry

From an industry perspective cooperation with research has broadened how the industry thinks of goods transport, thus, it has introduced a European perspective when planning for new innovative solutions in CITYLAB.

Municipal cooperation is challenging due to the many and often varying priorities in the public sector and in the end a need to please voters. There is interaction with the municipality on several levels, for example infrastructure and building permits, however, the cooperation between industry and the municipality when it comes to transportation of goods is somewhat limited. From an industry perspective, when developing new freight solutions, the political and therefore also media attention are placed on easily visible changes such as electric vehicles and biking infrastructure rather than focusing, understanding and investigating more complicated changes issues such as those in CITYLAB.

3.4 Paris

The City of Paris is divided into 20 municipal arrondissements, administrative districts, each with its own town hall and directly elected council. The Council of Paris is elected from the voters in the 20 arrondissements but it has a limited governing role. Ile-de-France or Paris Region includes the City of Paris and the surrounding communities are governed by the Regional Council (Ardagh, Ehrlich, & Daul, 2017).

3.4.1 Urban freight transport planning and political support for urban freight innovations in Paris

Urban freight plans and policy

The several existing policies in Paris affecting the urban freight operations in the city were described in D.3.2. The recent development is the citywide public debate on diesel vehicle pollution in Paris. As of January 16, 2017, labels called "Crit'air" will have to be put on private cars and commercial vehicles. The labels put in the windshield are compulsory and the colour coding is based on the Euro standard.

The first environmental zone ZCR (Zones à Circulation Restreinte) was introduced on 1st September 2015 in Paris. This regulation mainly affected buses and trucks registered before 1st October 2001 which were forbidden to enter. Since 1st July 2016 no passenger cars and small cars (N1 <3,5 t) with a registration before 1st January 1997 are permitted to enter the environmental zone since these vehicles no longer obtain a Crit'Air Vignette. The driver who doesn’t respect the restrictions are fined starting from 68 Euro (15th January 2017) depending on the size of the vehicle. Vehicles being registered abroad are allowed to enter the environmental zone of Paris without a Crit'Air Vignette until 31st March 2017.

Urban freight planning

The cooperation process with all professional and institutional stakeholders was initiated as early as 2001. Industry and research can contribute to a city’s planning processes, policy-making and urban freight transport planning through the Paris Charter for sustainable urban logistics signed with 90 partners in September 2013. The charter brought together 47 partners (shippers, senders and recipients, stakeholders from the rail and waterways sectors, delivering carriers, institutions, chambers of agriculture, skilled occupations, trade and industry). It is built

around shared principles and specific commitments of the partners as an expression of a desire to preserve the city's commercial activities while optimising and modernising the transport and delivery of freight in order to limit its adverse environmental impacts (Mairie de Paris, 2013).

This pioneering process generated new regulations applied based on environmental principles. A review of the 2006 charter has been conducted by a monitoring committee which agreed that this collective commitment should be modified and include logistics that better meet urban, environmental and economic needs. Four areas have been subjected to more thorough diagnosis in order to be more fully included in the new charter:

- monitoring, with the main goal of increasing compliance with Parisian regulations (monitoring observance of environmental principles and compliance with delivery zones);
- land use, in particular in order to develop Urban Logistics Zones;
- communication, in order to increase firms' awareness and foster public acceptance of transport activities;
- the region, in order to promote the use of logistics land and bring the activities of Paris into line with the policies of the region's local authorities.

This new charter sets out to be more concrete, more operational and more incentivising, relying on greater involvement on the part of the signatories who undertake to develop or support projects which will assist the implementation of sustainable logistics. The actions resulting from the charter will consist of projects which will be monitored.

Overall, municipal policy with regard to transport sets out to:

- assist economic development;
- reduce the adverse environmental impacts of freight transport;
- encourage innovative initiatives;
- prepare and plan for any changes in municipal, national and European regulations in order to develop, with professionals, the ways and means of applying them.

Municipal facilitation for urban freight innovations

Through including urban freight stakeholders in the development of the various urban freight policies and documents such as the charter, the municipality facilitated for increased uptake of urban freight innovation. Long-term planning is an important tool in providing stability and reducing the investment risk for industry.

In supporting the industry to develop innovative urban freight solutions the city has, in collaboration with CITYLAB, launched a request for proposals on experimental urban logistic solutions in the public space of Paris. The Call mainly concerns last mile delivery since its optimization is the one of the most significant potential to reduce nuisances and CO_2 emissions linked to urban mobility and to improve the acceptance of logistics by the inhabitants of a city. Possible themes the experiments propose:

- Rationalisation, optimisation of rounds, pooling of flows
- Inventory management and pooling
- Improved parking and occupancy of public space for delivery

- Reduction of nuisances, CO_2 emissions and improved acceptance of urban logistics by residents

Living Lab stakeholder cooperation - research, city and industry

The logistics sector is a complex topic, which involves interplay between a large number of institutional and professional stakeholders. Consultation is therefore essential for the success of logistics projects and the effectiveness and efficiency of the regulations which may be necessary in order to back up the principles and orientations set out in the Charter. The Paris Charter, a Living Lab environment, provides the framework for this consultation, which adopts an operational standpoint and monitors projects which are implemented at territorial levels that range from the district to the city. An operational Charter Project Monitoring Committee is set up to meet 3 or 4 times a year in order to create a permanent dialogue.

A Charter steering committee chaired by the Mayor of Paris or his/her representative will meet once a year to assess the partners' activities and guide activities in the coming year. It will also be the consultation body that deals with envisaged regulations that have an impact on the organisation of logistics and the transport of goods in Paris.

The Paris Living Lab in CITYLAB i.e. the working group on logistics sprawl of the Paris Charter is working very well having regular meetings relating to both of the two CITYLAB implementations. During the working group meetings of each projects or project monitoring committee all partners (municipality, research, industry etc.) could present solutions from different projects e.g. CITYLAB.

3.5 Rome

The City of Rome constitutes a commune named Roma Capitale which is governed by a mayor and a City Council. Altogether, the City of Rome is made up of 15 municipalities or administrative areas governed by a president and a council. Rome is the principal city of the province Metropolitan City of Rome and it is divided into non-administrative units (Roma Capitale, 2017).

3.5.1 Urban freight transport planning and political support for urban freight innovations in Rome

Urban freight policy

The city of Rome's work on urban freight transport involve: 1) improve / maintain accessibility and 2) reduce negative impacts (emissions and pollution). There existing policies in Rome affecting the urban freight operations in the city were described in D.3.2. The new Mobility Master Plan (2015) is a medium-term programming tool. The main aspect is to regulate mobility demand; however, it includes specific section on urban logistics plans and aim to reduce the urban freight vehicles in the city centre.

The Mobility Master Plan, is set to be implemented within 2020. Suggested measures are limited freight traffic zone dedicated to freight distribution and van sharing of electric vehicles to serve the traffic zone. Also, the Rome Municipality works on developing and implementing a Sustainable Urban Mobility Plan, but is still waiting for the National Guidelines to implement the SUMP, and the freight distribution measures.

Urban freight planning

The opportunities for urban freight stakeholders to influence the planning process and final policies lies in the round tables organised by the Mobility Agency and the Rome Municipality (next one to be held in June 2017). Further cooperation is integrated as part of the coming sustainable urban mobility plan.

Municipal facilitation for urban freight innovations

In general, in Rome and from a city perspective, the change of administration within public bodies is a greater barrier on how to carry on different measures rather than the changing political context. This is challenging as the mobility department constantly has to understand the urban freight situation and such turnover slows down the development of new ideas, the urban freight program and prevent a long-term processes and ongoing activities.

The Rome city partner is in itself a facilitator for urban freight innovations as it is a mobility agency there to support the municipality. Additionally, further support from other departments such as the Department for the Environment could support urban freight innovation. In CITYLAB support in terms of electric vehicles from this department could contribute to increased knowledge and understanding on how to pick up the caps.

One way the city can facilitate for urban freight innovations in CITYLAB, and the role of the mobility agency, is through transfer of the measure and the programming tool to the other partners. The city also can provide an overview of the distribution and traffic movements in the city which is important information when developing a new solution. Furthermore, the laws and regulations are important for urban freight distribution in the city and considering this is important for further solutions.

Living Lab stakeholder cooperation - research, city and industry

As there is little coordinated cooperation with these three stakeholders the implementation in Rome is in itself seen as a way to start building a Living Lab culture to test and adjust new urban freight innovations. The implementation is completed with Roma3 (research), Poste Italiane (industry), Meware (industry) and the Mobility agency (city). After a small scale test the waste company AMA together with the environment department are investigating the possibilities for operators to pick up different part of the waste.

3.5.2 The impact of urban freight transport planning, policy and political support for the Rome industry

Urban freight political and policy impact on industry

From an industry perspective in Rome, solutions can be limited due to changing political context and political demonstrations. Overall in Rome the industry notices that there is increased governmental attention to environmental issues. This has been important for the CITYLAB solution as the goal to improve waste collection is receiving more political attention thus the opportunity to develop new innovative urban freight solutions is increasing.

Urban freight planning involving industry

The participation of industry in urban freight planning are mostly linked to thematic round table meetings set by the public-sector stakeholders or linked to individual solutions or measures improving urban freight deliveries (CITYLAB, 2016a).

Municipal facilitation for urban freight innovations

Municipal facilitation in CITYLAB is mostly testing the software and support in the development and the design. One issue from a business point of view is that picking up and collecting waste is not profitable on its own and support with the business aspect is valuable. A legal issue related to the start-up is with the mail service since they are contracted for delivering mail not picking up waste.

Living Lab stakeholder cooperation - research, city and industry

The CITYLAB implementation is seen as a set up a local Living Lab and it has been developed based on discussion between all three parties. From an industry perspective, there is limited practice in thinking and working as a Living Lab outside of the CITYLAB project. However, working in such a cooperative environment has spread the benefits of the new solutions to a larger group of end-users. This collaboration between the stakeholders can be used to create new kind of logistics activities which are more optimised.

The Mobility Agency have been directly involved through providing information about traffic jams, road works, other projects etc. This input has been valuable support providing knowledge and experiences for the possibility of a Living Lab on a larger scale. There are tendencies of increasing cooperation with the municipality because there is more attention on environmental problems.

In cooperating with research in the CITYLAB solution, research has played the customer's role. During the design of the CITYLAB solution all three parties has worked closely together sharing action planes.

3.6 Rotterdam

The municipality of Rotterdam consists of 14 sub-municipalities and is part of The Rotterdam The Hague Metropolitan Area. The Rotterdam municipality is the transport and planning authority (Heslinga, Meijer, Wintle, & Rowen, 2017).

3.6.1 Urban freight transport planning and political support for urban freight innovations in Rotterdam

Urban freight plans and policy

Existing policies in Rotterdam affecting urban freight operations in the city were described in D.3.2. The Green Deal Zero Emission City logistics deal with the industry is still the most important plan for the Rotterdam municipality (Green Deal Zero Emission 010, 2015).

Urban freight planning

The primary way of working when cooperating in the urban freight planning process and policy-making is to work together with the all the organisations involved in city logistics. The municipality identify all relevant stakeholders, make contact, and get discussions started. This can be done by individual conversations, or through using the two larger city logistics meetings. Particularly industry is involved through these discussions.

Municipal facilitation for urban freight innovations

The government has facilitated for increased uptake of urban freight innovations by creating the Living Lab environment. So far, the benefits materialised after 2-3 years and the leading industry organisations that have been identified as 'front runners'. This group is now working together on their own – not led by the municipality. The municipality can facilitate urban freight innovations through a combination of the following three approaches:

- Through highlighting the municipal led efforts and initiatives so that the companies know the city is working on logistics. That way you can identify the right person for further cooperation and afterwards to bring companies together to share knowledge.
- The city, which is probably the biggest buyer of transport in the city, can optimize and clean their own fleet.
- Through long-term planning and the possibility of more regulation and laws make sure the traditional industry stakeholders change their behaviour.

Living Lab stakeholder cooperation - research, city and industry

In Rotterdam, there is an existing Living Lab which has worked with the CITYLAB idea of gathering stakeholder goals, their challenges and work together to overcome these. Ways to do this is through meetings, websites and the more traditional speaking to different stakeholders individually. The aim for the municipality is to help them on the way to new innovative urban freight solutions.

The cooperation with research is ongoing and beneficial since the universities and organizations like TNO in the Netherlands have a structured and facts-based approach to these issues.

Cooperation with industry is also ongoing. It is not only beneficial but a requirement to improve the urban freight situation. It is the role as the government on this subject to work with the industry.

3.6.2 The impact of urban freight transport planning, policy and political support for the Amsterdam industry

Urban freight political and policy impact on industry

The urban freight strategies, plans and regulations have little impact on the work done in this particular industry since there has been little interaction with the municipality and the solutions was developed independently of the municipality.

Municipal facilitation for urban freight innovations

One important element where municipalities can facilitate for increased urban freight innovations is through the development and implementation urban freight strategies. In Amsterdam, the industry finds the strategy good. In CITYLAB facilitating for using the water ways is more complex because several municipal departments are dealing with that. Also, the departments that do not want to have commercial activities on the water.

On a general level, industry could need more internal support, however, it is a trade off with increased profit and permission to invest.

In the CITYLAB Amsterdam implementation it could have been beneficial with more municipal support, however, as the City of Amsterdam is not a CITYLAB project partner it has been

challenging to ask for this support. When it comes to the floating depot this could have been realized with the right municipal support. Instead lack of municipal support turned out to be one of the barriers for implementing this solution.

Living Lab stakeholder cooperation - research, city and industry

In developing the new solution there have been regular meetings with the research institutions such as TNO and HvA (University of Applied Sciences). There has been little cooperation with the municipality, but cross-industry cooperation has been beneficial. There has been knowledge sharing with freight cycle manufacturers and with logistical partners in Amsterdam to develop partnerships in the supply chain and micro-hubs. Through involving the end-users in a co-creation process the industry has in general gotten positive views on delivery by bike instead of using a van.

3.7 Southampton

Southampton is a medium-sized city on the south coast of England with a population of around 243,000. The City of Southampton is the largest city in the ceremonial county of Hampshire but it is administratively independent and made into a unitary authority having the powers of a non-metropolitan county and district council combined. Southampton City Council (SCC) is responsible for all local government functions within its area including planning and transport policy in the city (Southampton City Council, 2017).

3.7.1 Urban freight transport planning and political support for urban freight innovations in Southampton

Urban freight plans and policy

Climate and environmental issues is high on the political agenda which act as an opportunity to work on these issues – bringing together industry, research and the municipality to reduce CO_2.

Existing policies in Southampton affecting urban freight operations in the city were described in D3.2. Additionally, there have been some developments. The activities related to freight logistics, such as HGV and fleet operations, are now mostly driven by the air quality issues the city is facing. Nitrogen dioxide levels exceed the limit set by the EU Ambient Air Quality Directive in several key locations across Southampton. The city currently has ten Air quality management areas declared, each one as a result of the annual mean for nitrogen dioxide (NO_2) exceeding the objective value of 40 µg/m^3 (Southampton City Council, 2008). The UK Government published the UK Air Quality Plan in December 2015. The plan identified Southampton as one of five cities which will be required to implement a mandatory Clean Air Zone (CAZ) no later than 2020 to ensure a satisfactory improvement is achieved.

Although Clean Air Zones will be characterised by the introduction of penalty charges for vehicles below a Euro 6 standard diesel engine, the Department for Environment, Food and Rural Affairs (DEFRA) is keen to ensure that they are also the focus of additional measures. Therefore, SCC adopted a Clean Air Strategy and Clean Air Zone Implementation Plan in November 2016 which identified a broad programme of measures to deliver improvements at the earliest opportunity and beyond 2020. These measures were identified following an assessment of the options by independent consultants. This exercise included extensive stakeholder engagement, air quality modelling, cost benefit analysis and an assessment to

gauge deliverability. The Clean Air Strategy commits the Council to 'Improve transport and freight delivery systems through efficient infrastructure and the uptake of new and innovative technologies' (Cabinet Member for Transformation Projects, 2016; Southampton City Council, 2016).

Urban freight planning

The University of Southampton has been included in the planning process as they have undertaken an initial review of the City Council fleet operations to identify opportunities for efficiencies to be made including the conversion of vehicles to electric. The review has led to a number of recommendations being made including the implementation of a real time fleet performance/management system, telematics, route optimisation, driver training and the financial case for the conversion of 16 vehicles to EV. This research will be integrated into an Electric Vehicle Action Plan which will be adopted by council and sit alongside the council's fleet management plan and establish the policy objectives for the increased uptake of low emission vehicles.

Municipal facilitation for urban freight innovations

The City Council is facilitating for urban freight by looking at procurement and their own deliveries generating large freight flows in the city. Currently they are committing to the clean air zone by reviewing their own fleet operations with a view to introducing more electric vehicle use or a transport service run by the local council.

Other ways the municipality facilitate is through effective regulations incentivise local businesses to operate cleaner vehicles and improve the efficiency of their freight operations. The intention is to offer organisations a 'carrot' to aid compliance with the clean air zone through the continued provision of free DSP's in partnership with the university, travel planning services for free, free electric vehicle charging infrastructure and grant funding for improved cycling facilities.

Living Lab stakeholder cooperation - research, city and industry

The University of Southampton is an important partner and the City Council is looking to involve academia closely in their urban freight solutions, planning or cooperation such as the Clean Air Partnership. It is important to utilize the University's expertise to develop parts of the Clean Air Strategy. There has been a strong working relationship between the City Council and research developed through the city's sustainable travel behaviour change programme, 'My Journey'. One way to formalise this cooperation has been through the Memorandum of Understanding.

The University, the City Council and industry representatives from the logistics sector, namely Meachers Global Logistics, regularly liaise via email, phone and direct via meetings to oversee progress of CITYLAB implementations. The Council commission DSPs, the University conduct the DSPs, and Meachers liaise with the organisations who have had DSPs undertaken to discuss the practical steps to implementing recommendations in the DSPs including switching the supply chain to the SSDC.

3.7.2 The impact of urban freight transport planning, policy and political support for the Southampton industry

Urban freight political and policy impact on industry

The impact of changing political context on urban freight transport is a concern. Especially since the limited time in office gives the politicians an excuse not to promise long-term solutions or to follow up on other parties promised solutions. One measure to reduce the impact of this uncertainty is a long-term urban freight strategy containing politically accepted measures targeted at urban freight. The perception that freight is largely a private sector issue makes it difficult to come up with and implement innovative ideas.

Urban freight planning involving industry

In Southampton, the industry is often involved in planning specific initiatives, however, more can be done at a more general freight strategy level.

While sustainable procurement measures may be identified, from a business perspective, as viable for efficiency gains it can sometimes be challenging to persuade the public body procurement team to make operational changes. Also, with such new solutions it is important to contractually oblige people to the agreement.

Municipal facilitation for urban freight innovations

For the industry, the City Council can facilitate increased innovation in urban freight through:

- A joint cross-stakeholder long-term strategy providing industry with the tools necessary for their business and investment strategies. This needs to be developed and implemented as an integrated freight work agreement.
- Subsidy in the transition from one mode to another or financial incentives related to investment expenses reducing the financial risks of new developments.
- Political will and policies such as subsidies and tax-relief,
- Listening to early adopters and to work with the stakeholders who have indicated an interest in urban freight issues.

Another measure which has proved successful is offering businesses a Delivery and Servicing Plan (DSP) initiated through the City Council and undertaken by the University. In the CITYLAB Southampton case the implementation would not have been possible without municipal support through being the biggest customer since the consolidation centre needs economies of scale and the Council has provided that scale.

Living Lab stakeholder cooperation - research, city and industry

The industry highlight that in terms of cooperation they have had a good relationship with the City Council. In the process of developing the consolidation centre as part of the CITYLAB solution SCC contacted the industry partner about their pollution issue and from there, together, the idea of a consolidation centre to take freight away from the city centre was identified. An additional benefit of the consolidation centre is the availability of warehousing services and SCC have taken advantage of this through long-term storage of management records.

Cooperation with research has happened as part of the CITYLAB project and has been useful for information gathering (e.g. though surveys), disseminating industry information and raising awareness of issues. One example of this is the Delivery and Servicing plans which identified that numbers of deliveries to Southampton General Hospital were much higher than believed by hospital supply chain management staff, resulting in changes being made to how incoming deliveries are managed (e.g. use of consolidation centre).

4 Making a successful Living Lab: political facilitation and lessons learned for wider uptake of urban freight innovations

Political support is often subject to the voters, and as urban freight often is an issue that doesn't occupy citizens, getting political support for urban freight is a challenge. The overall knowledge base on the urban freight flows in the cities improves through the development of new innovative solutions with industry, thus the transferability of results between different urban freight measures is important.

4.1 Political support and targeted policy for urban freight in CITYLAB cities

Overall, from the interviews completed in all the CITYLAB cities, the findings suggest that the topic of urban freight is sensitive to political support and the probability of having a changed political constellation. However, since developing innovative urban freight solutions is often a private matter industry is always looking at possibilities for profitable business solutions regardless of the changing political context. At the same time, municipal and political support will definitely speed up the innovation process and policy can force the industry to think differently to improve economic, environmental and social efficiency. The challenge is more, from both industry and city administration perspectives, that the politicians goal of being re-elected overshadow the implementation of a long-term urban freight strategy. Having an overall long-term vision for urban freight policies reduces the investment risk and creates opportunities for new and innovative solutions. On the other hand, mobility problems are severe and important to the general public and local enterprises, thus, the likelihood of further action to be taken is greater.

The approach on how to deal with urban freight transport depends on how important this topic is to the political parties in power and the importance of the topic is for the administration in, for example, the transport department. Depending on that, more or less budget will be made available for transport and mobility in general and the portion of this for urban freight transport. Having public bodies able to support financially can result in positive outcomes for both society and industry. It's important to have key people involved in a "team" working on urban freight e.g. having representatives of the department for transport or representatives of all stakeholder groups participating in the cooperation meetings on the topic.

4.2 City Logistics Living Labs – lessons learned from working towards Living Labs in CITYLAB

This section presents, from each group of partners, valuable lessons learned from the project and the added value of working towards a Living Lab approach using CITYLAB and the CITYLAB implementations as an opportunity for developing new cooperation structures.

4.2.1 City perspective

Stakeholder understanding, relationships and new cooperation mechanisms. Working with the CITYLAB project provides an opportunity to build good relationships with other urban freight stakeholders, particularly private partners. It also gives valuable insight to how the urban freight industry is operating on a day-to-day basis. The project provides a good connection between parties which is sometimes difficult to reach locally. However, there are mostly big companies involved and there would be valuable to include small local companies otherwise not heard in

the public debate. The CITYLAB project has helped to form and strengthen the ties between industry, research and the municipality. The project has enabled city representatives to see test cases in other cities and understand their practical implications.

Exchange of practices – practical lessons learned. Knowledge development and participation in the exchange of good practices through European projects provides an opportunity to assess the city/region on a European level. Also, the exchange of practices through the CITYLAB workshops provide reflections to further develop innovative concepts. The activities of the other CITYLAB city partners can provide a way to understand the urban freight measures in other cities. This new knowledge and insights can later be used to develop new innovations and urban freight projects. Understanding transferability is one of the elements that city authorities are very interested in. The project has highlighted the need for better understanding of the logistics demands that specific building types generate in order to factor this in to the planning stage of development. It has also highlighted the need for creative solutions for kerbside waiting areas for LGVs to prevent congestion and enable route optimisations and that the growth of online shopping and the vast number of LGVs operating in urban areas is now something which requires strategic thinking.

European framework – local actions. Another value added is that the experiences provided has a practical connection to real-life situations. Working within the European framework that CITYLAB provides is an opportunity to obtain funding for urban freight innovations locally. European projects can be used as an argument: if it is in the interest at a European level it should be funded locally. Another advantage of the project is that it gives a framework and a push for actually completing the solutions according to a given timetable.

Linking the CITYLAB urban freight implementations to the Living Lab or a cooperative structure has created an opportunity to work with urban freight planning using this as an argument for linking this to other ongoing projects in the municipality.

Evaluation and evidences of success/failure. Working with the CITYLAB project provides evidences or evaluation on the success which otherwise often wouldn't have been done in the public sector. This information can be used in other projects. The fact that the CITYLAB implementations are still continuing prove that are they are working. Even if the proposed solution turns out not to be successful the evaluation is of value to the city since the lessons learned of what went wrong are captured.

European networks – wider audience. European projects such as CITYLAB contribute in building European-wide networks. Thus, it provides an opportunity for the city to spread their experiences to a wider audience and more stakeholders.

4.2.2 Industry perspective

Stakeholder understanding, relationships and new cooperation mechanisms. Industry has gained increased understanding of how different stakeholders think, react and are concerned to the world around them. The cooperation with others who have different tools otherwise not available (e.g. MAMCA) is beneficial. Another important element is that the work done (e.g. evaluation, transferability assessments and comparisons) is completed at a larger scale than would have been done locally. CITYLAB is facilitating collaboration which otherwise wouldn't

have happened. Just taking to other people and hearing the questions they ask gets the industry thinking of other ways the implementation could have been done or improvements to be made.

Data management. One added value from participating in CITYLAB is the possibilities to collect, analyse, develop scenarios and use data related to the CITYLAB implementation. This is valuable to determine how/if the solution should be continued and how to further develop innovative urban freight solutions. Also, the sharing of data from the city partner has been useful. Although the industry cannot share competitive data, discussion in relation to the data assessments has a value in itself.

Cross-industry knowledge transfer. Lessons learned from other industries is a valuable outcome from the CITYLAB project as it improves cooperation and contact with the freight industry. This benefit is not only limited to the industry partners who form a part of the project but, through the workshops, new industries have been included and cooperation has occurred as part of these relationships. Learning from other initiatives and companies is important, however, the challenge lies in disseminating this effectively to society as a whole.

One of the main drivers with CITYLAB is the collaboration with other often larger freight industries. Being part of CITYLAB allows the industry to do something different which probably wouldn't have been done otherwise.

Innovation support – experiences, awareness and attention. Being a part of CITYLAB together with a city partner has provided increased municipal attention to urban freight issues. Working with the municipality on a project outside of the political environment has provided a way for the industry to express their thoughts and for the municipality to listen.

Getting exposure to people with different perspectives challenges the industry's own perspective on how to run the operations. The research is valuable as it can guide what the company foresees as important in the future.

European support through funding is helpful for the industry. CITYLAB is seen as an environment where the industry can test and develop new solutions without the commercial risks. It gives the justification to try new and different solutions. Another possibility is to gain more knowledge on logistics with working with others across borders, acquiring the knowledge that exists within this field.

The transfer of knowledge between industry and other sectors is valuable. The reason why experiments are repeated is because the lessons learned are not distributed properly, which projects like CITYLAB can help avoid.

4.2.3 Research perspective

Stakeholder understanding, relationships and new cooperation mechanisms. The project has provided contact with important and relevant stakeholders e.g. departments/public organisations; industry, retailers, citizens' associations which has resulted in preliminary discussions about possible joint endeavours. CITYLAB has provided cooperation between research, local authorities and industry which has improved the quality of data allowing for improved decision-making. For example, UR3 has been asked to host the first 'fabbrica del riuso' in Rome where the implementation could be tested on a larger scale.

New opportunities for research. Through CITYLAB new opportunities to assess data from the municipality which wouldn't have been available occurred. The project and the new cooperation structures facilitated for added opportunities for further research (e.g. spin-off projects) and the opportunity to be a part of the development of a new urban freight solution.

European networks – wider audience. Extra networking opportunities is gained from the project particularly since there are partners from both city and industry in each CITYLAB city. Additionally, such a large European project has provided good visibility of the results and the development of cross-national cooperation both across and within sectors.

4.3 Main contributions and stakeholder benefits from Living Lab collaboration

The analysis of inputs from the various CITYLAB cities show that the nature of the solutions and measures being implemented affect the importance of support from local authorities. However, in all cases, the development of city logistics implementations seems to benefit from a closer relationship between the industry partners, local authorities and researchers. But also, the other stakeholders benefit from collaboration on city logistics solutions and policies. Some of the direct benefits of closer relationships are summarised in Figure 1, showing by stakeholder category some of the observed collaboration benefits.

