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Deliverable 5.2

CITYLAB dashboards

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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
Randstad	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. As part of its evaluation framework, CITYLAB gives instant access to critical information by developing and updating comprehensive and transparent dashboards for each CITYLAB implementation. These dashboards are accessible through the CITYLAB website from February 2017 and will be updated throughout the project.

This deliverable introduces the idea of having a dashboard to monitor urban freight transport innovations and gives an overview of what already has been done in this field. Chapter 3 provides an overview of CITYLAB's approach of urban freight transport dashboards. In short, the dashboards

- Consist of four different tabs, following the fields of evaluation in CITYLAB's evaluation framework: adoption, process, context and impact.
- Local partners have chosen which CITYLAB indicators should be displayed on their dashboard. They were also invited to add additional indicators to make sure that the interests of all stakeholders are reflected on the dashboard.
- For each indicator on the dashboard, we show the current value and previous values (if they were measured).
- All adoption, process and impact values are compared to the ambition value that was set by the owner and/or users of the implementation

This deliverable is updated in M22 (February 2017), M28 (August 2017) and M34 (February 2018) with a list of changes to the dashboards. In the final update of M34, we will come up with a generic CITYLAB dashboard (and template) based on our experiences during this project, with an overview of the monitored effects and with an analysis of how the dashboards linked to the decision cycle within the local implementations. This is the update of M28.

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1 Introduction

The European Commission's target of CO_2-free city logistics in urban centres by 2030 requires identifying the right combination of sustainable and cost-efficient freight measures that will most effectively reduce freight-related emissions and congestion in cities. CITYLAB has received funding from the European Union's Horizon 2020 research and innovation programme to tackle these challenges. CITYLAB supports seven Living Labs where promising urban freight measures are tested and analyses if and how the seven tested measures can be transferred and scaled to the other CITYLAB cities with the ambition to implement them in at least one other city. This ambition requires thorough evaluation of the seven Living Lab implementations to learn whether they are satisfactory or not and why.

CITYLAB's evaluation activities consist of before-and-after assessments for a range of indicators and five established evaluation methods. These activities will generate a lot of information. This information will be made available to people involved in the Living Labs, all CITYLAB partners and followers, and urban freight transport researchers through deliverables, workshops, presentations and journal or conference papers. Downside of this approach is that deliverables and papers are usually written in retrospect and that results usually are presented long after the actual test or implementation took place. As part of its evaluation framework, CITYLAB aims to address this issue by giving instant access to critical information by developing and updating comprehensive and transparent dashboards for each CITYLAB implementation. A data driven or digital dashboard is a concept created to display information in a more user-friendly, visually pleasing manner. The idea followed the study of decision support systems which are computer-based information systems that support business or organisational decision-making activities. Today, dashboards are used in many fields to visually display to what extent an organisation is reaching its goals.

This document (D5.2 – CITYLAB dashboards) introduces the idea of having a dashboard to monitor urban freight transport innovations and gives an overview of what already has been done in this field. The deliverable describes the CITYLAB dashboards. It consists of the following sections:

- **Chapter 2 – Dashboards for urban freight transport projects** explores existing dashboards in the field of urban freight transport and urban mobility in general. The aim of this chapter is to learn from existing approaches.
- **Chapter 3 - CITYLAB dashboards** explains the features of the CITYLAB dashboards, how they were built, where you can find them and how and when they will be updated.

This deliverable primarily targets the CITYLAB project partners and other urban mobility and/or logistics research projects that want to integrate dashboards in their evaluation framework. The actual CITYLAB dashboards that monitor how well the seven Living Lab implementations perform can be accessed through this link: CITYLAB website.

The individual CITYLAB dashboards for each CITYLAB implementation were launched together with this deliverable (August 2016). Throughout the project, the individual dashboards are updated every time new data is available. This deliverable is updated every six months, reporting on which data was added to the dashboards in the past period. This version is the update of August 2017. In the final update of February 2018, we will describe a generic CITYLAB dashboard for urban freight transport implementations based on the lessons learnt from developing and using the individual CITYLAB dashboards.

2 Dashboards for Urban Freight Transport Projects

Dashboards are a tool developed in the business sector, where they were introduced to consolidate and summarise data already being gathered in various information systems throughout the organisation. Dashboards display key performance information and support operational decision making. Few (2004) defines a dashboard as “a visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance”. Two important aspects stand out in that definition: ‘important information’ and ‘a visual display’. The idea of consolidating and displaying important information is not new. Dashboards are successors of *Executive Information Systems* (EISs) that were first developed in the 1980s and displayed a handful of key financial measures through a simple interface. EISs never got popular because, at the time, the necessary data handling methodologies were not available. It was only during the 1990s that useful and accurate technologies to make information available were developed. What also emerged in the early 1990s, but did not become popular until late in that decade was a new approach to management that involved the identification and use of key performance indicators (KPIs), introduced by Robert S. Kaplan and David P. Norton as the *Balanced Scorecard*. The balanced scorecard is a system consisting of a mix of financial and non-financial measures to track progress over time. Typical for the balanced scorecard is that the measures are each compared to a ‘target’ value within a single concise report. The idea of management through the use of metrics still dominates the landscape today. *Business Performance Management* (BPM), as it is now commonly known, has become an international preoccupation (Few, 2006). The idea of performance management also pervaded the public sector. Mwita introduced the term “new public management” to describe a public sector focussing on, among other things, explicit standards and measures of performance and increased accountability in resource use (Fryer et al., 2009). Resources have to be spent wisely.

Part of local government resources are spent on decreasing the negative impact of the high demand for (predominantly motorised) urban road transport. For decades, policy makers focussed on passenger transport. The observation that urban freight transport is responsible for a considerable part of the negative impacts of urban transport and a proportionally higher expected increase in the number of urban freight trips, however, led to a rise in the research on this topic since the late 1990s (Browne et al., 2007) and to an increasingly important role for freight transport in urban planning and transport policies in large European cities (Lindholm, 2012).

During the last 20 years, a range of initiatives to reduce the negative impact caused by urban freight transport has been researched, tested and implemented. With this rise of urban freight measures, multiple evaluation methodologies emerged. Evaluating urban freight measures can have two purposes. Ex-ante evaluation is used to assess the expected impact of a measure or a set of measures which helps in deciding whether a measure should be supported or implemented (Filippi et al., 2010). Ex-post evaluation is used to know whether a measure really achieved what it was implemented for and can be called a good solution. Results of earlier ex-post evaluations can then serve as input for ex-ante evaluations.

Evaluating requires a thorough and systematic approach (see for example: Thompson and Hassal, 2005; van Duin, Quak & Munuzuri, 2007) for which various methodologies are used (Patier & Browne, 2010). A common approach is to measure the effect of a solution by comparing before and after values for a set of selected indicators. There is, however, no widespread consensus on which indicators to compare and on what measurement units should be used (Patier & Browne, 2010). Some authors have tried to come up with a list of indicators and measurement units with the aim to be able to mutually compare the impact of different measures, be it a generic list for all types of urban freight measures or a dedicated one for one type of measures (See for example: Browne et al., 2005; Patier & Browne, 2010; Balm, Browne, Leonardi & Quak, 2014).

A number of recent developments give some cause for a third type of evaluation: monitoring. Cambridge Dictionary defines monitoring as follows: *to watch and check a situation carefully for a period of time in order to discover something about it* (Cambridge Dictionary, 2016). The idea is to keep track of how a measure impacts its environment while it is being tested or implemented which allows to control closely and react rapidly.

One important challenge in urban freight transport is reconciling the needs of the many stakeholder groups that are affected by it (i.e. shippers, transport operators, receivers, infrastructure providers, infrastructure operators, landowners, local government, national government, other economic actors located in the urban area, residents, visitors, tourists) (MDS Transmodal Limited, 2012). One answer to that is to establish a freight partnership which is 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 and Browne, 2014). They differ from the traditional public-private partnership by also involving private stakeholders for consultation and dialogue in public decision-making and were initiated in many European cities (Browne et al., 2003). Although freight partnerships invite stakeholder groups to mutually share their points of view, they do not tend to lead to collaborative and joined innovative actions and ambitions (Quak et al., 2015). That is why CITYLAB introduces the Living Laboratory approach in the field of urban freight transport (D3.1). A Living Laboratory (Living Lab) is defined as a “test environment for cyclical development and evaluation of complex, innovative concepts and technology, as part of a real-world, operational system, in which multiple stakeholders with different background and interests work together towards a common goal, as part of medium to long-term study” (Lucassen et al, 2014). One important aspect of a Living Lab is the cyclical development of a solution that is beneficial to all stakeholders. One cycle within a Living Lab usually consists of four phases (D3.1):

- **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 executions 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/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 to this new cycle.

The Act/Decision phase results in a new planning phase when the solution needs some adaptation, but it can also result in a roll-out phase or in a new cycle based on a new idea. This cyclical approach asks for innovative ways to evaluate the solutions and one answer to that is to monitor (in real time if possible) how a solution lives up to the common ambitions that were set for the Living Lab.

Apart from the need to reconcile the needs of all stakeholders, there is second development that gives cause to more monitoring. Urban freight transport is characterised by a lack of systematic assessment of short and long term effects (Gatta & Marcucci, 2014). In theory, measures should be assessed ex-ante and ex-post and evaluated using the appropriate evaluation method, but it appears to be very challenging to collect the necessary data to do these assessments (Lindholm, 2012; Verlinde, 2015). First, despite the fact that researchers call for more reliable data, local policy makers do not tend to spend resources on collecting urban freight transport data. The resources spent on collecting transport data are usually mainly spent on passenger transport data. Second, if you want to evaluate urban freight measures from the perspective of all stakeholders, you also need data owned by shippers, logistics service providers and receivers. They are usually not keen on sharing those data because they are afraid of sharing sensitive information. They do not want their competitors to have access to these data. However, sharing data could lead to more sustainable urban freight transport. It would increase the options for consolidation and it would stimulate innovation (vehicle technology, ITS solutions, etc.).

In terms of technology and analytics, the landscape of data sources and information discovery techniques has significantly evolved in the last decade (Lohr, 2012, Mayer-Schönberger, 2014). The easy availability of data (e.g. by means of Internet of Things devices, digitization of administrations) has moved the research challenges to the 'Big Data' era, where the key issue is to address scalability of traditional storage and analytics solutions (Buhl et al., 2013).

For this reason, we are assisting in recent years to the appearance of new distributed paradigms (hardware architectures like Hadoop, and programming frameworks like Map-Reduce or Spark) for storing, manipulating and processing Big Data. Some of these paradigms are already common in some domains (like business intelligence, search engines) and took the place of conventional database architectures.

In the domain of public administrations and public governance, slower to adopt new technologies, these practices are still at the very beginning and require a radical change in the conventional manner of dealing with the wealth of public and private data now available (Brown et al., 2011, Manyika, 2013). The idea of manipulating and processing Big Data in the domain of public administrations and public governance also relates to the "smart city" concept. The European Commission defines a smart city as a "place where the traditional networks and services are made more efficient with the use of digital and telecommunication technologies, for the benefit of its inhabitants and businesses" (European Commission, 2015). The concept goes beyond the use of ICT but learning from data that are collected automatically throughout the city by, for example, street lights and ANPR cameras is an important part of the concept. This would partly solve the problem that it is difficult to get hold of high-quality urban freight data. Evolutions in big data and smart cities open a pathway to live and automatically updated monitoring tools.

These ideas also fit the European ambitions. The European policy level initiated Sustainable Urban Transport Plans (SUTP) (Van Uyten, 2014), Sustainable Urban Mobility Plans (SUMP) (Wefering, Rupprecht, Bührmann, & Böhler-Baedeker, 2014) and Sustainable Urban Logistics Plans (SULP) (Ambrosino, 2014). These plans aim to support local authorities in planning, developing and implementing an adequate transportation management. The plans discuss the main features of sustainable transport and highlight the need for monitoring, reviewing and reporting.

Monitoring can have two goals. First, it can be used to observe the current state of urban freight transport in a region, city or neighbourhood. By systematically and regularly updating the values of the indicators that are monitored, (negative) changes can be noticed and a plan to deal with them can be drafted. Second, monitoring can be used to assess whether a certain solution or measure achieves what it was implemented for. A valuable tool used for monitoring is a dashboard since it displays key performance information and supports decision making. Dashboards in urban freight transport are a real innovation. As already stated, most evaluations of urban freight transport measures appear in presentations, papers or project deliverables and are often produced in retrospect after the pilot finished. There are some urban transport related dashboards but they tend to be more focussed on passenger transport and capture the current status to inform travellers (see e.g. City Dashboard London (http://citydashboard.org/london/)) or to help the administration in discovering trends and problems that make urban transport less sustainable (see e.g. City Dashboard Rotterdam (https://time.tno.nl/nl/artikelen/dashboard-helpt-steden-schoon-en-leefbaar-te-maken/).

CITYLAB introduces a dashboard in its evaluation framework for three reasons:

- The dashboards visualise the input of the evaluation activities for the act/decide phase in the Living Lab cycle. They display the Living Lab ambition and the extent to which the current implementation contributes to that ambition.
- CITYLAB is a research program funded by the European Commission to contribute to the Commission's target of essentially CO_2-free city logistics in urban centres by 2030. The dashboards monitor to what extent a certain solution contributes to that target.
- By displaying the most relevant process and context indicators, the dashboards give insight in transferability options of the tested solutions. In most other evaluation frameworks, this aspect is often separated from the impact analysis and does not receive much attention.

3 CITYLAB dashboards

3.1 Evaluation framework

The objective of CITYLAB 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 are tested and evaluated, and the fundament for further roll-out of the solutions is developed.

Evaluation activities within CITYLAB serve three different objectives: (i) Facilitate the Living Lab cycle within CITYLAB (Act/Decide), (ii) Identify cost-effective strategies, measures and tools for emission-free city logistics (Compare) and (iii) Roll out the CITYLAB solutions to other CITYLAB cities (Transfer).

Reaching CITYLAB's three evaluation objectives requires a whole range of indicators that have to be evaluated and various evaluation methods. These indicators and methods are structured into four fields of evaluation: (i) adoption, (ii) process, (iii) context and (iv) impact. Each field of evaluation covers one particular aspect of the solutions that influences whether the solution is considered satisfactory or not and can be transferred or not. **Feil! Fant ikke referansekilden.** schematises CITYLAB's evaluation framework in its whole.

