



S+LOADZ

SMART AND SUSTAINABLE LOADING AND DELIVERY ZONES

IMPLEMENTATION HANDBOOK



ABOUT

This guideline is developed within the framework of the S+LOADZ project, Sustainable Digital Loading and Delivery Zones, developed under the umbrella of the 2021 Innovation call of EIT Urban Mobility to accelerate the shift to sustainable and smart city logistics. This project is developed jointly between 5 European commercial partners, 2 research institutes and 4 pilot cities and 1 follower city.



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ACKNOWLEDGEMENTS

This publication has been made possible thanks to the valuable contributions of the S+LOADZ technological partner, Parkunload, and the pilot cities, including Paris, Metropole du Grand Paris (Argenteuil), Vic and Ankara, who have shared their knowledge, experiences and lessons learned on the road to S+LOADZ implementation. Special thanks for their knowledge and contribution to Joana Rodríguez (Vic), Michèle-Angélique NICOL (Paris), Kelly Dufour (Paris), Martine Vasquez (Métropole du Grand Paris), Cécile Savin (Métropole du Grand Paris), and to the team of Parkunload including Carles Sentís, Patrice Maurin and Simon Hayes. In addition a warm thankyou to so many people in the municipalities, consultancies, universities, research centres and local communities that have contribute in any way to make S+LOADZ a reality.

PROJECT WEBSITE

sloadz.com

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**TOWARDS SMART
AND SUSTAINABLE
CITY LOGISTICS**

Online shopping was already in motion, even before COVID-19, but behaviour has shifted radically during the pandemic, and this has had effect of driving the growth of e-commerce even faster than anticipated. Consumers are becoming more demanding in terms of speed and flexibility of service; the urban last mile distribution of goods is a service that gains more relevance every day within the supply chain. E-commerce trends are also impacting land use and development patterns. To meet the demand for faster and cheaper shipping to consumers, retailers are moving inventory locations nearer to population centres to be closer to consumers. The growth in urban truck traffic is exacerbating urban last-mile challenges, creating greater competition for already congested urban roadways and curb space, particularly in dense urban cores.

The role for digital solutions such as S+LOADZ will be key to transform the urban logistics arena, addressing all the main challenges to help cities and logistic companies cope and capture the data value.

Urgent action to mitigate this problematic and organise the kerbside is needed in cities. In this context, during 2022, the S+LOADZ project, Sustainable and smart loading/delivery zones, supported by EIT Urban Mobility, has been developing and testing the Parkunload's technological solution to manage and control the loading/delivery activities in the city centres. The goal of the project is to regulate, monitor, and control "kerbside spaces" by maximising the organisation and utilisation of logistics vehicles parking bays.

By "organising" the kerbside, S+LOADZ contributes to the creation of more liveable and safer urban spaces as well as reducing congestion, pollution,

and noise. In the framework of the S+LOADZ project, several pilots have been initiated in the cities of Paris, Ankara, Vic, Argenteuil. The Parkunload technology was deployed there and evaluated over several months from operational, regulatory, technical, and social perspectives. All these factors have been considered to achieve a sustainable and scalable urban logistics solution across Europe. The learning from these pilots has been summarised in this guide, to facilitate the implementation of S+LOADZ in other cities.

The purpose of this guideline is to provide a view of the common logistics issues across the different cities and how to address them with digital solutions such as the Parkunload tools and functionalities.

This guide provides a detailed step-by-step sequence to help onboard

cities and provides an easy and friendly way for officials and end users to implement in a seamless manner, including the dissemination of the deployment process, promotion of tips and best practices for a successful execution. Based on the learning of the pilot cities, it is also included in this handbook the common challenges and potential solutions. Next, it will also include a module on "smart planning" on how to make the best use of the data-driven decision-making process to design more efficient and effective loading/delivery zone policies. At the end of the guide, the success story of the Catalan city of Vic is presented, which illustrates in a practical way what can be achieved with this type of solution.



**THE
LOADING/DELIVERY
CHALLENGE**

THE LOADING/DELIVERY CHALLENGE

2.

The following is a summary of the main challenges in urban logistics, which the S+LOADZ solution aims to address.