		From collaboration with		
		Cities	**Industry**	**Research**
Benefit to	**Cities**	Exchange of practices and learn from work done in other European cities	Learn from industry experiences and get knowledge on their responses to policies	Support for analysis of data, help to raise awareness of urban freight issues
	Industry	The possibility to affect policies, innovation support and present their view to the authorities	Transfer of knowledge between industries and cross-industry cooperation	Get help to provide evidence to cities and participation in knowledge transfer
	Research	Access to data, collaboration opportunities and information on policies	Access to data, knowledge on solutions being developed	Participation in a Europe wide network providing good visibility of results

Figure 1. Added value of stakeholder collaboration by stakeholder category.

In addition, it has been stressed from several partners that stakeholder collaboration as part of projects like CITYLAB provides an opportunity to build relationships and establish joint initiatives that otherwise would not have taken place.

Successful Living Lab collaborations require that all partners see a potential benefit from participating. In the public administrations, one challenge is that a limited work force has to cover a broad set of topics, and sometimes urban logistics does not get sufficient attention due to other pressing mobility issues. Still, when a city participates in a living lab environment and has urban freight policies in place, it is more likely to give priority to city logistics.

5 Conclusions

This deliverable has mapped current cooperation and experiences in the CITYLAB Living Labs, and extracts lessons on the relevance of a well working living lab environment on city or neighbourhood level for implementation of sustainable city logistics initiatives. This fourth version mainly uses the CITYLAB partners to extract different stakeholder groups' experiences on the importance of policy, political support and cooperation with either industry, research and the city. Altogether, this feeds into the final version of the CITYLAB Living Lab methodology in Deliverable 3.4. This deliverable, 3.3d, aimed to use the CITYLAB cities and their respective implementation actions as a case study to capture, from both industry and city perspectives, the importance of governmental support for urban freight implementations and how policy and/or the municipality can facilitate increased uptake of urban freight innovations.

The findings suggest that the policy and political support together with cooperation between research, industry and the city is valuable for developing new urban freight innovations. However, the degree to which government support and the involvement of all three stakeholders is needed depends on the nature of the implementation. Cooperation in urban planning, creating an opportunity for urban freight solutions, is considered more valuable in some CITYLAB cities than others.

An added value of the CITYLAB project lies in the increased stakeholder understanding, working relationships and new cooperation mechanisms. From an industry perspective innovation support through knowledge, experiences, awareness and attention is also valuable while the city partners highlight the exchange of practices and the practical lessons learnt. From a research perspective, the new opportunities and network possibilities are valuable.

This deliverable, following the ambition, has provided us with improved empirical knowledge on the importance for a Living Lab to have political support and long-term plan/strategies to increase the uptake of urban freight innovations.

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Appendix A

Process evaluation forms

City	Brussels		
Project partner	VUB		
Reporting period	May 2016 – May 2017		
What kind of relationships have been developed due to CITYLAB?	Improved relationship between Brussels Mobility and MOBI department of VUB		
Outcomes and activities undertaken because of CITYLAB? E.g. contacts, actions, conversations, policy changes, meetings, workshops etc.	**Who?**	**What?**	**Impact / changes?**
	VUB – Brussels Mobility	UFT analysis based on sample of OBU data of HGVs	Development of a new methodology to evaluate UFT in Brussels
	VUB – Brussels Mobility	Project to work further on OBU data and to do other research tasks for Brussels Mobility	Use of public resources for scientific evaluation of UFT, its impact and innovative solutions in Brussels
New outcomes, ideas and activities, e.g. projects, contacts, occurred outside because of CITYLAB?	**Who?**	**What?**	**Impact / changes?**
What is the added value for you from participating in the CITYLAB project?	As a research partner, we had the opportunity to explore which urban freight transport (UFT) analyses are possible based on sample of the data collected by the On Board Units (OBU) of all heavy goods vehicles (HGVs) in Brussels. The On Board Units are compulsory in Belgium. They are used to calculate the kilometre charge drivers have to pay when they use Belgian road infrastructure.		
Cooperation between research, industry and cities is one of the key elements in the LL, from a research perspective in your city how is the: • cooperation with industry? • cooperation with the municipality?	Cooperation with industry goes well. The industry partner is in charge of implementing the solution and provides us with data to do analyses. Cooperation with municipality goes well. We have regular meetings to discuss progress on the method to use the OBU data for UFT analyses. They give input on what they expect and share outputs of other projects they did with other partners that can contribute to the work we are doing together.		
What were the main challenges and main benefits in using	Main challenge: come to an agreement on the amount of information Brussels Mobility will share with us. They do not want to violate their contract with the provider of the OBUs and		

CITYLAB's Living Lab approach - the cooperation between the city authorities and the research partners?	we want access to enough data to be able to do a proper analysis. In the end, we agreed that they would only share a random sample of the data that we can use to develop a sound methodology. Afterwards, we will apply the methodology in their offices on the full sample as part of a new research project with them. Main benefit: because there was a budget available (and public authority nor university had to finance the research themselves), we were able to look for a project with added value which wouldn't have been done otherwise (or at least not so soon in time).

City	London		
Project partner	University of Westminster (UoW) Transport for London (TfL) Gnewt Cargo TNT UK		
Reporting period	Autumn 2016 – Spring 2017		
What kind of relationships have been developed due to CITYLAB?	Renewed and reinforced partnership between research, local authorities and industry businesses around urban logistics in London. New partnership of UoW, TfL, Gnewt Cargo and TNT UK with the London Borough of City of London Industry partnership between Gnewt Cargo and TNT UK is reinforced		
Outcomes and activities undertaken because of CITYLAB? E.g. contacts, actions, conversations, policy changes, meetings, workshops etc.	**Who?**	**What?**	**Impact / changes?**
	UoW	Data collection	Scenario for growth of electric vans and consolidation centres in London
	TfL	Public policy support	Search for larger new facilities for freight consolidation in central London
	London Borough of City of London	Public policy support	Search for larger new facilities in Central London
	Gnewt Cargo	Consolidating freight of multiple	Reduction in mileage in city centre. Higher load factor

		clients into a single vehicle	
	TNT UK	Allowing the subcontractor Gnewt to transport TNT parcels together with the parcels of other clients (carriers' carrier approach)	Reduction in mileage in city centre. Higher load factor
	All London Living Lab partners	Workshops and meetings	Dissemination of good practices on how to grow electric van distribution and consolidation in city centre
	All London Living Lab partners	Transfer of practice to other follower cities	Exchange and planning of activities in Budapest, Madrid and Manchester
New outcomes, ideas and activities, e.g. projects, contacts, occurred outside because of CITYLAB?	**Who?**	**What?**	**Impact / changes?**
	UoW	Dissemination	Wider expert audience
	UoW	Lectures	Professional training
	Gnewt Cargo	Consolidation of goods from clients other than TNT UK into single van trips	Reduction in mileage in city centre. Higher load factor
	Gnewt Cargo and TNT UK	Testing of new solution	Insight into effects of new solutions
What is the added value for you from participating in the CITYLAB project?	Development of new solutions Development of new cooperation Very good visibility of research Very positive results of experimentation and testing of new solutions Excellent quality of data allowing improved decision making Excellent cooperation between research, local authority and industry businesses		
Cooperation between research, industry and cities is one of the key elements in the LL, from a research perspective in your city how is the:	Excellent cooperation with industry Excellent cooperation with the local authority representatives of TfL and City of London		

- cooperation with industry? - cooperation with the municipality?	Embedding Citylab activities into existing networks allowed to set up a Workshop on the Search for larger new facilities in Central London
What were the main challenges and main benefits in using CITYLAB's Living Lab approach - the cooperation between the city authorities and the research partners?	Main challenge in London was the pre-existing networking and the difficulty to distinguish the Living Lab approach from the already existing approach to networking in urban logistics in London Main benefits: London local Workshop of Citylab on 12 May 2017 was receiving a lot of positive feedbacks from the participants.

City	Oslo		
Project partner	TOI		
Reporting period	January 2016 – May 2017		
What kind of relationships have been developed due to CITYLAB?	There has been important transfer of knowledge between the Oslo partners and in particular the relationship between research and industry has been improved.		
Outcomes and activities undertaken because of CITYLAB? E.g. contacts, actions, conversations, policy changes, meetings, workshops etc.	**Who?**	**What?**	**Impact / changes?**
	Stakeholders affected by the common logistics function	CITYLAB workshop	This workshop resulted in increased understanding of the different stakeholders affected by this solution and in the end the area dedicated for the common logistics solution was increased.
	Steen&Strøm, Emporia and Logistikbolaget	Cross industry cooperation	Experiences and knowledge has been shared across industrial partners.
	The City of Oslo	"The city as a shopping centre"	The idea of the common logistics functions has spread to other parts of the city and it is might considered as a solution for certain areas in the city centre.
	The City of Oslo and urban freight industry	Information from the urban freight forum – increased knowledge	The common logistics solution has now been introduced to the Oslo Freight Forum by the City of Oslo.

	The City of Oslo and urban freight industry	Looking into using the CITYLAB common logistics function for off-peak deliveries in the city-centre	There are discussions whether the Oslo solution can be used in combination with night deliveries in the city centre.
	The City of Oslo and TOI	Continuous meetings and information transfer between the municipality and TOI	There has been continuous meeting with the city partner and the research partner which, for the researcher, has led to greater understating of the ongoing projects in the city and for the city this has resulted to greater insight to the research thus being able to make better use of this within the municipality.
New outcomes, ideas and activities, e.g. projects, contacts, occurred outside because of CITYLAB?	**Who?**	**What?**	**Impact / changes?**
	The City of Oslo, Logistics service provider, National Road Administration, TOI	Cargo bike initiative	A new project where additional stakeholders are involved from the City of Oslo, the National road administration and a logistics service provider. Has resulted in increased stakeholder cooperation and the uptake of a new urban freight solution.
	The City of Oslo, Akserhus Region, TOI	SmartMR	An opportunity to transfer the knowledge of the CITYLAB project to other stakeholders than those directly involved in the project.
What is the added value for you from participating in the CITYLAB project?	The added value from participating in this project has been a greater knowledge of all the ongoing urban freight activities and potential initiatives in the city. Also,		
Cooperation between research, industry and cities is one of the key elements in the LL, from a research perspective in your city how is the:	Cooperation with the municipality and the industry are going well, however, there could have been increased cooperation, in particular in CITYLAB, with all three parties. The cooperation is most usually done individually rather than as a group. This could be due to the private nature of the Oslo implementation but it is important to find other projects where this structure can function better.		

• cooperation with industry? • cooperation with the municipality?	
What were the main challenges and main benefits in using CITYLAB's Living Lab approach - the cooperation between the city authorities and the research partners?	As written above one of the main challenges in using the Living Lab approach has been combining all three parties and understanding the possibilities that lies with applying this approach. The idea is under development in Oslo, however, it is not yet fully functional. The benefit has been increased understanding of how the other stakeholders are affected by each other actions. Another positive outcome has been the opportunities for new projects and increased urban freight initiatives.

City	Paris		
Project partner	IFSTTAR + City of Paris		
Reporting period	November 2016 - May 2017		
What kind of relationships have been developed due to CITYLAB?	The Living Lab approach has made the realisation of the concept of Logistics Hotels possible. The Living Lab gathered different stakeholders – public authorities (the City of Paris and the Paris Region), urban logistics real estate developer (SOGARIS, a logistics real estate investor and manager whose capital is mainly controlled by the city of Paris) and logistics operators (Chronopost for Beaugrenelle terminal, XPO Logistics and Eurorail for Chapelle logistics hotel). The concept has been developed together by the stakeholders. The solutions have then been converted into a favourable regulatory and economic environment through discussions within the Living Lab.		
Outcomes and activities undertaken because of CITYLAB? E.g. contacts, actions, conversations, policy changes, meetings, workshops etc.	**Who?**	**What?**	**Impact / changes?**
	IFSTTAR and City of Paris	Meetings	Participating in the definition of the new logistics charter
	IFSTTAR and Sogaris	Meetings, site visits, interviews	Readjustment of initial project relying on electric vans to switch to gas vans
New outcomes, ideas and activities, e.g. projects, contacts, occurred outside because of CITYLAB?	**Who?**	**What?**	**Impact / changes?**
	City of Paris	Call for tenders to develop new logistics hotels in Paris	Better air quality Less traffic congestion Multi-function and optimal use of urban lands

	Sogaris	New projects of logistics hotels in Paris and in other cities	Reduction of pollution Better economic balance New market opportunities
What is the added value for you from participating in the CITYLAB project?	We have carried out ex ante analysis on Chapelle thanks to cooperation with Sogaris. This helps us to better assess the genesis of the innovative urban logistics concept (logistics hotel) under the historical and contextual background. Sogaris also provided us the ex-post analysis on Beaugrenelle. With this study, we can gain better knowledge of the environmental impact of this kind of urban logistics facilities. This learning combining with the ex-ante analysis of Chapelle give a comprehensive understanding on urban logistics center development and useful for future urban planning project.		
Cooperation between research, industry and cities is one of the key elements in the LL, from a research perspective in your city how is the: • cooperation with industry? • cooperation with the municipality?	• Sogaris received interviews of our students, provided materials and data for analysis. IFSTTAR sits in the steering committee of environmental impact assessment of Beaugrenelle. • The City of Paris provides us information (legislation, economic, financial, etc.) concerning the Paris urban zoning definition. IFSTTAR assisted their meetings on future city logistics charter definition. Cooperation with the two partners allows us to understand the conditions of success and the positive and negative impact to develop logistics facilities in city center. This learnings can be duplicated or transfer to other cities.		
What were the main challenges and main benefits in using CITYLAB's Living Lab approach - the cooperation between the city authorities and the research partners?	Economic/financial indicators are an important part of assessing the success or failure of a logistics hotel, as well as making it susceptible to reproduction, therefore it will be important to provide some sort of economic evaluation.		

City	Rome
Project partner	UR3
Reporting period	January 2016 – May 2017
What kind of relationships have been developed due to CITYLAB?	The city of Rome has started working on the development of the Sustainable Urban Mobility Plan (SUMP), following the indications contained in the General Urban Mobility Plan

	passed by the local Administration in April 2015. The first act of the city of Rome was to nominate a steering committee where practitioners, administration, industry, citizens, and academia/research are present. Prof. Marcucci (UR3), also due to the contacts developed within CITYLAB, was nominated as a member. The interest the local Administration is pursuing is to have an active and constant engagement of various stakeholders. “Participation” is, in fact, a major aim the Roman Administration is pursuing in all city-related policies. The main contributions produced within CITYLAB that will be transferred within the SUMP steering committee, in particular, and within all SUMP activities, in general, refer both to methodology as well as policy themes. More in detail: as it is for the methodological contribution, Prof. Marcucci will transfer the living lab approach developed and tested in the Roman implementation so to help structuring the stakeholders’ participation process according to the theoretically sound procedures developed. This intent was particularly appreciated during the first meeting of the Steering Committee that took place on 02/05/2017. As it is for the policy themes that will be brought to the attention of the SUMP Steering Committee, Prof. Marcucci’ s intention is not limited to addressing the direct/indirect reverse logistics integration with respect to clean waste management (i.e. the main focus of the CITYLAB implementation in Rome) but also to contribute to the discussion by transferring to the Roman context the knowledge and research results developed by CITYLAB partners in other cities so to provide reliable and “tested in the field” results with respect to the other axis of intervention studied within CITYLAB (i.e. highly fragmented last-mile deliveries in city centres; inefficient deliveries to large freight attractors and public administrations; logistics sprawl). Furthermore, a series of workshops/meetings is planned with a set of privileged stakeholders in Rome, namely: industry associations (e.g. Unindustria), retailers’ associations (e.g. ConfCommercio, Confesercenti), citizens associations (e.g. Carte in Regola), various departments/public organizations (e.g. Dipartimento Trasporti, Dipartimento Ambiente, ISPRA). The aim pursued in the workshop/meeting series is to transfer the knowledge derived from research pursued both within CITYLAB as well as other research context/endeavours (e.g. ICROWD4FR8 research project – funded by Fondazione BNC; SMARTENVIRONMENTS research project – funded by Regione Lazio; LOGICO research project – funded by TPS s.r.l.). The knowledge transfer process aims at both sharing cutting edge research results with stakeholders interested in the research aims pursued (i.e. ICROWD4FR8 – crowdshipping using public transportation; SMARTENVIRONMENTS – logistics repercussions on tourists’ non-motorized path choices in historical cities; LOGICO – participated urban freight policy making procedures integrating discrete choice models and agent-

	based modeling) as well as, and possibly even more important, the living lab approach to problem identification and characterization, policy definition, deployment, evaluation, and revision that are typical of the living lab approach.		
Outcomes and activities undertaken because of CITYLAB? E.g. contacts, actions, conversations, policy changes, meetings, workshops etc.	**Who?**	**What?**	**Impact / changes?**
	UR3 – Department of the Environment	Meeting with the Counselor	Contacts with AMA (local waste management company) and formal participation to the implementation living lab.
	UR3 – ISPRA (Italian National Institute for Environmental Protection and Research)	Contact, conversation, meetings	Sharing strategic information related to the integration of direct/reverse flows for waste management
	UR3 - SUMP Steering Committee	Participation in SUMP meeting	Transfer of CITYLAB experience/results within the Steering Committee which now is considering adopting living lab methodology.
New outcomes, ideas and activities, e.g. projects, contacts, occurred outside because of CITYLAB?	**Who?**	**What?**	**Impact / changes?**
	UR3	Participation in H2020 MG-7.2-2017 - Optimisation of transport infrastructure including terminals	Introduced living lab approach into the project which, also due to this innovative contribution, successfully passed the first screening process.
	UR3	Participation to the following International Conferences: 2017 NECTAR Conference on “Transport in a networked society”; 10th International Conference on City Logistics; 5th IEEE International Conference on “Models And Technologies For Intelligent	Dissemination of Rome’s implementation results and future research endeavours.

		Transportation Systems"; XIXth Scientific Meeting of the Italian Society of Transport and Logistics Economists	
	UR3, RSM, PIT, MEW	Organisation of a freight-related workshop in Rome	Sharing and critical discussion of CITYLAB proposed solutions and approach within a highly interested community of competent stakeholders.
What is the added value for you from participating in the CITYLAB project?	Contacts with important and relevant stakeholders (e.g. departments/public organisations; industry, retailers, citizens associations) and preliminary discussions about possible joint endeavours. As an example, the department of the environment has asked UR3 to develop a joint project to pilot test the direct/reverse logistic procedures developed within CITYLAB in a "fabbriche del riuso" (re-use factories) project representing a high-ranking objective for the Department. In particular, UR3 has been asked to host the first "fabbrica del riuso" in Rome where the concepts developed in the implementation could be tested on a larger scale and, according to preliminary evaluations, could also represent a financially viable solution capable of guaranteeing the self-sustainability of the project. It is important to underline the fundamental importance of the implementation developed that was highly appreciated by the Administration since it provided context-specific knowledge with respect to organizational, functional, environmental, social, economic issues.		
Cooperation between research, industry and cities is one of the key elements in the LL, from a research perspective in your city how is the: • cooperation with industry? • cooperation with the municipality?	In Rome, the cooperation between research and industry is generally linked to personal contacts and there are no well-structured forums where these activities take place. The CITYLAB experience represents a first attempt to develop a well-rooted and open format to involve research and industry in pursuing jointly defined objectives. The municipality of Rome has developed through the years an open collaboration with, at least, the three main public Universities, namely: University of Roma Tre, University of TorVergata and Sapienza University to address, on an ad-hoc basis, specific transport related policy issues.		
What were the main challenges and main benefits in using CITYLAB's Living Lab approach - the cooperation	The main challenges with respect to CITYLAB's Living Lab approach were to implement and adopt a well-structured discussion, definition, deployment, and revision process within a highly articulated and, sometimes, difficult to aggregate decision making process necessarily involving stakeholders pursuing particular/contrasting objectives.		

between the city authorities and the research partners?	The main foreseeable benefits are linked to a clear, credible, structured and open discussion and deliberation process that the living lab approach characterizing the CITYLAB project has promoted. In particular, this has allowed discussing and tackling the main problems/issues pertaining to the local level and also introducing/testing innovative solutions/ideas before actually taking policy decisions that could have long-lasting implications not only with respect to the specific transport-related problems addressed (i.e. integrated direct/reverse logistics clean waste management) but also with respect to the procedures developed and adopted for devising the solutions proposed.

City	Rotterdam/Amsterdam		
Project partner	TNO		
Reporting period	January 2016 – May 2017		
What kind of relationships have been developed due to CITYLAB?	TNO-PostNL TNO-Municipality Rotterdam and together with regional stakeholders Green Deal zero emissions stadsdistributie		
Outcomes and activities undertaken because of CITYLAB? E.g. contacts, actions, conversations, policy changes, meetings, workshops etc.	**Who?**	**What?**	**Impact / changes?**
	TNO-PostNL	Regular meetings (approx. every month)	Finetuning the implementation
	TNO-Rotterdam municipality	Regular meeting (every 2 weeks)	Dicussing city logistics policy
	Green Deal zero emission stadsdistributie (TNO and Rotterdam involved)	Meeting	Roadmap development and implementation of initiatives
New outcomes, ideas and activities, e.g. projects, contacts, occurred outside because of CITYLAB?	**Who?**	**What?**	**Impact / changes?**
	TNO	New project	
What is the added value for you from participating in the CITYLAB project?	Contacts with industry and municipality, learning in what circumstances the living lab methodology is applicable.		
Cooperation between research, industry and cities is one of the key elements in the LL, from a research	Both are valuable.		

perspective in your city how is the: • cooperation with industry? • cooperation with the municipality?	The cooperation with the industry partner is more difficult because it not always has the most priority. However, it provides us with information on the business perspective. Both meeting the municipality and the urban freight networks they set-up is important for us in aligning with the practical side of urban freight. What are the issues and which policy might work.
What were the main challenges and main benefits in using CITYLAB's Living Lab approach - the cooperation between the city authorities and the research partners?	In Rotterdam, the formation of the platform and roadmap development on city logistics worked well. In Amsterdam, a closer cooperation with the city could have improved the speed of the implementation.

City	Southampton		
Project partner	University of Southampton		
Reporting period	January 2016 – May 2017		
What kind of relationships have been developed due to CITYLAB?	Working relationships have been developed between the Citylab partners (University of Southampton, Southampton City Council (SCC) and Meachers Global Logistics (MGL)) and personnel from other municipal organisations who have become part of the Southampton Living Lab (Southampton Solent University, University Hospital Southampton NHS Trust, Isle of Wight Hospital Trust). These relationships have revolved around a continuous dialogue in which logistics problems are aired and possible solutions investigated and scoped through small-scale projects overseen by the University of Southampton.		
Outcomes and activities undertaken because of CITYLAB? E.g. contacts, actions, conversations, policy changes, meetings, workshops etc.	**Who?**	**What?**	**Impact / changes?**
	University of Southampton procurement team	Meetings; provision of purchasing data	Better understanding of University purchasing of goods and services and opportunities for collaborative purchasing (MSc dissertation 2016). New 10-year strategy being adopted by the University of Southampton will address smarter procurement
	University of Southampton and Southampton	Meetings; site surveys of incoming parcel deliveries and	Consolidation concept not adopted by universities at this stage due to concerns over

Solent University halls of residence managers	student attitudes to consolidated deliveries; production of a costed proposal for consolidation	increases in same-day delivery demands by students. New evidence on impacts of university halls of residence being presented by invitation to the UK Association of Student Residential Accommodation. Dialogue now taking place with Parcelly (http://www.parcelly.com/) to look into alternative delivery systems for halls post in Southampton
Isle of Wight NHS Trust (Finance Manager)	Meetings; site surveys of incoming parcel deliveries; plan made for phased introduction of consolidation	Consolidation proposal not adopted due to changes in operating circumstances and in senior management at the Trust
University Hospital Southampton NHS Trust (Procurement and Supply Chain Managers)	Meetings; delivery and service plan undertaken	Pilot implementation of temporary storage and transport by MGL of 12 drugs dispensing cabinets with further roll-out agreed and about to commence; Ongoing talks about consolidation of goods coming into the hospital pharmacy. SCC are working with MGL to procure a controlled drugs handling licence so that pharmacy supplies can be consolidated via the SSDC
Southampton City Council (Fleet managers)	Meetings; survey of in-house vehicle use	Detailed audits of 16 SCC vehicles covering 6 service areas (Animal Welfare, Clinical Waste, Hygiene & Pest Control, Emergency Planning Library Services, Parking Operations, Waste & Recycling) have shown that conversion to electric vehicles is viable and, considering those 16 vehicles only, could save

			1,800 metric tonnes CO_2 per year and save 60% on vehicle operating costs with a CAPEX payback period of around 7 years. SCC are now looking to run selective trials with electric vehicles across parts of the fleets.
New outcomes, ideas and activities, e.g. projects, contacts, occurred outside because of CITYLAB?	**Who?**	**What?**	**Impact / changes?**
	University Hospital Southampton NHS Trust (Stock Management and Clinical staff)	New project analysing store room design from the perspective of different users and considering stock management, ward budgets and sustainable freight practices.	Project is currently scoping out the possible changes that may be considered for implementation.
	SCC (Fleet Management)	Some fleet vehicles to be fitted with CAN bus technology to directly measure engine performance (e.g. fuel use)	Will provide hard evidence of existing carbon footprint
What is the added value for you from participating in the CITYLAB project?	Extra networking opportunities gained; enhancement of reputation through publication of articles; added opportunities for further research (e.g. spin-off projects)		
Cooperation between research, industry and cities is one of the key elements in the LL, from a research perspective in your city how is the: • cooperation with industry? • cooperation with the municipality?	Co-operation between the CITYLAB research, industry and municipality partners has been excellent with all members fully supportive of one another.		
What were the main challenges and main benefits in using CITYLAB's Living Lab approach - the cooperation	The main challenges have been in persuading external parties (large municipal organisations) to change their ways of working. Although the managers we have met with have been encouraging and positive about proposed initiatives, financial constraints and other competing priorities have prevented		

between the city authorities and the research partners?	some from taking place. The Living Lab approach has been helpful in bringing the various people together to share information and opinions, to discuss possible ways forward and to allow access to data and to sites (for surveys). The turnaround of senior managers, particularly related to the Isle of Wight Trust has meant that agreed actions have been overturned and activities stopped.

EUROPEAN COMMISSION

INNOVATION and NETWORKS EXECUTIVE AGENCY

HORIZON 2020 PROGRAMME for RESEARCH and INNOVATION

Reducing impacts and costs of freight and service trips in urban areas (Topic: MG-5.2-2014)

Grant agreement no: 635898

Deliverable 3.3c

CITYLAB: lessons and experiences with living laboratories

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Document Control Sheet

Project no.:	635898	**Acronym**	CITYLAB
Project Title	City Logistics in Living Laboratories		
Work Package	WP3	**Title:**	Living laboratories
Deliverable no.:	D3.3	**Title:**	CITYLAB: lessons and experiences with living laboratories
Version	1	**Revision**	0
Issue Date	31 Jan 2017		
Dissemination Level	Public		
Future references	CITYLAB Deliverable 3.3c (2017). CITYLAB: lessons and experiences with living laboratories.		

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CITYLAB consortium by Living Lab			
Living lab	**Municipal partner(s)**	**Industry partner(s)**	**Research partner(s)**
Brussels	Brussels Mobility	Procter & Gamble Services	Vrije Universiteit Brussel
London	Transport for London	TNT Gnewt Cargo	University of Westminster University of Gothenburg
Oslo	Oslo kommune	Steen & Strøm	TOI
Paris	Mairie de Paris		IFSTTAR DLR
Randstat	Gemeente Rotterdam	PostNL	TNO
Rome	Roma Capitale	Poste Italiane MeWare SRL	Università degli studi Roma Tre
Southampton	Southampton City Council	Meachers Global Logistics	University of Southampton
Networking and outreach partner			
POLIS			

Executive summary

The objective of the CITYLAB project is to develop knowledge and solutions that result in roll-out, up-scaling and further implementation of cost effective strategies, measures and tools for emission free city logistics. In a set of living laboratories, promising logistics concepts will be tested and evaluated, and the fundament for further roll-out of the solutions will be developed.