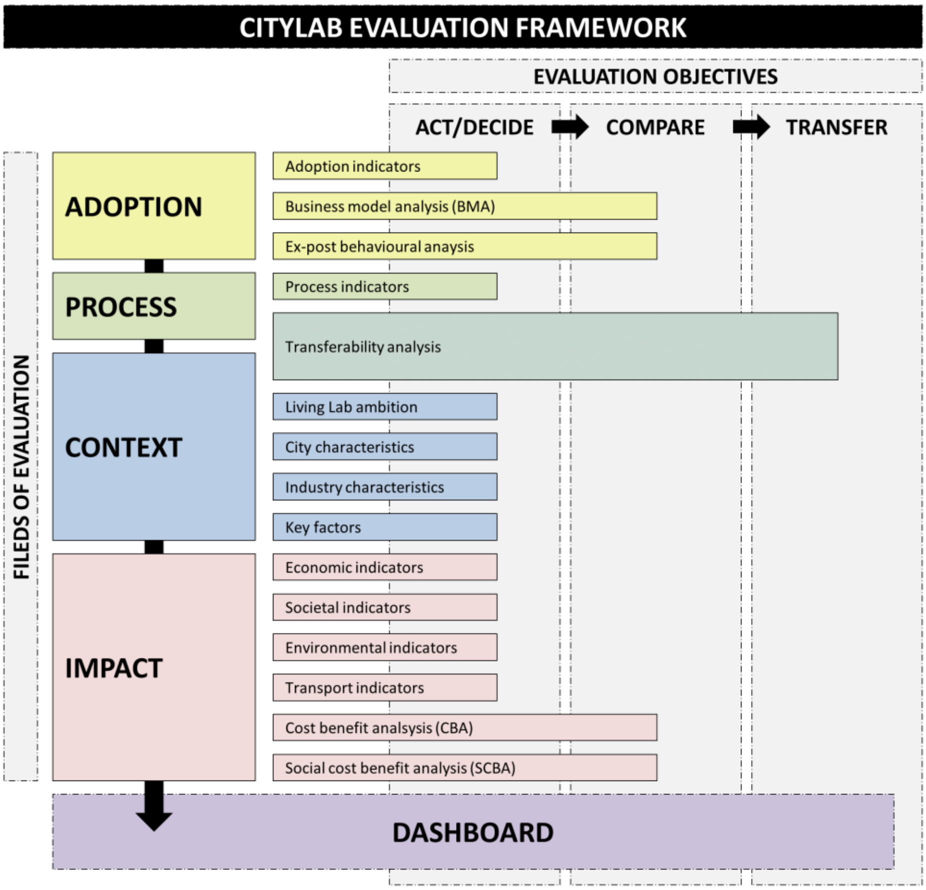

Figure 1 – CITYLAB's evaluation framework

The first field of evaluation, i.e. 'Adoption', detects to what extent stakeholders that did not initiate the solution are willing to pay for the solution or to change their behaviour in order to perpetuate the solution. CITYLAB covers this aspect in its evaluation framework through a range of adoption indicators evaluating users' feedback on the solutions and assessing to what extent the solution is adopted by the target group. The two evaluation methods that fit this evaluation field are Business Model Analysis and ex-post behavioural analysis. A solution's success does not only depend on characteristics of the solution itself but also on how and where it was implemented.

'Process' relates to the Living Lab methodology and attempts to determine how successfully the implementation followed the implementation plan as stipulated during the planning phase. It allows evaluators to make the important distinction between implementation failure/success and theory failure/success. CITYLAB adopts eight process indicators that are primarily qualitative and mainly inspired by the Living Lab methodology. The evaluation method that fits this evaluation field is the transferability analysis which builds on insights into how impacts were achieved.

'Context' describes important characteristics of the setting in which the solution was implemented. More than any other field of evaluation, it makes the connection between the implemented solution and a possible transfer to another city. Four groups of indicators are used: (i) city characteristics (ii) industry characteristics, (iii) Living Lab ambition and (iv) key factors. These context indicators, together with the process indicators, provide input for the transferability analysis which is the evaluation method that fits this field of evaluation.

Finally, 'impact' assesses and quantifies the changes that can be attributed to implementing the new urban freight transport solution. It concerns changes in the well-being of all stakeholders. Again, four groups of indicators are used, reflecting the criteria of the different stakeholders: (i) economy, (ii) environment, (iii) society and (iv) transport. The two evaluation methods that fit this evaluation field analyse the overall impact of the solution from the perspective of commercial stakeholders through Cost-Benefit Analysis and combine that with the perspective of public stakeholders through the Social Cost-Benefit Analysis.

Comparing the before, during and after values of the CITYLAB indicators and applying the evaluation methods generates a lot of information. As part of its evaluation framework, CITYLAB aims to address this issue by giving instant access to critical information by developing and updating comprehensive and transparent dashboards for each CITYLAB implementation. For more information on CITYLAB's evaluation framework, please read CITYLAB Deliverable D5.1 (CITYLAB evaluation framework and indicators).

3.2 Dashboard characteristics

CITYLAB dashboards show, for each implementation, a graphical presentation of a selection of indicators from each field of evaluation from CITYLAB's evaluation framework. The fields of evaluation are chosen carefully and cover particular aspects that influence whether a solution is considered satisfactory and can be transferred. This structure of four fields of evaluation is repeated in the dashboards in the form of **four different tabs**.

CITYLAB's evaluation framework consists of a list of 54 indicators that are general for each implementation. The local actors of each implementation **chose which of those indicators should be displayed on their dashboard** to make sure that the criteria they consider as important for their implementation get sufficient attention. The environmental indicator reflecting the European Commission's target of essentially CO_2-free city logistics in urban centres by 2030 is displayed on each dashboard (indicator 38 – Carbon dioxide). The context indicators that are displayed on the dashboard are the same for each implementation. The year to which the displayed data applies is mentioned between brackets. The context tab gives a first impression of the transferability of a solution to another context. Other cities that are interested in the solution can compare their city characteristics to the characteristics of the city where the solution was implemented. Finally, the local actors could also add indicators to the obligatory list of CITYLAB indicators to make sure the dashboards capture all relevant aspects of each individual implementation. VUB, responsible for Task 5.2, and TOI, project coordinator had a meeting (via Skype or face to face) with the scientific partners of each implementation to develop an indicator list relevant for the specific implementation. They could motivate why they would not collect data for a certain indicator, how they are going to collect data for each of the indicators and they could also add indicators of their own to the indicator list. This approach is in line with the living lab methodology and with the fact that the CITYLAB implementations mutually differ.

For each indicator on the dashboard, we show the **current value and previous values** (if they were measured). All adoption, process and impact values are **compared to the ambition value** that was set by the owner and/or users of the implementation. Four types of charts are used:

- Pie charts are used to illustrate a numerical proportion. They are used, for example, to depict adoption rate and adoption willingness.
- Stacked bullet graph charts to compare the current value to previously measured values and to a target value. They are used, for example, for nearly all impact indicators.
- Text boxes to allow displaying qualitative indicators and single value indicators. They are used, for example, to display facilitators and barriers of the implementation on the process tab and to display some of the values on the context tab.
- 100% stacked bar charts to compare the percentage that each value contributes to a total. They are used, for example, to depict share of commercial vehicles or land use on the context tab.

Three items are fixed on the dashboards and are always displayed, independent of which tab you are looking at. Today's date is shown top left on the dashboard. Bottom left, a list of all variations to the local implementation and/or data collections are added with their date. The variations could consist of the start and end date of the local implementation and of changes to the local implementation. This list is numbered and these numbers are used in the graphs on the dashboard. Middle left, there is a brief description of the local implementation that is monitored on that particular dashboard to remind the user of the dashboard what he is looking at, especially users that look at the dashboard from a transferability point of view.

The concept of the dashboards is displayed in Annex 1: Concept of CITYLAB dashboards.

3.3 Dashboards in practice

CITYLAB dashboards can be publicly accessed through the CITYLAB website (http://www.citylab-project.eu/). On the implementations page, there is a dashboard button next to each implementation (http://www.citylab-project.eu/implementations.php). Figure 2 shows an extract from the CITYLAB website. Southampton University is the responsible CITYLAB partner for the project website. This website can only be changed and operated by people from the university which is why the dashboards are stored on another webpage operated by VUB who is the responsible partner for the dashboards. There is a direct link on the CITYLAB website to the CITYLAB dashboards. The dashboards can only be accessed through the CITYLAB website.

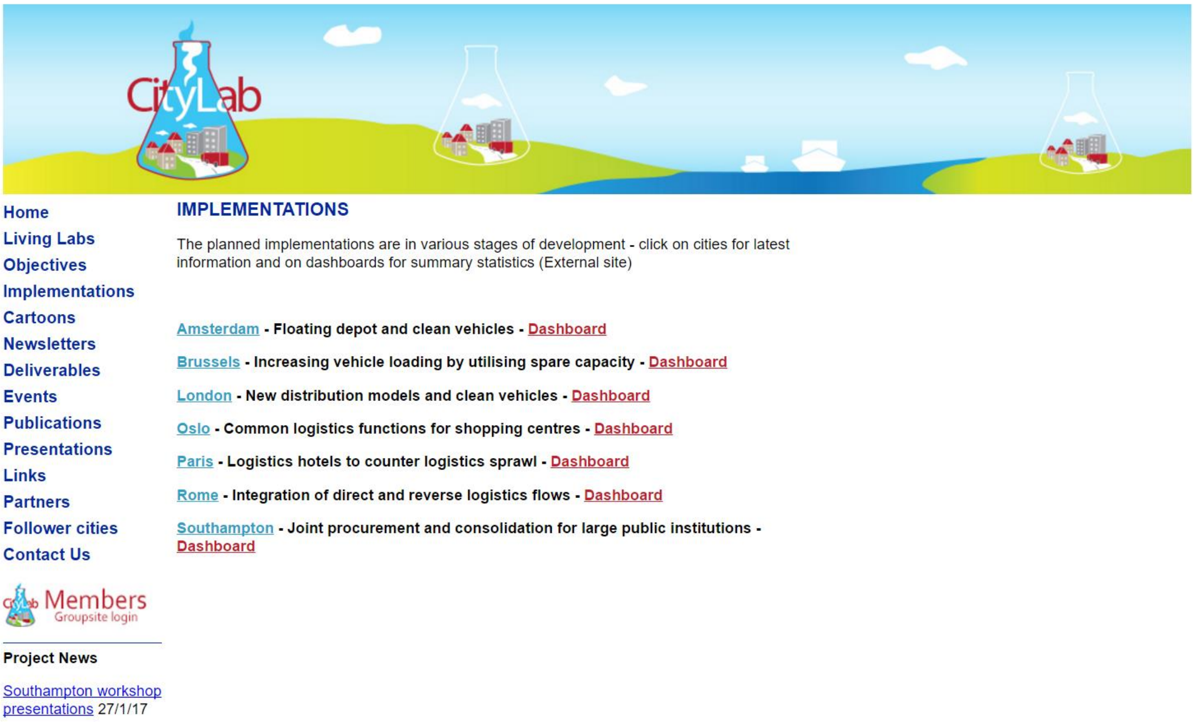

Figure 2 – Extract from the CITYLAB website (February 2017)

In an ideal world, the CITYLAB dashboards would be updated automatically based on real-time data. In practice, real-time data are often not available (yet) and most data are not collected automatically but require a manual data collection process. To feed the CITYLAB dashboards, we developed an Excel template for each implementation. Local partners can update this Excel template and upload it to the CITYLAB dashboard website. The dashboard will then be updated automatically. The template for Brussels is added in Annex 2 as an example.

The first version of this deliverable was published in August 2016. Prior to that, local partners were asked to check their Excel template and indicate how they plan to collect the necessary data. They were also asked which indicators should be added to their template and which indicators should be displayed on their dashboard. Autumn 2016, VUB asked all partners to fill in the context indicators as input to a finished first version of the dashboards (with context indicators only). That version was put online February 2017. The context tab of the current dashboards is added in Annex 3 as an example.

The Excel templates are not only used to feed the dashboards, but also to collect the data needed for the other evaluation activities in CITYLAB. This data collection is part of Task 5.3 (Impact and process assessment of the seven CITYLAB implementations). The dashboards will be updated when additional data have been collected, and data collection for Amsterdam, Brussels and Southampton has been delayed. In Amsterdam, PostNL abandoned the idea of using a barge to bring goods into the city at the end of 2016 because it appeared to be not cost-effective. They changed to using inner-city microhubs and abandoned stores, supported by a floating depot, to distribute post and parcels from. The implementation will start operating after Q1 2017. In Brussels, the implementation got delayed because it proved more difficult than expected to set-up pricing and align new supply chain set-ups within PGBS. The implementation will start 1st of March 2017. In Southampton, many first steps were taken but take-up from large municipal organisations to date has been rather slow. Today, it is unclear when the implementations would start. We will update the dashboards for these three cities as soon as the data is available.

We initially intended to ask project partners for an update of their available data every three months. It appears that a fixed interval of three months is not useful since the implementations differ in progress, scope, development and do not all follow the same planning.

Figure 3 gives an overview per implementation of when the different alternatives of the implementation were implemented or will be implemented. Green indicates that we already received data input, yellow indicates that we do not have data input yet. The late provision of data (June 2017 or M26) and the fact that many partners changed the template or had difficulties filling in the required values made it impossible to automatically upload the templates. Additional changes were needed to the programming of the dashboards.

This deliverable has been updated in M22 (February 2017) and M28 (August 2017). It will be updated in M34 (February 2018) with a list of changes to the dashboards. Changes will be made throughout the project and not only in the months in which the updates are due. In the final update of M34, we will come up with a generic CITYLAB dashboard (and template) based on our experiences during this project, with an overview of the monitored effects and with an analysis of how the dashboards linked to the decision cycle within the local implementations.

M16: Excel template finished

M22: Launch of dashboards - context tabs for all implementations are filled in – no data available yet for other tabs

M28: Adoption, process and context tab for Brussels is completed

M29: Adoption, process and context tab for Amsterdam, London, Oslo, Paris and Rome is completed

Implementation	City	Partner	Start implementation	Data collection			
				BAU data	Alternative 1	Alternative 2	Alternative 3
Growth of consolidation and electric vehicle use	London	TNT and Gnewt Cargo	- New delivery system: August 2016 - Consolidation: September-October 2016 - Changing depot location: April 2017	Initial situation	New delivery system: electric van deliveries for 10	Allowing TNT deliveries to be consolidated with	Changing depot location, allowing all parcels from
				Sep 2015 - Dec 2015	Aug 2016 - Nov 2016	Nov 2016 - Apr 2017	Apr 2017 - Dec 2017
Floating depot and city centre micro-hubs	Amsterdam	PostNL	- Idea to shift transport of parcels to canals: May 2015 - Idea to shift transport of fresh food to canals: January 2016 - Idea to use microhubs and e-freight bikes for parcel deliveries: December 2016 - Use of microhubs and e-freight bikes: Q1 2017	Initial situation	Micro-hubs + e-freight bikes	Micro-hubs + e-freight bikes (60%) + vans (40%)	Micro-hubs + e-freight bikes + floating depot
				Q1 2017	Q2-Q4 2017	?	?
Increasing load factors by utilising free van capacity	Brussels	Procter & Gamble	- Start implementation: March 2017 - Test with 2nd owner of free capacity: Q3 2017	Initial situation in Brussels	Test with Febelco in Brussels	Test with Parcify in Antwerp	
				Q2 2017	Q2 2017	Q3 2017	
Joint procurement and consolidation	Southampton	Meachers Global Logistics	Isle of Wight NHS Trust: no implementation within project timescale	Initial situation			
				May 2016			
			Southampton general hospital: consolidation from Meachers consolidation centre	Initial situation	Implementation		
				Q3 2017	Q3 2017		
		Municipality of Southampton	Electrification of vehicles performing service trips for municipality	Initial situation	Implementation		
				Q2 2017	Q3 2017		
Common logistics functions for shopping centres	Oslo	Steen & Strøm	Implementation supports planning during the construction of common logistics functions for inbound and outbound freight flows at Økern shopping centre because the most critical phase for ensuring the solution is the planning process. There will be a limited ex post analysis, but the collected data will not be useful for the dashboard since the centre will not be operational yet. Instead, we will collect data from other shopping centres with limited versions of the logistics functions to extend the knowledge on the impact of such solutions. - Stovner shopping centre (Oslo, Norway) - Emporia shopping centre (Malmö, Sweden) - Oslo city shopping centre (Oslo, Norway) - Strømmen Storsenter (Oslo Area, Norway)	Stovner shopping centre	Emporia shopping centre	Oslo city shopping centre	Strømmen Storsenter
				Q2 2017	Q2 2017	Q2 2017	Q2 2017
Integration of direct and reverse logistics	Rome	Poste Italiane, Meware	- Start first implementation: November 2016	Initial situation	First implementation		
				Q1 2017	Q1 2017		
Logistic hotels	Paris	SOGARIS	Beaugrenelle	Initial situation	Operations with electric vehicles	Operations with natural gas vehicles	
				Jan 2017	Q2 2017	Q4 2017	
			Chapelle International: construction work is going according to schedule and the opening of the building will be effective in November 2017. Because this implementation focusses on the process of constructing logistics buildings in cities, we will not monitor impact and adoption for this implementation. We will focus on process and the regulatory, technical and economic challenges.	Process assessment			
				March 2017			