STAKEHOLDER	CURRENT CHALLENGE	POTENTIAL IMPACT
City planners	 No precise data for planning of loading/delivery zones	Excess or lack of supply of loading zones in specific areas or streets in the city.
	 No precise emission data in relation to the type of vehicle	It is not possible to control the emissions associated to the type of logistic vehicle per zone.
	 No data for impact assessment	It is not possible to assess the use and impact of digitally implemented loading zones in a cost-effective way.
	 No operational data to balance the demand and supply of loading zones	Without data on the use of loading zones, it is not possible to provide the ideal amount of S+LOADZ to avoid problems of congestion, pollution and obstruction of public space.
	 High complexity to apply and communicate dynamic rules according to vehicle type and time of day	It is not possible to apply a complex regulation, which would fit the dynamic nature of the logistics operation in the centre of the cities.
	 Inefficient use of loading zones due to long staying times	The overstay currently limits the rotation of spaces that makes loading zones inefficient
Traffic agents	 Lack of tools for smart enforcement, based on exact time of starting the parking session, type of vehicle or type of zone	Low enforcement capacity, ending in misuse of public space
Logistic companies	 Current supply of loading/delivery zones does not meet the needs of logistics operators.	*Misuse of public space for loading/delivery activities. *High costs in traffic fines for non-compliance with current regulations.
	 The current loading/delivery zones are not based on usage data, and are not always the results of an alignment among the government and logistic companies	The quantity, location, dimensions and timing of the existing supply of loading and delivery zones do not match the real needs of the logistics industry.
Logistic vehicles drivers	 The parking rules for logistics operators are not clear as they may vary per zone, time of the day, etc.	The lack of centralised information and clear communication of the rules of loading/delivery zones in cities leads to misuse of that zones.
	 There are not always spaces available for loading/delivery activities forcing the drivers to spend a lot of time looking for a loading zone	Lack of real-time and timely information on loading and delivery zones results in extra kilometres travelled and longer journey times.
Citizens	 There is no space on the kerbside to walk, cycle or enjoy, as it is illegally occupied by logistic vehicles.	Less public space for citizens and increased risk of traffic accidents
	 High level of congestion, pollution and noise due to disorganised logistical traffic	General reduction in citizens' quality of life

Learn how to solve all this challenges with S+LOADZ, and the Parkunload technological solutions in the next chapters!



**SMART AND
SUSTAINABLE
DELIVERY ZONES**

S+LOADZ, smart and sustainable loading/delivery zones, aims to reach a smarter, more sustainable, flexible, dynamic and digital delivery zones management, transforming logistics, improving the liveability, quality of life and economic prosperity in cities.

S+LOADZ IN SHORT

The S+LOADZ project is adapting and piloting the Parkunload solution, a digital platform to control, regulate, monitor, and analyse the loading and delivery zones of logistics operations in urban centres. The platform has three types of end-users: 1) cities, 2) drivers and 3) traffic agents, who together transform the delivery/loading activities in urban centres.

Through the city interface, cities can virtually manage the rules of the game for the temporary parking of logistics vehicles operating in city centres, and together with applications for drivers and traffic officers, the following functionalities are possible:

- Defining permitted/prohibited temporary parking zones for pick up/delivery.
- Establishing special conditions/benefits for low emission vehicles.
- Defining dynamic rules by time of day, type of vehicle, capacity of the zone, among others.
- With the Parkunload app , drivers of logistics vehicles will check in when parking and check out when leaving in the permitted areas.
- Like a smart parking system, and the traffic officers use it to enforce the right use of loading zones.

By digitising loading/delivery zones, cities will gather enough data so they will be able to monitor the use of the zones and adjust the related policies, based on a data-driven decision-making process.

More info about the S+LOADZ project? Visit sloadz.com

Curious about the product? Visit parkunload.com/product/

WHICH ARE THE FUNCTIONS OF PARKUNLOAD?

CITY COUNCIL DEFINES THE LOADING/DELIVERY ZONE RULES



CITY DASHBOARD & BACKEND OFFICE

RULES OF THE LOADING/DELIVERY ZONES (CAN BE DYNAMIC RULES):



Location



Quantity



Time limit



Hours of the day



Type of vehicles authorized

DRIVERS APP



DRIVERS look for temporary parking for loading/delivery activities



Driver parks in authorised loading/delivery zone



Driver starts parking session in the App



The driver delivers the packages or loads the goods to the truck



Driver finishes parking session in the App



Driver leaves the loading zone

ENFORCEMENT APP



Traffic agents check the compliance with the loading/delivery zone rules with the App.

Is the vehicle following the rules?
- YES = ✓
- NO = Warning or fine

PARKUNLOAD



**SLOADZ:
STEP BY STEP
IMPLEMENTATION**

To ensure a successful implementation of smart sustainable loading and delivery zones (SLOADZ) it is proposed that cities adopt the following 10 step-by-step approach.