The role of this deliverable is to report on the lessons and experiences from the Living Lab process in each city involved. This document is updated twice a year throughout the CITYLAB project. This document is the **third** edition finalised in **January 2017,** and is referred to as Deliverable 3.3c.

The Living Lab city environment can facilitate or act as a barrier in the implementation of policy measures using the Living Lab approach. Deliverable 3.1 and 3.2 identified how city characteristics can facilitate implementation of urban freight transport living labs. These characteristics are: existence of an urban freight policy with clear depicting ambitions, goals and specific objectives on urban freight; existence of measures that back up implementation of policy; active stakeholder cooperation platforms, including key players such as, the municipality, industry and research institutions; monitoring and evaluation of actions and measures. Deliverable 3.3c focuses on the status of the stakeholder cooperation in the different CITYLAB cities, looking at how efficient stakeholder cooperation contributes to the faster uptake and wider roll out of the innovative urban freight solutions, how and in which form stakeholders are involved in the work on urban freight transport and if it has contributed to joint knowledge production (JKP) and shared situational awareness (SSA).

The stakeholder cooperation in the CITYLAB cities have very different forms, frequencies and degrees of involvement of the different parties. It is often organised as workshops and forums of various forms, as well as individual meetings between the stakeholders. The success of this way of working to a large degree relies on the local authorities and the effort to ensure continuous stakeholder commitment. For each city, we also discuss how the feedback from stakeholders is integrated in the urban freight policy processes, considering integration between different elements of the city environment.

This third version is a development of Deliverable 3.3a and 3.3b. It focuses on the stakeholder cooperation in relation to increasing joint knowledge production and shared situational awareness as key characteristics of the Living Lab city environment and Living Lab implementation action. It also summarises activities taken place by the research partners achieving a specific CITYLAB Living lab objective on the city level during July 2016 - November 2016. This will feed into the final version of the CITYLAB Living Lab methodology in Deliverable 3.4.

1 Introduction

The objective of the CITYLAB project is to develop knowledge and solutions that result in roll-out, up-scaling and further implementation of cost effective strategies, measures and tools for emission free city logistics. In a set of Living Laboratories ("Living Labs"), promising logistics concepts are tested and evaluated, and the fundament for further roll-out of the solutions is developed.

A Living Lab is defined as a dynamic test environment in which stakeholders aim at achieving a long-term goal and where complex innovations can be implemented. CITYLAB introduces the Living Lab concept in the city logistics domain, and has developed a methodological approach for this (CITYLAB, 2015). There are seven Living Labs in CITYLAB, in which specific test and implementation actions are planned - the cities are Brussels, London, Oslo, Paris, Rome, Rotterdam and Southampton. Experience show that a majority of pilots carried out within urban freight rarely result in continuation. The Living Lab approach is based on an idea that for successful up-scaling a supporting environment on the city or neighbourhood level is needed. This favourable city environment can contribute to the following important conditions: Policy support with a set of measure; Established stakeholder cooperation; Monitoring and evaluation. Having those in place on the city level acts as a facilitator to increased uptake of innovations, as it creates an environment beneficial for cyclical implementation of innovations. The cyclical innovation process is not a new thing and is adopted by a lot of organisations, however, the linkages and interaction with a supportive external environment creates a difference supported within the Living lab approach. This is why, within the CITYLAB project, we consider the existence of a supportive external environment as a prerequisite when applying a cyclical approach, proposed in Deliverable 3.2, on implementation development.

The Living Lab environment on a city or neighbourhood level encompasses ambitions, strategies, policies, scope, partners and cooperation structures necessary to be involved in urban freight issues. The contribution of CITYLAB is to evaluate how different factors of the living lab environment act a facilitator to the cyclical development of innovative urban freight implementations. CITYLAB maps and studies the Living Lab environment in each city to increase the understanding of how policies and cooperation structures at the city level may facilitate or hinder the development of urban freight initiatives. Additionally, specific objectives are established for each CITYLAB city, focusing on how to further develop Living Lab environment within CITYLAB project boundaries.

CITYLAB also supports implementation of specific urban freight initiatives within the Living Labs. The CITYLAB Living Lab implementations are urban freight initiatives involving the private sector, expected to contribute to the overall city ambitions. One such implementation action is studied and supported in each CITYLAB city. Throughout the project, we assess the interaction between the local living lab environments and implementations, looking at whether this interaction acts as a barrier or facilitator for the further uptake of the solution. The implementations are both private and publicly driven, thus the learning extracted from these implementations will highlight different aspects of the approach (CITYLAB, 2016b).

1.1 Role of this deliverable

Stakeholder collaboration is key for the Living Labs. This third version of Deliverable 3.3 therefore has a thematic emphasis on the stakeholder cooperation processes in the Living Lab environments and within the implementation actions. Key questions being addressed are:

- What is the current status of stakeholder collaboration for urban freight transport on city level in the CITYLAB living labs?
- To which degree is stakeholder collaboration important for the implementation actions?
- Has CITYLAB so far contributed to increased Joint Knowledge Production and improved Shared Situational Awareness?

This deliverable is a part of WP 3 of the project, which is oriented towards the external Living Lab environment on city or neighbourhood level. The scope of this version also considers stakeholder collaboration in the implementation actions as the link between these two (environment and implementation) which is the core of the WP3

The findings from this deliverable not only feed into Deliverable 3.4 - *CITYLAB Handbook for City Logistics Living Laboratories*, but are also an instrument for risk management in the project. This document is being twice a year throughout the CITYLAB project. This document is the **third** edition finalised in **January 2017**. The rest of this document is organised as follows. In Chapter 2 we introduce the process evaluation approach that is being used, while Chapter 3 summarises the updates from each of the seven CITYLAB cities. Finally, Chapter 4 summarises the stakeholder cooperation, JKP and SSA in the CITYLAB Living Labs. Additionally, it empirically discusses the barriers and prerequisites when making a successful Living Lab.

1.2 Stakeholder cooperation to increase knowledge and awareness facilitating increased uptake of innovations in urban freight

To assess stakeholder cooperation in the CITYLAB cities this deliverable uses both the CITYLAB Living Lab city environment and the CITYLAB Living Lab implementation actions to extract the experiences both on the city and/or neighbourhood level. Thus, the interaction between WP 3 and WP 4, or between city environment and implementation for different CITYLAB cases, is constructed. When in turn, looking at how these two processes has increased JKP and SSA it provided us with an opportunity to identify the value of such a cooperative environment.

In urban freight transport many different stakeholders have different and sometimes conflicting interests, and rarely one stakeholder has an overview of the system, the effects of actions or policy measures. Hence, there is a lack of shared situational awareness, meaning that the perception of the urban freight system and how actions will fulfil one's goals varies between stakeholders. One way to make transitions in the urban freight system is to increase the SSA of the relevant stakeholders, thus ensuring that urban freight transport stakeholders are aware of what information is required and also understand how their action affect the urban freight system. Increasing the SSA maturity level involves moving from perception of establishing a common and induvial goal to participation focusing on cooperative joint actions, shared values and the ability to adapt to unforeseen situations (Quak, Lindholm, Tavasszy, & Browne, 2016).

Joint knowledge production is a means to achieve this process change and increase the shared situational awareness among urban freight stakeholders. JKP in sustainable urban freight implies that scientists, policy-makers and private companies cooperate in the exchange, production and application of knowledge. Thus, enabling the connection between long-term research objectives and short-to-medium-term policy aims. Success factors for joint knowledge production are:

- Actors - broad actor coalition

- Discourses - shared understanding of goals and problem definitions, recognition of stakeholder perspective
- Rules – organisation reflecting division of tasks by participants, role of researchers and their knowledge is clear, presence of innovations in reward structures and
- Resources - presence of specific resources such as boundary objects, facilities, organisation forms and competences

One of the ambitions of the City Logistics Living Labs is to increase JKP in the urban freight transport system which in turn increases the SSA awareness to participation (Quak et al., 2016). To achieve this the Living Lab methodology follows a cyclical approach, where solutions can be tested and re-adjusted/improved to fit the changing real-life environment. Using this method ensures that the stakeholders are involved much earlier in the in planning and implementation processes, and that the proposed implementations are revised and improved to meet stakeholder needs and obtain maximum impact (CITYLAB, 2015).

2 Process evaluation approach

The overall role of the process evaluation is to extract the lessons learned from the different Living Lab processes in each CITYLAB city and use this as input to the Living Lab methodology. It is useful to systematise this information as part of the documentation of the progress of the Living Lab activities. Frequent updates make it possible to identify challenges early and propose measures that can mitigate problems that are discovered.

The process evaluation complements monitoring of the implementation actions that take place in WP 4 of the project, and whose progress is being reported in Deliverables 4.1 and 4.2. The main outcomes of WP 4 will be data and information that will serve different evaluation activities in WP 5. The WP 4 deliverables will give details on the status of each of the seven implementation activities, while Deliverable 3.3 deals with the overall Living Lab processes.

The main objective of the process evaluation is to assess the link between WP 3 and WP 4, to see how living lab environment on the city level supports the development of innovation.

2.1 Information collection

Two main sources of information were used for this deliverable:

1) semi-structured interviews with projects partners;
2) public source search for additional information.

This methodology is conducted within an open framework allowing for focused, conversational, two-way communication. Not all questions were defined ahead of the interview; some were developed during the session. Furthermore, the questions were adjusted to fit the context of each city and what has been reported in Deliverable 3.2 and previous versions of Deliverable 3.3. The information collected contain the reason for the answers not only the answers themselves, thus helping us to obtain insights to the specific issue on stakeholder cooperation in the Living Labs (Grønmo, 2004). The transcribed interviews can be found in Appendix A.

The questions used as a starting point for structuring the discussion were the following:

- What are the current developments in the city environment LL and what are the main barriers for the establishment/functioning of the LL environment on a city level?
- How powerful/influential are the stakeholder groups (local authorities, industry partner, research partner) involved in your city?
- Which formal and informal forms on stakeholder cooperation exist in your city on the questions related to urban freight?
- How regular do they meet? How often they are consulted by local authorities? If not consulted, then why?
- How are the research partners and local authorities working together? What is happening in this relationship?
- Why has the cooperation been difficult and what measures have contributed in solving these difficulties?

All these questions aim at assessing the stakeholder issues faced when applying Living Lab methodology.

Other sources used for information are Deliverable 3.3b, the periodic reports and lessons and experiences from the city level Living Lab the previous six months. For description of stakeholder collaboration in the implementation actions, the research partners collected the information locally in dialogue with the respective industry partners. Deliverable 3.2 provided

the baseline input on stakeholder cooperation and the goals for the project partners. A supplementary Google search was completed to provide information supporting the statements identified in the interviews.

2.2 Overview of contributions

Table 1 details the information sources used as a basis for Chapter 3 and 4, while Table 2 gives a detailed overview of the process forms received.

Table 1. Information sources used.

Document version	Sources of information
Version a – Nov 2015	Fact sheets collected October 2015 describing each implementation and city reports on urban freight status collected as part of task 2.2.
Version b – Jul 2016	Process evaluation forms collected May 2016 describing each city's Living Lab experiences.
Version c – Jan 2017	Bilateral Skype calls with research partners and selected city partners describing current Living Lab city environment experiences. Information collection on implementation action stakeholder collaboration by research partners.
Version d – May 2017	n.a.
Version e – Nov 2017	n.a.

Table 2. Process evaluation forms received and Skype calls completed.

Partner	D3.3a - Nov 2015	D3.3b - July 2016	D3.3c - Jan 2017	D3.3d - May 2017	D3.3e - Nov 2017
TOI	n.a.	x	x		
OSLO KOMMUNE	n.a.	x	x		
UNIVERSITA DEGLI STUDI ROMA TRE	n.a.	x	x		
ROMA CAPITALE	n.a.	x			
UoW	n.a.	x	x		
TFL	n.a.	x			
VUB	n.a.	x	x		
BRUSSELS MOBILITY	n.a.	x			
TNO	n.a.	x	x		
ROTTERDAM	n.a.	x			
IFSTTAR	n.a.	x	x		
PARIS	n.a.	x			
SOUTHAMPTON UNIVERSITY	n.a.	x	x		
SOUTHAMPTON CITY COUNCIL	n.a.	x	x		

3 Stakeholder cooperation in the CITYLAB Living Labs

To increase the joint knowledge production the CITYLAB partners in each city have together identified their Living Lab ambition, which will guide the work undertaken and strengthen the working relationship (CITYLAB Deliverable 3.2, 2016). In line with the Living Lab methodology and a success factor for joined knowledge production (CITYLAB, 2016a; Quak et al., 2016), these ambitions were identified to find a common goal which stakeholders would work together to achieve, rather than having multiple individual processes targeting urban freight. Cooperation and engagement between the public and private sectors and the development of consensus-based strategies are essential in urban freight transport to identify appropriate policies. One of the main roles of the Living Lab working methodology in the CITYLAB cities is to create such an environment and a management process for stakeholders to be heard (CITYLAB, 2016d). The below section reports the developments of these ambitions and how the work undertaken have contributed to joint knowledge production and in turn increased shared situational awareness maturity levels.

3.1 Brussels

In Brussels, urban logistics both suffer from and contribute to severe road traffic congestion with an average time loss of 33% compared to free-flow traffic in 2014 (www.tomtom.com). Freight traffic is responsible for 14% of all vehicle entering the Brussels-Capital Region, however, the proportional burden on the environment and liveability is higher. Vans and trucks account for one quarter of transport related CO_2 emissions and one third of NOx emissions in the Region (Brussel Mobiliteit, 2013; Lebeau & Macharis, 2014). Because of this proportionally high impact and the European aim to achieve CO_2-free city logistics in major urban centres by 2030, there is a need to develop an integrated vision on freight transport and distribution for the Brussels-Capital Region and to take sets of measures and support sustainable urban freight transport solutions focusing on reduction of emissions and vehicle movements in the city. The development of the Strategic Plan for Goods Traffic in the Brussels-Capital Region (drafted from 2011 onwards and approved in 2013), in accordance with its mobility plan, accommodates the first aim. The second is reached by the different actions that have been taken or supported by the Region according to its Strategic Plan and will also be, to some degree, targeted within CITYLAB (CITYLAB, 2016b).

3.1.1 Joint knowledge production: Stakeholder cooperation in the Brussels Living Lab city environment

Stakeholder cooperation is the groundwork for a successful Living Lab. Existing stakeholder cooperation mechanisms in Brussels are summarised in table below.

Table 2. Stakeholder involvement in the Brussels Living Lab environment

Stakeholder cooperation and communication (type of meetings)	On a regional level, Regional Mobility Committee (RMC) arranges stakeholder meetings with no fixed format. Other ways for stakeholder to express their opinion to Brussels Mobility are through individual contact. Meetings with industry and researchers at other events or seminars strengthen the interaction opportunities. The RMC does not have a fixed list of members. Invitations are sent to members listed on a contact list (whoever can have their contact information listed).

	In city centre of the Brussels-Capital Region, the municipality City of Brussels there are no structured stakeholder cooperation meetings, the stakeholder consultation is based on a more one-to-one contact with whoever affected by the measure.
Stakeholder involvement and commitment (number of meetings, organisational form)	It is not a fixed number of meetings during a year, it depends on the topics of interest for the Brussels Region. Around 20-40 people, research partner is present. The members vary from associations, retailers and representatives of road freight carriers to biking companies, rather diversified. There is an open invitation and stakeholders participate when the topic is of interest.
Stakeholder impact	It might be that stakeholders can lobby to impact the policy outcome, not only for information.

As mentioned in D3.2 and identified in table 2 Brussels has an established system for collaboration with both public and private sectors to come to more sustainable urban freight transport. These existing opportunities for stakeholder involvement, particularly these open meetings, increase the opportunity for knowledge transfer and the possibility of having all relevant stakeholders participating. The topics of these meetings are rather diversified but always focused on freight ranging from measures and solutions to problem identification, thus increasing the SSA.

Considering the overall Brussels ambition and the Living Lab methodology an ambition for the CITYLAB Brussels Living Lab city environment was defined. It is *to further reinforce the cooperation [between researchers] and the local authorities by using the On-Board Unit data to get more insight in the number of trucks leaving, entering and driving around in Brussels as well as their origin and destination* (CITYLAB, 2016a). As part of the collaborative planning phase VUB and Brussels Mobility Department have together identified this as a priority action for the Brussels Living Lab environment.

Together with Brussels Mobility, VUB will use the data from on board units in heavy goods vehicles to get more insight in the number of trucks leaving, entering and driving around in Brussels as well as their origin and destination. VUB would develop a methodology that can be applied repeatedly, not one shot analysis. As from September 2016 on, VUB and Brussels Mobility Department will clearly define actions and will clarify whether VUB has full access to the data or not.

3.1.2 Joint knowledge production: Stakeholder cooperation the Brussels Living Lab implementation action

Contributing to the overall city ambitions, the aim of the Brussels implementation action is to increase load factors and vehicle efficiency for deliveries to small stores and to re-establish contact between manufacturer and store owner, thus establishing measures for more sustainable urban freight transport (CITYLAB, 2016c). The implementation will take place in multiple municipalities in the Brussels-Capital Region, depending on the concentration of small independent retailers that are willing to participate.

The Brussel CITYLAB implementation action is driven by private stakeholders rather than local authorities resulting in a smaller group participating in the development process. It might be the case that a privately initiated urban freight implementation has other objectives and targets compared to a government initiated process.

In the Brussels Living Lab implementation, crucial partners and stakeholders involved are:

- PGBS which oversees delivery and collection of goods at the lowest cost and optimal service while meeting the needs of their customers.
- Transport operators which are interested in low cost but high quality transport operations and satisfaction of the interests of the shippers and receivers.
- Receivers (small independent store owners) with the main interests of On-time delivery of products, with a short lead-time, low transport costs, using their private car less and more time available to do work in the shop, lowest out-of-stock as possible and convenient deliveries.
- Consumers who care about availability of a variety of goods in nearby shops in the city centre.
- Infrastructure providers (Brussels-Capital Region) which seek cost recovery and infrastructure performance, accessibility and use of infrastructure and less hindrance because of parked vehicles for (un)loading.
- Local government focusing on creating an attractive city for inhabitants and visitors, with minimum inconvenience from freight transport, while also having an effective and efficient transport operation.
- Atrium achieving improved business environment for small independent store owners.
- Residents and visitors/tourists that require minimum inconvenience from UFT.

Working together has helped the living lab owner e.g. the stakeholder initiating the implementation action (PGBS), participants reflections on the design of the implementation action and how to move forward in the next living lab cycle (CITYLAB, 2016b).

3.1.3 Impact on shared situational awareness

The CITYLAB Living Lab has been very useful from the research partner perspective because it has created a framework and a project for the Brussels-Capital Region and research to work together. Brussels Mobility has provided data that otherwise wouldn't be available. This relationship saves time and working together with them in this given project is important for providing direct contact. Working together on such an ambition has created an opportunity for building knowledge together on trucks movements in Brussels. The collaboration established in CITYLAB has furthermore contributed to increased direct contact between several researchers and Brussels Mobility, however, which researchers to be included depends on the best project proposal. In a Regional Mobility Committee meeting, the research partner was in one meeting asked to organise a Multi Actor Multi-Criteria Analysis (MAMCA) workshop.

Setting-up the Living Lab implementation using a collaborative approach has contributed to a learning-by-doing process. This cooperation has been a way to incorporate and respond to the experiences of the Living Lab owner (PGBS, owners of free capacity and stores) and the end-users. Overall, organising a development process in Living Lab cycles with different set-ups allows for each set-up to be evaluated increasing the knowledge on urban freight solutions. Especially for the service-driven companies it is important to reduce failures and detect the differences in the organisation, feasibility, service, costs of the alternatives suggested implemented.

3.2 London

In London, the main challenges faced by the city is air quality and infrastructure capacity problems, hence it recognised a need to improve the efficiency of the freight transport sector whilst also reducing the negative environmental and social impacts. There is a general interest of the London authorities in supporting economic growth of clean urban freight solutions and

business innovations via regulations (such as exemption of the London Congestion Charge for electric vehicles) and consultations. The CITYLAB Living Lab of London will contribute actively to implement this policy (CITYLAB, 2016b).

3.2.1 Joint knowledge production: Stakeholder cooperation in the London Living Lab city environment

When it comes to stakeholder collaboration at the city level, London is identified as an advanced city, which other CITYLAB cities can learn from. The cooperative mechanisms are well established and the below table identify such activities.

Table 3. Stakeholder involvement in London

Stakeholder cooperation and communication (type of meetings)	London Freight Forum - strategic meeting Regularly group meetings Targeted meetings for individual projects Mini Living Labs or subgroups
Stakeholder involvement and commitment (number of meetings, organisational form)	London Freight Forum - 4 times a year Small direct meetings regulatory depending on the need for discussion.
Stakeholder impact	The work undertaken is now creating a knowledge base for the society. The cooperation has been of importance for developing the area of urban freight e.g. it helped creating Gnewt Cargo, and facilitated the contracts with first clients.

Discussions among stakeholders in London, businesses and Transport for London, identified the following barriers and challenges as important for sustainable urban freight solutions: 1) little or no growth in most inner city consolidation centres and the use of electric freight deliveries from the UCC's, 2) the conditions for such growth are not well understood and 3) there is a need to gain better understanding of business models for clean deliveries with electric vehicles and tricycles and 4) the lack of affordable space for logistics activities in large urban areas such as in London. Hence, the CITYLAB ambition for this Living Lab environment *is to support the growth of clean vehicle usage in London as well as support the implementation action of TNT and Gnewt Cargo with a clear set of framework actions and strategies* (CITYLAB, 2016a).

The London Living Lab environment contribute to the current London freight strategy with multiple involvements in policy activities, cooperation and projects targeting more specifically efficiency, air quality, consolidation, electric vehicles, data and monitoring. At a national level, there is a new ongoing program which support electric freight vehicles. This has a positive impact of the London Living Lab implementation generating a positive environment for urban freight policy related to such vehicles.

3.2.2 Joint knowledge production: Stakeholder cooperation the London Living Lab implementation action

The London CITYLAB Living Lab is focused on the task of developing and implementing a specific solution that will be beneficial for London. With the Living Lab environment focusing on the necessary strategies, the objective of the London implementation action is more practical aiming to identify the best possible management solution for inner city distribution,

consolidation and clean vehicle use, from the point of view of a local authority, a large carrier, and a small carriers' carrier (a freight carrier that only works for other carriers rather than directly competing with them for freight flows from customers). Two main industry partners, TNT and Gnewt Cargo, seek to explore how to increase new distribution hub operational concepts that support viable business cases for last-mile-operation with clean vehicles.

The stakeholders in the London Living Lab implementation action are Transport for London (TfL), Gnewt Cargo, TNT UK and University of Westminster (UoW). Within this framework CITYLAB has facilitated increased cooperation activities to develop solutions for urban freight. The experience from this collaboration is that there is in general a very positive attitude towards sustainable urban freight in London with multiple initiatives on-going. However, despite all the incentives and efforts in the last years, only few commercial vans are using alternative fuels or electric powertrains. Many challenges hinder a wide-scale uptake of clean technologies and sustainable logistics solutions such as bringing back consolidation centres towards city centre areas, and using ultra-low emission vehicles for freight transportation. Thus, the London Living Lab will contribute to overcome the various barriers and facilitate a wider uptake of these sustainable solutions.

The decision to select the type of action was taken within the London Living Lab, which is the acting as decision making body of the CITYLAB project in London. Multiple activities of Transport for London, University of Westminster, TNT UK and Gnewt Cargo are currently developed in accordance with the Living Lab ambition in London. The Living Lab meetings are conducted to coordinate the activities. Current focus is the preparation of the London local Workshop and "Follower" cities session, and to facilitate the run of the implementation action on growth of electric freight and consolidation in London.

There is also coordination with London policies and activities dealing with consolidation centre, re-timing (out of hours) deliveries, clean vehicles (LoCity) and Freight Quality Partnerships (CLFQP) (Central London Freight Quality Partnership, 2016; LoCITY, 2016). CITYLAB has provided connections with the municipality in London which in turn has gained insights to Gnewt Cargo, hence is has resulted in support of innovative business.

3.2.3 Impact on shared situational awareness

UoW benefits from being involved in multiple tasks around data collection and data analysis, and has now access to data that would have been very difficult to obtain without a good cooperation. The scientific output has now more practical relevance than most other academic institutions. TfL is benefiting from the outputs and expertise of UoW and can take better informed decisions in several domains.

CITYLAB has provided the researchers with connections with the municipality in London and insight to important experiences from the private company Gnewt Cargo. CITYLAB is a platform for sharing information and gaining knowledge. Due to CITYLAB and other research project relations the researchers are much more accepted as persons dealing with freight than in the beginning. They are getting to take part in the London urban freight policy. Additionally, this knowledge is to a larger degree now present in the city and municipality itself. External knowledge is less needed than in the beginning, indicating that there has been a knowledge transfer increasing the shared situational awareness. Reports produced by researchers have been used in policy-making e.g. London Olympics and shifting freight transport to the morning. There are increasingly more formal talks on nearly all subjects regarding freight in London which might indicate that the barriers between research and public policy has been reduced.

Central London FQP is based at the University of Westminster, which makes it easier to be included.

The policy activities in the London Living Lab have been strongly influenced by the questions arising during the implementation efforts, which have focused around the limitation of further

transfer of parcels flows and business growth in Gnewt Cargo due to the lack of affordable logistics depot space in central London.

3.3 Oslo

The Municipality of Oslo has a medium-term target (2 to 7 years) to achieve 50% reduction of environmental emissions by 2020 (CITYLAB, 2016b). The City of Oslo has, in their Climate and Energy Strategy, an aim of working closely with citizens, businesses, knowledge institutions, and other public authorities to develop and implement good climate solutions as emphasised. Affecting urban freight, they shall facilitate a city logistics system where traffic demand is reduced, and where all new cars and light freight vehicles in Oslo shall use renewable fuels or be plug-in hybrids from 2020 (Oslo kommune, 2016). It is now introduced a diesel ban on days with serious air pollution, however, freight vehicles are not affected.

3.3.1 Joint knowledge production: Stakeholder cooperation in the Oslo Living Lab city environment

The ongoing stakeholder cooperation activities in the Oslo Living Lab environment can be summarised in the above table.

Table 4. Stakeholder involvement in Oslo

Stakeholder cooperation and communication (type of meetings)	The Forum for Urban Freight in Oslo - invitation only meetings. Direct contact, individual meetings between stakeholders and the municipality through common projects. Other public authorities are also involved
Stakeholder involvement and commitment (number of meetings, organisational form)	The Forum for Urban Freight meets 4 times a year. Around 10-12 participants of 15 invited urban freight related organisations. Ad. hoc meetings
Stakeholder impact	The Freight Forum acts as agenda-setters for urban freight and a source where users can send their issues which in turn are given to the municipality. Contributed to constructive participation, overall focus on urban freight rather than on single measures and increased number of loading and unloading bays in the city centre. Additionally, contribute with their professional input to policy. The Forum is working on a City Logistics plan. The Forum is a reference group for the Car Free Inner City project.

Relating to Oslo's mid-term target the *Living Lab environment ambition is to support the Agency for Urban Environment of the City of Oslo in promoting sustainable urban freight transport and increase the knowledge on efficient deliveries in a car-free city centre* (CITYLAB, 2016a).

The main activity undertaken contributing to the Living Lab ambition for Oslo is participation and presenting important knowledge on urban freight at a public hearing regarding the Climate- and environmental strategy for Oslo (Oslo kommune Climate- and energystrategy, 2016. Available in English). Both the research partner and the industry presented their opinions at this hearing. This strategy was decided mid-2016, and urban freight deliveries are one important aspect of the strategy.

In this framework, the research partner together with the municipality developed a project proposal to assess the environmental impact of shared deliveries and crowd logistics but that was not funded. In the CITYLAB Living Lab in Oslo one important goal is to develop projects together, however, the city does not have enough financial support to fund projects on its own. Hence, it is necessary to apply for other funds (e.g. regional), and the realisation of the projects and the cooperative relationship depends on the funding decision.