Legend
Data available
Data to be collected

Figure 3 – Expected data availability for dashboard updates

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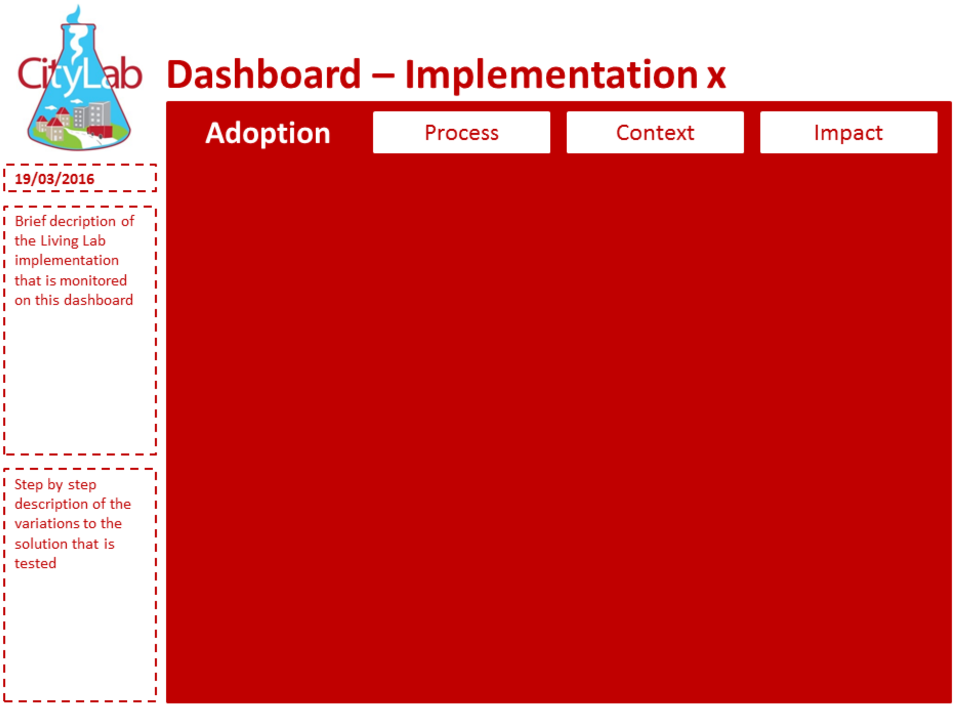
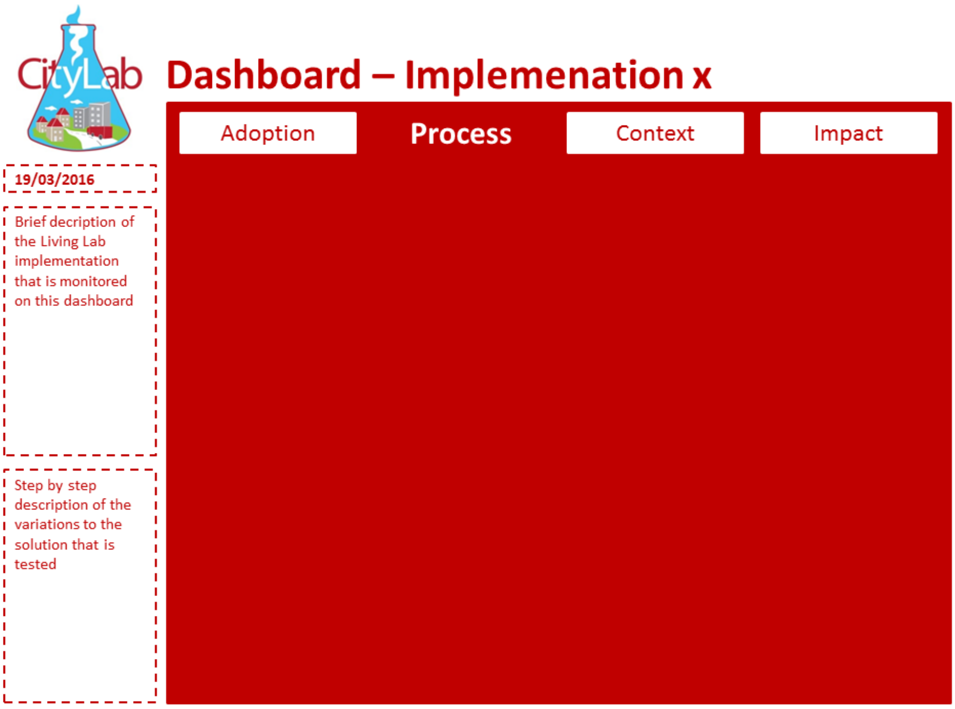
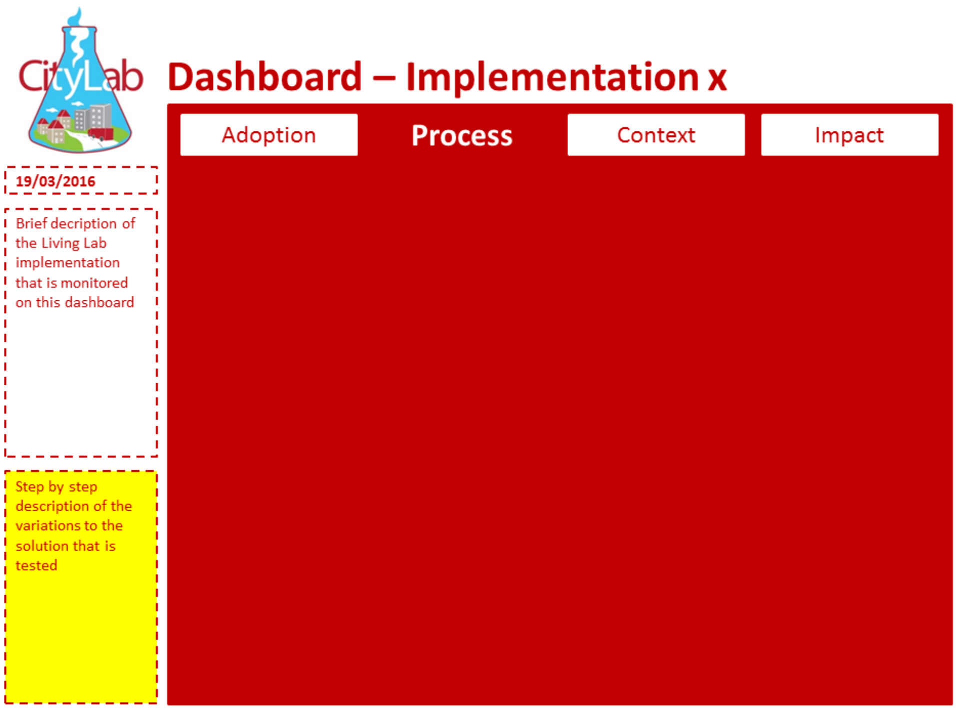
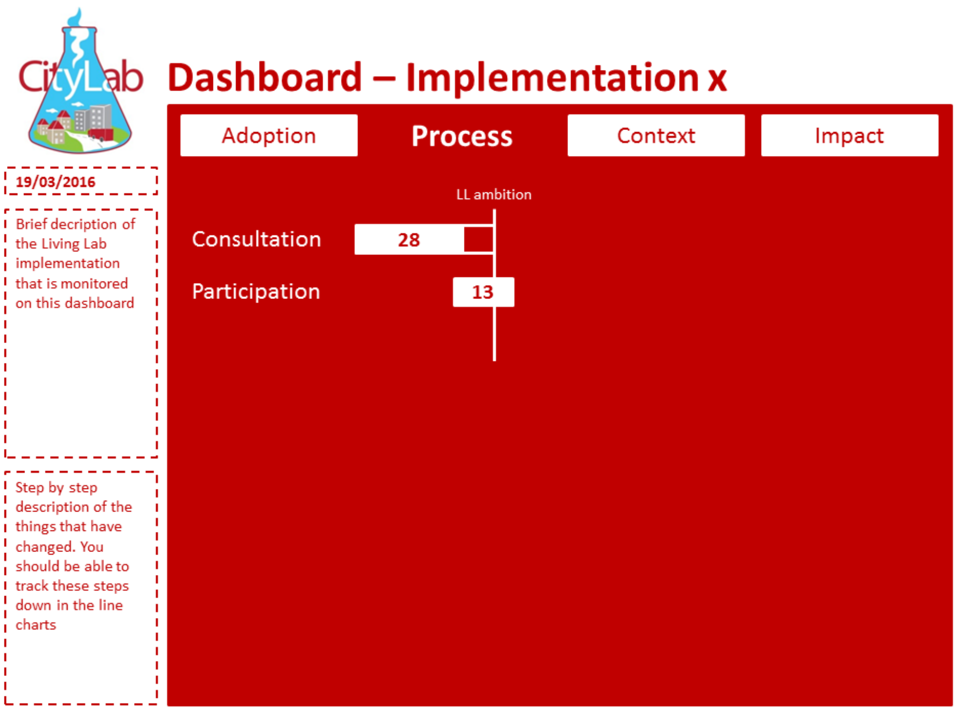
5 Annexes

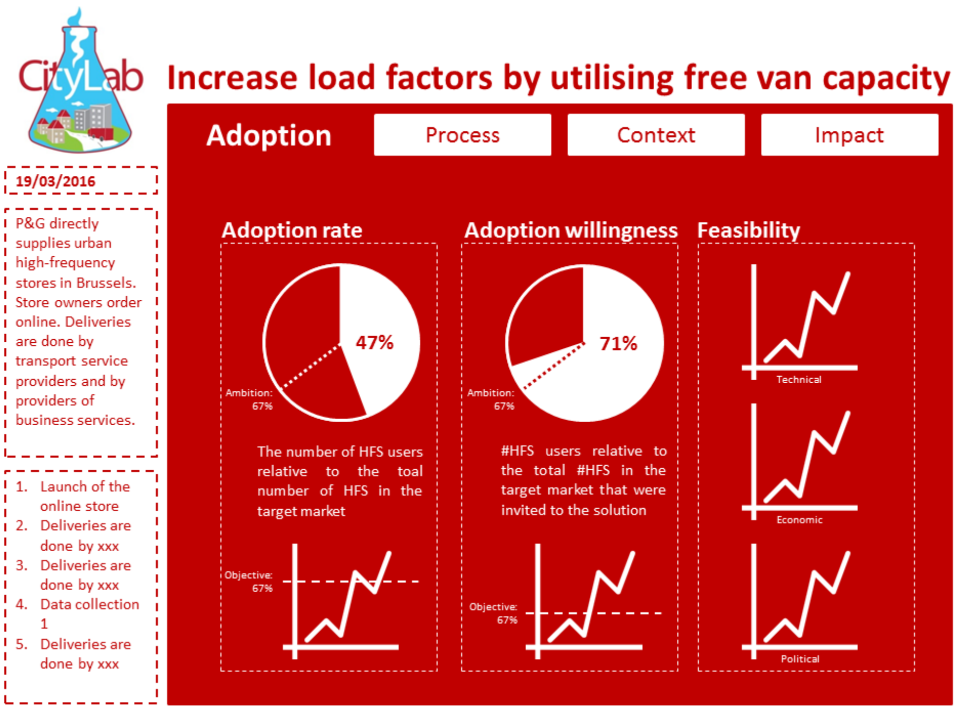
5.1 Annex 1: Concept of CITYLAB dashboards (dd. August 2016)

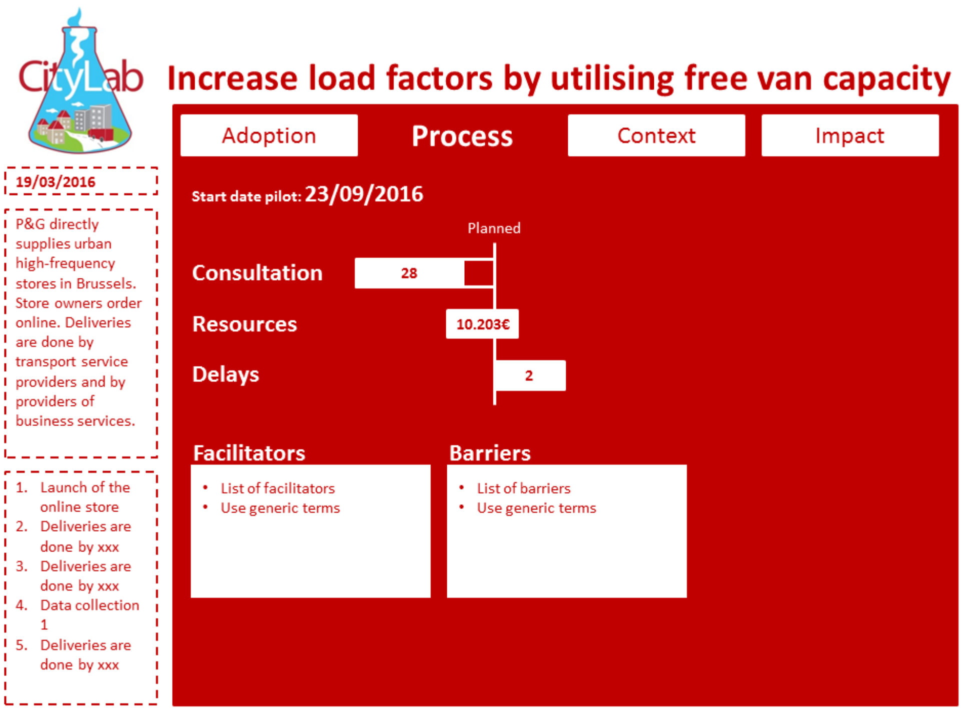


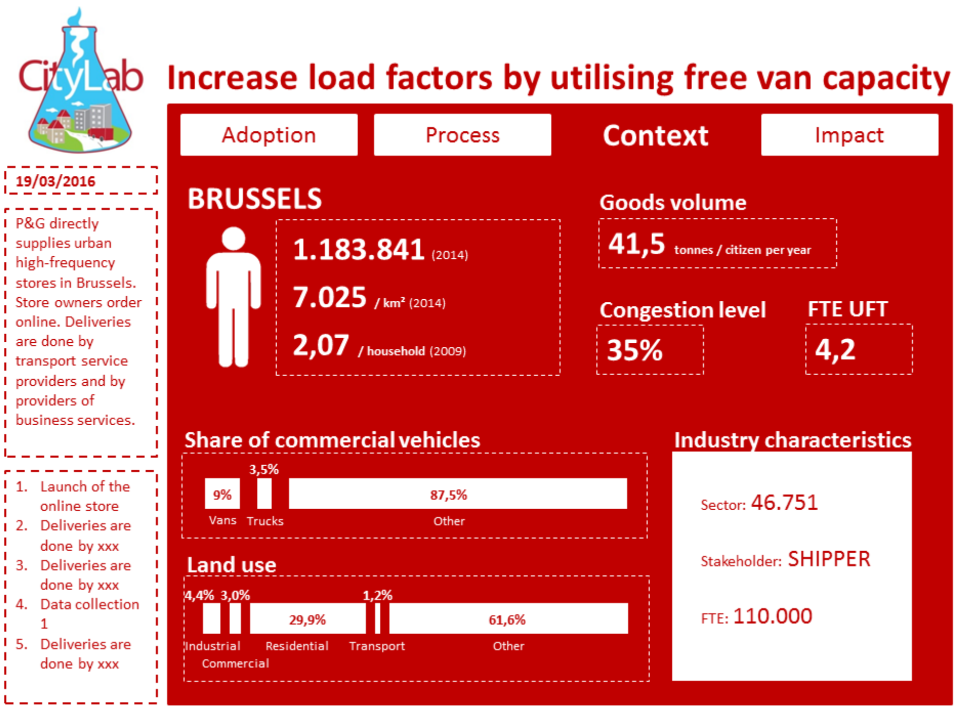



CityLab
Dashboard – Implementation x
Adoption
Process
Context
Impact
19/03/2016
Brief decription of the Living Lab implementation that is monitored on this dashboard
Step by step description of the variations to the solution that is tested