The vice mayor for transport and environment has established the project for Car Free Inner City, for a more liveable inner city, starting with measures in 2017. The main activity will be removing all curbside parking, and thus make more room for activities, and it should be easier available curbside parking for freight vehicles. An own plan for goods distribution is being worked out, making also this activity part of the Living Lab.

Additionally, related to the plans for car free inner city centre, there may be a trial with cargo bikes that TOI are contacted to evaluate, but it is not yet clear whether the trial will materialise. There have been several meetings with the municipality, logistics service provider and the Norwegian Public Roads Administration. What is particularly interesting here is that other people from the City of Oslo have been interested in urban freight and the cargo bikes.

There has also been a suggestion from the municipality that the research partner participate in the evaluation of a pilot with parking sensors for both freight vehicles and passenger cars in one street in Oslo. In relation to this, there has been a meeting and there is still an ongoing process, yet funding remains an issue also in this case.

In another ongoing project, BYTRANS, the municipality and the research partner are working closely together on issues that are affecting the urban freight deliveries in the city (Transportøkonomisk institutt, 2016).

3.3.2 Joint knowledge production: Stakeholder cooperation the Oslo Living Lab implementation action

The aim for the Oslo implementation action is to improve the conditions for efficient deliveries to major traffic generators e.g. multi-tenant shopping centres, thus reduce the level of freight movements. In other words, the goal of Steen & Strøm, implementation owner, is to establish a common logistics function for inbound and outbound freight flows the new Økern shopping centre. In the Oslo Living Lab implementation, crucial partners and stakeholders involved are:

- Owner of shopping centre, Steen & Strøm - Management of services offered, decide what services should be offered and work out of business model with all stakeholders
- Retail shops and HoReCa - Different shops e.g. XXL (Sport equipment), cloths (HM, VOLT, Dressman, CUBUS etc). User of the new services.
- Retail chains - XXL, Varner, Lefdal, Nille, Clas Ohlson etc. User of the new services. Express satisfaction, dissatisfaction, costs and benefits with a new service.
- Logistic service providers - DB Schenker Norway, Bring, PostNord, DHL User of the new services.
- Drivers - Drivers for different LSP's User of the new services. Express satisfaction, dissatisfaction, costs and benefits with a new service.
- In-house service provider – ColliCare Performer of the new service.
- The Municipality of Oslo - Agency for urban environment and different other agencies Support and on living labs and implementation
- Research institute TOI - Scientific support and on living labs and logistics in the implementation.

Using the Living Lab approach has contributed to individual meetings between the real estate developer and the logistics in-house service provider speeding up the process of developing such a solution. Thus, additional stakeholders have been included in the development process as Steen & Strøm's knowledge of the common logistics function has increased. Additionally, this collaboration identified a need to include the views of relevant stakeholders outside of the project. Hence, they were invited to a workshop where plans for the common logistics functions at Økern were discussed. The outcome of this cooperative workshop was that the storage area was increased and important considerations from a logistics service provider was highlighted, e.g. sufficiently large recycling area. Site visits from Steen & Strøm and TOI to the shopping centres Emporia (Malmö, Sweden), Oslo City (Oslo, Norway) and Strømmen Storsenter (Oslo Area, Norway) have resulted in insights on the scope and organisation of solutions that share commonalities with the planned solution at Økern.

3.3.3 Impact on shared situational awareness

Discussions with the municipality related to the Living Lab ideas, has somewhat increased the shared situational awareness, however, it has been a challenge to define the role of the participants and deciding a concrete strategy on how to move forward. So far, the work has focused on gaining a shared understanding on goals and problem definition. A list of potential cooperation areas has been defined, the municipality was particularly interested in the evaluation of initiated urban freight measures.

Including additional stakeholders through workshops and site visits, which is a success factor for joint knowledge production, has been beneficial for increasing the shared situational awareness among the stakeholders affected by the Oslo implementation action. In particular, the workshops have contributed to sharing of knowledge between private stakeholders and understanding the issue from another point of view.

This collaboration has also resulted in invitations to hearings regarding urban freight issues in Oslo and to workshops in the freight forum to present research. Since there are several urban freight stakeholders present at these meetings this can contribute to increasing the SSA.

3.4 Paris

The main urban freight challenges in Paris are logistics sprawl and air pollution e.g. severe NO_x and PM emissions. The long-term urban freight transport ambition for the city is to reduce overall emissions of the territory and activities by 75% in 2050 compared to 2004. The overall goal of the city council is to have 100% of deliveries to be non-diesel by 2020. These policy challenges are supported through the elaborated policy framework on the city and region level. In 2013 more than 80 organisations, institutions and associations in urban freight transport signed the Paris Charter for Sustainable Urban Logistics, committing themselves to progress in the field of urban logistics. This document represents the urban freight transport action plan for the city of Paris (CITYLAB, 2016b).

3.4.1 Joint knowledge production: Stakeholder cooperation in the Paris Living Lab city environment

When it comes to stakeholder collaboration at the city level, Paris is identified as an advanced city, which other CITYLAB cities can learn from. The cooperative mechanisms are well established and the below table identify such activities.

Table 5. Stakeholder involvement in Paris

Stakeholder cooperation and communication (type of meetings)	Strategic stakeholder general meeting working group meetings
Stakeholder involvement and commitment (number of meetings, organisational form)	Twice a year for the General Meeting Regulatory for the working groups
Stakeholder impact	The Living Lab is a place where some adjustments can be made, but operators will not have the final word when the Mayor of Paris decides on a policy. Operators are unsatisfied with recent initiatives (closing of a major street corridor), but this is discussed in the Living Lab.

The overall objective of the municipality for the Paris Living Lab is to change the logistics organisation of shippers and carriers towards greener solutions such as green vehicles and pedestrian deliveries (CITYLAB, 2016a). Considering this objective, there is a debate in Paris regarding digital economy and crowd sourced deliveries. Two issues have surfaced: the bankruptcy of TakeEatEasy, an app for instant deliveries connecting self-contractors, freight shippers and consumers, and the introduction of Amazon Prime Now in the centre of Paris. Additionally, there is another debate related to the pedestrianization of several important squares and one main central road. Car and commercial traffic will be further banned from central Paris.

The Paris Living Lab city environment ambition *is to contribute to the goal of a reduction of the overall emissions from activities in the urban area by 75% in 2050 compared to 2004.* Following this, there is an extremely close relationship between the research partners and local authorities, mostly within the Metro freight project (METROFREIGHT, 2014). These meetings act as a platform for sharing data and knowledge where the research partner provide studies, participate in working group meetings and answer informal questions (at least twice a month). It is necessary to have public agencies on board in such initiatives, due to the need of getting building permits, finding good depot locations, and being a go-between allowing private partners to work together.

3.4.2 Joint knowledge production: Stakeholder cooperation the Paris Living Lab implementation action

The Paris CITYLAB implementation action aims to address the negative consequences of “logistics sprawl” to reintroduce logistics terminals in the dense urban areas. Logistics sprawl is the spatial de-concentration of logistics facilities and distribution centres in metropolitan areas (Dablanc and Ross, 2012), and it has been a noticeable spatial pattern for the last decades in large cities around the world. The Living Lab city environment and the Living Lab implementation action are highly interlinked in Paris as the logistics hotels is one of the flagship operations of the Paris Living Lab environment. In developing successful initiatives, the municipality has been actively working with private partners to develop logistics hotels, a new concept of logistics real estates adapted to city centre locations, accessible for trains, large trucks and electric vehicles. In the Paris Living Lab implementation, organised as a Public Private partnership, crucial partners and stakeholders involved are:

- City of Paris,
- Paris Region,

- SOGARIS (a logistics real estate investor and manager whose majority of capital is owned by the city of Paris),
- Chronopost (express parcel integrator), which is the sole user of the Beaugrenelle terminal while Chapelle will have multiple users and
- Researchers.

The logistics hotel's Living Lab is organised as one of the constituted working groups of the Sustainable Logistics Charter of Paris. It represents a partnership between the City of Paris, the Paris Region and SOGARIS (a logistics real estate investor and manager whose majority of capital is owned by the city of Paris). Chronopost (express parcel integrator) is the sole user of the Beaugrenelle terminal, while Chapelle will have multiple users.

3.4.3 Impact on shared situational awareness

The Paris Living Lab has made the Logistics Hotels possible: stakeholders have initiated the idea within the Paris Living Lab, and the idea was discussed and partnerships identified and consolidated. The project has then been converted into a favourable regulatory and economic environment through discussions within the Living Lab. Both logistics hotels are assessed within the CITYLAB Living Lab, and replication possibilities are imagined there. Relating this work to joint knowledge production all the success factors are present and therefore the Paris Living Lab has reached the highest maturity level, participation on both a system and individual level, of shared situational awareness.

The Chapelle assessment study has demonstrated that discussions between stakeholders (within the Paris Living Lab) could help mitigate obstacles and go ahead with construction. Energy and willingness from main stakeholders was key to mitigating barriers.

3.5 Rome

Rome's city centre is characterised by its historical heritage, and consequently challenging infrastructure for modern (freight) transport. The major objectives for the city of Rome to work on urban freight transport are twofold: improve / maintain accessibility and reduce negative impacts (emissions and pollution) (CITYLAB, 2016b, 2016c). Rome Municipality approved in 2014 (City Council) and in 2015 (Municipal Assembly) the new Mobility Masterplan outlining Urban Sustainable Freight Distribution objective, containing the impacts of freight vehicles circulating through:

- Aggregation of transport operators;
- Increased load factor;
- Switching power supply of the freight vehicles;
- Rationalization of areas of goods loading / unloading.

3.5.1 Joint knowledge production: Stakeholder cooperation in the Rome Living Lab city environment

The ongoing stakeholder cooperation activities in the Rome Living Lab environment can be summarised in the table below.

Table 6. Stakeholder involvement in Rome

Stakeholder cooperation and communication (type of meetings)	The City Administration Department of Transport together with the Mobility Agency of Rome are used to organised round-tables with stakeholders. This type of stakeholder cooperation and communication stopped around two years ago, due to the instability of local political government. Within CITYLAB the intention is to re-activate this useful custom taking advantage on the cooperation existing between the stakeholders already engaged within the Rome living lab implementation.
Stakeholder involvement and commitment (number of meetings, organisational form)	Cooperation between the Mobility Agency of Rome and the City Administration allows to define alternative technical options/solutions to the political objectives. The round table meetings (usually with 8-10 stakeholders) were driven by policy needs resulting in no regularity. Within CITYLAB some meetings have been performed between the research group and the Mobility Agency of Rome and the new Mobility Department. The research group will both organise ad hoc meetings with stakeholders and administer specific surveys.
Stakeholder impact	Consultation with stakeholders to get their opinions on suggested policy measures and transport issues. Within CITYLAB there has been an intense exchange of opinions, ideas and possible themes of collaboration leading to the definition and implementation of policy relevant instruments/actions for urban freight transport

The new city Rome administration set the following issues as the most critical problems: (1) local public transport and cycling; (2) potholes; (3) waste collection and management. This has slowed down the potential activities related to freight transport.

Following the need in Rome to coordinate, systematise and bolster urban freight-related shared policies and activities the *intention within CITYLAB is to establish and reinforce the cooperation between research partner and city authority to further cooperate on the creation of the local Living Lab environment* (CITYLAB, 2016a).

A first meeting with the Mobility Agency in Rome took place to illustrate the Living Lab philosophy and explain the distinction with the Living Lab referred to the implementation case. In this meeting the organisations present shared ideas and proposed focus topics.

A second meeting has been scheduled with the new Mobility Department administration to describe the CITYLAB goals and characteristics. As written in the Traffic Master Plan, technical freight meetings with stakeholders (Rome Municipality, shop owners, logistic operators, associations) will be organised in the next months, aiming to improve the freight distribution system in Rome.

There were difficulties in organising these CITYLAB Living Lab meetings in the beginning, due to the temporary absence of political guidance. Furthermore, the different way of working using stakeholder cooperation, compared to normally applied methods, have been challenging.

3.5.2 Joint knowledge production: Stakeholder cooperation the Rome Living Lab implementation action

No formal living lab or other active form of collaboration taking joint-action on improving the sustainability of the urban freight system is established in Rome, however, the implementation case's processes, as well as learning from the other CITYLAB cities, could help establishing a stakeholder collaboration practices on a city level (CITYLAB, 2016b). The Rome

implementation aims to facilitate the EU circular economy strategy by providing an efficient city logistics system collecting recycled urban waste thus minimising road congestion and polluting emissions while increasing freight vehicle load factors (European Commission, 2016). Waste management is a major issue for the sustainability of urban areas. Many countries are facing problems related to capacity of landfills and emissions from combustion (CITYLAB, 2016c).

In the Rome Living Lab implementation crucial partners and stakeholders presently involved are:

- Poste Italiane (PIT), logistic operator. Their interest is implementing a new smart approach to urban logistics which provides functional integration between direct and reverse logistics and in acquiring information on new market opportunities.
- MeWare (MEW), the technology enabler that supports the logistics and research stakeholders in the exploitation of business case identified.
- City of Rome (RSM), is the owner of the Living Lab implementation and a customer, benefitting from the environmental positive results derived by the new solution proposed, especially in a long-term period when the scale dimension of the pilot will be hopefully enlarged.
- University of Roma Tre (UR3), supports the implementation process by providing research knowledge useful for both determining barriers/opportunities/pre-requisites and assessing impacts and transferability potential.
- Company providing the concierge service at UR3 (CSU), involved in the alerting system by using the web-based interface to communicate with PIT whenever a box is full.
- UR3 Mobility Manager (UMM), involved in the planning of the system to the operational aspects linked to implementation.
- UR3 students, teaching and administrative staff (STA), STA is the actor responsible for the success of the recycling initiative. They have been consulted in the planning via specific surveys to acquire relevant information needed to define the most appropriate recycling system to foster their participation.

Additional stakeholders (i.e. the Department of the Environment in Rome and the local waste collection company) will be invited to participate to jointly develop new Living Lab cycles identifying new opportunities with respect to well-focused recyclable materials.
The local CITYLAB partners are already involved in all the major active working groups dealing with urban freight distribution policy innovation in the city of Rome. In more detail, RSM (Rome Mobility Agency) participates / coordinates in all the working groups previously described and is the living lab owner for Rome's implementation case.

3.5.3 Impact on shared situational awareness

This newly identified stakeholder collaboration has allowed Rome to build a community of multiple actors, working together in the city context, to work together towards shared solutions. This has increased the joint knowledge on working with constraining regulations and legislation (e.g. labour legislation), for both local authorities and industrial partner, when developing and implementing new sustainable urban freight solutions.

Using this cooperative approach additional stakeholders have been included, namely the company responsible for providing the concierge service, the UR3 Mobility Manager, and UR3 students, teaching and administrative staff. Hence, the actor coalition has increases contributing to shared situational awareness. Additional stakeholders are foreseen to be actively engaged (i.e. the Department of the Environment and the local waste collection company)

The connection between research partners and organisation are good. It is the Mobility Agency of Rome which was the one having the needs and visions of the city of Rome. The round tables and the LL methodology matches and they would like to go in this direction.

3.6 Rotterdam

Air quality problems are the main reason to work on urban freight transport in Rotterdam. Most logistics' efforts focus on the harbour and the related hinterland connections (as Rotterdam is Europe's biggest port). However, there is since 2014 an overall ambition to achieve zero-emission city logistics by 2020 in the Rotterdam city centre (CITYLAB, 2016b).

3.6.1 Joint knowledge production: Stakeholder cooperation in the Rotterdam Living Lab city environment

When it comes to stakeholder collaboration at the city level, Rotterdam is identified as an advanced city, which other CITYLAB cities can learn from. The cooperative mechanisms are well established and the below table identify such activities.

Table 7. Stakeholder involvement in Rotterdam

Stakeholder cooperation and communication (type of meetings)	The Front Runners - a group of the highest ranked companies which are consulted on freight related issues, consultation talks. Stakeholder workshops. Everyone can attend the meetings and the invitations are sent by email and there are two-five meetings a year. Focuses on urban freight only.
Stakeholder involvement and commitment (number of meetings, organisational form)	The Front Runners – meet two-five times a month. The stakeholders are there on a voluntary basis, started in 2014, but they can leave the group when they feel the need to do so. Workshops – an average of 80 people participate in these meetings. It is organised by the stakeholders themselves and the local authorities. Experts from urban freight research participate.
Stakeholder impact	The city like further increased activity with the companies, however, it might the case that the companies' experiences that the meetings are about reflecting less acting. The local authorities expect stakeholders to do something and if the policy fits with the industry business they work on it.

The Living Lab city environment focuses on the city centre of Rotterdam, as this is set by the ambition for zero emission city logistics in Rotterdam. The ambition of the Rotterdam Living Lab environment within CITYLAB *is to reinforce the cooperation between municipality of Rotterdam and TNO on data collection and forming of the Rotterdam living lab and the process management* (CITYLAB, 2016a).

This cooperation has enabled Rotterdam and TNO to cooperate on data collection, the forming of the living lab and the process management. Following this ambition, in the Rotterdam CITYLAB Living Lab, there is now focus on how to further develop their roadmap and ambition for the City of Rotterdam. Currently, the activities undertaken focus on knowledge development rather than single solutions by 2020. Important questions are how to continue and where to place the effort? So far, the Living Lab approach has been very useful for the city and the methodology is to some extent based on what has been done in Rotterdam (Green Deal, 2016).

For the Green Deal Zero Emission City Logistics, the target is to guide all the relevant city logistics stakeholders to achieve zero emission city logistics in the inner centre of Rotterdam by 2020. It is led by the Rotterdam Municipality with assistance/guidance by TNO. Stakeholders are highly involved at different stages. Regular meetings between TNO and Rotterdam Municipality and the plan is to continue working together according to the detailed action plan developed within Green Deal (plan for upcoming 2 years). Now, the initiative is looking at ways to get more involvement. For instance, manufacturers, university, other research institutes or the technical university Delft (Green Deal Zero Emission 010, 2015).

3.6.2 Joint knowledge production: Stakeholder cooperation the Amsterdam Living Lab implementation action

This Amsterdam implementation followed from a shared vision in Amsterdam of making the city centre more sustainable and reduce congestion. The aim for the Amsterdam implementation action is to make better use of canals and waterways to facilitate clean last mile deliveries. Initially, for the implementation the possibilities to shift road transport to water was investigated. Unfortunately this was too costly, also when including new innovations which could reduce costs. Now, in the adapted implementation, the water is used for storage providing flexibility to the delivery process.

PostNL has cooperated with the local authorities (via the Amsterdam Smart City) as well as with researchers (TNO, Amsterdam university of applied science, HvA and VU). In the Amsterdam Living Lab implementation crucial partners and stakeholders involved are:

- PostNL;
- The Municipality of Amsterdam;
- Blom dekschuiten barge company for the floating depot;
- TNO for scientific support on living labs and logistics in the implementation;
- Vrije Universiteit of Amsterdam for scientific support;

The idea was that – based on a business case that we calculated at that time – we would start with the floating depot (combining mail and parcel deliveries for the Amsterdam city centre). In the actual implementation, we faced technical difficulties (i.e. the development of the floating depot was more complicated and had not high priority from the ship builder) that slowed the process. During this process, we reflected on the earlier plans using information that came available (from PostNL Living lab in Delft, experiences with local authorities and changes within PostNL itself). These lessons were taken in account, which resulted (shared with the different stakeholders, including local authorities) in a new cycle, still aiming adding to more sustainable urban distribution (together) by the different stakeholders.

The cooperation (industry, research and local authorities) resulted in better understanding of each other's issues and how to use each other's strengths. This relation helped in developing the new shared spaces for micro hubs, or the continuation of possibilities of micro hubs at floating depots, especially the fact that it was clear for all why something failed in cycle one and two helps in together looking for feasible solutions in the newer cycle.

3.6.3 Impact on shared situational awareness

Another interesting element is the cooperative and collaborative approach taken with stakeholders and other solutions to make the concept work. For the floating depot cooperation with the canal management is required and for the shared space micro hubs it has to be coordinated with other services.

This shared ambition was formulated by the city, the transport companies and TNO. For the city, this period is relatively long as it includes two local elections in which the city board could change. The companies argued that this ambition (within 5 years) is good: if it would be stated further in the future it would not require (immediate) action from them, thus no action would be taken by them as there are always more urgent issues to handle.

Broadening the actor coalition is an ongoing process in the Rotterdam Living Lab environment. The initiative is looking at ways to get more involvement from other stakeholders and thus increasing the shared knowledge production.

3.7 Southampton

For Southampton City Council (SCC), a major motivating factor is the need to improve air quality while maintaining economic prosperity, as 2013 data gathered by the World Health Organisation indicated that NOx levels in air were measured above the stated safety limit of 40 µg/m³. These data have been used by the UK government to target Southampton and four other poorly performing cities/towns to take remedial actions. As freight transport is recognised as a significant contributor to air pollution along key transport corridors it is naturally in the interests of SCC to consider any schemes that may reduce freight transport and its associated negative impacts on air quality (CITYLAB, 2016c).

3.7.1 Joint knowledge production: Stakeholder cooperation in the Southampton Living Lab city environment

The ongoing stakeholder cooperation activities in the Southampton Living Lab environment can be summarised in the above table.

Table 8. Stakeholder involvement in Southampton

Stakeholder cooperation and communication (type of meetings)	Open-door policy of anyone who wants to raise issues with the Southampton City Council. There are no official freight interest group or body that the stakeholders can contact, however, the urban freight stakeholder cooperation relies on direct contact between stakeholders. Consultation has been held with the Freight Transport Association on the proposals for a Clean Air Zone. The Chamber of Commerce is a more formal body linking the politicians, business, and the City Council. Meachers have informal breakfast meetings where companies get together to discuss freight issues.
Stakeholder involvement and commitment (number of meetings, organisational form)	Need to have a consultation platform, to directly talk to several stakeholders simultaneously with the new air quality management and Clean Air zones. An engagement plan will be drawn up.
Stakeholder impact	The urban freight stakeholders in Southampton are included in dealing with air quality since it is particularly bad when it comes to HGV and LGV. Cooperation is emphasised when developing the air quality action plan and electrification of local authority fleet, thus the stakeholders have an impact on policy-making and the policy implementation processes. The stakeholders are used for planning purposes, strategy development and for input on what to include in freight related plans.

The activities related to freight logistics in Southampton, such as HGV and fleet operations, are driven by Southampton being identified as one of five cities which will be required to implement a mandatory Clean Air Zone (CAZ) no later than 2020. SCC has adopted a Clean Air Strategy which commits the Council to 'Improve transport and freight delivery systems through efficient infrastructure and the uptake of new and innovative technologies'. An Implementation plan, working document for internal use, sits beneath the strategy and outlines specific actions to achieve this aim. It makes references to a freight group being established. The idea is that this group will be a subgroup to an overall stakeholder consultation forum (Clean Air Partnership) considering all aspects of the clean air zone. This group will work on establishing what are of importance for logistics in the city.

The Clean Air Partnership is considering to adopt a charter like Paris. This is currently the subject of a review being undertaken by a third party; the Environment Centre. The City Council is looking at the details and examples from the CITYLAB project and feeding them into the development process.

Local government may manage the partnership, but it is potentially run by a third-party which hopefully can result in the greater involvement compared to being imposed by the authority. It is under consideration whether access to these specific offers will depend on whether an organisation signs up to the Clean Air Partnership. Signing up to the Partnership may unlock access to the package of measures (Cabinet Member for Transformation Projects, 2016; Southampton City Council, 2016).

The Southampton City Council and the University of Southampton are the main organisers of the Living Lab environment and the Living Lab implementation action in Southampton, supported by Meachers Global Logistics, the operators of the SSDC and external organisations such as Southampton Solent University and from local hospital trusts. Currently there are no official stakeholder cooperation mechanisms in Southampton. Thus, w*ithin the CITYLAB project, at the city level, the objective is to further develop cooperation mechanisms between different actors involved in urban freight transport to move towards a true Living Lab environment (CITYLAB, 2016b).*

So far this is done by involving the University as an important partner within the Clean Air Partnership itself. A revised Memorandum of Understanding (MoU) is currently being drafted between the Southampton City Council and the University of Southampton on sustainable logistics, with a main objective of reducing overall vehicle emissions and improving air quality standards. The council will approach major freight attractors in the city, including hospitals and universities, to encourage them to sign up to the MoU and to actively engage in the types of measures, such as freight consolidation, that are expected to benefit citizens. Note: an existing MoU runs out in January 2017.

3.7.2 Joint knowledge production: Stakeholder cooperation the Southampton Living Lab implementation action

Contributing to the overall city ambition of improving air quality the aim of the Southampton implementation action is to reduce the overall levels of freight movements generated by large municipal organisations (e.g. local authorities, hospitals, universities) when purchasing goods and services, by identifying opportunities for consolidation and off-site storage. The Southampton implementation has deliberately never been strictly defined in terms of its scope and intensity, as these have been dependent on actions taken by external stakeholders (i.e. large municipal organisations). Since the implementation action in Southampton focus on large municipal organisations stakeholder cooperation has been particularly important. The main

stakeholders are large municipal organisations, and other crucial partners and stakeholders involved are:

- University Hospital Southampton NHS Foundation Trust
- Isle of Wight NHS Trust
- Southampton Solent University (Halls of Residence)
- University of Southampton (Halls of Residence)
- Southampton City Council
- Meachers Global Logistics, as operators of the SSDC, offering consolidation, distribution and warehousing services

The relationship between the research partner and the local authority has been beneficial since it has resulted in student projects and data sharing. However, making companies apply this way of working together with the council has proved somewhat difficult. The freight industry has tended to approach researchers directly on their own initiative rather than through a living lab approach e.g. Meachers has done that to come up with projects and ideas. The stakeholder meetings are driven by the Council and the industry where the researchers come up with ideas guided by specific themes are selected by the Council. This relationship provides a link between the council and the industry.

3.7.3 Impact on shared situational awareness

With the new air quality action plan it is foreseen that the existing stakeholder cooperation structures will be beneficial if the Council since it can bring together stakeholders and where researchers can act as facilitators for such a platform. This cooperative environment has been fundamental in developing relationships, mainly through face-to-face meetings, between the project partners and the large municipal organisations that we are trying to persuade to behave differently. This approach has been beneficial for:

- Identifying problems/challenges/issues from different stakeholder viewpoints
- Generating ideas and possible solutions to best mitigate those problems
- Agreeing scoping studies to look at potential feasibility of solutions
- Offering large organisations (both public and private) DSP support
- Implementing actions where scoping studies and research suggest benefits

For Southampton City Council, there has been a knowledge transfer after they attended the CITYLAB workshop in Paris spring 2016. With this information, they currently work to formulate the Clean Air Partnership and in this relation, determine how best to gather the commitment of local stakeholders.

4 Making a successful Living Lab: stakeholder cooperation as a prerequisite for wider uptake of urban freight innovations

4.1 Stakeholder collaboration in the CITYLAB Living Labs

The most frequently used ways to invite stakeholders to collaboration meetings in the CITYLAB cities are open invitations or inviting people who have signed up to a specific mailing list. If many participants attend these meetings there might be a need to consider the balance of broad participation against decision-making efficiency. However, what the suitable number of people is is difficult to tell, in these cities the number of participants differs from 30 to around 100 people. The number of such meetings and the use of stakeholders to formulate policy varies across each city. The cooperative CITYLAB environment is less developed in some cities than in others. Often the interaction between the local authorities and the stakeholders is still to a large degree based on individual meetings. The organisational structure of the existing meetings is relatively similar where the topic under discussion are decided by politicians and depends on the planned policy initiatives, which are changing. Whether the meetings only focus on freight or has a broader mobility perspective differs between the CITYLAB cities.

The interactions between the local authorities and the stakeholders are mostly for information and reflection purposes, but it also the case that their views have resulted in policy changes. It is viewed as an opportunity for the stakeholders to raise their issues. The findings from the interviews suggest an uncertainty about the real impact of these meetings. With the Living Lab way of working you might reduce some of the direct personal contact but you might get an overall structural picture of what is happening related to urban freight in the area compared to when lobbying your interest.

One reason for keeping to the more traditional way of organising meetings can relate to the political system and how it involves interest groups. In a corporative system, the idea is that a few selected interest groups are more involved in the policy formulation process, hence excluding other interests. For example, trade unions and major businesses are consulted about specific policies, compared to a pluralistic system where the organisations and interest groups have equal access to the policy-making arena and everyone is free to participate, however often depending on their resources, to influence the political process. Today, these systems are less visible but the culture is still there, setting the framework for stakeholder involvement, and fostering the political will to organise such collaborative arenas in addition to what already exists (Allern & Bale, 2012).

Due to working together in CITYLAB, the researchers are much more accepted as persons dealing with freight than in the beginning when urban freight related issued started surfacing. More stakeholders, especially those less interested in politics with a voice otherwise not heard, are included in developing the city's urban freight policy. Hence, the acceptance and representativeness of a developed policy has increased. Reports produced by researchers regarding a specific topic agreed on in the Living Lab have been used in policy-making. Another benefit is that the barrier for cooperation has been reduced resulting in more informal talks on nearly all subjects regarding urban freight. Overall the interviewees stated that it is a good approach and an opportunity to strengthen the relationship between stakeholders.

Within the Living Lab implementation actions the stakeholders directly impacted by the implementation are consulted, however, the degree to which other stakeholders outside of the planning group actively participate differs. It might be the case that the specific Living Lab implementations are to a larger degree organised as closed meetings, particularly, compared to the Living Lab city environment which is publicly driven. There are also differences in

whether there is a public or privately Living Lab owner which might result in different approaches on how to organise the Living Lab.

4.2 CITYLAB Living Lab contributions to joint knowledge production and shared situational awareness

While assessing the CITYLAB Living Lab contributions to joint knowledge production and shared situational awareness using the identified success factors, we find that the organisation and structuring of stakeholder cooperation has increased both these elements. In the following paragraphs the JKP success factors are assessed which is one important element to bring stakeholders together in the field of urban transport and increase the shared situational awareness (Quak et al., 2016).

Actors. For a cooperative environment to be fully functional a broad coalition of actors is necessary. One issue is that when the number of stakeholders increases, the conflicts of interests is larger and decision-making is more complex. The CITYLAB Living Labs are still on such a scale that this is not an issue. On the other hand, increasing the number of involved actors as the Living Labs develop has contributed to increased understanding of the situation of other stakeholders. There is now a small sized forum where there is room to raise individual concerns discussed in the light of what is best for the urban freight system and the city as a whole. Defining this working relationship with common objectives has resulted in involvement of additional stakeholders. For instance, in Oslo a cargo bike initiative relating to the ambition of the Living Lab environment has resulted in an increased number of interested and involved stakeholders in urban freight issues and particularly cargo bikes. Findings from the CITYLAB Living Labs suggest that the distances between the stakeholders are important for successful joint knowledge production and increased SSA. E.g. in London the central London Freight Quality Partnership is based at the University of Westminster. This has reduced the barrier of distance and made it easier for the research partner to be included in a governmental policy-making process.

Relating to the degree to which there are a broad incorporation of stakeholders, the owner of the Living Lab can impact the number of actors participating. In Brussel, the Living Lab implementation action is driven by private stakeholders rather than local authorities resulting in a smaller group participating in the development process.

Discourses. The discourse success factor involves identifying a shared understanding of goals and problem definition including a recognition of stakeholder perspective. Contributing to joint knowledge production all the CITYLAB Living Labs, both within the city environment and the implementation actions, formulated shared objectives. They were developed between the city, researchers and industry, thus contributing to exchange of knowledge and experiences. How extensive this ambition is and the time-perspective of it is different for the city and the industry. With elections it is difficult to plan longer than 5 years ahead, while the companies argued an ambition with a longer time-perspective would not require immediate action from them resulting in no action as there are always more urgent issues to handle. The findings suggest that working together on a common defined ambition has created an opportunity to build knowledge on a specific area of urban freight in the CITYLAB cities.

The degree to which this has been done depends on whether the stated ambition focuses on the city level or on a specific private implementation. It might be the case that a private initiated urban freight implementation has other objectives and targets compared to a government initiated process. A public Living Lab often have several ambitions, targets or interests to satisfy while private initiated solutions in the end often depends on if the companies find the results

economically viable. In cities where the Living Lab implementation is an integrated part of the Living Lab city environment and the overall city ambitions, stakeholder cooperation has been more targeted compared to solutions that are purely industry driven. Hence there might be a lack of shared situational awareness between the industry and the public authorities.

Rules. This successful collaboration involves a division of tasks by participants and a clear understanding of the researchers' knowledge. A challenge in the CITYLAB Living Labs has been identifying the role of the researchers and their knowledge in relation to ongoing processes in the city. There is a need for a clear understanding on the roles of each stakeholder in the Living Lab and how the researcher best can contribute.

Resources. The CITYLAB project has provided financial opportunities for local authorities, researchers and industry to work together. However, there is still an issue of capacity among the stakeholders to work on the specific ambition. The interviews suggested that, despite the Living Lab setup, project financing is still an issue for further developing the relationship between the local authorities, research partners and industry partners. Hence, increasing the joint knowledge production on specific issues within urban freight and from working with different issues and stakeholders may still contribute to higher shared situational awareness. Additional, elaborations on this issue will follow in the next section as this is also a barrier for having a successful Living Lab.

All CITYLAB cities have recognised the importance of the stakeholder perspective increasing the joint knowledge production, however, the impact of this collaboration and the degree to which it is practiced varies among the cities. The Living Labs has in CITYLAB resulted in a relationship which provides a link between the council and the industry. Furthermore, it has established groups who regularly engage in sharing and learning which is an important requirement in SSA in the urban freight transport systems. CITYLAB has provided the researchers with connections in the municipality and insight to important experiences from the industry. CITYLAB is a platform for sharing information and gaining knowledge. Due to CITYLAB and relations developed from other research projects, the researchers and their freight knowledge is much more accepted compared to the beginning when these issues first surfaced. Additionally, awareness of urban freight issues is to a larger degree now present in the city and municipality itself. External knowledge is less needed than in the beginning, indicating that there has been a knowledge transfer increasing the shared situational awareness. These positive experiences have resulted in more formal talks on nearly all subjects regarding urban freight, which might indicate that the barriers between research and public policy has been reduced.

4.3 Prerequisites and barriers for stakeholder collaboration in the CITYLAB Living Labs

This section elaborates on important prerequisites for stakeholder collaboration and barriers that have to be dealt with in order to promote further stakeholder collaboration in the Living Labs. The prerequisites and barriers are discussed considering the findings and experiences from the seven CITYLAB Living Labs.

The Living Lab approach faces several challenges hindering its smooth implementation in a city. In the next subsections, we discuss resources and financial issues, political and institutional factors, social and cultural issues as well as practical and cultural considerations. Finally, a summary of barriers and prerequisites for further stakeholder cooperation in CITYLAB cities is given. The objective of the next steps is to reduce or tackle these, and to

further develop the cooperative environment for a Living Lab. This initial assessment will be supplemented with facilitators for a successful Living Lab and potential solutions. Identifying the barriers, which the city must overcome, can increase the likelihood of a successful Living Lab in CITYLAB.

4.3.1 Resources and financial issues

It is important that the partners have sufficient financial and physical resources to participate in collaborative actions. This is closely linked to political and institutional factors (Banister, 2005).

Capacity. Having sufficient resources among stakeholders to participate in Living Lab meetings or forums is an important prerequisite for establishing a functional Living Lab environment. If there is a lack of capacity at the local authorities, the process is slowed down. This issue is linked to having sufficient human resources allocated to urban freight within the municipality. The Living Lab suffers when time and effort for managing sustainable urban freight come in second place.

Financing. Connected to the capacity issue is the need to have projects financing the stakeholders to work together. In CITYLAB this is mostly an issue for the local authorities and the research partner, as the industry very often themselves can provide the funding if they find cooperation beneficial.

These issues have been identified to play a role in the CITYLAB Living Labs. In both Oslo and Southampton level of staff resources in the City Council has affected the possibilities to facilitate and further develop the Living Lab environment. Due to Government Austerity, there are at present (under review) only 2 members of staff working on the urban freight issues amongst other commitments in Southampton. Project financing is an issue for further developing the relationship between the local authorities, research partner and industry partner. From a researcher perspective, there is a need for politicians who want to spend money on a dedicated policy on urban freight. London, Rotterdam and Brussels have experienced this issue when establishing a relationship with the municipality. It is even said that *"a main barrier is funding from central government".*

Relating to this issue the presence of specific resources such as boundary objects, facilities, organisation forms and competences is a success factor for joint knowledge production and in turn increased shared situational awareness.

4.3.2 Political and institutional factors

Political and institutional factors concern political acceptability and degree of coordination of actions between private and public organisations, other policies or different levels of government (May et al., 2006; Banister, 2005).

Political stability and long-term vision among the politicians is a prerequisite for organising and implementing a fully functioning Living Lab environment. Political stability also impact whether the administrative experts maintain in their jobs. A challenge may be the need of the sitting government to achieve results prior to the next election. The goal of being re-elected may result in a loss of the overall long-term vision for urban freight and their policies in general. Hence organising freight stakeholder groups to influence their policy might be an action with limited results.

This factor was highlighted as very important in all the CITYLAB Living Labs. For instance, in London the change of Mayor in London has led to a short-term change of policy. In addition, the new UK governmental positions towards Brexit can potentially have an impact on the

cooperative structure of a Living Lab. Both Rome and Rotterdam are struggling with the consequences of an election; Rome with the changes in political leadership after an election and Rotterdam with mobilisation leading up to an election.

Proximity to decision-makers. Using independent organisations such as mobility agencies means that the administrate organisation of the Living Lab do not have power the decide on policies, they only provide information input to policy formulation. The final decision-maker of the policy is thus absent from the cooperative process and introducing an additional level of government creates a barrier for the flow of information and the impact of views of the stakeholders. For example, in Rome, the work with the Living Lab has been done with the Mobility Agency, which must then bring the information further to the City of Rome Department for Transport. Reducing this barrier would here mean involving someone from the relevant decision-making body.

Political agenda. Related to the above barrier of political stability is the importance of having urban freight issues on the political agenda. If there is a lack of interest among the citizens the issues are often not addressed by the politicians. Often the local administration doesn't focus on urban freight, hence there is no structured group working on urban freight. In several of the CITYLAB cities urban freight is considered important but it is not the priority. Passenger transport is for example more important. Moreover, it is stated that more ambitious targets with concrete measures could be beneficial to have a policy for achieving sustainable transport. On the other hand, when the local politicians fully endorse a Clean Air Strategy in Southampton, there is cross party agreement, and central government interest has been a facilitator for establishing urban freight stakeholder cooperation in Southampton. The political support has provided a good climate to reintroduce the Southampton Distribution Centre.

Organisational structure. The restructuring of an organisation has been identified as a potential challenge in the CITYLAB Living Lab. It makes it difficult to establish a stable environment where opinions are shared over time with the same actors. In other words, the Living Labs are dependent on gatekeepers, who could be an individual at the municipality having a personal interest in urban freight. This is highly interlinked with employee continuity which has been an issue in the Southampton case where people have left the area of urban freight. With urban freight issues impacting several departments within the municipality it is difficult to identify all relevant municipal actors regarding these issues to establish a Living Lab environment. This is identified as an issue in Oslo combined with a capacity barrier.

4.3.3 Social and cultural issues

Social and cultural issues relates to public acceptance of a methodology. This influences the effectiveness and act as a significant barrier to progress (May et al., 2006; Banister, 2005). Key issues are *short-termism*, *differing interests* and the need to *build relationships*.

Short-termism. It is a perception from the interviews that there is an excessive focus on short-term results at the expense of long-term interests, which is often linked to political stability. If this is the case, the purpose of the city environment Living Lab is potentially reduced to being information meetings. Limiting the cooperative environment to information meetings only may result in stakeholders getting a perception of "nothing being done", leaving them without any real influential power. Thus, they limit their participation to a minimum and the Living Lab loses its functionality. Furthermore, in relation to employee continuity it is rather difficult to plan for a long-term vision if relevant stakeholders often are quitting the Living Lab activities.

Differing interests. When the stakeholders participating in the Living Lab have differing interests, disagreements among stakeholders can create a barrier for participating in such an environment. Among the stakeholders, a lack of shared visions for urban freight limits their opportunity to impact for instance policy measures. Furthermore, it might be difficult to decide

the focus on this cooperative environment when there are several pressing issues in one city. For example, in Southampton, which is a port city, there are many different areas of freight which is a huge contributor to pollution and congestion. In this case, there have been difficulties in developing a Living Lab, but at the same time such a cooperative mechanism might be the solution to this issue. Despite this being a barrier, it may also be an argument facilitating for developing a Living Lab since the environment might function as a place where the stakeholder can come together and develop an overall strategy accepted by all relevant stakeholders.

Relationship building. This is a process that takes time and the establishment and the output of a Living Lab might be limited if sufficient relationships are not built. Within CITYLAB it is mentioned that the *tendering process* gets in the way of building a good relation, however this a process it is difficult to change due to legal restrictions.

4.3.4 Practical and technological considerations

This final group of issues relates to practical limitations on availability of technology, physical availability of space and a general lack of skills and expertise (May et al., 2006; Banister, 2005).

Employee continuity. This barrier is important for continuing the relationship between the stakeholders at all levels (industry, researchers and government). It is however particular important to have employee continuity within the local authorities since they are the one initiating the Living Lab and possibly using the information in their policy formulation. In the Rome Living Lab, due to political changes, people are leaving the Transport Department and the urban freight issues. In this case, the process of establishing a Living Lab in the city must start over with new people.

Technological. This a barrier particularly emphasised in the Living Labs focusing on electrification such as London and Rotterdam, struggling with the capacity of electric vehicles. In London, there is a lack of competitive 3.5t electric vans with 1.2 t payload and 15cmb capacity. This is perhaps not so much an issue for the Living Lab environment at a city level but more an issue within each implementation case within the overall cooperative environment.

4.3.5 Summary of barriers and prerequisites for further stakeholder cooperation in CITYLAB cities

The degree of importance of prerequisites and barriers listed above depends on the phase (plan, implement, evaluate, act) in which each Living Lab environment is. The planning of a Living Lab environment might be more affected by the political and institutional barriers, while in an evaluation and acting phase the social and cultural cooperative barriers may be essential. Overall, the findings from the interviews suggest that, the political/institutional and resources/financial barriers are the most challenging to overcome. Several of these barriers focuses on the municipality and their opportunities to facilitate stakeholder cooperation. Moreover, all above listed barriers are somehow connected to political will and political stability.

In summary, it is the government administration organising these meetings, not the politicians, hence there might be a missing link between politics and stakeholders. The emphasis of the political and institutional barriers might indicate that the political side should be present at, and interested, in the urban freight meetings. Another important issue is to get a stakeholder group to focus on the same visions and target similar policy tools. Acting as one group with a common goal can provide stakeholder meetings with increasing legitimacy and further possibilities to impact policy. Banister's (2005) findings suggest that resources followed by institutional and political barriers most often occurred. These findings are confirmed from the information collected in this Deliverable.

When stating up Living Lab processes in the CITYLAB Living Labs, it has been identified that a major hindrance to overcome is to get involvement followed by agreement. The groundwork is provided in the start-up process. When starting up Living Labs in CITYLAB it has been difficult to overcome institutional differences in the cooperating local authorities. Differences between levels of government, organisations and private and public bodies set the boundaries for the Living Lab environment and may prevent the development of Living Labs.

Furthermore, differences between cities and agencies, political conditions and institutional system impacts how well the Living Lab functions and the use of this concept.

5 Conclusions

This deliverable summarises experiences with the Living Lab approach in the CITYLAB project. This third version mainly uses the CITYLAB Living Lab methodology to extract experiences from the Living Labs, feeding into the final version of the CITYLAB Living Lab methodology in Deliverable 3.4. This deliverable, 3.3c, aimed to assess stakeholder involvement and stakeholder communication in the CITYLAB Living Labs. To ensure that all main stakeholder groups and users are regularly involved, hence reducing the barriers for success.

The findings suggest that the stakeholder cooperation mechanisms in the seven CITYLAB cities are mostly stakeholder meetings around four times a year. In these meetings, there are from 30-80 people depending on the aim and the topic under discussion. Where such meetings are not organised, cooperation between the local authorities and stakeholders are mostly organised through individual meetings and direct contact.

Highlighting the importance of stakeholder cooperation has changed the emphasis from the solution as a single object to the process of integrating a particular solution within the urban freight environment or even within the city environment. Using CITYLAB's cooperative mechanisms has allowed creation of experimental environments sufficiently connected with the real-world stakeholders. Identifying a common ambition, increasing the number of stakeholders involved in urban freight issues and having finance for such activities is increasing the joint knowledge production between the stakeholders involved in CITYLAB. This has also changed the perspective of the involved actors towards a solution approach rather than problem based approach

The identified issues and factors affecting the opportunities to act as a Living Lab are resources and financial, political and institutional, social and cultural, practical and technological. In CITYLAB political/institutional factors and resources/financial issues are highlighted as particularly important both in terms of planning a Living Lab environment and continuing and following up on the stakeholder cooperation within an existing Living Lab. The benefits of using this approach is providing stakeholders with an instrument to impact their workday and reducing the barrier for active engagement in policy formulation. It might also be more efficient than meetings with each stakeholder individually. Generating an increase acceptance and representativeness of a developed urban freight policy.

This deliverable, following the ambition, has provided us with an improved empirical knowledge base on Living labs and how they are organised to accommodate stakeholders, their views and their impact on urban freight policy in each city based on cities experiences.

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Appendix A. Transcribed interviews from projects partners

Brussels – 10.11.2016

Living Lab environment on a city level and current stakeholder cooperation practices

How the Regional Mobility Committee interact with the stakeholders:

- When the Regional Mobility Committee invites stakeholders to join their meetings it is not a fixed list of members that appear at those meetings. The invitations are sent around to all mobility members listed on a contact list (whoever wants to be on this last can have their contact information listed). The members are all from retailers to biking companies, rather diversified. In other words, there is open invitation and the stakeholder decide to join when the topic is of interest to them. Of the organisations represented associations are the main stakeholder organisation.
- It is not a fixed number of meetings during a year, it depends on how many topics are of interest for the Brussels Region.
- No fixed format of the meetings, a way to confront the policy makers with the users. It is the administration organising these meetings not the politicians. Missing a link between the politicians and the stakeholders but not within the committee, maybe there should be someone there from the political side,
- The meetings are not particularly freight oriented but driven by the actions of urban mobility. The starting point of the meetings is an action that the Regional government are thinking of.
- In the meetings stakeholders present their point of view, alternatives are discussed, road prising scheme and a discussion of what to do with the money, informing the stakeholders. To get feedback on a different measure, the stakeholders have a say but it is difficult to say how much they change the measure depending on the input.
- There is usually around 20-40 people and the CITYLAB research partner are usually presents. It might be the case that the stakeholders come to lobby and impact the outcome. It's not only for information.

Other ways for stakeholder to express their opinion to Brussels Mobility are through individual contact between the mobility department and each stakeholder depending on the issue. Meetings with industry and researchers at other events or seminars which strengthen the interaction opportunities.

The city of Brussels is another public level. They are coordinating Brussels studies and it's not the same as the Brussels Mobility. Furthermore, it is a difference between the Brussels capital region and Brussels mobility. In the city of Brussels there are no structured stakeholder consultation rather with one to one contact with whoever are impacted by the measure the city are considering implementing. Additionally, there are no structured measures undertaken in this municipality.

Policy making, evaluation and stakeholders engagement

There haven't been made an official update of the "The Strategic Plan for Goods Traffic" but the measures in the plan has been separately updated. When the evaluation was finished, the administration presented their findings at one meeting and the stakeholders could say whether they agreed.

The LL way of working has been useful in Brussels, however the evaluating phase after implementation together with readjustments could be more emphasised. Now we see that the first cycle is happening but not the final cycle. The evaluation that is happening are mostly ex-ante rather than ex-post. The barriers for completing the final cycle could be:

- evaluation is expensive and the evaluations so far have been finance evaluation through European projects such as the mobile depot and LAMILO consolidation centre,
- disruptive due to political power and the need for quick attention and impact

There might be a need to involve politicians in the final part of the LL cycle to increase the importance and making sure this phase is completed.

Research partner a local authority ask for evaluation, organise meetings at the mobility committee.

Progress on CITYLAB Living Lab: objectives, research and municipality cooperation

The ambition for the Living Lab environment in Brussels is to use On Board Unit data to get more insight in the number of trucks leaving, entering and driving around in Brussels as well as their origin and destination.

- Between the local authorities and the research partner is it not direct contact between only one research partner but different ones depending on who provides the best project suggestion etc. When it comes to the Brussels Mobility Committee meetings the CITYLAB research partner was for one meetings consulted throughout the development process. They did a did a MAMCA-workshop for stakeholders impacted by the measures in the region. The measures were selected based on what they are thinking of implementing.
- The CITYLAB LL has reinforced the link between cities and industry. It has been very useful from the research partner perspective because it has created a framework and a project for the Brussels region and the research to work together which otherwise could have been limited. The Brussels mobility as provided the researchers with data and the research partner will be allowed to work with the data which haven't happened without CITYLAB. This relationship saves time when deciding who to do the analysis and provides ideas in the beginning of the projects. Working together with them in this given project are important for providing direct contact.
- Additionally, there is relationship from working together in other EU-projects and Cathy is the chair in the mobility committee.

The main barriers for the establishment/functioning of the LL environment on a city level:

- Politicians, their goal of being re-elected rather than having an overall long-term vision for their policies, hence get between the implementation and evaluation.
- the development of a good relationships between,
- coinciding interests and
- a tendering process gets in the way of building a good relation.

http://www.mobielbrussel.irisnet.be/articles/pbm/de-gewestelijke-mobiliteitscommissie

Reports are distributed via email to those attending.

London 10.11.2016

Living Lab environment on a city level and current stakeholder cooperation practices

Freight in the city 3rd of November, no legislative activity, too much planning and little action, have meetings regularly two weeks ago, results from the cooperation?

London already functions like a LL:

- design and testing policies,
- 4 times a year huge London freight forum a strategic meeting and many targeted meetings at individual projects,

You could say that there are many mini LL or subgroups relatively uncoordinated with at least people in each group. More ambitious target with concrete measures could be of importance and make the policy making better for achieving sustainable transport. The work undertaken now are creating a knowledge base for this society.

The involvement of TfL has been of importance for developing the area of urban freight, they created Gnewt Cargo and facilitated the contract between them and the big country.

Policy making, evaluation and stakeholders engagement

There is a lack of concrete measures and research evaluating the impact of the measures that are going on such as:

- Quantitative evaluation/impact
- Transferability analysis

The projects should be more targeted, a narrower target. There is a London freight data report but no impact of policies. It might be the case that if we did not have the cooperative approach nothing would have started. The measures have an impact but it is difficult to measure. There is a need for a policy that is monitored and quantified but the politicians don't want to look at the impact of the policies they are suggesting.

New mayor = new changes with a public focus rather than private focus. The changes of staff impact the LL such as where to place the costs. However, the role of the researcher is marginal in this matter.

Progress on CITYLAB Living Lab: objectives, research and municipality cooperation

CITYLAB has provided connections with the municipality in London, can now have conversations with TfL with experiences from the private company Gnewt gaining insights from both sides. Doing other projects with Gnewt, hence personal benefits. Supporting innovative business and sharing data. CITYLAB is a platform for sharing information and gaining knowledge.

Barriers:

- technological (electricity reduced),
- economic (barriers in each implementation case),
- planning barriers
- political

There is a need for politicians that want to spend money on a dedicated policy on urban freight.

Due to CITYLAB and other research project relations the researchers are much more accepted as persons dealing with freight than in the beginning. We are getting to take part in the London urban freight policy, however it is becoming less since this have been developed within the city. The reports produced by researchers have been used in policy-making e.g. London

Olympics and shifting freight transport to the morning no more impacts and no different disruptions. Central London FQP are based at the university of Westminster, which makes it easier to be included. More informal talks on nearly all subjects regarding freight in London.

Has the connection between research partners and city authorities been beneficial? UoW benefits from being involved in multiple tasks around data collection and data analysis, and has now access to data that would have been very difficult to obtain without a good cooperation. The scientific output has now more practical relevance than most other academic institutions. TfL is benefiting from the outputs and expertise of UoW and can take better informed decisions in several domains.

Researcher local authority cooperation

Why has the cooperation been difficult and what measures have contributed in solving these difficulties?

Small mistakes, or big challenges have never led to total failures in the past, because UoW and TfL are learning from mistakes and always take corrective action with joint decision making. Out of 1 to 4 project proposals each year, only few make it to approval and successful completion. Write more proposals would be one solution. The main reason why the cooperation was a success and is expected to continue so, is the very good knowledge level, regular meetings, and a trustful personal attitude.

In what way has/hasn't involving local authorities in developing private initiated solutions contributed to a successful initiative?

Each new project proposal needs to invent something new, otherwise it is unlikely to be funded. If the innovation was "born" in the public sector, the baby is usually proposed to grow in the private industry. If the innovation comes from the private company, it is proposing it to the local authority for funding, before it can grow. Both ways work differently.

Research partner is UoW, local authority is TfL. We have developed a very good, long term work partnership. Our joint work focusses on setting up new tasks and policy activities, implementing planned actions, developing proposals for future projects, work with the industry, be part of current networks.

Oslo – 11.11.2016

Living Lab environment on a city level and current stakeholder cooperation practices

Currently urban freight transport policy is an area in between agencies in Oslo municipality, with no clear responsibilities. The freight traffic will also need to "go green" Electric mobility is a clear priority for the city strategy for reduced emissions. This is administered under the responsibility of the Transport department in city political administration. There is established an Agency for Climate measures. Further the Agency for urban environment is an administrative body that provides expertise as well as execute policies that are being decided by the city government. There is a team within the Agency who is responsible for urban freight. They also in part runs the Forum for Urban Freight in cooperation with the mentions stakeholders. The common traffic measures (signage, street layout, traffic management) is run by the agency.

There are several urban freight transport stakeholder organisations in Oslo.

(1) Urban Freight Transport Forum, which was created on 09.09.2015. Forum was initiated by the Agency of Urban Environment and its governance is done by the municipality

together with the NGO (LUKS) that represents interests of the private sector (industry partners). The fforum combines local government and industry and there is an opportunity for non-invited stakeholders and citizens to raise issues they want the forum to consider. The members are:

- The Oslo Police
- AT (The Norwegian Labour Inspection Authority, Oslo)
- SVV (The Norwegian Public Roads Administration, Oslo)
- BYM (Agency of Urban Environment in the City of Oslo)
- PBE (Agency for Plan and Building Services in the City of Oslo)
- NHO-LT (Norwegian Logistics and Freight Association)
- NTF (Norwegian Transport Workers Union)
- NNN (The Norwegian Food and Allied Workers Union)
- TS-forum (Transport and Logistics Association Norway)
- NLF (Norwegian Haulers Association)
- OHF (Oslo Retail Association)
- LUKS (The Norwegian Supply Chain Development and Competence Center)

Research organizations are not part of the Forum, but the number of members has increased since the beginning. Participation to sessions is by invitation only and additional stakeholders are invited if required by specific theme/topic for the Forum. CityLab has been introduced to the Forum, and a status for City Lab is on the Agenda for the next meeting.

(2) NGO – a competence center for urban deliveries. This is a combination of a knowledge center and lobbying for the industry which operates across Norway and is owned by different industry partners. Center both represents the industry and creates a knowledge on urban freight. This is a very influential organization and often provide feedback in public hearings.

Their activity is more focused on solving specific ground to earth issues, as, for example, on street signs, facilitating deliveries during planning of the new buildings, working conditions of drivers, etc. They are more focused on the daily business.

Now, Oslo, does not have an urban freight transport policy plan, but the new policy administration introduced in autumn 2015 a city council declaration, focusing on:

- To introduce low emission zone (s) in Oslo
- To introduce a car-free inner city
- To set up a consolidation centre for city distribution
- To further electrify transport

There is a goal to develop an Urban Freight Plan for Oslo, in general freight traffic is getting more important in mobility policy making. Still, it's not a top priority. The fact the green party is now in office from 2015 has helped a lot to promote sustainable policies. Form June 2016 urban freight has been highlighted in the city's newly accepted climate- and environmental strategy where the research partner participated. In the draft national Transport plan the EU goal of essential CO2-free urban deliveries has been suggested. In both these two plans stakeholders could provide feedback and were invited into public hearings. NGO and TOI provided such feedback on the draft.