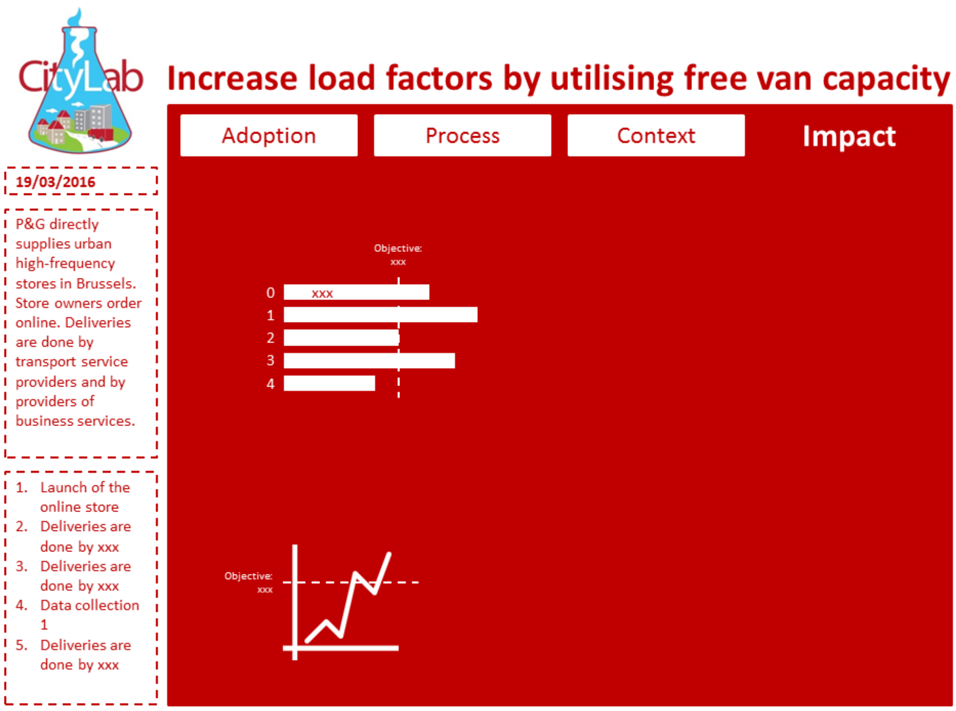

CityLab
Dashboard – Implementation x
Adoption
Process
Context
Impact
19/03/2016
Brief decription of the Living Lab implementation that is monitored on this dashboard
Step by step description of the things that have changed. You should be able to track these steps down in the line charts
LL ambition
Consultation
28
Participation
13


Increase load factors by utilising free van capacity
Adoption
Process
Context
Impact
19/03/2016
P&G directly supplies urban high-frequency stores in Brussels. Store owners order online. Deliveries are done by transport service providers and by providers of business services.
1. Launch of the online store
2. Deliveries are done by xxx
3. Deliveries are done by xxx
4. Data collection 1
5. Deliveries are done by xxx
Adoption rate
47%
Ambition: 67%
The number of HFS users relative to the toal number of HFS in the target market
Objective: 67%
Adoption willingness
71%
Ambition: 67%
#HFS users relative to the total #HFS in the target market that were invited to the solution
Objective: 67%
Feasibility
Technical
Economic
Political


Increase load factors by utilising free van capacity
Adoption
Process
Context
Impact
19/03/2016
P&G directly supplies urban high-frequency stores in Brussels. Store owners order online. Deliveries are done by transport service providers and by providers of business services.
1. Launch of the online store
2. Deliveries are done by xxx
3. Deliveries are done by xxx
4. Data collection 1
5. Deliveries are done by xxx
Start date pilot: 23/09/2016
Planned
Consultation
28
Resources
10.203€
Delays
2
Facilitators
• List of facilitators
• Use generic terms
Barriers
• List of barriers
• Use generic terms



Increase load factors by utilising free van capacity
Adoption
Process
Context
Impact
19/03/2016
P&G directly supplies urban high-frequency stores in Brussels. Store owners order online. Deliveries are done by transport service providers and by providers of business services.
1. Launch of the online store
2. Deliveries are done by xxx
3. Deliveries are done by xxx
4. Data collection 1
5. Deliveries are done by xxx
BRUSSELS
1.183.841 (2014)
7.025 / km² (2014)
2,07 / household (2009)
Goods volume
41,5 tonnes / citizen per year
Congestion level
35%
FTE UFT
4,2
Share of commercial vehicles
9%
3,5%
87,5%
Vans
Trucks
Other
Land use
4,4%
3,0%
29,9%
1,2%
61,6%
Industrial
Residential
Transport
Other
Commercial
Industry characteristics
Sector: 46.751
Stakeholder: SHIPPER
FTE: 110.000



Increase load factors by utilising free van capacity
Adoption
Process
Context
Impact
19/03/2016
P&G directly supplies urban high-frequency stores in Brussels. Store owners order online. Deliveries are done by transport service providers and by providers of business services.
1. Launch of the online store
2. Deliveries are done by xxx
3. Deliveries are done by xxx
4. Data collection 1
5. Deliveries are done by xxx
Objective: xxx
0
xxx
1
2
3
4
Objective: xxx

Increase load factors by utilising free van capacity

19/03/2016

P&G directly supplies urban high-frequency stores in Brussels. Store owners order online. Deliveries are done by transport service providers and by providers of business services.

1. Launch of the online store
2. Deliveries are done by xxx
3. Deliveries are done by xxx
4. Data collection 1
5. Deliveries are done by xxx

Adoption | Process | Context | **Impact**

- Load factor
- CO_2 emissions
- Congestion level

- P&G sales
- Replenishment costs
- ROI P&G

- Cost per received item
- Satisfaction HFS owner
- ROI owner of free capacity
- Satisfaction owner of free capacity

5.2 Annex 2: Excel template for local implementation in Brussels

Adoption indicators

Data Collection Template

Nr.	Indicator	Description	Data need per indicator	Definition	Data unit	Measurement method	Ambition	Business as usual	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Remark/explanation	Dashboard	Users: P&G	Users: Stores	Users: Transport
1 - ADOPTION INDICATORS																	
1	Adoption willingness	'Adoption willingness' is the ratio of the number of users relative to the total number people/companies that were invited to adopt the solution.	Willingness to adopt	Willingness to adopt is defined as the number of users relative to the total number people/companies invited to adopt the solution.	Number	Collected by the initiator/local partners							- Number of participating shops/number of shops approached - Number of participating owners of free capacity/number of owners of free capacity approached	X			
2	Adoption rate	'Adoption rate' is the ratio of the number of users relative to the toal number of people/companies in the target market.	Adoption rate	Adoption rate is defined as the number of users relative to the toal number of people/companies in the target market.									- Number of participating shops/total number of shops (993)	X			
3	Technical feasibility	'Technical feasibility' is the degree to which users are technically able to adopt the innovation[1].	Technical feasibility P&G	Technical feasibility is defined as the degree to which users are technically able to adopt the innovation.	Index	Survey (Likert scale, 1-7)							- Store owners -> Do store owners have access to technology needed to order the goods they want to buy? (Survey shops approached and not only participating shops) - Owners of free capacity -> To which degree are owners of free capacity technically able to integrate the flows of P&G in their routing planners?	X			
			Technical feasibility Owners high frequency stores														
			Technical feasibility Owners free capacity														
4	Financial feasibility	-Financial feasibility' is the degree to which stakeholders financially benefit when adopting the innovation.	Financial feasibility P&G	Financial feasibility is defined as the degree to which stakeholders financially benefit when adopting the innovation.	Index or EURO (if possible)	Survey (Likert scale, 1-7)							- Financial benefit for store owners (lower cost of supply?) - Financial benefit for owners of free capacity (higher revenues?) - Financial benefit for PGBS (higher sales?)	X			
			Financial feasibility Owners high frequency stores														
			Financial feasibility Owners free capacity														
5	Environmentally beneficial	The "environementally beneficial' indicator concerns to the expected impact the proposed solution proposed on the environment.	Environmentally beneficial	The "environementally beneficial' indicator concerns to the expected impact the proposed solution proposed on the environment.	Index	Survey (Likert scale, 1-7)											
6	Social desirability	The 'Social desirability' indicator aims to capture the implications the proposed solution to socially valuable issues from thestakeholders' perspective.	Social desirability	The 'Social desirability' indicator aims to capture the implications the proposed solution to socially valuable issues from thestakeholders' perspective.	Index	Survey (Likert scale, 1-7)											

Context indicators

Data Collection Template

Nr.	Indicator	Description	Data need per indicator	Definition	Data unit	Measurement method	Year	Value	Remark/explanation	Dashboard	Users
2 - CONTEXT INDICATORS[2]											
2.1 - Living Lab ambition											
8	Ambition	'Ambition' lists the Living Lab ambition and goals.	Living Lab ambition	Living Lab ambition is defined as the Living Lab' common visions, ambitions and objectives developed by the Living Lab owner and the participants.	Descriptive	D3.2					
9	Population size*	Population size' is the actual number of individuals in a population.	Actual population	Actual population is defined as the number of individuals in a population.	Number	Collected by the initiator /local partners				X	
10	Population denisty*	Population density' is a measurement of population size per unit area.	Population denisty city/municipality level	Population density (people per sq. km of land area) is defined as midyear population divided by land area in square kilometers.						X	
			Population denisty disaggregated level[3]								
11	Household size	Household size' refers to the average number of persons per private household.	Persons per household	Persons per household is defined as the number of persons living in private households divided by the number of private households. Collective households such as boarding houses, halls of residence and hospitals and the persons living in them are excluded.						X	
12	Residential land use	Residential land use' is the ratio of land used for residential purposes compared to total land use.	Residential land use	Residential land use is defined as land area used for residential purposes, housing, divided by total land area use.						X	
13	Commercial land use	Commercial land use' is the ratio of land used for commercial purposes compared to total land use.	Commercial land use	Commercial land use is defined as land area used for commercial activities, e.g. shops, offices, theaters, restaurants etc., divided by total land use.						X	
14	Industrial land use	Industrial land use' is the ratio of land used for industrial purposes compared to total land use.	Industrial land use	Industrial land use is defined as land area used for industrial purposes, e.g. factories or warehouses, divided by total land use.						X	
15	Transportation land use	Transportation land use' is the ratio of land used for transportation purposes compared to total land use.	Transportation land use	Transportation land use is defined as land area used for transportation activities divided by total land use.						X	
16	Road density*	Road density' is the length of the urban area's total road network per unit area.	Road density	Road density (km of road per sq. km of land area) is defined as the length of the urban area's total road network divided by the urban area's total land.						X	
17	Congestion level*	Congestion level' refers to the annual delay totals on the road network in the urban area under study related to free flow travel time.	Level of congestion	Level of congestion is categorized by high level, reasonable level and low level (G3)	High-reasonable-low					X	
18	Goods volumes	Goods volumes' refers to the average volumes of goods entering and leaving the urban area under study.	Goods volumes	Goods volumes is defined as the average volumes of goods entering and leaving the urban area under study. If possible, please specify by vehicle category, etc.	Number	Survey, Collected by the initiator/local partners				X	
19	Shares of commercial vehicles	Share of commercial vehicles' is the ratio of the total number of commercial vehicles on the road network relative to the total number of vehicles on that road network. A commercial vehicle is defined as any type of motorised road vehicle, that by its type of construction and equipment is designed for, and capable of transporting goods, whether for	Share of vans	Share of vans is defined as the ration of the total number of vans on the road network relative to the total number of vehicles on the same road network		Collected by the initiator/local partners				X	
			Share of trucks	Share of trucks is defined as the ratio of the total number of commercial vehicles on the road network relative to the total number of vehicles on the same road network.						X	
20	FTE's dedicated to UFT*	Full-time equivalents dedicated to urban freight transport' by local authorities to work on urban freight transport-related topics.	Employment in urban freight transport	Full-time equivalents dedicated to urban freight transport' by local authorities to work on urban freight transport-related topics.					- Brussels-Capital Region and City of Brussels (and other municipalities if possible).	X	

2.3 - Industry characteristics													
21	Sector	'Sector' describes the industrial sector in which the private company initiating the innovation operates according to the NACE classification system.	Industrial sector	Industrial sector describes the economic activities in which the private company initiating the innovation operates (NACE classification system).	Descriptive	Collected by the initiator/local partners			- Use NACE codes	X			
22	Stakeholder*	'Stakeholder' describes whether the private company initiating the innovation is a supplier, a receiver or a transport service provider.	Stakeholder	Stakeholder is a description of the private stakeholder initiating the innovation as a supplier, receiver or a transport service provider.						X			
23	FTE's*	'Full-time equivalents' expresses how many people are full-time employed by the private company initiating the innovation.	Employment in initiating industry	Employment in initiating industry is defined as the number of people who are full-time employed by the private company initiating the innovation.	Number	Provided by the operator				X			
2.4 - Key Factors													
24	Strategic	This indicator describes strategic key factors for the tested implementation.	Strategic key factors	This indicator describes strategic key factors for the tested implementation.	Descriptive	D3.2							
25	Operational	This indicator describes operational key factors for the tested implementation.	Operational key factors	This indicator describes operational key factors for the tested implementation.									
26	Ethical	This indicator describes ethical key factors for the tested implementation.	Ethical key factors	This indicator describes ethical key factors for the tested implementation.									
27	Legal/regulatory	This indicator describes legal/regulatory key factors for the tested implementation.	Legal/regulatory key factors	This indicator describes legal/regulatory key factors for the tested implementation.									
28	Technological	This indicator describes technological key factors for the tested implementation.	Technological key factors	This indicator describes technological key factors for the tested implementation.									