TOI works together with other research institutes, municipality and NGO to develop SULP. In this work the definition that TOI and NGO puts in SULP differs.

There is a close relationship with the Public Roads Administration that recently has established a 4 year programme for City Logistics. This government body is increasing the activities for a more efficient and green logistics.

Progress on CITYLAB Living Lab: objectives, research and municipality cooperation

In Oslo, the Living Lab ambition of CITYLAB is to support the Agency for Urban Environment of the City of Oslo in promoting sustainable urban freight transport. The objective is to increase the understanding on how the political ambition of a car-free city centre can be realised to efficiently facilitate deliveries to freight recipients in the inner-city area.

In this framework, TOI together with municipality developed a project proposal to evaluate the impact on emission due to the sharing economy and how it impacts freight deliveries into the city but that was not funded. Since the city does not have enough financial support to projects, it is necessary to apply to other funds (e.g. regional) and realization of the projects depends on the results of the funding decision. Another topic where TOI works with Oslo municipality is to possibly evaluate a cargo bike trial.

In general, there is no interest observed to evaluate impact of policy measures, however it is an intention to evaluate the use of the Urban Freight Forum. If that is done, it is mainly by initiative of researchers and not commissioned by municipality. Its more research driven than policy driven.

TOI tried to initiate discussions on LL ideas with municipality, but they had hard times in defining the Living Lab and what role TOI will have in it. They though defined a list of potential cooperation areas. The municipality was interested to evaluate some measures but from research partner that was harder to find capacity and funding at that moment. Now it is necessary to find a funding to finance it.

TOI works together with NGO and municipality in several projects. There is a good cooperation on bilateral level, it’s more difficult when all three parties are involved.

In general, there is a distance between research and policy making in Oslo for urban freight. Municipality is interested to work with research partners, but is hard to be committed, because funding is limited as well as internal capacity within Agency of Urban environment (urban freight is on one person).

So far, urban freight was not really acknowledged as a topic on the level of public authorities, that only starts now. And now urban freight is a part of the climate strategy and overall strategy.

Paris 11.11.16

Living Lab environment on a city level and current stakeholder cooperation practices

The stakeholders meet twice a year as general meeting, many more times for each the working groups.

How powerful/influential are the stakeholder groups (local authorities, industry partner, research partner) involved in your city?

Very general question. I don't know, nothing different from elsewhere: of course, freight groups are quite powerful, but local authorities have more power on some issues (street closing, environmental regulations). The LL is a place where some adjustments can be made, but operators will not have the final word when the mayor of Paris has decided on a policy. Research partners: we are influential I guess, on some issues (we pushed for a low emission zone, we raised the issue of logistics sprawl).

The main barriers for the establishment/functioning of the LL environment on a city level: No barrier, the LL is functioning very well Operators are very angry by some recent initiatives (closing of a major street corridor), but the LL is a place where these issues are discussed.

Progress on CITYLAB Living Lab: objectives, research and municipality cooperation

Extremely close relationship between the research partners and local authorities, mostly within the Metrofreight project (www.metrans.org/metrofreight). We provide studies and data (they provide data too), we participate in working group meetings, we answer informal questions they may have (at least twice a month).

In what way have/haven't involving local authorities in developing private initiated solutions contributed to a successful initiative?

The municipality has worked closely with private partners to develop logistics hotels. Necessary to have public agencies on board (building permits, finding good locations, being a go-between for makings private partners work together).

Rome 10.11.16

Living Lab environment on a city level and current stakeholder cooperation practices

When developing, the master plan the mobility agency of Rome and city administration worked together. Previously they have had consultation with stakeholders to get their opinions. Round-tables have been much used (know that they are organizing new round tables following the LL approach) but preferably one-to-one discussions with and talks to stakeholders (mobility agency) about problems and evaluating issues. This happened often in the past but it might has changed, however, the round table meetings were driven by policy needs resulting in no regularity.

The traffic master plan was completed two years ago, but last two months very little has happened. The new administration doesn’t focus on urban freight and there is no structured group working on urban freight. Additionally, people are leaving the urban freight department. The Mobility agency are still working on the issues but they are not the final decision-maker of the policy, they provide input in policy formulation. It is an independent organization but it works for the city of Rome. Mobility of Rome cover all transport related issues and have specific departments including a department of freight.

The City administration department of transport have stakeholder meetings ad hoc and there is a need to further involve the city of Rome in developing the policy.

LL could function also for Rome, however there is still much that needs to be done, decided and implemented. One important thing in Rome now is to get information from stakeholders to see what they would like to have but it varies how much of these opinions are considered. Participation has now been considered hence the LL approach could be appropriate for Rome. The political side they must change their mindset. The most important issue is participation getting a stakeholder group to focus on the same visions and obtain the same good solutions. First there is a need to get involvement followed by agreement, the first is in the start-up process.

Urban freight is considered now important but not the priority, passenger is for example more important.

Policy making, evaluation and stakeholders engagement

In policy development stakeholders give their opinion and the information are used by the mobility agency of Rome as input to the decision-making process.

The round-tables have mostly been ex-ante useful to decide the appropriate policy but little used for ex-post evaluation. The research partner suggested to do the evaluation in the LL of the policy limited traffic zone in Rome increasing the access fee related to the emissions standard, from 600 euro per year to 2000 with evaluation from stakeholders\transport providers. What did they do and what is their opinion and what to have instead, social benefits connection with objectives and if they are obtained. The mobility of Rome accepted this evaluation from stakeholders with survey, an initiative from the university to the mobility agency and then to the city administration.

Progress on CITYLAB Living Lab: objectives, research and municipality cooperation

The City administration department of transport and the CITYLAB research partner have had official meeting discussing the LL methodology, share the ideas and propose some focus topics.

It was difficulties in the beginning due to temporary absence of political guidance. Different to use the Living Lab methodology compared to normally applied methods. The stakeholders were the same as the one in the implementation case Poste Italiane, Mobility agency of Rome ++ where the mobility agency of Rome was the one having the needs and visions of the city of Rome.

Roma3 has started to investigate specific topics together with Mobility of Rome. The connection between research partners and organization are good. The round tables and the LL methodology matches and they are happy to go in this direction.

The challenge is to involve the city of Rome department of transport due to changes within the department which could be considered as a barrier. At the same time, good cooperation with Rome Mobility can reduce the problem.

Another barrier are difficulties in discussing with the city of Rome, due to shared visions and interest for freight mobility agency are more easy to cooperate with. Because of internal struggles with people quitting research activities are not the priority.

Furthermore, differences between cities and agencies, political conditions and institutional system impacts how well the LL functions and the use of this concept. It is a good approach and opportunity to strengthen the relationship between stakeholders.

Rotterdam 10.11.16

Living Lab environment on a city level and current stakeholder cooperation practices

The front runners are a group of highest ranked companies, leading freight industries that are consulted in freight related issues. The stakeholders are there on a voluntary basis participating in the consultation talks. to two- five years a month. Has been a group since 2014 and they are asked to join consultation rounds. There are always consultations in politics in the Netherlands.

Workshops with the stakeholders are organised not only by the local authorities but by other stakeholders. Experts from the freight research area Laetitia participate. It is estimated that around 100 people participate in these meetings and on average 80 people. It is organised by the interest groups.

Everyone can attend the meetings and the invitations are sent by email and there are two-five meetings a year. The people attending choose what they want to hear and it only focuses on urban freight.

Stakeholder do they have an impact? Logistics zero 10 are looking broader not only policy, infrastructure in the Netherlands. But how stakeholders can be involved?

Useful involvement? The local authorities expect stakeholders to do something. It is more about reflect but less act. They are doing their business and if it fits they work on it. The city would want the companies to do more.

Policy making, evaluation and stakeholders engagement

Monitoring and evaluating solutions have not been a priority in urban freight. It is done with the environmental zone which show the results but not much.

Progress on CITYLAB Living Lab: objectives, research and municipality cooperation

Currently we are reflecting on how to work with our roadmap and ambition in Rotterdam. Knowledge development, Roadmap with Rotterdam, rather than particular solutions by 2020, how to continue on that? Where to place the effort. With the focus on zero emission barriers have been that electric vehicles are expensive and that there is a lack of financing. It is mainly talk little action and it has been considering ways of financing.

Another barrier is that the election is in one and a half year and the politicians might change and the sitting government are expecting results. Administers working with freight now are working with the things that are happening now is done by the previous elected, need something their own.

What do you think about the LL approach, is this future for Rotterdam? Yes, the approach it comes from what has been done in Rotterdam. Started in 2011/2012.

For Green Deal Zero Emission City Logistics the target is to guide all the relevant city logistics stakeholders to achieve zero emission city logistics in the inner centre of Rotterdam by 2020. Lead is by Rotterdam Municipality with assistance/guidance by TNO.

Front runners are one group of stakeholders. In addition, there are workshops which are less active. Currently, the initiative is looking at ways to get more involvement, manufacturers can you get them together ongoing process. Potentially include the university, research institute, technical university Delft but mostly it is only two partners.

Southampton LL 11-11-2016

Living Lab environment on a city level and current stakeholder cooperation practices

The activities related to freight logistics, such as HGV and fleet operations, are driven by the air quality issues the city is facing. Nitrogen dioxide levels exceed the limit set by the EU Ambient Air Quality Directive in several key locations across Southampton. The city currently has ten AQMAs declared, each one as a result of the annual mean for nitrogen dioxide (NO_2) exceeding the objective value of 40 µg/m^3. In all cases emissions from road transport are the main contributor of the exceedance. The UK Government published the UK Air Quality Plan in December 2015. This identifies measures intended to reduce nitrogen dioxide emissions and achieve European Union limit levels before 2020. The plan identifies Southampton as one of five cities which will be required to implement a mandatory Clean Air Zone (CAZ) no later than 2020 to ensure a satisfactory improvement is achieved. Air Quality is a high political priority.

Although Clean Air Zones will be characterised by the introduction of penalty charges for vehicles below a Euro 6 standard diesel engine, the Department for Environment, Food and Rural Affairs (DEFRA) is keen to ensure that they are also the focus of additional measures. Therefore SCC adopted a Clean Air Strategy and Clean Air Zone Implementation Plan in November 2016 which identifies a broad programme of measures to deliver improvements at the earliest opportunity and beyond 2020. These measures were identified following a vigorous assessment of the options by an independent consultants, Ricardo and Low Emission Strategies Ltd. This exercise included extensive stakeholder engagement, air quality modelling, cost benefit analysis and an assessment to gauge deliverability. A long list of options was then rationalised and prioritised into packages of measures. Amongst its key recommendations are initiatives targeting freight logistics operation in the city.

The Clean Air Strategy commits the Council to 'Improve transport and freight delivery systems through efficient infrastructure and the uptake of new and innovative technologies'.

An Implementation plan sits beneath the strategy and outlines specific actions to achieve this aim. for the implementation plan is a working document for internal use but it makes references to a freight group being established. The idea is that this group will be a subgroup to an overall stakeholder consultation forum (Clean Air Partnership) considering all aspects of the clean air zone. This group will work on establishing what are of importance for logistics in the city.

- The Clean Air Partnership may consider adopting a charter similar to Paris. This is currently the subject of a review being undertaken by a third party; the Environment Centre. The City Council is looking at the details and examples from the CityLab project and feeding them into the development process.
    - There has been a knowledge transfer after the CITYLAB workshop in Paris spring 2016.
    - The work is currently underway to formulate the Clean Air Partnership and determine how best to gather the commitment of local stakeholders.

There are many different stakeholders dealing with air quality but the air quality is particularly bad when it comes to HGV and LGV so logistics is an important part. The environment centre (specialize in community engagement) based on Germen experiences, work hand in hand with local government, are included in the consultation on this strategy.

Local government may manage the partnership, but it is potentially run by a third-party which hopefully can result in the greater involvement compared to being imposed by the authority.

- The Clean Air Strategy talks about the priorities, the key outcomes, how to achieve them, infrastructure and technology, freight delivery and transport together. It refers to alternative solutions and fuels.
- It targets HGVs. Road transport is the most significant contributor to poor air quality within the city with 34% attributed to heavy goods vehicles. There is consultation with businesses on the impact of the plan and the clean air zone. Altogether this strengthens the case for the sustainable distribution centre in the city and Meachers' vehicles are compliant with the standards required for the clean air zone.
- The City Council is committing to the clean air zone itself by looking at the possibility to something like Gnewt Cargo or a transport service run by the local council.
- The clean air zone is an effective regulatory 'stick' which will incentivise local businesses to operate cleaner vehicles and improve the efficiency of their freight operations. The intention is to offer organisations a 'carrot' to aid compliance with the clean air zone through the continued provision of free DSP's in partnership with the university, travel planning services for free, free electric vehicle charging infrastructure and grant funding for improved cycling facilities.

It is under consideration whether access to these specific offers will depend on whether or not an organisation signs up to the Clean Air Partnership. Signing up to the Partnership may unlock access to the package of measures.

From a CITYLAB perspective, the importance of air quality as a political issue is accelerating the level of implemented learning.

The University is an important partner and the City Council is looking to involve academia closely within the Clean Air Partnership itself. There has been a strong working relationship developed through the city's sustainable travel behaviour change programme, 'My Journey'. The City Council are now looking to renew the Memorandum of Understanding, formed as the basis for delivering the My Journey programme, since it has been a flexible way to commission work through the University and it has been working very well. The University are currently under consideration to do a feasibility study to identify appropriate sites for alternative clean fuel re-fuelling in the city (subject to funding). It is important to utilize the University's expertise to develop parts of the Clean Air Strategy.

Local politicians fully endorse the strategy hence there is cross party agreement. Additionally, there is political support and a good climate to reintroduce the SDC.

Potential barriers in developing this strategy and involving stakeholders:

- Level of staff resources at the City Council because of Government Austerity. At present there are only 2 members of staff working on the issues amongst other commitments. This is currently under review as part of an internal staff restructure exercise.
- Another important consideration, in relation to the SDC, is how fast decisions are made in the public sector organisations that have been targeted to use the facility. Protracted discussions and staff turnover have prevented contracts coming to fruition. In some cases the additional short term costs with switching to the SDC have prevented contracts being taken forward.
- The relationship between central and local government. Delivering the measures to improve air quality are all currently expected to be solved locally, but there is a need for national policy to support the work being done, there is a need for complementary policy.

European Union are taking forward infraction proceedings against the UK government for not reaching the EU-targets and limit values. This may include a significant annual fine. In addition there has been a case in the UK High Court where environmental lawyers', Client Earth, have challenged the Government's Air Quality Plan 2015 as being insufficient in achieving the necessary change to address the effects of air pollution. The outcome is that the Government is currently reviewing its national Air Quality Plan with amendments expected in the New Year.

There is also an added public awareness of air quality in the city. There are local campaign groups focusing solely on the issue. Since freight logistics and the movement of goods by road contribute to the concentrations of air pollutants in the city, and specifically adjacent to the Port of Southampton, the growing political pressures to deal with the issue is helping to open a dialogue with the Port. Local campaigners are increasingly aware of the link between the movement of goods and the affect this road-based transport is having on their health.

On behalf of the council there is an open-door policy of anyone who wants to raise issues with them. The overall transport manager has left, other have left the council, Neil Tuck is the main contact. The council don't have any official freight interest group or body that the stakeholders can contact, instead it is direct contact between them. No freight interest group and the real mechanism to do this is the chamber of commerce and Meachers having an informal breakfast club where companies get together to discuss freight issues, very informal.

The chamber of commerce a more formal body linking the politicians, business and the council. There is a need to have a consultation platform, new air quality management. Air quality zones where they need to talk to stakeholders. Consult the local authorities Neil Tuck he is going to the POLIC conference.
New freight plan updates as part of the new air quality strategy, electrification of local authority fleet.
When it comes to the LL approach in Southampton in the context of the air quality management/action plan its good, but it is not really happening now. But in the future for this management plan LL is a good idea to bring stakeholders together. Going forward next year, how to foresee this in this plan.
What works and what is not for the LL approach in Southampton, what are the barriers for it?

- Different interests: Port city many different areas of freight huge contributor to pollution and congestion, retailers into the city itself, and no common way to bring all these interests together. This is where the LL can come in and create a place where these stakeholders can meet.
- Political barriers? There has been political stability, the main barrier is founding from central government, a lot of the experts have lost their jobs and lest the council. Time and effort managing the basic needs where sustainable freight government have been second place.

Policy making, evaluation and stakeholders engagement
The pre-gate facility where there was an area outside the port to hold lorries here was done static evaluation of the pollution not the measures. Report in time. The focus is now air quality which must be addressed. No formal evaluation, however there is national monitoring of these areas and the pollution has not been reduced against the national target so that the local government must solve this issue.

Does Southampton have any monitoring and evaluation process?

- Not specifically, current trends in traffic and pollution, estimates on what the current measures might produce and the impact all theoretical, not a lot have been implemented
- Routing data collection for the national statistics
- For certain projects, e.g. my Southampton evaluation to what extent using public transport looking at the effectiveness of the council policy. DSP have collected data on freight impact but the depends on the companies adopting those measures.

Progress on CITYLAB Living Lab: objectives, research and municipality cooperation

- *Within the CITYLAB project, on the city level, the objective is to further develop cooperation mechanisms between different actors of the urban freight transport to make a next step to the creation of the Living Lab environment in the city.*

The memorandum of understanding runs out in January, the Council is trying to renew it but it has been delayed. Working together within the general area of sustainable logistics. Update discussion will take place in December this year.

Beneficial? Yes, it means that we have a relationship, open to students projects, having data available, creating a better relationship but making companies use this is difficult.

How organised: natural point where meetings take place, driven by the council and the industry, the researchers come up with ideas, directed by the council in terms of themes. This relationship is a link between the council and the industry.

Does the industry address you with you issues? Meachers have done that, come up with projects and ideas. Unique position but others can do use them. Do work in London as well.

LL approach have so far resulted in little change but with the new air quality action plan but it will have a big benefit if the council will bring together stakeholders. Researcher as facilitator for the platform. The Council needs for the plan must be clarified.

Barriers: lack of capacity in the council the process is slowing down.

EUROPEAN COMMISSION

INNOVATION and NETWORKS EXECUTIVE AGENCY

HORIZON 2020 PROGRAMME for RESEARCH and INNOVATION

Reducing impacts and costs of freight and service trips in urban areas (Topic: MG-5.2-2014)

Grant agreement no: 635898

Deliverable 3.3b

CITYLAB: lessons and experiences with living laboratories

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Document Control Sheet

Project no.:	635898	**Acronym**	CITYLAB
Project Title	City Logistics in Living Laboratories		
Work Package	WP3	**Title:**	Living laboratories
Deliverable no.:	D3.3	**Title:**	CITYLAB: lessons and experiences with living laboratories
Version	1	**Revision**	0
Issue Date	12 Jul 2016		
Dissemination Level	Public		
Future references	CITYLAB Deliverable 3.3b (2016). CITYLAB: lessons and experiences with living laboratories.		

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CITYLAB consortium by Living Lab			
Living lab	**Municipal partner(s)**	**Industry partner(s)**	**Research partner(s)**
Brussels	Brussels Mobility	Procter & Gamble Services	Vrije Universiteit Brussel
London	Transport for London	TNT Gnewt Cargo	University of Westminster University of Gothenburg
Oslo	Oslo commune	Steen & Strøm	TOI
Paris	Mairie de Paris		IFSTTAR DLR
Randstat	Gemeente Rotterdam	PostNL	TNO
Rome	Roma Capitale	Poste Italiane MeWare SRL	Università degli studi Roma Tre
Southampton	Southampton City Council	Meachers Global Logistics	University of Southampton
Networking and outreach partner			
POLIS			

Executive summary

The objective of the CITYLAB project is to develop knowledge and solutions that result in roll-out, up-scaling and further implementation of cost effective strategies, measures and tools for emission free city logistics. In a set of living laboratories, promising logistics concepts will be tested and evaluated, and the fundament for further roll-out of the solutions will be developed.

The role of this deliverable is to report on the lessons and experiences from the Living Lab process in each city involved. This document will be updated twice a year throughout the CITYLAB project. This document is the **second** edition finalised in **July 2016**. The main experience, from this reporting period of the Living Lab city environment, is the importance of good collaboration and clear communication between the city and the research partners to develop a common understanding needed to instigate changes in freight practices.

This second version is an extension of Deliverable 3.3a. It applies the Living Lab methodology to extract the Living Lab experiences and activities taken place on the city level during the previous six months, November 2015 - April 2016. Further, this will feed into the final version of the CITYLAB Living Lab methodology in Deliverable 3.4.

1 Introduction

The objective of the CITYLAB project is to develop knowledge and solutions that result in roll-out, up-scaling and further implementation of cost effective strategies, measures and tools for emission free city logistics. In a set of Living Laboratories ("Living Labs"), promising logistics concepts will be tested and evaluated, and the fundament for further roll-out of the solutions will be developed.

A Living Lab is defined as a dynamic test environment where complex innovations can be implemented. Currently, the field of city logistics is characterized by many small-scale demonstrations. Barriers for large-scale implementations of these demonstrations are often transferability, knowledge of business cases and involvement of the right stakeholders. A Living Lab differs from conventional demonstrations in that it creates an experimentation environment in which stakeholders aim at achieving a long-term goal together.

In the CITYLAB project the Living Lab environment is considered at two levels: on the level of the city itself and on the level of the specific implementation case. The city level is more a strategic level, looking upon the development of urban freight transport and logistics. Determining key elements for it are: existence of a strategic development plan supported by a set of policy measures; established stakeholder communication instruments/platforms and a developed monitoring process. Implementation cases are more operational, addressing specific problems and solutions at a practical level. For both city and implementation case levels a living lab methodology is proposed, aimed to facilitate the process.

A living lab methodology for the CITYLAB project was developed in Deliverable 3.1. The methodology follows a cyclical approach, where several solutions can be tested and re-adjusted/improved to fit the changing real-life environment. One cycle within a Living Lab usually consists of the following phases (CITYLAB Deliverable 3.1):

- **Planning,** where the Living Lab vision, ambitions, objectives, main users and stakeholders are identified and where conceptual designs of implementation cases to be tested in the Living Lab are made.
- **Real-life implementation,** where concrete Living Lab solutions are prepared for execution and implemented in a real-life environment.
- **Evaluation,** where the results of the implementation are analysed based on more extended data collection and on feedback from the users.
- **Act/Decide,** where, based on the lessons learned from the evaluation phase, a decision is made on the continuation of the Living Lab into a new cycle and on what amendments will be made in this new cycle.

There are seven Living Labs in CITYLAB, in which specific test and implementation actions are planned - the cities are Brussels, London, Oslo, Paris, Rome, Rotterdam and Southampton.

The role of this deliverable is to report on the lessons and experiences from the Living Lab process in each city involved. This deliverable does not focus on the specific implementation case in a city, but reports on the development and experiences with the Living Lab environment on the city level. The findings from this deliverable not only feed into Deliverable 3.4 - *CITYLAB Handbook for City Logistics Living Laboratories*, but are also an instrument for risk management in the project.

This document will be updated twice a year throughout the CITYLAB project. This document is the **second** edition finalised in **July 2016**.

The rest of this document is organised as follows. In Chapter 2 we introduce the process evaluation approach that is being used, while Chapter 3 summarises the specific feedbacks that have been obtained from the seven living labs. Finally, Chapter 4 discusses the main findings with an emphasis on main barriers and benefits of the Living Lab approach.

2 Process evaluation approach

2.1 Purpose and role in the project

As outlined in Deliverable 3.1, the CITYLAB Living Lab approach is based on phases from planning, via implementation to evaluation and then acting/making a decision on whether the solution should be rolled out, further developed or abandoned. It is foreseen that several cycles/iterations through the four steps may be needed, this is illustrated in Figure 1.

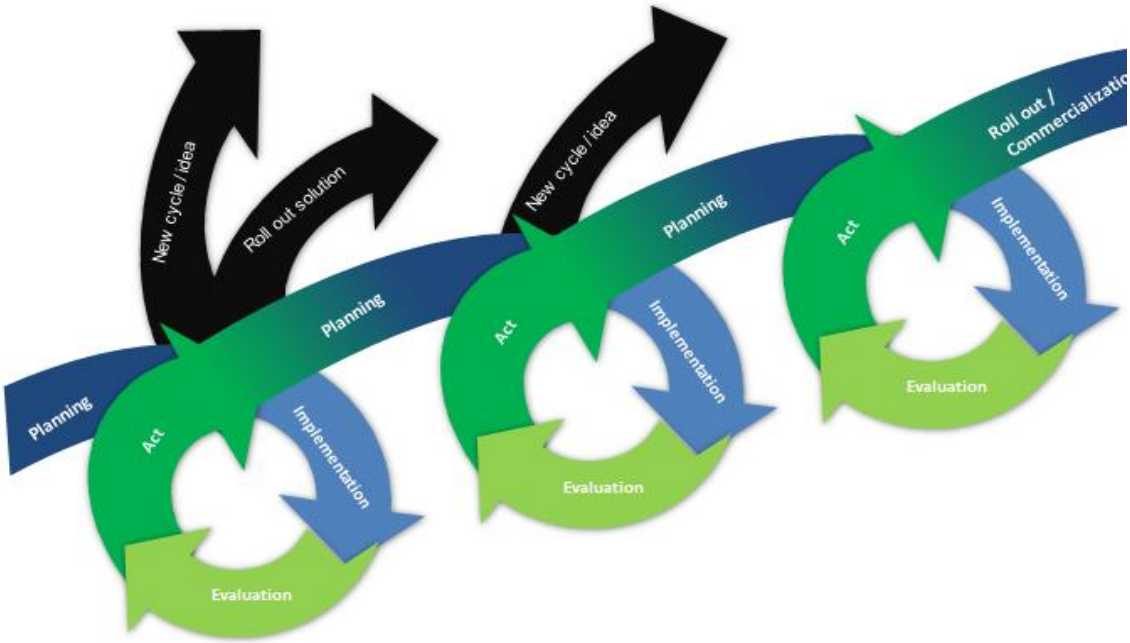

Figure 1. Cyclical Living Lab process (Source: CITYLAB Deliverable 3.1).

A key role of the process evaluation is to extract the lessons learned from the different phases of the Living Lab processes in each CITYLAB city. It is useful to systematize this information as part of the documentation of the progress of the Living Lab activities, and frequent updates makes it possible to identify challenges early and propose measures that can mitigate problems that are discovered. The process evaluation also captures experiences from use of the Living Lab approach itself, and this information will feed into Deliverable 3.4 - CITYLAB Handbook for City Logistics Living Laboratories.

The process evaluation complements monitoring of the implementations that takes place in WP 4, which will be reported in Deliverables 4.1 and 4.2. The WP 4 deliverables will give details on the status of each of the seven implementation activities, while Deliverable 3.3 deals with the overall Living Lab processes. The main outcomes of WP 4 will be data and information that will be used in different evaluation activities in WP 5.

2.2 Information collection

The main sources of information for this deliverable are process evaluation forms circulated to each Living Lab at regular six-month intervals. These forms are sent to the CITYLAB research and city partners. Questions cover three main topics:

- Which activities took place during the reporting period and what activities are planned?
- What went well and facilitated the implementation of activities during the reporting period?
- Which kind of barriers the partners has encountered during the reporting period and how they managed to overcome them?

2.3 Overview of contributions

Table 1 details the information sources used as a basis for Chapter 3 and 4, while Table 2 gives a detailed overview of the process forms received.

Table 1. Information sources used.

Document version	Sources of information
Version a – Nov 2015	Fact sheets collected October 2015 describing each implementation and city reports on urban freight status collected as part of task 2.2.
Version b – June 2016	Process evaluation forms collected May 2016 describing each city's Living Lab experiences.
Version c – Nov 2016	n.a.
Version d – May 2017	n.a.
Version e – Nov 2017	n.a.

Table 2. Process evaluation forms received.

Partner	Nov 2015	July 2016	Nov 2016	May 2017	Nov 2017
TOI	n.a.	x			
OSLO KOMMUNE	n.a.	x			
UNIVERSITA DEGLI STUDI ROMA TRE	n.a.	x			
ROMA CAPITALE	n.a.	x			
UoW	n.a.	x			
TFL	n.a.	x			
VUB	n.a.	x			
AED – BM	n.a.	x			
TNO	n.a.	x			
ROTTERDAM	n.a.	x			
IFSTTAR	n.a.	x			
PARIS	n.a.	x			

Partner	Nov 2015	July 2016	Nov 2016	May 2017	Nov 2017
SOUTHAMPTON UNIVERSITY	n.a.	x			
Southampton City Council	n.a.	x			

In the first version of the Deliverable 3.3a, we did not report on the city Living Lab environment but the CITYLAB implementations since the Living Lab methodology of CITYLAB was finalised in October 2015. Deliverable 3.3b is therefore the first Deliverable on process evaluation of the Living Lab city environment. The progress of specific implementation cases will be reported in Deliverables 4.1 and 4.2.

3 CITYLAB cities Living Lab ambitions

The following chapter describes the ambitions of the CITYLAB living lab environments in each city. In CITYLAB a "city Living Lab environment" is defined as a city environment that comprise the following elements in the area of city logistics:

- Urban freight strategy/plan
- Established urban freight transport stakeholder cooperation mechanisms
- Existence of measures/implementation cases
- Monitoring process

Therefore, cities participating in CITYLAB project are situated at different stages of the city Living Lab environment development process. Some, like London and Paris, are already working within established Living Lab environments (even though, logistics environments in these cities are not "labelled" as a "Living Lab", they are satisfying the above-mentioned criteria for the Living Lab processes). Others, like Rotterdam and Southampton, are beginning to organise their work on city logistics according to the Living Lab principles. Table 3 provides an overview on where cities stand in their living lab processes.

Table 3. Living Lab processes in CITYLAB cities.

	London	Southampton	Oslo	Paris	Rotterdam	Brussels	Rome
Pre-requisites for the LL environment							
Urban freight strategy/plan	x	x		x	x	x	x
Established cooperation mechanisms	x		x	x	x	x	x

Existence of measures/ implementation cases	x	x	x	x	x	x	x
Monitoring process	x		x	x	x		x
Objectives within CITYLAB							
City level	x	x	x	x	x	x	x
Implementation case	x	x	x	x		x	x

Table 3 also indicates the objectives of the CITYLAB cities within the project. Below, ambitions of the cities for the city living lab environment are presented. These ambitions might be twofold: stated on the general level, looking at the vision of the city on the initial or further development of the local city living lab environment or stated for the CITYLAB, looking on what kind of actions can be performed within CITYLAB, further contributing to developing the local living lab environment.

Brussels

On April 1st 2016, an electronic road charging system for trucks was introduced on Belgian roads. Each truck using Belgian roads will have an On Board Unit, which tracks the route and automatically sends a bill to the owner. The ambition for the Living Lab environment in Brussels is to use those data to get more insight in the number of trucks leaving, entering and driving around in Brussels as well as their origin and destination. Together with Brussels Mobility Department, Vrije Universiteit Brussel will develop a long-term methodology.

London

The London Living Lab ambition of CITYLAB is to support the growth of clean vehicle usage in London as well as support the implementation action of TNT and Gnewt Cargo with a clear set of framework actions and strategies. The long-term goals are:

- Deliver an implementation action on growth of electric freight deliveries in London.
- Monitor growth, assess costs and benefits, demonstrate beneficial impacts for market and private business, and public sector.
- Develop and run a trial with a two-stage approach: initial transfer of business from diesel fleet to electric fleet, intermediate evaluation, then a second transfer of business of diesel fleet to electric fleet, final evaluation.
- Support growth with search for an appropriate depot location in or close to Central London.
- Deliver a growth potential analysis for transferability to other businesses and other cities.
- Analyse success factors and barriers.
- Link and analyse links with other London logistics and policies such as ultra-low emission zone planning and freight operator recognition scheme, etc.

- Provide recommendations for policy makers.

Oslo

In Oslo the Living Lab ambition of CITYLAB is to support the Agency for Urban Environment of the City of Oslo in promoting sustainable urban freight transport. The objective is to increase the understanding on how the political ambition of a car-free city centre can be realised to efficiently facilitate deliveries to freight recipients in the inner city area.

Paris

Paris recognise their Living Lab ambition as contributing to the goal of a reduction of the overall emissions from activities in the urban area by 75% in 2050 compared to 2004. The overall objective of the municipality for the Paris Living Lab is to change the logistics organisation of shippers and carriers towards greener solutions such as green vehicles and deliveries by foot. Another important objective is tour optimization as well as new ways of using vehicles i.e. co-sharing the use of delivery vehicles.

Rome

In Rome the CITYLAB Living Lab ambition has not yet been developed, however, a valuable contribution from the CITYLAB project is gaining the knowledge on the creation of such an environment. At present, there is no one structural formalised approach to implement all the activities taking place in Rome with respect to urban freight distribution. The intention is within CITYLAB is to establish and reinforce the cooperation between research partner and city authority in order to further cooperate on the creation of the local Living Lab environment.

Rotterdam

Rotterdam is currently in the process of organising its work on the urban logistics processes according to the Living Lab principles. Rotterdam's ambition within CITYLAB is to reinforce the cooperation between municipality of Rotterdam and TNO on data collection and forming of the Rotterdam living lab and the process management.

Southampton

The Southampton Living Lab's ambition is to vastly improve air quality within the city while maintaining economic prosperity. Within the CITYLAB project, on the city level, the objective is to further develop cooperation mechanisms between different actors of the urban freight transport in order to make a next step to the creation of the Living Lab environment in the city.
The planned actions are:

- Consultation and drafting of a Memorandum of Understanding (MoU) (aimed at improving air quality and including freight-related objectives and possible measures).
- Publicising the MoU and directly approaching companies involved in delivery and service planning, and other relevant organisations, to seek their agreement.
- Convening living lab meetings to discuss progress, results and ways forward
- Organisation of other dissemination events.

4 Information collected from the Living Labs

This chapter summarises the main experiences and findings from each city in the period of November 2015 – April 2016 based on the information from the process evaluation forms.

4.1 Brussels

The main activities undertaken in Brussels during this reporting period are sessions by the Regional Mobility Committee on goods transport on January 20th 2016 about what to do with the revenues of the new electronic road charging system for trucks in Belgium and another held March 7th 2016 about different types of recognition schemes for transport companies or fleet operators. Moreover, the city has improved knowledge and awareness within the organisation related to stakeholder collaboration in urban logistics and externally by writing a dossier on transport in the magazine of the Economic and Social Council.

Another initiative is the start-up of five new pilot Delivery and Servicing Plans (DSP) in order to define a methodology for management of deliveries in Brussels.

The main barrier from Brussels Mobility point of view is linked to governmental administration regarding length of administrative processes and dependency vis-à-vis political level. The research partner has experienced some minor communication barriers in terms of understanding the extent of the Living Lab processes within CITYLAB. However, after learning that the Living Lab processes aims to support authorities in developing policies and measures towards more sustainable urban freight transport through improved relationships between research partners and the local government, the mobility department of the Brussels-Capital, this has been improved.

A key facilitator for success could involve developing existing relationships with enterprises and administrations to make the collaboration easier. Additionally, collection of high quality data is crucial for research partners contributing to local authorities in developing policies and measures towards more sustainable urban freight transport. The city has identified a need to address the difficulty of scaling-up successful pilot projects to improve mobility and increase the project's impact.

According to Brussels Mobility there are no challenges in applying the CITYLAB's Living Lab approach since they already use a similar methodology when developing Delivery and Servicing Plans. However, as indicated by the research partner it might be easier to follow the Living Lab approach and include stakeholders in the decision making process in a city where you can apply the methodology from the beginning. The benefit of this approach is the informal structure in which city authorities and research partners can develop actions.

The activities planned to be undertaken by the city are related to projects applying the CITYLAB methodology such as an expanded pedestrian area through: counting of freight vehicles, local establishments transport and logistics survey, a pilot project of local logistic space and a consultation of stakeholders in the framework of the Urbact project, Freight TAILS. As part of the Living Lab approach new objectives for the cooperation between the mobility department of the Brussels-Capital Region and Vrije Universiteit Brussel will be developed, specified and potentially executed.

4.2 London

During the first year of CITYLAB, the main activities undertaken were to define the goals and objectives for the London Living Lab and set up the implementation action. The Living Lab was linked with the LoCity and the London Freight policy was made through workshop participation.

The main barrier is that it was impossible to relabel all London Freight policy activities and all London stakeholder consultations into a London Living Lab. However, it was possible to link the Living Lab activity to the other London networking activities and workshops, notably the London LoCity initiative, the Central London Freight Quality Partnership, and the London Freight Forum. For the implementation case the difficulty was to find a new location for a Central London depot. The main delay was the starting date of the implementation action due to operational decisions at the businesses TNT and Gnewt Cargo. Currently the starting of the implementation action is foreseen mid May 2016. Furthermore, the broader London policy does not foresee provision of affordable space for logistics depots and warehouses in Central London. This remains a barrier for a wider spread and upscale of the solution of electric freight delivery in the city centre.

Good networking relations and good consultation between Living Lab partners and the other London freight policy actors are important facilitators for success together with TNT providing access to a Central London depot for Gnewt Cargo. During this period, it was learned that the implementation action is feasible but the starting date is dependent on other business decisions.

Challenges in applying the CITYLAB's Living Lab approach is that existing stakeholder consultation and London Freight policy does not provide a major difference with the Living Lab approach. This makes it difficult for the Living Lab to establish itself as something new for London. The focus on implementation action and the use of it to generate good results and visibility is hopefully the right strategy to allow the Living Lab to become successful as an approach.

The activities planned to be undertaken in the next six months:

- Start of the implementation action.
- Workshop and public discussion about London's objective of scaling up electric delivery solutions.

4.3 Oslo

During these six months the main activity has focused upon discussions with the Agency for Urban Environment on how to further develop the city level living lab activities in Oslo. The City of Oslo is, in cooperation with distribution stakeholders, developing a city distribution plan for the central area as part of the car-free city centre project. They are also increasing the number of fast charging stations and creating a parking garage for professional EV fast charging. The research partner has presented environmental challenges of urban freight at a public hearing regarding the environmental objective to improve air quality by reducing emissions and to improve urban freight logistics in the City Council Declaration. Furthermore, the research partner has participated at a circular society workshop where, based on the city of Oslo environmental strategy, private companies, citizens and public institutions discussed citizen's participation in light of mobility, urban freight and leadership.

There might be a challenge in possibly combining the Oslo Living Lab process in CITYLAB with the already established freight dialogue forum between the municipality, interest organisations and industry. To overcome this barrier there have been meetings with the municipality and the head of the freight dialogue forum. Moreover, the city has experienced a somewhat complicated procurement process when establishing the new types of EV chargers.

Regular contact, meetings and cooperation with the Agency for Urban Environment of the City of Oslo and representatives for the industry has been a facilitator for success. Stakeholder awareness raising by participating in workshop and presentations has been beneficial in increasing knowledge about existing challenges within urban freight. By informing the public, politicians and the private sector about urban freight issues you might gain government's attention, thus potentially acting as agenda-setters. For Oslo, the city distribution plan as part of the City Logistics plan developed together with several important stakeholders has been a facilitator for success. Establishing the Forum for City Distribution in Oslo autumn 2015 has provided beneficial collaboration with stakeholders where, together, they seek to facilitate sustainable logistics.

One benefit of using CITYLAB's Living Lab approach is the dialogue and information sharing between the City of Oslo and the research partner, increasing the understanding of which urban freight issues, from the city perspective, are most important and how to potentially solve these. Furthermore, it might be interesting, from a researcher perspective, to broader engage the Agency for City Environment to be involved in urban logistics issues in general and CITYLAB in particular beyond those already included in CITYLAB.

Potential actions to be undertaken, requested by the city within the Oslo Living Lab, in the next six months include high quality data collection related to understanding service trips and the use of vans to define new measures in a way that generate emission cuts, while maintaining a good business climate. Another topic of interest is evaluation of measures for existing pilots and measures that follows from the city's emission cut targets. Understanding on how the political ambition of a car-free city centre can be realised in a way that facilitates deliveries to freight recipients in the inner city area in the most efficient ways could be beneficial. Planned actions for the next six months involve awareness raising amongst the general public on the role and needs of urban freight transport and to increase the emphasis on urban freight transport in all relevant municipal planning and within the agency itself.

4.4 Paris

During this reporting period the main activities undertaken within the Paris Living Lab environment were done within working groups on the following topics: e-commerce, silent night deliveries and freight by waterways. A conference was organised in May 2016 about silent deliveries. At the CITYLAB event of May 26, 2016 the Paris Living Lab key stakeholders were represented. Furthermore, three new working groups have been created on: 1) Updating the municipal delivery ordinance including a Low Emission Zone; 2) Rail freight and logistics development projects; (3) Return logistics. Finally, it was decided to make a special synthesis report for elected officials regarding the main results and recommendations from the Paris Charter. The main topics are:

- The use of on-street loading/unloading zones,
- Waterways for urban deliveries
- E-commerce development
- Perspectives on consumer demands and habits, and the way retailers and logistics providers respond.

The main barrier when trying to reach the Living Lab objective is that some of the decisions reached by the municipality are not based on consensus from the Living Lab working groups.

The atmosphere within the group remains cordial but business groups commonly express their disagreements. The disagreement about the new ban on old diesel vehicles during the Living Lab discussions resulted in adjustments to accommodate freight companies, such as financial help for the small companies (less than 10 employees), and more time provided to comply with the new regulation. Two of the 16 Living Lab working groups have been put on hold: i) deliveries by foot as a neighbourhood service and ii) the reorganisation of automobile carriage (large lorries transporting 6 to 8 automobiles to car dealers). The project on deliveries by foot is not fully abandoned as the municipality is working with the project manager to see how the idea can be further deployed in Paris.

Facilitators for success involve building of consensus between the municipality and urban freight stakeholders. To do so the Paris Living Lab working groups are all led by a representative from the business and freight organisations. Another success factor is the Living Lab Steering Committee meeting, held twice a year. The meeting is always co-presided by the three elected officials involved (Deputy Mayor for transport, Deputy Mayor for urban planning and economic development, Deputy Mayor for commerce and trade). These Living Lab committee meetings bring direct input to the identification of Paris urban freight policy.

Direct communication across all the different Living Lab working groups is important when applying the Living Lab methodology. The Paris urban freight team has decided to develop a communication process. A collaborative website with better document sharing functionalities and a detailed newsletter have been developed. The key item of each newsletter is a portrait of one of the key stakeholders of the Living Lab, emphasizing its actions, contributions and challenges towards Paris urban freight strategy.

The Living Lab approach, in general, is essential because it provides consensus building in situations where, without the Living Lab, conflicts would arise, because of potentially conflicting views over truck and van traffic in Paris. This was extremely clear in the case of the ‘old diesel vehicle’ ban. The Paris Living Lab approach was born prior to CITYLAB, however, the involvement of the CITYLAB project has reinforced the Paris Living Lab approach. It did so especially in terms of better communication within the Paris Living Lab. Also, the Paris Living Lab has started to reach out to a more international audience. More communication is made in English, where the CITYLAB event of May 26, 2016 was important. Research has always been closely associated to the Paris Living Lab process (three institutes and universities have actually signed the 2013 Paris Sustainable Logistics Charter). Research representatives are associated to some of the working groups, to the Steering Committee, to specific projects such as the 2015 Innovative Logistics program (Paris&Co).

One planned activity is an event, to be held in October 2016, for the three years Charter where new members will join: waterway operators, logistics providers, carriers, retailers. An ongoing activity is the implementation of electric charging stations (60 “Belib’ stations” by Summer 2016, and 90 by end of 2016) and CNG charging stations. Several other events for 2017 worth noting are:

- The conclusion of the logistics innovation demonstrators program (22 projects selected in 2015).
- The implementation of five urban logistics spaces (a bid for tender will be launched on July 7, 2016).
- A new delivery ordinance to comply with the new Paris low emission zone, which will provide advantages to the cleanest freight companies (use of reserved lanes, access to specific loading/unloading zones).

4.5 Rome

In Rome the activities performed during this reporting period have mainly been concentrated on the implementation case. The reason is temporary absence of political guidance at a city level. Due to commissioning by the national government of Rome city administration it has been impossible to organise activities involving strategic visions for the city. However, local elections will be held by the end of June and Living Lab activities/meetings can be resumed.

Planned activities for the next six months aim to establish/reinforce cooperation with the city authority within the CITYLAB's Living Lab approach. In particular, the research partner plans the following:

- Have a first dedicated meeting only with city authorities.
- Clarify the Living Lab methodology and the distinction between the Living Lab city environment and the Living Lab implementation case.
- Develop a preliminary roadmap for transforming the city's ambitions and goals in dedicated procedures with respect to specific policies.
- Construct a roadmap for fostering improvements and behaviour change in urban freight transport dynamics.
- Organise meetings for smaller groups and workshops for larger groups.

4.6 Rotterdam

One activity undertaken within these six months to make Rotterdam emission-free from city logistics was a meeting with transport operators to evaluate the interest in Battery Electric Vehicles and discussions with manufacturers on BEV. Further, the Secretary General visited Rotterdam to see how zero-emission logistics is developed and the first zero-emission logistics service provider in Rotterdam (Breytner) has started. The municipality has started to develop their policy where emission-free means regulation-free and a plan for zero emissions at Schouwburgplein. Other activities undertaken are:

- Cooperation on local logistical studies via Rotterdam University of Applied Science, and Erasmus Universites Rotterdam.
- Increasing the number of large EVs via EU project FREVUE.
- 'Front runner' meetings to transfer the experiences of those ahead in their business to other stakeholders, driver's game, and further data collection and analysis.

Rotterdam city logistics living lab is running, however, the process of developing such an environment takes time. e.g. providing privileges for zero-emission vehicles. Another time consuming issue is the availability of large zero-emission vehicles at feasible price for transport companies. There are also some issues with the driver license, B-license drivers were allowed to drive EVs up to 4.25tonnes instead of 3.5tonnes as for conventional vehicles. Therefore, a more expensive driver operates the electric vans. This is a problem nationally, which reduces the number of electric vans in Rotterdam. From the research partner perspective time and capacity available could be improved.

Time and capacity available at Rotterdam city have been important facilitators for success. Support internally both from the city administration and at the political level is beneficial. Moreover, budgets and new projects which fits the city objectives (e.g. FREVUE for new vehicles and internationally roll out coalition of the willing, BuyZET for procurement of zero-emission transport and top sector logistics support) facilitates success. Finally, the rising awareness of the topic has been important when trying to involve several industry partners.

One experience is that it might be beneficial to focus on a few projects or topics and to do them well, rather than try to do everything at the same time. In Rotterdam the focus could be on reaching technical and financially viable zero-emission vehicles, which is essential to maintain the work with private businesses. Furthermore, within technical logistics and behaviour, there is the need for standardisation, e.g. real-time car use data which is very time and cost consuming.

The main challenge is communication: with several ongoing projects for both the city and the research partner and with communication systems that are not well-developed, close cooperation and collaboration can be difficult. City developments are communicated via a system that is unavailable for the research partner, resulting in bi-weekly meetings and mail correspondence. This is also the case for data exchange with the transport sector. In summary, the main barrier is the need of collaborative facilities and systems to be in place.

Planned activities involve continuation of activities in technics (if possible increase from only large vehicles to vans as well), drivers game (finalisation: most efficient driver of Rotterdam will be announced), logistics policy and regulation. One pilot to be initiated will seek to increase privileges for electric vehicles and on November 3rd a fourth workshop with over 100 transport companies is planned to discuss city logistics and IFSTTAR will likely present at this regional meeting.

4.7 Southampton

There has been a dialogue between the London living lab industrial partners (TNT and Gnewt) and Southampton CITYLAB partners (SCC, University of Southampton, Meachers Global Logistics) with a view to implementing the London concept in Southampton. Delivery and Servicing Plans (DSPs) have been undertaken for several large organisations in Southampton (Southampton General Hospital, Associated British Ports, Mayflower Theatre) and the Isle of Wight (IoW NHS Trust). At the city level there have been discussions held with Dearman's (a technology company specialising in zero-emission technologies) about a Transport Refrigeration Unit (TRU) they have developed, with the potential for trials using the Southampton living lab as a showcase study area. In addition, discussions with UK government (DEFRA) and with Transport for London to apply learning from Ultra Low Emission Zone in Central London to the emerging Cleaner Air Zone in Southampton have been arranged.

There have been no barriers or delays at the general level, however, at implementation level the main barrier is convincing key people at large organisations of the merits of making any changes. The Council restructuring as a result of government austerity measures has led to job losses and a reduction of the Council's wider transport team by 6 people – this has placed a significant strain on the staff available to do the work. Dedicated officer support for the promotion of the Sustainable Distribution Centre has been withdrawn as a result of these resource constraints alongside subsidy support for the SSDC.

Contacts made with London living lab industrial partners (TNT and Gnewt) have been instrumental facilitators in getting discussions going. Personal interaction with high-level executives at the large organisations that we are trying to influence to change their procurement and transport practice. External pressures from EU and UK government have sharply focused SCC thinking on the development and implementation of a Cleaner Air Zone for the city and this has become the focus of the proposed Memorandum of Understanding rather than a specific one for sustainable freight as originally envisaged. Issues surrounding air quality in the city and related policy has raised the level of importance of sustainable freight strategies with HGV movements playing a significant part in the breach of EU limit values for NO_2 concentrations. The existing OJEU procurement framework, which was established when setting up the Sustainable Distribution Centre, has acted as a significant tool for engagement with public sector organisations.

Lessons learned when applying the Living Lab approach is that there is a need to provide a convincing business case for change based on detailed analysis of business-as-usual and of the proposed new way of working. Besides, we need to understand the various stakeholder requirements and to engage with people having different roles within an organisation (e.g. procurement, transport). Shared goals provide a sound basis for co-operation.

Challenges in using CITYLAB's Living Lab approach at the City Council is the continued resource constraints which will put pressure on staff being able to find sufficient time to fully realise all the living lab goals. Moreover, disparate needs of stakeholders can make it difficult to find shared goals and agree upon priorities. It can be difficult to sell the concept of consolidation. The uptake of freight innovations amongst local public sector bodies can be a glacial process as a result of extended decision-making processes and because of the size of the organisations involved. On the other hand, shared experiences from city authorities in the CITYLAB project will help to develop the confidence and understanding needed to instigate changes in procurement and freight practices.

Actions planned to be undertaken by the city during the next six months include development of a Clean Air Partnership and a Memorandum of Understanding involving major organisations in the city including freight operators, and those organisations that generate significant freight movements in and out of the city. Simultaneously, the research partner will closely follow and evaluate the CITYLAB implementation on the Isle of Wight (e.g. planned 4-phase operation) with a view to exploiting ideas further together with pursuing electric vehicle concepts with ongoing discussion with London living lab partners.

5 Discussion and conclusions

5.1 Experiences from use of the Living Lab approach

At this moment, all of the CITYLAB cities have the majority of the elements necessary to operate within a Living lab (or comparable) environment in the city. The difference is that at some cities (e.g. London, Paris, Brussels) these elements are already functioning (and, sometimes are formalised) in the frameworks comparable to Living Lab. In other cities the elements of the Living lab environment are so far more dispersed and less interconnected. Therefore, the work conducted in each city focusses on different Living Lab stages.

The general experience from the use of the CITYLAB Living Lab methodology is that cooperation and consultation is crucial when applying this approach. Besides, there is a need to develop cooperation mechanisms between actors. So far the collaboration relies on establishing and maintaining good networking relations internally between the Living Lab partners. However, it could be a need to develop external relations with other industries, the public, government administrations and politicians etc. Key facilitators for a successful Living Lab approach involve regular contact, discussion and meetings with the cities and the research partners. Furthermore, if shared goals are developed as part of this contact it might provide a sound basis for further cooperation. By developing such an environment for two-way consultation between these two parties there is a potential to increase the overall understanding of challenges in freight practices and policies. Another experience recognised when developing solutions within the Living Lab approach is that shared experiences between city authorities in the CITYLAB project can help to develop the confidence and understanding needed to instigate changes in freight practices.

Moreover, the need to understand the various stakeholder requirements and to engage with people having different roles within an organisation (e.g. procurement, transport) has been identified as an important basis for the LL methodology. Personal interaction with high-level executives at the large organisations trying to influence is another potentially beneficial approach when developing a Living Lab environment.

Direct communication across the different Living Lab participants has been identified as important when applying the Living Lab methodology, especially internally within each Living Lab city environment. A consequence of this method is the potential to reach out to a more international audience with communication done in English. On the other hand, communication might also create a challenge in situations where it isn't fully functional, thus providing an obstacle for further collaboration.

The final experience worth considering is whether or not there exists a common understanding of how the research partner and the city interpret the Living Lab approach. If this is understood differently, separate objectives for cooperation and misunderstanding in accomplishing the agreed actions may result.

5.2 Conclusions

This deliverable is intended to summarise experiences with the Living Lab approach in the CITYLAB project, to be updated twice a year. This second version mainly uses the CITYLAB

Living Lab methodology to extract experiences from the Living Labs, feeding into the final version of the CITYLAB Living Lab methodology in Deliverable 3.4. At this moment, six out of seven city environment Living Lab processes are established. The feedback from each CITYLAB partner mainly focuses on how to generate a good environment for collaboration between each city and the research partners and how to develop a common understanding needed to instigate changes in freight practices.

References

CITYLAB (2015a). Practical guidelines for establishing and running a city logistics living laboratory. Deliverable 3.1, www.citylab-project.eu.

CITYLAB (2015b). CITYLAB: lessons and experiences with living laboratories. Deliverable 3.3a. www.citylab-project.eu.

Appendix A. Process evaluation form

City	
Project partner	
Reporting period	
Contact details	
Name	
Telephone	
E-mail	
Date	

1. **What Living Lab city environment activities were taken during the reporting period?**

- Please describe shortly the main activities that have been undertaken during this reporting period.

2. What barriers or delays (if any) were encountered, in your city, during the reporting period?

- Please describe the process barriers or delays in order of importance as experienced in trying to reach the objectives and why they are important.
- Please also describe the process actions that have been taken to overcome the mentioned barriers or delays and if they were successful or not.

3. What facilitators for success were encountered during the reporting period?

- Please describe the process facilitators for success in order of importance as experienced in trying to reach the objectives and why they are important.

4. What were the lessons learned during the reporting period?

- Please describe what is learned, for example in do's and don'ts in terms of the process and actions.

5. What were the main challenges and main benefits in using CITYLAB's Living Lab approach and from the cooperation between the city authorities and the research partners?

6. **What activities are planned for the next 6 months?**

- Please describe shortly the main activities that are planned to be undertaken

EUROPEAN COMMISSION

INNOVATION and NETWORKS EXECUTIVE AGENCY

HORIZON 2020 PROGRAMME for RESEARCH and INNOVATION

Reducing impacts and costs of freight and service trips in urban areas (Topic: MG-5.2-2014)

Grant agreement no: 635898

Deliverable 3.3a

CITYLAB: lessons and experiences with living laboratories

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Document Control Sheet

Project no.:	635898	**Acronym**	CITYLAB
Project Title	City Logistics in Living Laboratories		
Work Package	WP3	**Title:**	Living laboratories
Deliverable no.:	D3.3	**Title:**	CITYLAB: lessons and experiences with living laboratories
Version	1	**Revision**	0
Issue Date	27 Nov 2015		
Dissemination Level	Public		
Future references	CITYLAB Deliverable D3.3 (CITYLAB: lessons and experiences with living laboratories).		

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WP Leader	TOI
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CITYLAB consortium by Living Lab			
Living lab	**Municipal partner(s)**	**Industry partner(s)**	**Research partner(s)**
Brussels	Brussels Mobility	Procter & Gamble Services	Vrije Universiteit Brussel
London	Transport for London	TNT Gnewt Cargo	University of Westminster
Oslo	Oslo commune	Steen & Strøm	TOI
Paris	Mairie de Paris		IFSTTAR DLR
Randstat	Gemeente Rotterdam	PostNL	TNO
Rome	Roma Capitale	Poste Italiane MeWare SRL	Università degli studi Roma Tre
Southampton	Southampton City Council	Meachers Global Logistics	University of Southampton
Networking and outreach partner			
POLIS			

Executive summary

The objective of the CITYLAB project is to develop knowledge and solutions that result in roll-out, up-scaling and further implementation of cost effective strategies, measures and tools for emission free city logistics. In a set of living laboratories, promising logistics concepts will be tested and evaluated, and the fundament for further roll-out of the solutions will be developed.