Process indicators

Data Collection Template

Nr.	Indicator	Description	Data need per indicator	Definition	Data unit	Measurement method	Planned	Business as usual	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Remark/explanation	Dashboard	Users		
3 - PROCESS INDICATORS																	
29	Duration[4]	'Duration' refers to how long the implementation case has been running.	Duration	Duration is defined as the number of months the implementation case has been running.	Number									X			
30	Delays	This indicator compares the planned timing for the implementation case to the actual timing and monitors possible delays.	Delays	Delays compares the planned timing for the implementation case to the actual timing and thereby identifies potential delays.	Descriptive								Described by P&G. Planned starting date is 1-10-2016				
31	Availability of resources	'Availability of resources' compares resources used to organise the implementation case to planned resources.	Availability of resources	Availability of resources compares resources used to organise the implementation case to planned resources.	Descriptive												
32	Consultation	'Consultation' is used to assess to what extent owner, customers, users and stakeholders of the implementation case mutually consulted .	Consultation	Consultation describes to what extent owner, customers, users and stakeholders mutually consulted.	Number								Number of meetings	X			
33	Participation	'Participation' compares planned interventions of or consultations between owner, customers, users and stakeholders of the implementation case to actual interventions and consultations.	Participation	Participation compares planned interventions of or consultations between owner, customers, users and stakeholders of the implementation case to actual interventions and consultations.	Descriptive								Described by P&G				
34	Facilitators	'Facilitators' is used to list persons or organizations that helped developing the implementation case throughout the process.	Facilitators	Facilitators describes persons or organizations that helped developing the implementation case throughout the process.	Descriptive								- List people that were consulted	X			
35	Lessons learnt	'Lessons learnt' is used to summarize lessons learnt throughout the process.	Lessons learnt	Lessons learnt is used to summarize lessons learnt throughout the process.	Descriptive								Described by P&G				
36	Barriers	'Barriers' is used to describe barriers encountered throughout the process.	Barriers	Barriers is used to describe any problems or barriers encountered throughout the process.	Descriptive								Described by P&G				

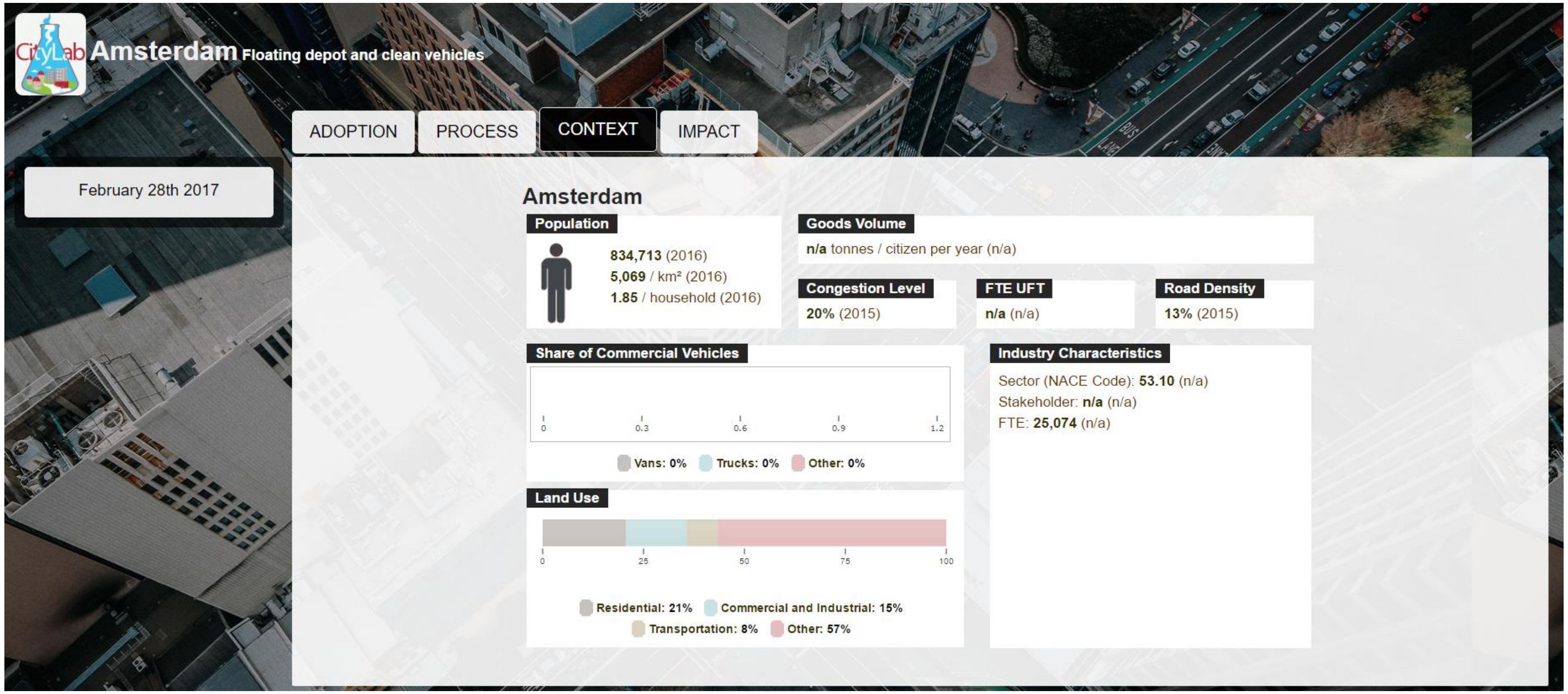
Impact indicators

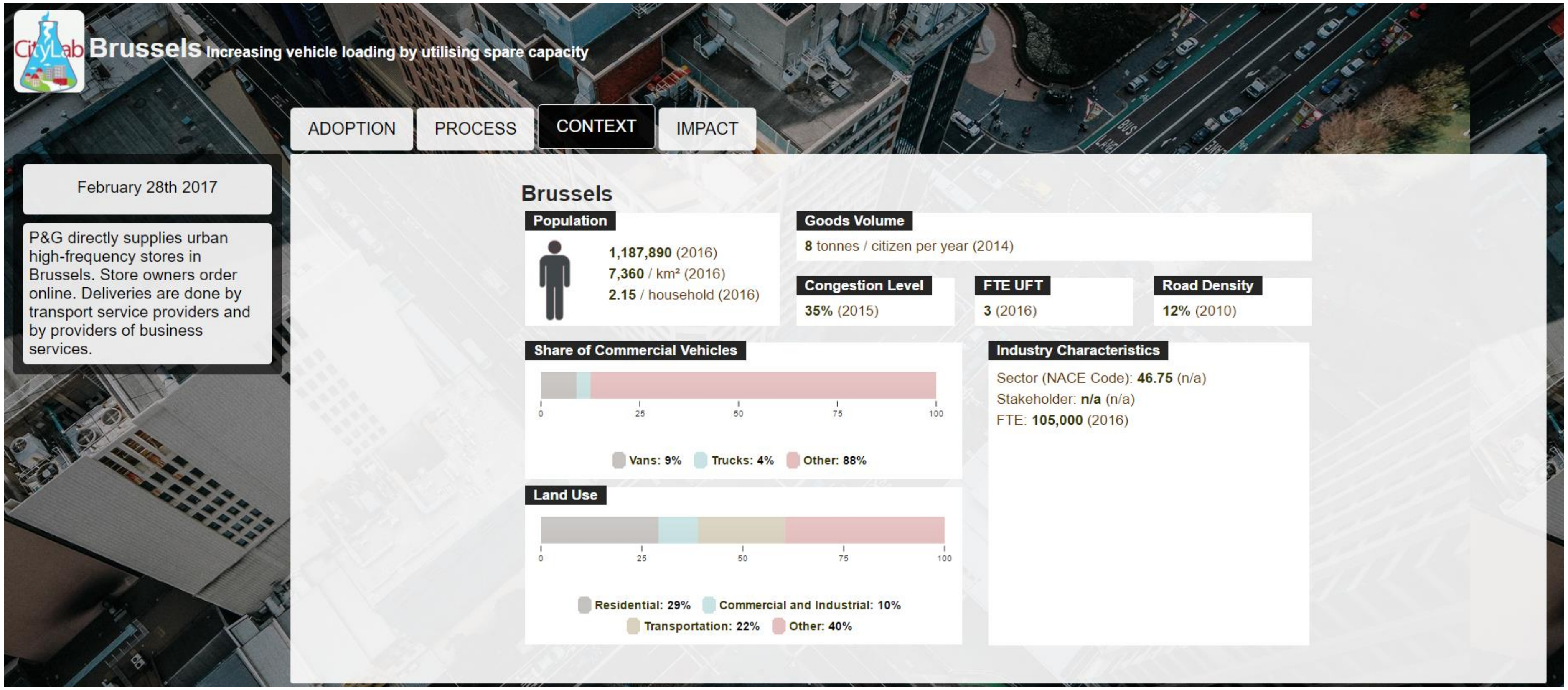
Data Collection Template

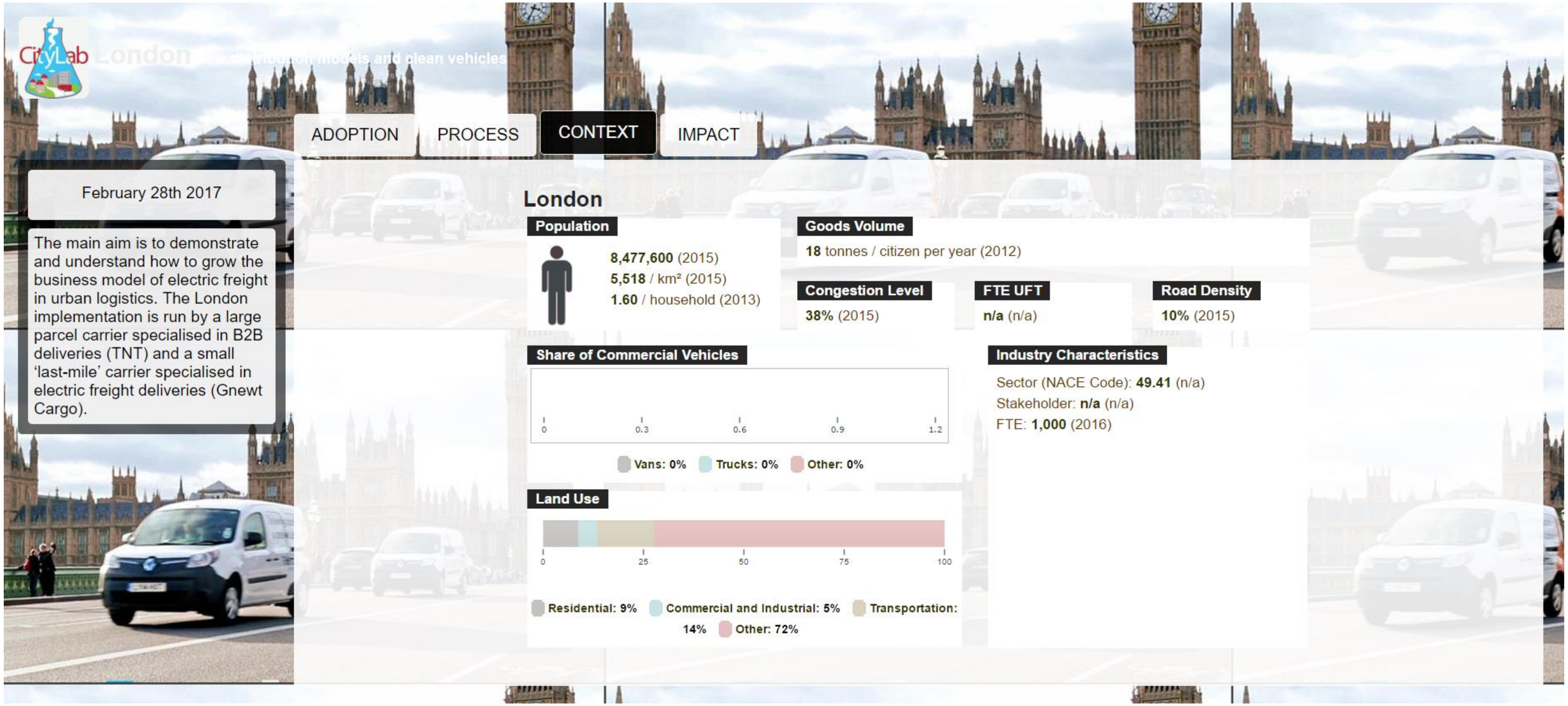
Nr.	Indicator	Description	Data need per indicator	Definition	Data unit	Measurement method	Objective	Business as usual	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Remark/explanation	Dashboard	Users
4 - IMPACT INDICATORS															
4.1 - Environment															
37	Air quality	'Air quality' is the healthiness and safety of the atmosphere which can be described by the level of pollutants in the air. The main air pollutants considered are: Sulphur dioxide (SO2), Nitrogen dioxide (NO2) and Particulate matter (PM2.5 and PM10).	Sulphur dioxide (SO2) concentration	SO2 level is defined as the average hourly (or peak/off-peak) SO2 concentration over a full year.	µg/m3 (or ppmv, parts per million by volume)	Collected through monitoring stations, or by simulation or modelling.							Difference **cannot be measured** since the impact of the pilot will be too small		
			Nitrogen dioxide (NO2) concentration	NO2 level is defined as the average hourly (or peak/off-peak) NO2 concentration over a full year.									Difference **cannot be measured** since the impact of the pilot will be too small		
			Particulate matter (PM2.5 and PM10) concentration	Particulate level is defined as the average hourly (or peak/off-peak) PM10 and PM2.5 (if possible) concentration over a full year.									Difference **cannot be measured** since the impact of the pilot will be too small		
			'Sulphur dioxide (SO2) emissions	SO2 emissions is defined as the average SO2 emissions per shipment by vehicle type and fuel type.	gram per shipment	Several possibilities, have to be determined locally. Some examples: - Calculated on the basis of fuel / energy consumption (54) - Calculated from information on vehicle kms and emission numbers (STREAM 2011).							- Calculate from information on vehicle kms and emission numbers	X X X	
			Nitrogen dioxide (NO2) emissions	NO2 emissions is defined as the average NO2 emissions per shipment by vehicle type and fuel type.									- Calculate from information on vehicle kms and emission numbers	X X X	
			Particulate matter (PM2.5 and PM10) emissions	Particulate emissions is defined as the average particulate emissions per shipment by vehicle type and fuel type.									- Calculate from information on vehicle kms and emission numbers	X X X	
38	Carbon dioxide	'Carbon dioxide' (CO_2) is the most significant greenhouse gas (as it contributes to about 80% of total EU greenhouse gas emissions) and is considered as one of the most important causes of	CO_2 emissions	CO2 emissions is defined as the average CO2 emissions per vehicle-km by vehicle type and fuel type.									- Calculate from information on vehicle kms and emission numbers	X X X	
39	Noise level	The indicator 'Noise level' is used to capture the outdoor sound level caused by human activities, including transport.	Noise level	The main noise indicators for noise mapping are Lday, Levening, Lnight and Lden (day-evening-night). These are long-term averaged sound levels, determined over all the correspondent periods of a year.	dB(A)	Noise mapping using simulation tools.							Difference **cannot be measured** since the impact of the pilot will be too small		
			Noise nuisance	Noise nuisance is defined as the experienced number of noise peak moments per resident in a given timen period (day, evening, night).	Number	Calculated on the basis of noise peak moments (loading and unloading), and number of residents (within 100m of loading-unloading moment).							Deliveries will take place during the day. By day, one vehicle more or less in a certain street or neighbourhood will not decrease or increase noise nuisance. Therefore, we will not calculate the impact on number of noise peak moments per resident.		
4.2 - Society															
40	Employee satisfaction	'Employee satisfaction' is used to describe whether employees are happy and contented and fulfilling their desires and needs at work. The indicator should be analysed for each industrial partner.	Employee satisfaction Owner of free capacity	Employee satisfaction is defined as the degree in which employees are satisfied with their work and any operational changes in the organisation.	Index	Survey (Likert scale, 1-5)							- Employee satisfaction among employees of the owner of free capacity - Employee satisfaction 4PL P&G (ODTH)	X	
			Employee satisfaction 4PL P&G										- Employee satisfaction among employees of the owner of free capacity - Employee satisfaction 4PL P&G (ODTH) - Employee satisfaction employees high frequency stores	X	
			Employee satisfaction high frequencey stores										- Employee satisfaction among employees of the owner of free capacity - Employee satisfaction 4PL P&G (ODTH) - Employee satisfaction employees high frequency stores	X	
41	Spatial consumption	'Spatial consumption' refers to the amount of public outdoor space that is dedicated to logistics activities such as loading, unloading and handling.	Spatial consumption	Spatial consumption is defined as the amount of space (m2) that is assigned for logistic service operations in a given (i.e. demonstration area) area, for example the surface area used for logistics operations (e.g. transhipment, consolidation centres) and the specific use of this land in this area (i.e. industrial, commercial, residential, etc.).	m2 and type of land use (before logistics operations)	Provided by the operator									
42	Traffic safety	'Traffic safety' is described by the number of traffic accidents, injuries and deaths per shipment	Traffic satefy	Traffic safety is defined as the number of recorded traffic accidents and the resulting number of injuries, fatalities and casualties caused by means of freight transport ~~p~~er shipment	Number per shipment	Provided by the operator or derived from other data available							Difference **cannot be measured** since the impact of the pilot will be too small. We will try to calculate impact on traffic safety based on other data (time of day, type of vehicle, distance, etc.)		
43	Crime	This indicator refers to the number of goods that get stolen or deliberately damaged while being carried or stored between shipper and receiver.	Crime/transport security	Crime is defined as the number of thefts and vandalism during freight transport in a given time period.											