The role of this deliverable is to report on the lessons and experiences from the Living Lab process in each city involved. This document is being updated every 6th month throughout the CITYLAB project. This document is the **first** edition finalised in **November 2015**.

This first version mainly establishes the methodology to be used, as the Living Lab approach has just been finalised. Subsequent versions of the deliverable will use this methodology to extract experiences from the Living Labs, feeding into the final version of the CITYLAB Living Lab methodology in Deliverable 3.4.

1 Introduction

The objective of the CITYLAB project is to develop knowledge and solutions that result in roll-out, up-scaling and further implementation of cost effective strategies, measures and tools for emission free city logistics. In a set of Living Laboratories ("Living Labs"), promising logistics concepts will be tested and evaluated, and the fundament for further roll-out of the solutions will be developed.

A Living Lab is defined as a dynamic test environment where complex innovations can be implemented. Currently, the field of city logistics is characterized by many small-scale demonstrations. Barriers for large-scale implementations of these demonstrations are often transferability, knowledge of business cases and involvement of the right stakeholders. A Living Lab differs from conventional demonstrations in that it creates an experimentation environment in which stakeholders aim at achieving a long-term goal together.

A living lab methodology for the CITYLAB project was developed in Deliverable 3.1. The methodology follows a cyclical approach, where several solutions can be tested and re-adjusted/improved to fit the changing real-life environment. One cycle within a Living Lab usually consists of the following phases (CITYLAB Deliverable 3.1):

- **Planning,** where the Living Lab vision, ambitions, objectives, main users and stakeholders are identified and where conceptual designs of implementation cases to be tested in the Living Lab are made.
- **Real life implementation,** where concrete Living Lab solutions are prepared for execution and implemented in real life environment.
- **Evaluation,** where the results of the implementation are analysed based on more extended data collection and on feedback from the users.
- **Act/Decision,** where, based on the lessons learned from the evaluation phase, a decision is made on the continuation of the Living Lab into a new cycle and on what amendments will be made in this new cycle.

There are seven Living Labs in CITYLAB, in which specific test and implementation actions are planned - the cities are Brussels, London, Oslo, Paris, Rome, Rotterdam and Southampton.

The role of this deliverable is to report on the lessons and experiences from the Living Lab process in each city involved. The findings from this deliverable not only feed into Deliverable 3.4 - *CITYLAB Handbook for City Logistics Living Laboratories*, but are also an instrument for risk management in the project.

This document will be updated every 6th month throughout the CITYLAB project. This document is the **first** edition finalised in **November 2015**.

The rest of this document is organised as follows. In Chapter 2 we introduce the process evaluation approach that is being used, while Chapter 3 summarises the specific feedbacks that have been obtained from the seven living labs. Finally, Chapter 4 discusses the main findings with an emphasis on main barriers and benefits of the Living Lab approach.

2 Process evaluation approach

2.1 Purpose and role in the project

As outlined in Deliverable 3.1, the CITYLAB Living Lab approach is based on phases from planning, via implementation to evaluation and then acting/making a decision on whether the solution should be rolled out, further developed or abandoned. It is foreseen that several cycles/iterations through the four steps may be needed, this is illustrated in Figure 1.

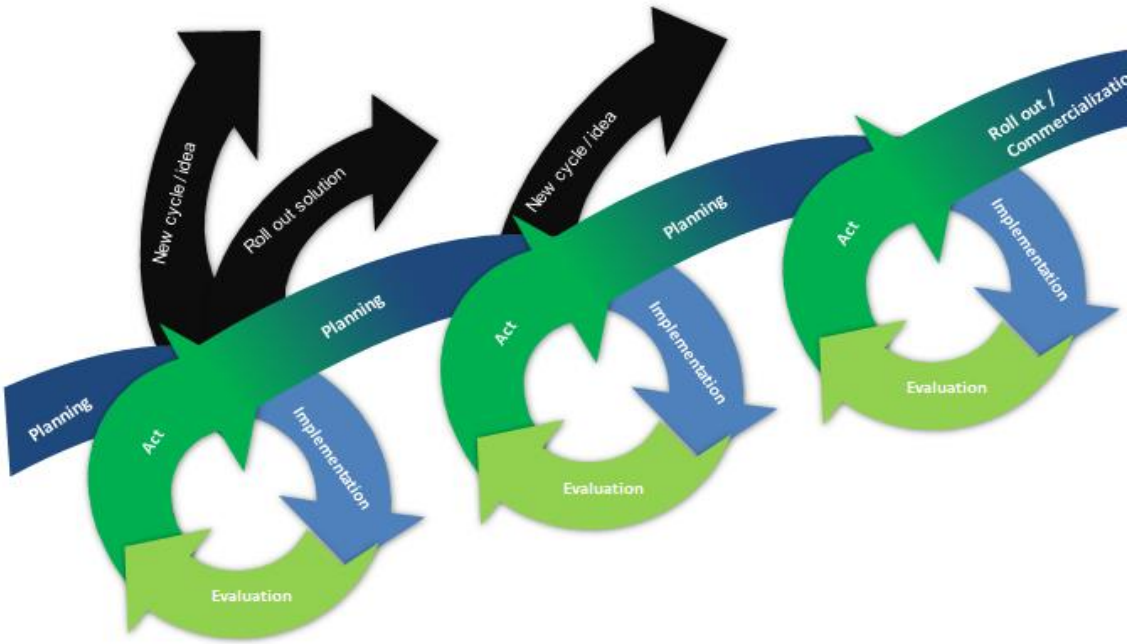


Figure 1. Cyclical Living Lab process (Source: CITYLAB Deliverable 3.1).

A key role of the process evaluation is to extract the lessons learned from the different phases of the Living Lab processes in each CITYLAB city. It is useful to systematize this information as part of the documentation of the progress of the Living Lab activities, and frequent updates makes it possible to identify challenges early and propose measures that can mitigate problems that are discovered. The process evaluation also captures experiences from use of the Living Lab approach itself, and this information will feed into Deliverable 3.4 - CITYLAB Handbook for City Logistics Living Laboratories.

The process evaluation complements monitoring of the implementations that takes place in WP 4, which will be reported in Deliverables 4.1 and 4.2. The WP 4 deliverables will give details on the status of each of the seven implementation activities, while Deliverable 3.3 deals with the overall Living Lab processes. The main outcomes of WP 4 will be data and information that will be used in different evaluation activities in WP 5.

2.2 Information collection

The main sources of information for this deliverable are questionnaires circulated to each Living Lab at regular six month intervals. The questionnaires are sent to all of the CITYLAB

partners, independent on their roles in the CITYLAB project or individual Living Labs. The questions included are structured alongside three main topics:

- At which current stage of the Living Lab process the project partner is situated (a tick box indicating whether the CITYLAB partner is currently performing planning, implementation, evaluation or act/decision phase and which kind of activities within each phase he considered as important ones).
- What went well and facilitated the implementation of activities during the reporting period?
- Which kind of barriers the partner has encountered during the reporting period and how it managed to overcome them?

The full questionnaire template is included in Appendix A.

When needed, the questionnaire will be supported by follow-up questions and interviews if additional information is needed. The information collection will be performed every 6th month, and this document updated accordingly.

2.3 Overview of contributions

Table 1 details the information sources used as a basis for Chapter 3 and 4, while Table 2 gives a detailed overview of the process forms received.

Table 1. Information sources used.

Document version	Sources of information
Version a – Nov 2015	Fact sheets collected October 2015 describing each implementation and city reports on urban freight status collected as part of task 2.2.
Version b – May 2016	n.a.
Version c – Nov 2016	n.a.
Version d – May 2017	n.a.
Version e – Nov 2017	n.a.

Table 2. Process evaluation forms received.

Partner	Nov 2015	May 2016	Nov 2016	May 2017	Nov 2017
TOI	n.a.				
OSLO KOMMUNE	n.a.				
STEEN OG STRØM	n.a.				
UNIVERSITA DEGLI STUDI ROMA TRE	n.a.				
MEW	n.a.				
POSTE ITALIANE - SOCIETA PER AZIONI	n.a.				

Partner	Nov 2015	May 2016	Nov 2016	May 2017	Nov 2017
ROMA CAPITALE	n.a.				
UoW	n.a.				
TFL	n.a.				
Gnewt Cargo	n.a.				
TNT	n.a.				
VUB	n.a.				
Procter & Gamble Services Company NV	n.a.				
AED – BM	n.a.				
TNO	n.a.				
PostNL	n.a.				
ROTTERDAM	n.a.				
POLIS	n.a.				
IFSTTAR	n.a.				
PARIS	n.a.				
DLR	n.a.				
SOUTHAMPTON UNIVERSITY	n.a.				
Southampton City Council	n.a.				
Meachers	n.a.				

In this first version of the document the approach has been different from what is planned for forthcoming versions. The reason for this is that the Living Lab methodology of CITYLAB was finalised by the end of October 2015, and it is still too early to collect experiences from use of this. Instead, information on the specific implementations was collected as input for the first meeting of the Living Lab Advisory Group that took place in London in October 2015.

3 Information collected from the Living Labs

This chapter summarises the main experiences and findings from each city so far, setting up a background description of the Living Labs in each city. In later versions of the deliverable, these descriptions will be supplemented with information from the process evaluation forms.

3.1 Brussels

To better deal with freight deliveries, Brussels Capital Region has a Strategic Plan for Goods Traffic adopted by the regional government in July 2013. This plan should be revised every 2 years, and describes 36 actions divided in 3 main axes:

- Optimising the flows
- Fostering modal shift
- Making the delivery person's life easier

Several interesting actions have taken place in Brussels during the last few years. A freight flows study has been carried out to better understand goods traffic in Brussels. First of all, a phone survey has been carried out to obtain responses from 3000 entities (enterprises, schools, administrations, hospitals, shops, logistics service providers…). Then (but regardless of the phone survey) the software FRETURB was used to map movements of goods transport in Brussels.

Another successful initiative has been an Urban Consolidation Centre (UCC) that was developed in the framework of the LaMiLo project. The UCC was launched in September 2014 in collaboration with CityDepot. After a six months trial and a positive evaluation, the UCC is now continuing its activities on a 100% private basis.

The scope of the CITYLAB implementation in Brussels are deliveries to small independent retailers, which are characterized by small quantities and low load factors. To improve efficiency of deliveries, Procter & Gamble aims to increase load factors by unlocking free capacity from different service providers that already have daily delivery and/or service trips in Brussels (e.g. hygiene companies, office deliveries, public transport). Procter & Gamble are currently exploring the feasibility of alternative solutions. Different trials might be executed:

1) Depending on the location of the retailers, one or more neighbourhoods might be involved. For instance, recently the pedestrian zone in the centre of Brussels has been largely extended, only allowing deliveries until 11am. Involving this area in the pilot is therefore interesting.

2) Different forms of free capacity might be tested (e.g. using a hygiene company as well as office deliveries)

Some of the key challenges to address are giving companies with free transport capacity, as well as the small independent retailers, incentives to participate.

3.2 London

London is one of the most advanced cities in urban freight transport management. The London Freight Plan was published in 2007. It was produced to support the sustainable development of London by giving clear guidance and direction to complement the freight policies in the (previous) Mayor's Transport Strategy and Climate Change Action Plan. It recognised the need to improve the efficiency of the freight sector whilst also reducing the environmental and social impacts of freight transport on London, particularly our contribution to climate change. London Freight Strategy – a longer term freight strategy for London is currently under development by Transport for London (TfL).

Amongst the measures already implemented are the London Low Emission Zone, London Congestion Charging Scheme, Freight Operator Recognition Scheme, London Freight Forum and Delivery and Servicing Plans.

In CITYLAB, TNT, Gnewt Cargo,TfL and University of Westminster (UoW) will study what is the best possible management solution for clean inner city distribution, consolidation and clean vehicle use, from the point of view of a local authority, a large carrier, and a small carriers' carrier? The implementation involves an integrated or co-operative supply chain approach between carriers. In the first phase (January 2016 – June 2016), the roles and interests of the involved partner are:

Gnewt Cargo: The parcels delivery business of Gnewt Cargo focuses on the London Congestion Charge Zone. The company is performing city centre distribution with a centrally-located consolidation centre and a purely electric van fleet. Their key role is taking over additional business from TNT.

TNT*:* Switch from one carrier with standard fleet to Gnewt Cargo for goods coming from TNT's national parcels network. One of the TNT network depots is in Barking, East London (about 9 miles from Tower Bridge). Instead of starting deliveries from Barking, the goods will be transferred by truck to the Gnewt depot in central London, probably giving about 7-10 van payloads (each carrying 60-80 parcels per day) to Gnewt, out of their national network, for final distribution. The previous LSP serving central London will move to another area of distribution.

TfL: Transport for London will support the other partners when needed.

UoW: Support with set-up of the Living Lab implementation and preparation of the implementation plan. Data collection, interviews, meetings and quantitative data processing. Reporting of the changes occurring during the implementation. Legacy, lessons learnt and final report.

In the medium term (June 2016-March 2017), TNT will seek to give Gnewt Cargo additional goods and parcels after positive evaluation of the solution. TNT will prepare the potential growth of the solution beyond London. Exchange with other Living Labs of the CityLab project will possibly allow a replication in another city.

3.3 Oslo

The city of Oslo has recently elaborated a strategy for reducing emissions from urban freight by 50% by 2020, and is working on loading bay structure and possibilities for an Urban Consolidation Centre. It has been a priority to re-establish the cooperation forum between the city and key stakeholders from the private sector involved in urban freight transport.

In CITYLAB, the key area of interest is shopping centres, which account for around 1/3 of Norwegian retail trade. Steen & Strøm are planning a new shopping centre at Økern in Oslo. The goal of Steen & Strøm is to establish common functions for inbound and outbound freight flows at the new Økern shopping centre. Previous demonstrations and analyses have suggested that such functions should be operationally and financially viable. In many shopping centres drivers have to bring all items from common unloading areas to the individual shops. This increases delivery times and congestion in the freight receipt areas. By introducing new logistics functions Steen & Strøm aim to reduce stoppage times for trucks and increase efficiency of in-house logistics.

The implementation will facilitate identification of consolidation opportunities for logistics service providers as well as off-hour deliveries as the transport leg and in-house transport leg in the shopping centre may be decoupled.

There have been delays in the engineering and the process of obtaining building permits from the city of Oslo, so the planned opening date of the centre has been altered. The centre is now

expected to open by 2020. However, the role of CITYLAB in bringing co-creation into the design of the freight receipt remains the same. The Oslo implementation builds on past experiences from Sweden and a previous European project (STRAIGHTSOL). Steen & Strøm are still in the engineering phase. CITYLAB workshops and dialogue with different stakeholders will contribute to the design of the final solutions. For evaluation of the concept, we will collect data from other centres to assess the differences between centres without common logistic functions and one centre in Sweden where a similar concept has been implemented.

3.4 Paris

In the long term, there is a goal to reduce the overall emissions from activities in the urban area by 75% in 2050 compared to 2004. It is also a goal (wish from city council, Autumn 2014) that 100% of deliveries should be non-diesel by 2020.

Paris has a Sustainable City Logistics Charter, established in September 2013, which contains 16 specific initiatives for the logistics sector:

1. Outline policy for urban logistics in Paris
2. Chapelle International Logistical Hotel
3. Developing canal transport Port de l'Allier on the St Denis canals
4. Trialling of Tramfret with an operator
5. Programme to develop logistics zones in leased car parks on land owned by social landlords
6. Modernisation of delivery zones, inventing and trialling an information service dealing with the availability and reservation of delivery zones
7. Deploying a network of recharging terminals for electric vehicles in Paris
8. Developing fleets of electric vehicles (own account or subcontracted)
9. Agreement between the City of Paris and car transport firms about car carrier trailer traffic. Implementing the principles of the charter: consultation, environment, urban integration, economic dynamism. Signing of the agreement before the end of 2013.
10. Certification for low-noise night deliveries with Certibruit: certification of the entire transport chain - vehicles, sites, staff training + creation of a toll-free number.
11. Introduction of a system of parking space reservation for removals
12. ALUD: Trialling of a local pedestrian delivery service
13. Encouraging good practices for deliveries to small shopkeepers and own-account transport
14. Developing water-based urban logistics with a self-unloading boat. Port du Gros Caillou
15. E-commerce and home deliveries
16. 50% of last-mile deliveries performed by non-diesel vehicles by 2017

One topic that has been emphasised in Paris is the 'logistics sprawl', i.e. that logistics facilities are moved and established further away from the city centre. To counterbalance this trend, the Paris administration aims at reintroducing logistics terminals in dense areas. Two 'logistics hotels' are assessed, at different stages of implementation (***Chapelle*** at construction phase – ***Beaugrenelle*** at operating phase. The implementation in Paris is a part of long-term planning of the city; the requirements for rail and logistics facilities were decided 10 years ago in the 'zoning code'. The project will provide a framework to allow city practitioners guidelines to do so, while assessing costs and benefits of (re)introducing logistics terminals in dense urban areas.

3.5 Rome

Rome Municipality has a freight and logistics plan, and there is ongoing work on interventions to rationalize the distribution of goods. The existing Limited Traffic Zone (LTZ) can be extended, and there is work on new rules for access for freight vehicles.

The CITYLAB implementation is set to integrate direct and reverse logistics flows and involves Poste Italiane, Meware, Roma Capitale and University of Roma Tre. The concept being explored is to combine delivery of mail/parcels with collection of goods/clean recyclable waste, either directly from the addressee or from a location close to the addressee, during the same transportation route by means of modular units, while ensuring information sharing throughout the whole logistic chain and the consequent optimisation of operational processes. This will maximise vehicle load factors, reduce vehicle movements and thus reduce congestion and polluting emissions.

There are still some uncertainties about which specific product/service should be used as a test-case. On-going meetings should soon clarify this point. There will be development and meetings during the next few months to establish the design of the solution.

3.6 Rotterdam

Rotterdam has been active in the city logistics domain in previous years, and there is a Green Deal 010 Zero Emission City Logistics plan from November 2014 saying that the city should work together with the transport sector to achieve zero emissions for urban goods logistics in the inner city by 2020. There is also the ECOSTARS recognition scheme for transport companies and environmental zones, that will be kept for as long as needed.

The implementation linked to the Rotterdam Living Lab is prepared by PostNL and will take place in the city of Amsterdam. Rotterdam and Amsterdam are linked through the Randstad conurbation.

PostNL wants to build and operate a floating depot for delivery and pick-up of parcels and smaller items in city centres that are easily reachable by canals and waterways. The floating depot is pushed by a hybrid push-boat, and goes full electric in the canals. Instead of using 6 diesel vans, the parcels will be moved into the city centre with one floating depot. From there, the parcels will be distributed using small electric vehicles. The floating depot can be raised, so that it go under bridges (in canals) and lifted at quay level to supply the electric vehicles.

The operational process is planned as follows:

- In the morning, parcels are delivered to the floating depot hub
- Parcels are sorted and loaded onto the floating depot
- The floating depot is brought into the city centre and stays there as a hub
- Parcels are delivered by small electric vehicles, which reload at the floating depot, and parcels that have been picked up during the roundtrips are returned to the floating depot
- At the end of the shift, the floating depot returns to its hub
- Parcels that have been picked up during the day are unloaded and returned to the Parcel Sorting Centre.

Two important issues have to be resolved as part of the further planning: first, a final agreement has to be reached with the shipyard constructing the floating depot (Veka). The building/lease construction and governance requires full commitment of all parties involved. Funding is part

of this discussion as is focus on the milestones of the process; second, permission and access to docking locations in the inner city must be obtained.

3.7 Southampton

A Freight Strategy for Urban South Hampshire (2009) set out an ambition "To facilitate the safe and efficient transportation of freight into, out of and within the region, supporting a competitive local and regional economy, whilst taking into account the existing and future needs of our society and the environment." The current Urban Freight Strategy (UFS) is badly in need of updating and Southampton itself would benefit from its own freight strategy that could feed into the one for South Hampshire. By January 2017 Southampton City Council will be in a strong position to write its own UFS after it has had two years of Delivery and Servicing Plan data to look at along with a Low Emission Strategy for the city.

One initiative in the city has been the establishment of the Southampton Sustainable Distribution Centre (SSDC). This centre has been run by Meachers Global Logistics since December 2013, and operates a consolidation centre service along with general warehousing. The promotion of the SSDC is ongoing and from September 2015 it will have a sales executive working on it two days a week. A main aim of the SSDC is to improve air quality and reduce congestion and pollution through consolidating loads going into Southampton. The project has currently 8 users storing over 2000m^2 of items at the SDC. There are also two projects with two public bodies looking at how the SSDC can potentially reduce over 500 vehicle movements a week.

- The implementation in Southampton deals with joint procurement and consolidation for large public institutions and involves:
- Delivery and service planning
- Rationalisation of goods and services purchasing practice
- Joint procurement both within and between large public institutions
- Facilitating increased use of the SSDC

As part of the work, we will develop a methodology to allow large municipal organisations to audit their freight and service vehicle flows, and quantify the benefits of consolidating subsets of these. Emphasis will also be placed on working with neighbouring organisations in joint procurement and consolidation could reduce costs and environmental impacts. The SSDC will provide the live demonstrator working with the two universities (University of Southampton and Southampton Solent University) the City Hospital and Southampton City Council who have all signed a memorandum of understanding related to the SSDC.

The most critical step is convincing the relevant managers, at universities and hospitals that using the SSDC will be of benefit to them.

4 Discussion and conclusions

4.1 Status of Living Lab processes in the CITYLAB cities

At this moment, the official Living Lab processes have not started. The next step of the CITYLAB project is to anchor the Living Lab methodology of Deliverable 3.1 amongst all partners and to establish the Living Lab processes in each city.

Despite this, the planning of the specific implementations that are supported in the Living Labs is ongoing, and the current status of the implementations have been briefly summarised in Chapter 3.

4.2 Experiences from use of Living Lab approach

So far the Living Lab methodology has not yet been applied, but we will report on experiences in later versions of this deliverable.

4.3 Conclusions

This deliverable is intended to summarise experiences with the Living Lab approach in the CITYLAB project, to be updated twice a year. This first version mainly establishes the methodology to be used, as the Living Lab approach has just been finalised. Subsequent versions of the deliverable will use this methodology to extract experiences from the Living Labs, feeding into the final version of the CITYLAB Living Lab methodology in Deliverable 3.4.

References

CITYLAB Deliverable D 3.1 (Practical guidelines for establishing and running a city logistics living laboratory). www.citylab-project.eu.

Appendix A. Process evaluation form

General partner information

City	
Project partner	
Reporting period	
Contact details	
Name	
Telephone	
E-mail	
Date	

Content information

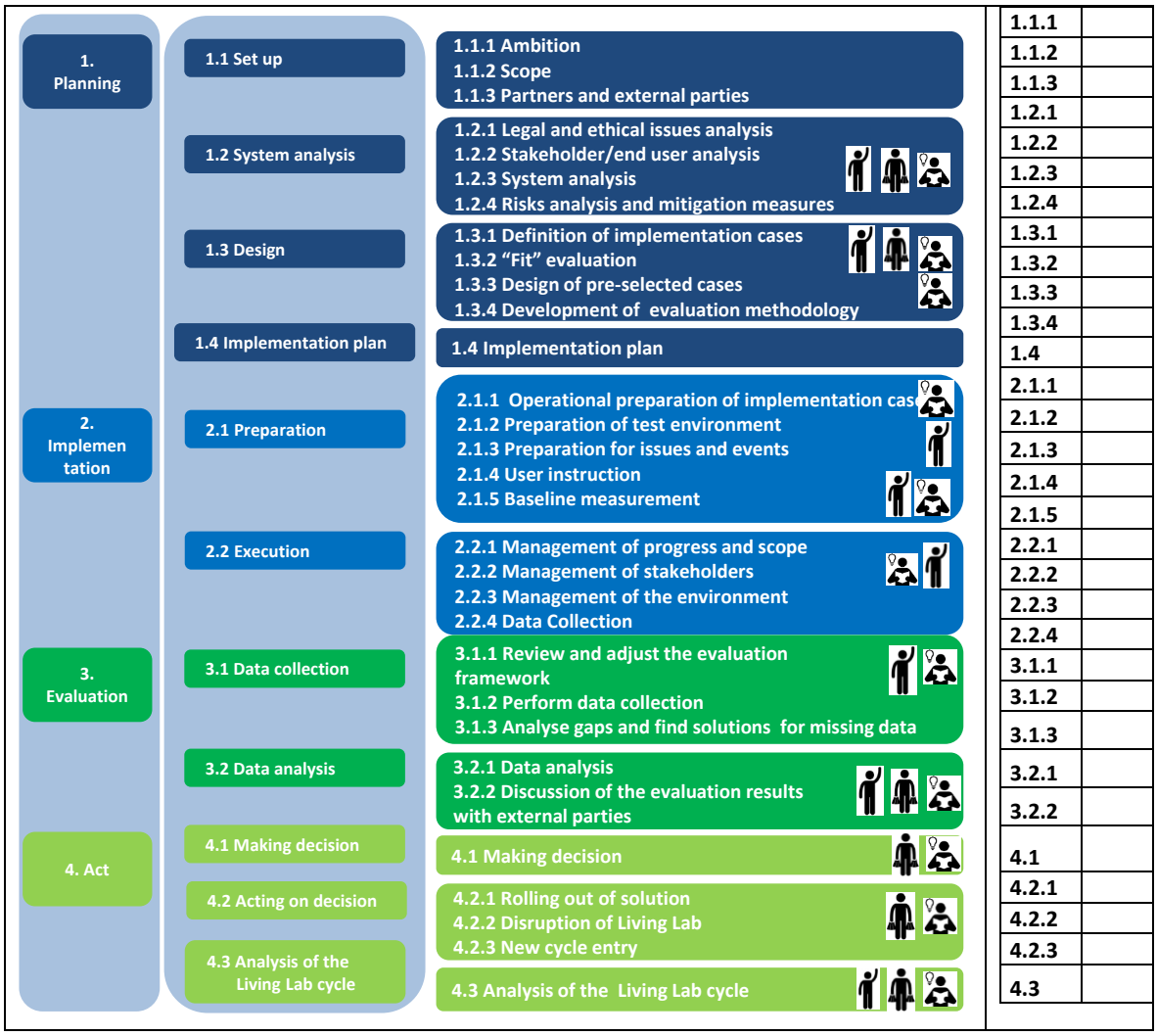
1. Which Living Lab phase(s) have been applicable for you during the reporting period?

- *Please put 'X' in the open box before the relevant phase(s).*

	Planning
	Implementation
	Evaluation
	Act/Decision

2. **What activities were taken during the reporting period?**

- *Please indicate High/Medium/Low involvement in different activities with "H", "M" and "L" to the right below (please leave cells empty where no activities have taken place during this reporting period).*



- *Please describe shortly the main activities that have been undertaken during this reporting period.*

3. Delay

- *It is possible that a delay might occur compared to the planned timeline? Please put a 'X' in the open box that fits best with the actual situation.*

	No delay
	<1 month delay
	1-3 months
	3-6 months
	>6 months

Please explain the reason(s) for delay (if any).

4. What barriers were encountered during the reporting period?

- *Please describe the process barriers in order of importance as experienced in trying to reach the objectives and why they are important.*
- *Please also describe the process actions that have been taken to overcome the mentioned barriers and if they were successful or not.*

5. What facilitators for success were encountered during the reporting period?

- *Please describe the process facilitators for success in order of importance as experienced in trying to reach the objectives and why they are important.*

6. What were the lessons learned during the reporting period?

- *Please describe what is learned, for example in do's and don'ts in terms of the process and actions?*

7. What were the main challenges and main benefits in using CITYLAB's Living Lab approach?

- *Please describe what is learned, for example in do's and don'ts in terms of the process and actions?*