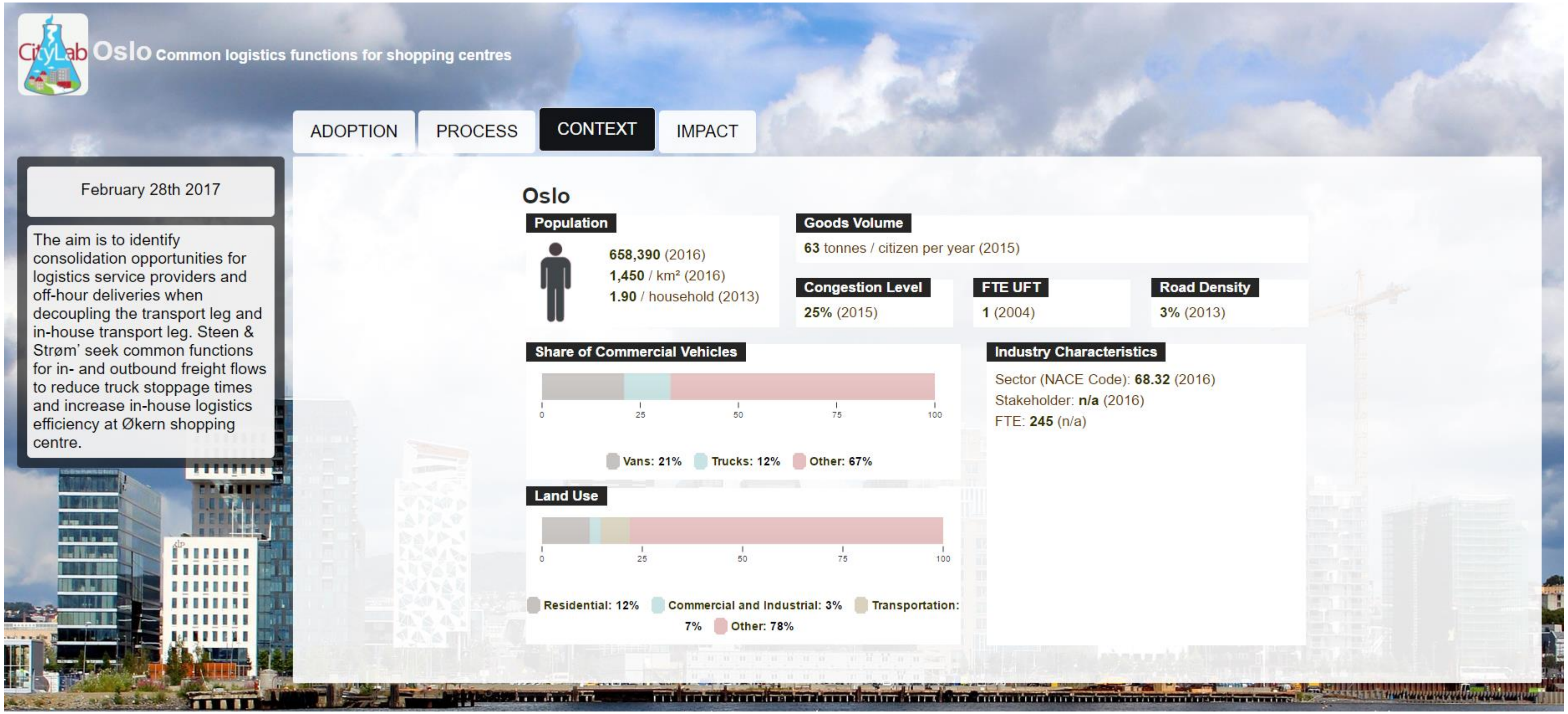
4.3 - Economy								
45	Costs per received item	The average costs (directly or indirectly) paid by the receiver for the transportation of a good or service unit.	Delivery costs receiver	Delivery costs receiver is defined as the average amount of money paid by the receiver for receiving Per shipment	EURO/shipment	Provided by the receivers or operator or derived from other data available.	- **Not relevant** since store owners are not charged	
46	Costs per delivered item	The average costs paid by the shipper for the transportation of a good or service unit.	Delivery costs shipper	Operating revenue is defined as the total income per shipment generated. Operating costs is defined as the total operating costs per shipment incurred.	EURO/shipment	Provided by the shippers or operator or derived from other data available.	- Delivery cost paid by the shipper to get the goods from the DC of the 4PL P&G (ODTH) to the shop. And for transporter to get goods to stores.	X
47	Operating profit	'Operating profit is the operating revenues minus the operating costs. The average operating profit can be expressed by dividing the operating benefits for example by vehicle-km or by units(shipment) of goods/services delivered. This indicator should be assessed for each industrial partner.	Operating revenues and operating costs	Operating revenue is defined as the total income generated. Operating costs is defined as the total operating costs incurred.	EURO/shipment	Provided by the operator.	- To be calculated for PGBS, owners of free capacity and store owners	X
48	Return on investment	'Return on investment' is the ratio of money gained or lost on an investment relative to the amount of money invested (operating profit / investment costs). This ratio should be assessed for each industrial partner.	Operating costs and investment costs	Operating profit from Indicator 47. Investment costs is defined as the total capital costs spent for setting up the initiative, demonstration, action or measure. Investment costs include, for example, the costs of vehicles and infrastructure, if it is for the particular demonstration.	%	Provided by the operator.	- To be calculated for PGBS and owners of free capacity	
49	Enforcement costs	'Enforcement costs' are the amount of money spent by the local authority to enforce other parties to comply with changes in the transport system and/or legislation.	Enforcement costs	Enforcement costs is defined as the amount of money spent by the local authority to enforce changes in the transport situation, for example the costs for supplementary policy measures.	EURO	Provided by the local authority or derived from other data available.	**Not relevant** since the solution does not depend on government support.	
50	Customer satisfaction	'Customer satisfaction' is used to describe whether customers are happy with the service they are provided with. The indicator should be analysed for each industrial partner	Customer satisfaction	Customer satisfaction is defined as the user's perception of the overall quality of the service provided.	Index	Customer survey	- How satisfied are store owners with qualtiy of service and quality of supply?	X
4.4 - Transport								
51	Average vehicle speed	'Average vehicle speed' is described by the distance (km) travelled in a certain time period (hour).	Speed level	Speed level is defined as the average network or route speed during the peak and off-peak hours.	Kilometres/hour	Traffic observation, simulation, or speed data provided by the operator	- To be received from the owner of free capacity	X
52	Freight movements		Freight movements	Freight movements is defined as the number of freight vehicles (trucks and vans) moving into a demonstration area in a given period.	Kilometres, shipment number	Traffic observation or simulation	- Per vehicle type	X
53	Freight kilometres	'Freight kilometres' is the average number of vehicle kilometres driven to deliver an item.	Vehicle kilometres Owner of free capacity	The number of vehicle kilometres per vehicle type (LGV, HGV) per shipment	Kilometres, shipment number	Provided by the operator (e.g. through vehicle trip diaries, or logbook, management or transport system's output, during operations).	- Ask drivers to keep track of the number of vehicle kilometres ´-Including distance P&G/ODTH depot owner of free capacity, km store owners, km owners of free capacity	X
			Vehicle kilometres 4PL P&G					X
			Vehicle kilometres Owner high frequency stores					X
54	Energy		Fuel consumption	Fuel consumption is defined as the number of litres fuel consumed- per shipment, by vehicle and fuel type. In case of electric vehicles "Energy consumption" should be used.	Litres per shipment	Fuel and energy consumption (by vehicle and fuel type) and the corresponding "freight kilometers" should be provided by the operator.	- Ask drivers to keep track of the fuel consumption	X
			Energy consumption	Energy consumption is defined as the number of electricity consumed per shipment, by vehicle type (if applicable). In case of fuel-driven vehicles "Fuel consumption" should be used.	kWh per shipment		- Will be measured in case of electric vehicles	X
Additional indicators								
55	Frequency of supply	'Frequency of supply' is the number of times a shop is replenished per week (by the store owner or by a distributor/manufacturer	Frequencey of supply	Frequency off supply is defined as the average weekly number of replenishments of the shops.	Number	Provided by store owners (BAU and alternatives) / by the operator (alternatives)	- We will also compare this to the ideal delivery frequency	X
56	Replenishment size	'Replenishment size' is the average replenishment quantity per supply	Replenishment size	Replenishment size is defined as the average replenishment quantity per supply	# SKUs	Provided by store owners (BAU and alternatives) / by the operator (alternatives) through a survey	- We will also compare this to the ideal replenishment size	
57	Replenishment size P&G	'Replenishment size P&G' is the average replenishment quantity of P&G products per supply	Replenishment size	Replenishment size P&G is defined as the average replenishment quantity of P&G products per supply	# SKUs	Provided by P&G		
58	Distance DC 4PL P&G - store	'Distance DC 4PL P&G - store' is the length of the different trips between the distribution centre of ODTH (4PL P&G) and the store	Distance DC 4PL P&G - store	Distance DC 4PL P&G - store is defined as the average length of trips between the distribution centre of ODTH (4PL P&G) and the store	Number	Calculated on the basis of data collected from surveys among store owners		
59	Stock Keeping Units (SKUs) in store	'SKUs in store' is the average number of SKUs in store	SKUs in store	SKUs in store is defined as the average number of SKUs in store at a certain moment	Number	Survey / counting	- Carefully choose the timing to count	
60	P&G Stock Keeping Units in store	'P&G SKUs in store' is the avarege number of SKUs of P&G in store	P&G SKUs in store	P&G SKUs in store is defined as the average number of P1G SKUs in store at a certain moment	Number	Survey / counting	- Carefully choose the timing to count	
61	Sales	'Sales' is the average weekly sale expressed in SKUs	Sales	Sales is defined as the average weekly sale expressed in SKUs	Number	Survey		
62	P&G sales	'P&G sales' is the average weekly sale of P&G products expressed in SKUs	P&G sales	P&G sales is defined as the average weekly sale of P&G products expressed in SKUs	Number	Survey		
63	Lead time	'Lead time' is the average time between ordering the goods and having the goods in store	Lead time	Lead time is defined as the average time between ordering the goods and having the goods in store	Hours	Survey / provided by the operator via data webshop and owner free capacity		X
64	Purchase costs per received item	'Purchase cost per received item' is the average purchase cost paid by the store owner for his goods	Purchase cost store owner	Purchase cost store owner is the average cost paid by the store owner to purchase the goods he wants to sell	%	Provided by the operator	- No absolute data since this is secret	

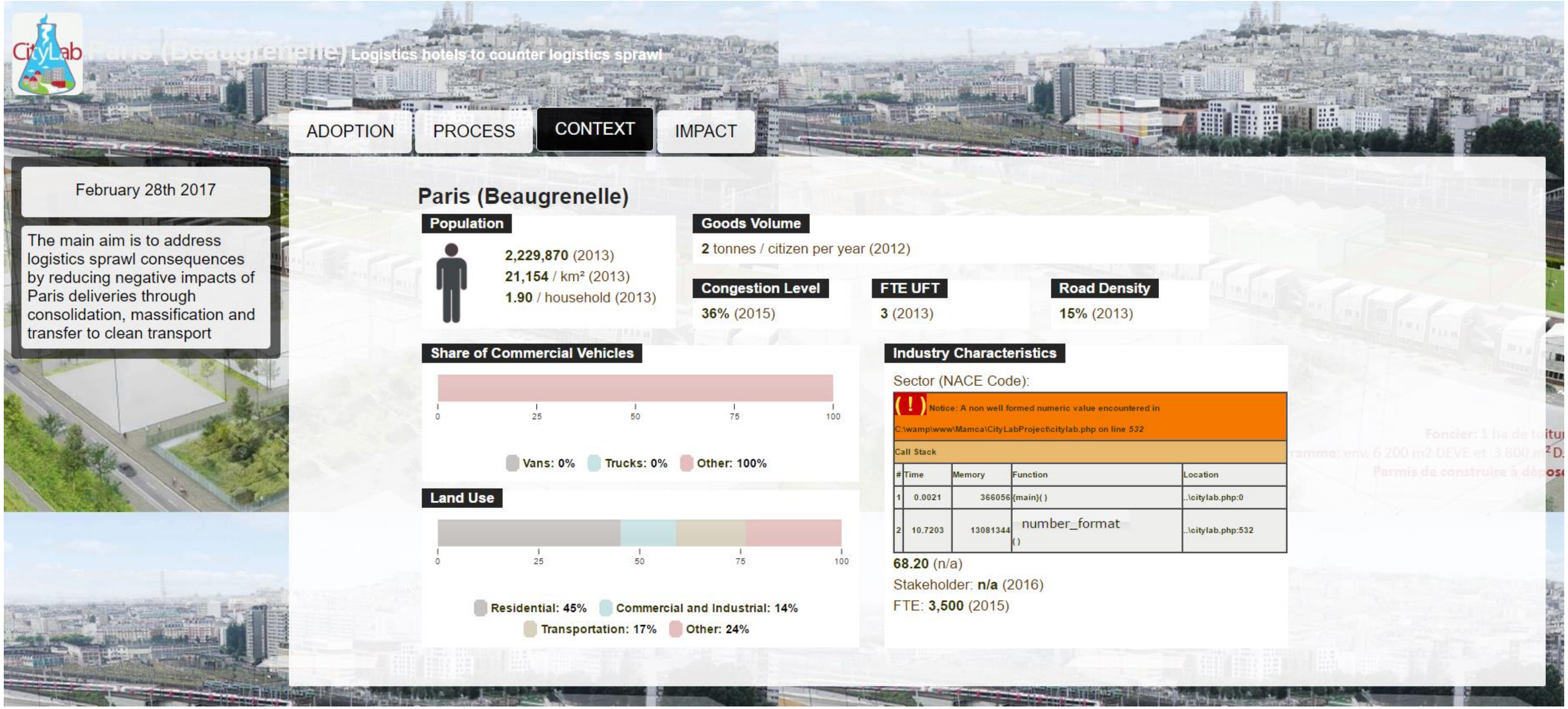
5.3 Annex 3: Print screens first version CITYLAB dashboards (dd. February 2017)

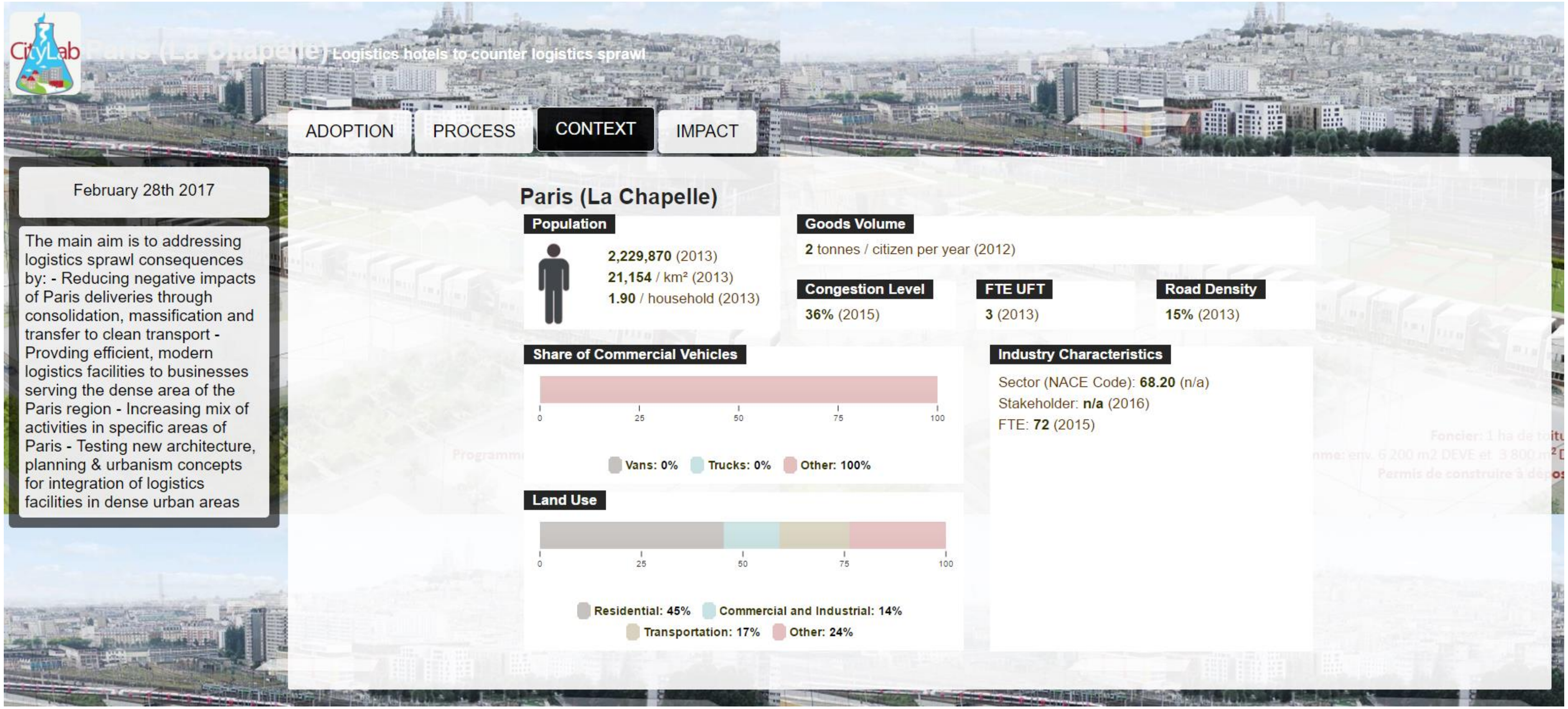



CityLab
Brussels Increasing vehicle loading by utilising spare capacity
ADOPTION
PROCESS
CONTEXT
IMPACT
February 28th 2017
P&G directly supplies urban high-frequency stores in Brussels. Store owners order online. Deliveries are done by transport service providers and by providers of business services.
Brussels
Population
1,187,890 (2016)
7,360 / km² (2016)
2.15 / household (2016)
Goods Volume
8 tonnes / citizen per year (2014)
Congestion Level
35% (2015)
FTE UFT
3 (2016)
Road Density
12% (2010)
Share of Commercial Vehicles
0
25
50
75
100
Vans: 9%
Trucks: 4%
Other: 88%
Industry Characteristics
Sector (NACE Code): 46.75 (n/a)
Stakeholder: n/a (n/a)
FTE: 105,000 (2016)
Land Use
0
25
50
75
100
Residential: 29%
Commercial and Industrial: 10%
Transportation: 22%
Other: 40%

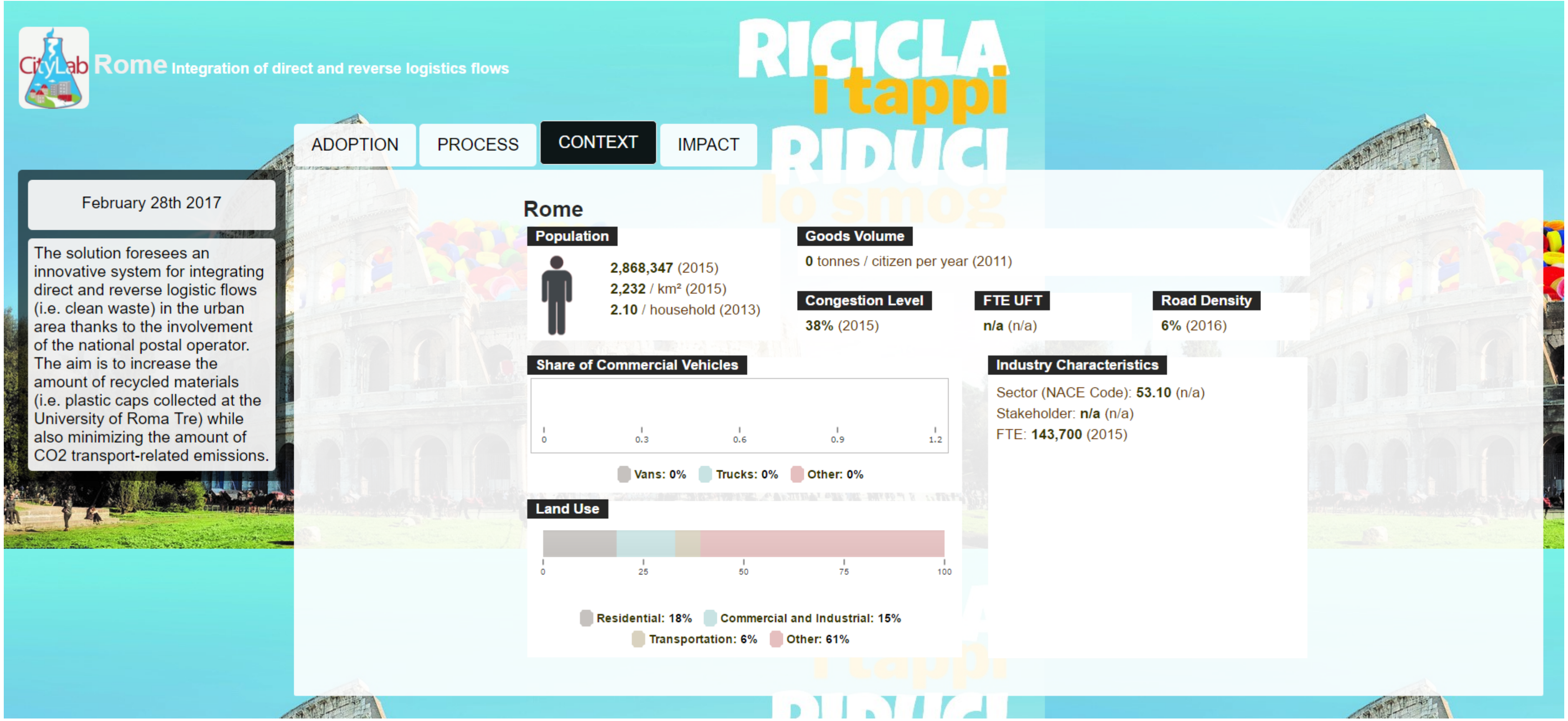

London
models and clean vehicles
ADOPTION
PROCESS
CONTEXT
IMPACT
February 28th 2017
The main aim is to demonstrate and understand how to grow the business model of electric freight in urban logistics. The London implementation is run by a large parcel carrier specialised in B2B deliveries (TNT) and a small 'last-mile' carrier specialised in electric freight deliveries (Gnewt Cargo).
London
Population
8,477,600 (2015)
5,518 / km² (2015)
1.60 / household (2013)
Goods Volume
18 tonnes / citizen per year (2012)
Congestion Level
38% (2015)
FTE UFT
n/a (n/a)
Road Density
10% (2015)
Share of Commercial Vehicles
0
0.3
0.6
0.9
1.2
Vans: 0%
Trucks: 0%
Other: 0%
Industry Characteristics
Sector (NACE Code): 49.41 (n/a)
Stakeholder: n/a (n/a)
FTE: 1,000 (2016)
Land Use
0
25
50
75
100
Residential: 9%
Commercial and Industrial: 5%
Transportation: 14%
Other: 72%

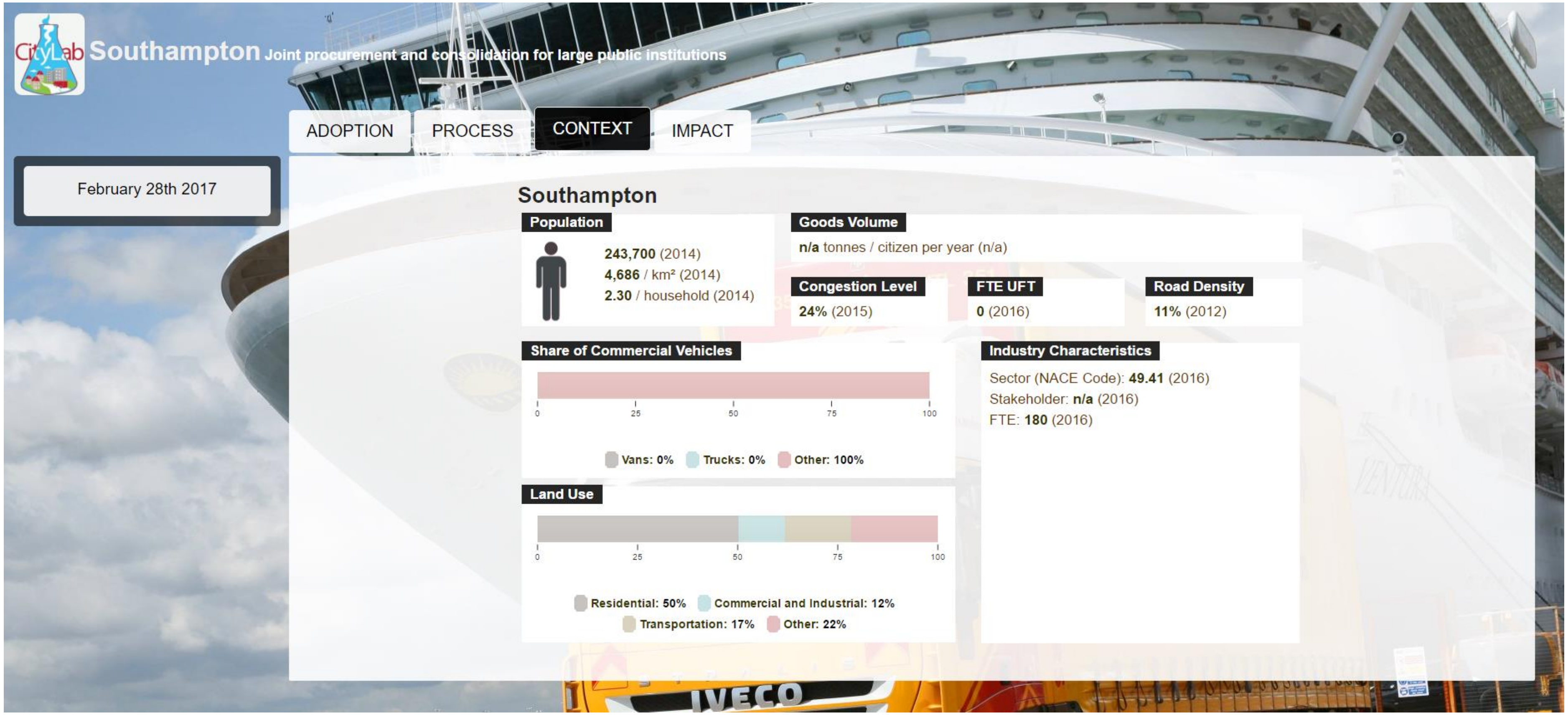

Oslo Common logistics functions for shopping centres
ADOPTION
PROCESS
CONTEXT
IMPACT
February 28th 2017
The aim is to identify consolidation opportunities for logistics service providers and off-hour deliveries when decoupling the transport leg and in-house transport leg. Steen & Strøm' seek common functions for in- and outbound freight flows to reduce truck stoppage times and increase in-house logistics efficiency at Økern shopping centre.
Oslo
Population
658,390 (2016)
1,450 / km² (2016)
1.90 / household (2013)
Goods Volume
63 tonnes / citizen per year (2015)
Congestion Level
25% (2015)
FTE UFT
1 (2004)
Road Density
3% (2013)
Share of Commercial Vehicles
0
25
50
75
100
Vans: 21%
Trucks: 12%
Other: 67%
Industry Characteristics
Sector (NACE Code): 68.32 (2016)
Stakeholder: n/a (2016)
FTE: 245 (n/a)
Land Use
0
25
50
75
100
Residential: 12%
Commercial and Industrial: 3%
Transportation: 7%
Other: 78%


Logistics hotels to counter logistics sprawl
ADOPTION
PROCESS
CONTEXT
IMPACT
February 28th 2017
The main aim is to address logistics sprawl consequences by reducing negative impacts of Paris deliveries through consolidation, massification and transfer to clean transport
Paris (Beaugrenelle)
Population
2,229,870 (2013)
21,154 / km² (2013)
1.90 / household (2013)
Goods Volume
2 tonnes / citizen per year (2012)
Congestion Level
36% (2015)
FTE UFT
3 (2013)
Road Density
15% (2013)
Share of Commercial Vehicles
Vans: 0%
Trucks: 0%
Other: 100%
Land Use
Residential: 45%
Commercial and Industrial: 14%
Transportation: 17%
Other: 24%
Industry Characteristics
Sector (NACE Code):
Notice: A non well formed numeric value encountered in
C:\wamp\www\Mamca\CityLabProject\citylab.php on line 532
Call Stack
number_format
68.20 (n/a)
Stakeholder: n/a (2016)
FTE: 3,500 (2015)

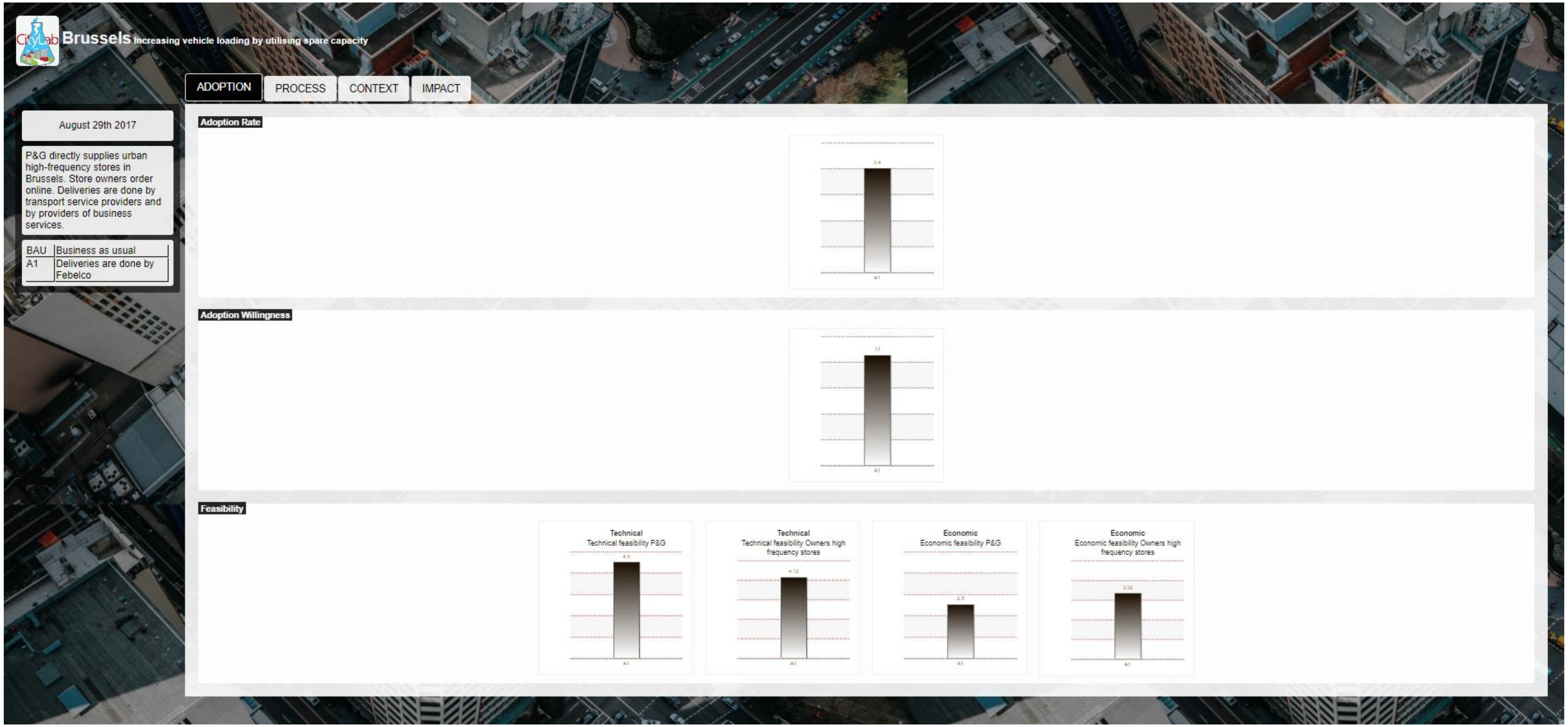


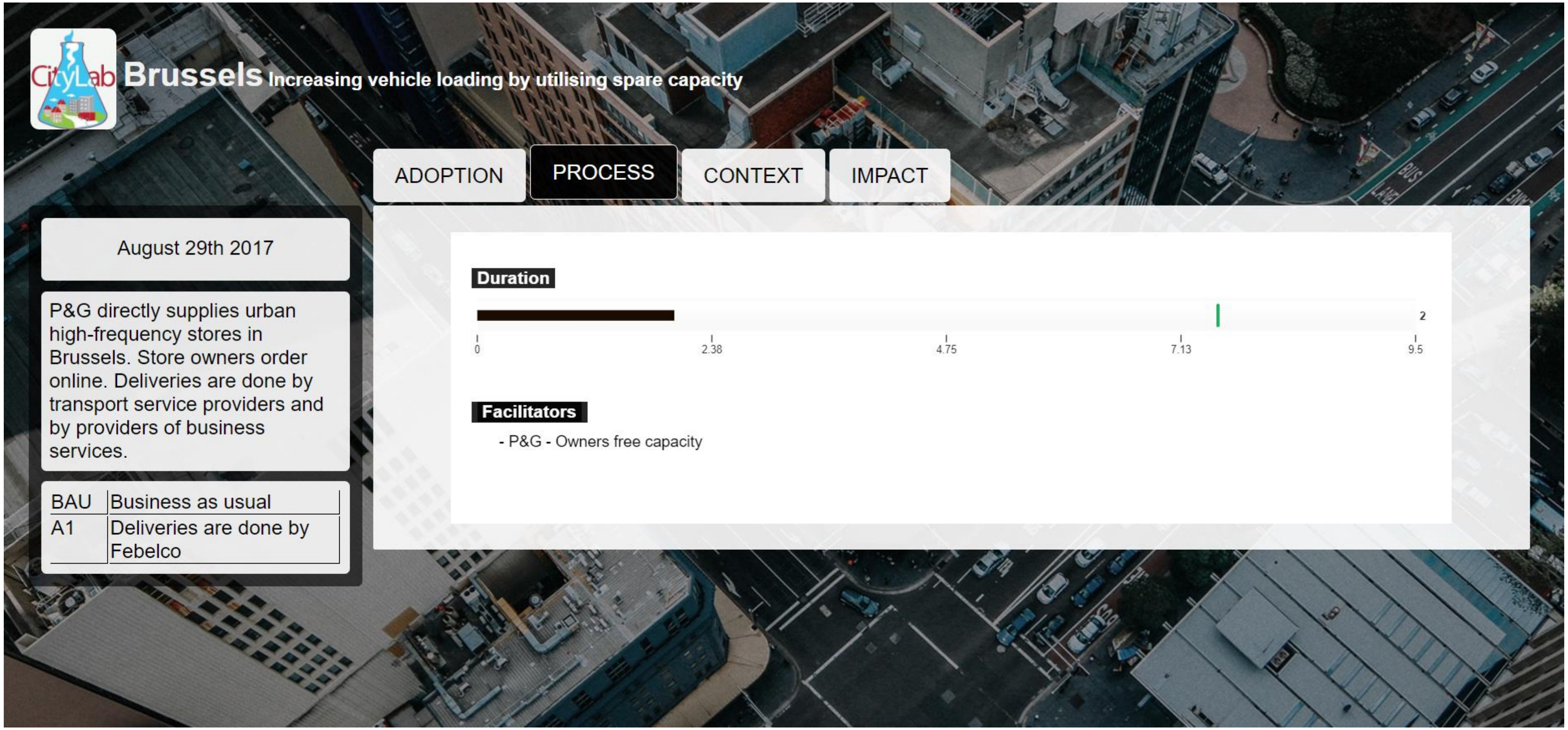
Logistics hotels to counter logistics sprawl
ADOPTION
PROCESS
CONTEXT
IMPACT
February 28th 2017
The main aim is to addressing logistics sprawl consequences by: - Reducing negative impacts of Paris deliveries through consolidation, massification and transfer to clean transport - Provding efficient, modern logistics facilities to businesses serving the dense area of the Paris region - Increasing mix of activities in specific areas of Paris - Testing new architecture, planning & urbanism concepts for integration of logistics facilities in dense urban areas
Paris (La Chapelle)
Population
2,229,870 (2013)
21,154 / km² (2013)
1.90 / household (2013)
Goods Volume
2 tonnes / citizen per year (2012)
Congestion Level
36% (2015)
FTE UFT
3 (2013)
Road Density
15% (2013)
Share of Commercial Vehicles
0 25 50 75 100
Vans: 0%
Trucks: 0%
Other: 100%
Industry Characteristics
Sector (NACE Code): 68.20 (n/a)
Stakeholder: n/a (2016)
FTE: 72 (2015)
Land Use
0 25 50 75 100
Residential: 45%
Commercial and Industrial: 14%
Transportation: 17%
Other: 24%

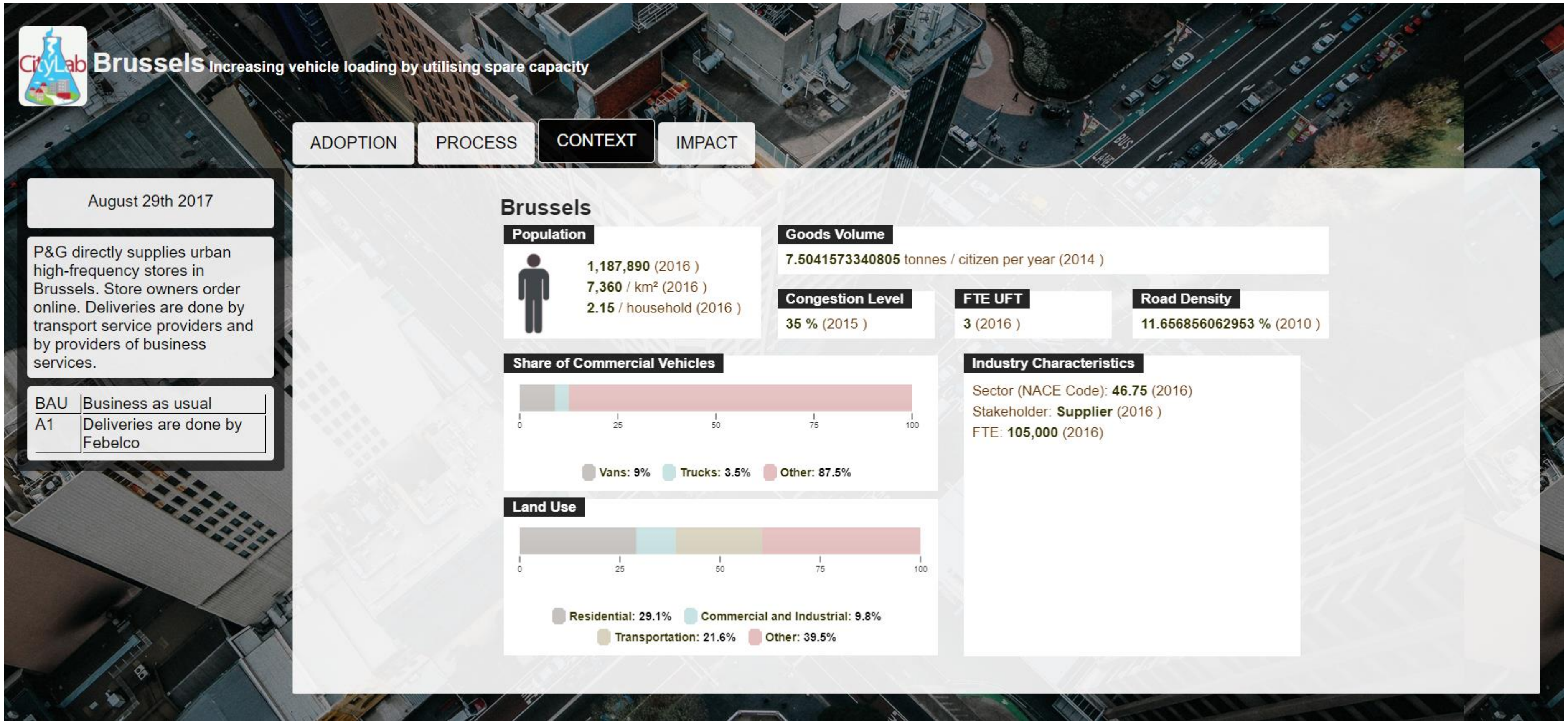

CityLab
Rome Integration of direct and reverse logistics flows
RICICLA i tappi RIDUCI lo smog
ADOPTION
PROCESS
CONTEXT
IMPACT
February 28th 2017
The solution foresees an innovative system for integrating direct and reverse logistic flows (i.e. clean waste) in the urban area thanks to the involvement of the national postal operator. The aim is to increase the amount of recycled materials (i.e. plastic caps collected at the University of Roma Tre) while also minimizing the amount of CO2 transport-related emissions.
Rome
Population
2,868,347 (2015)
2,232 / km² (2015)
2.10 / household (2013)
Goods Volume
0 tonnes / citizen per year (2011)
Congestion Level
38% (2015)
FTE UFT
n/a (n/a)
Road Density
6% (2016)
Share of Commercial Vehicles
0
0.3
0.6
0.9
1.2
Vans: 0%
Trucks: 0%
Other: 0%
Industry Characteristics
Sector (NACE Code): 53.10 (n/a)
Stakeholder: n/a (n/a)
FTE: 143,700 (2015)
Land Use
0
25
50
75
100
Residential: 18%
Commercial and Industrial: 15%
Transportation: 6%
Other: 61%

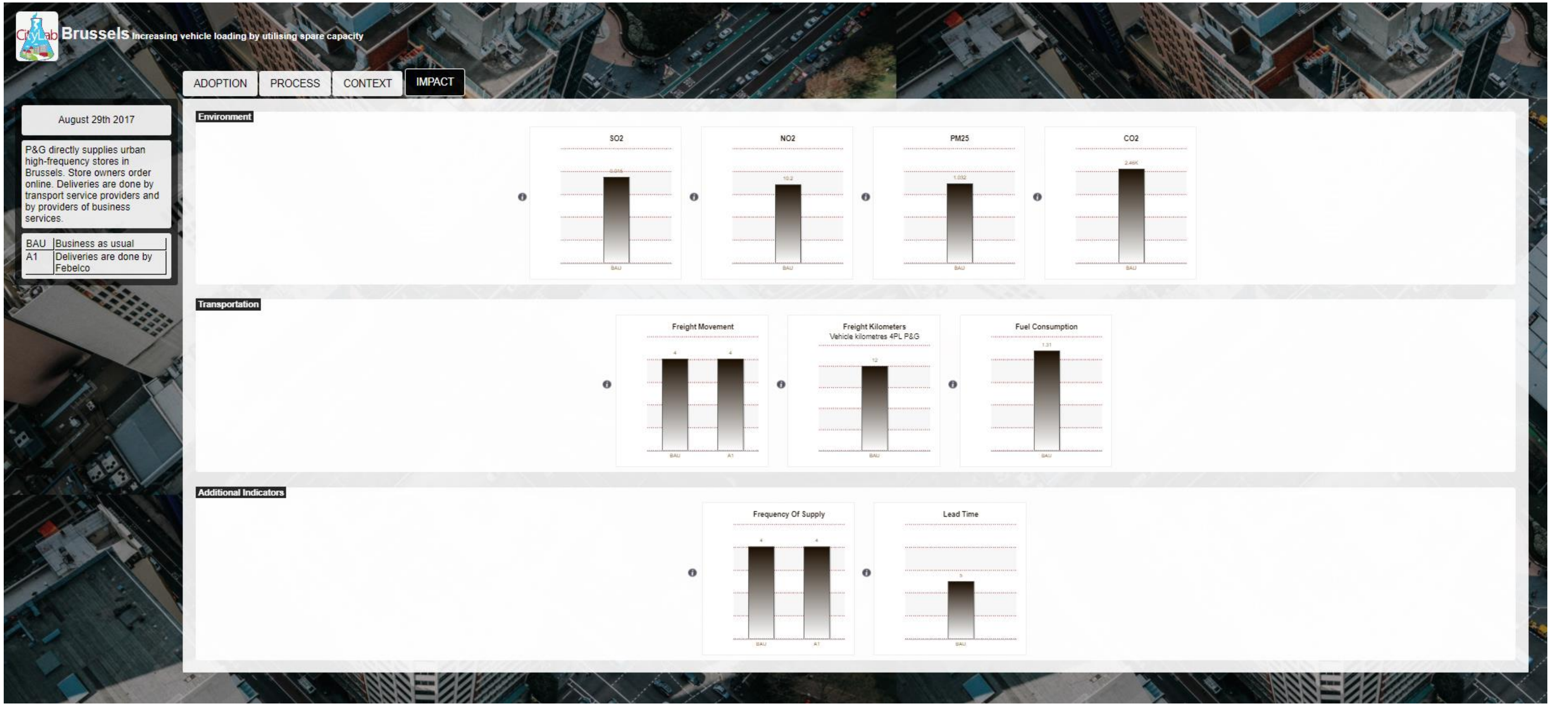

Southampton Joint procurement and consolidation for large public institutions
ADOPTION
PROCESS
CONTEXT
IMPACT
February 28th 2017
Southampton
Population
243,700 (2014)
4,686 / km² (2014)
2.30 / household (2014)
Goods Volume
n/a tonnes / citizen per year (n/a)
Congestion Level
24% (2015)
FTE UFT
0 (2016)
Road Density
11% (2012)
Share of Commercial Vehicles
0
25
50
75
100
Vans: 0%
Trucks: 0%
Other: 100%
Industry Characteristics
Sector (NACE Code): 49.41 (2016)
Stakeholder: n/a (2016)
FTE: 180 (2016)
Land Use
0
25
50
75
100
Residential: 50%
Commercial and Industrial: 12%
Transportation: 17%
Other: 22%
IVECO

5.4 Annex 4: Print screens second version CITYLAB dashboards (dd. August 2017) – Example of Brussels




Brussels Increasing vehicle loading by utilising spare capacity
ADOPTION
PROCESS
CONTEXT
IMPACT
August 29th 2017
P&G directly supplies urban high-frequency stores in Brussels. Store owners order online. Deliveries are done by transport service providers and by providers of business services.
BAU Business as usual
A1 Deliveries are done by Febelco
Duration
2
0
2.38
4.75
7.13
9.5
Facilitators
- P&G - Owners free capacity


Brussels Increasing vehicle loading by utilising spare capacity
ADOPTION
PROCESS
CONTEXT
IMPACT
August 29th 2017
P&G directly supplies urban high-frequency stores in Brussels. Store owners order online. Deliveries are done by transport service providers and by providers of business services.
BAU Business as usual
A1 Deliveries are done by Febelco
Brussels
Population
1,187,890 (2016)
7,360 / km² (2016)
2.15 / household (2016)
Goods Volume
7.5041573340805 tonnes / citizen per year (2014)
Congestion Level
35 % (2015)
FTE UFT
3 (2016)
Road Density
11.656856062953 % (2010)
Share of Commercial Vehicles
Vans: 9%
Trucks: 3.5%
Other: 87.5%
Industry Characteristics
Sector (NACE Code): 46.75 (2016)
Stakeholder: Supplier (2016)
FTE: 105,000 (2016)
Land Use
Residential: 29.1%
Commercial and Industrial: 9.8%
Transportation: 21.6%
Other: 39.5%


Brussels Increasing vehicle loading by utilising spare capacity
ADOPTION
PROCESS
CONTEXT
IMPACT
August 29th 2017
P&G directly supplies urban high-frequency stores in Brussels. Store owners order online. Deliveries are done by transport service providers and by providers of business services.
BAU Business as usual
A1 Deliveries are done by Febelco
Environment
SO2
NO2
PM25
CO2
Transportation
Freight Movement
Freight Kilometers
Vehicle kilometres 4PL P&G
Fuel Consumption
Additional Indicators
Frequency Of Supply
Lead Time