KEY STEPS



1. CREATE THE PROJECT TEAM AND SECURE POLITICAL WILL



2. SELECT THE DEPLOYMENT AREA



3. MEASURE A BASELINE



4. DEFINE THE OPERATING RULES OF THE SLOADZ



5. ALIGN/ADJUST REGULATORY FRAMEWORK



6. INSTALL TRAFFIC SIGNS AND TECHNOLOGY



7. COMMUNICATION TO KEY STAKEHOLDERS



8. LAUNCH OF THE SLOADZ PILOT



9. ENFORCEMENT



10. MONITORING AND EVALUATION

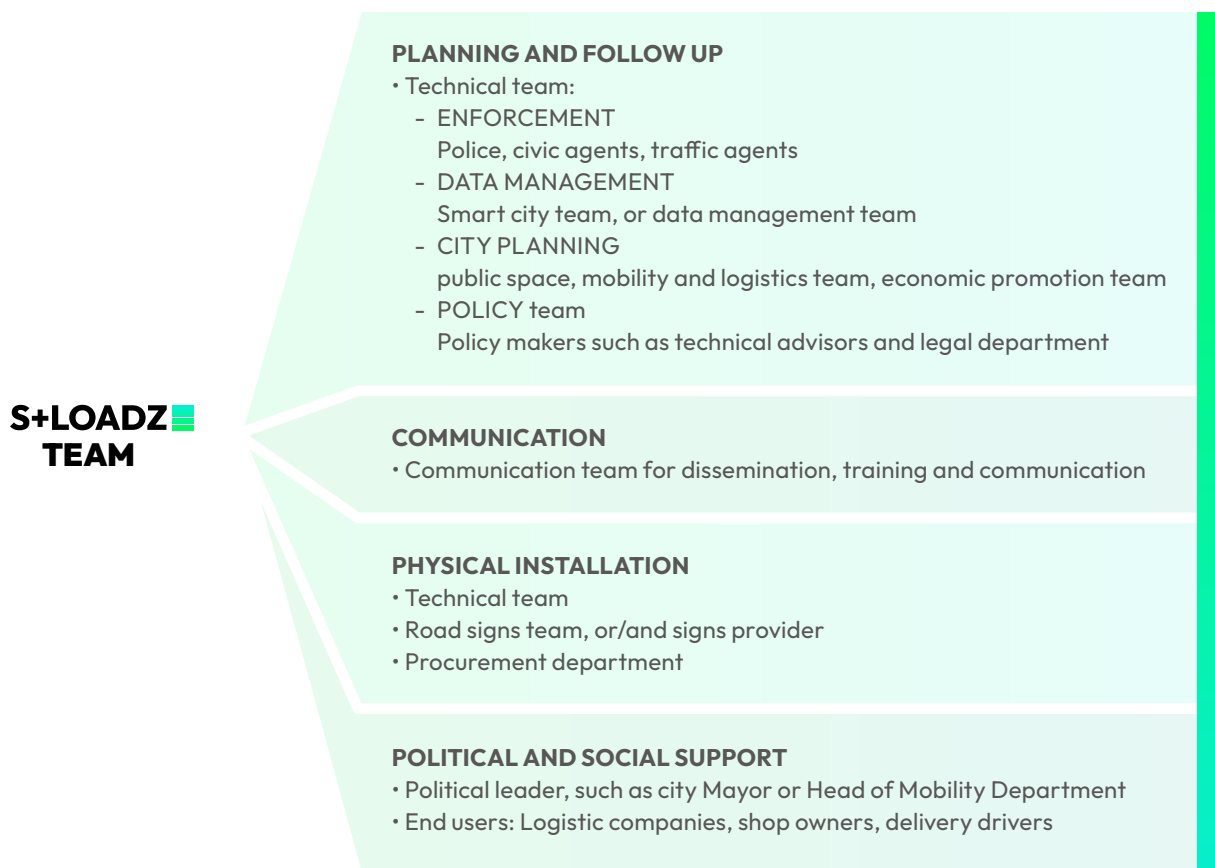


11. IMPROVE AND SCALE UP SLOADZ

1. CREATE THE PROJECT TEAM AND SECURE POLITICAL WILL

S+LOADZ is an interdisciplinary and multi-stakeholder project that requires high-level support to align the key stakeholders of a municipality. The first key step of the project is to secure political will by clearly demonstrating how the project objectives are aligned with the city's objectives in terms of mobility, sustainability, efficiency and general well-being. High-level support for SLOADZ will ensure that the necessary resources are made available and ensure the continuity of the project in the long term.

The success of the project deployment is closely related to the team that is put together for its implementation. It is advisable to include at least the following stakeholders from the beginning of the project as a working team:



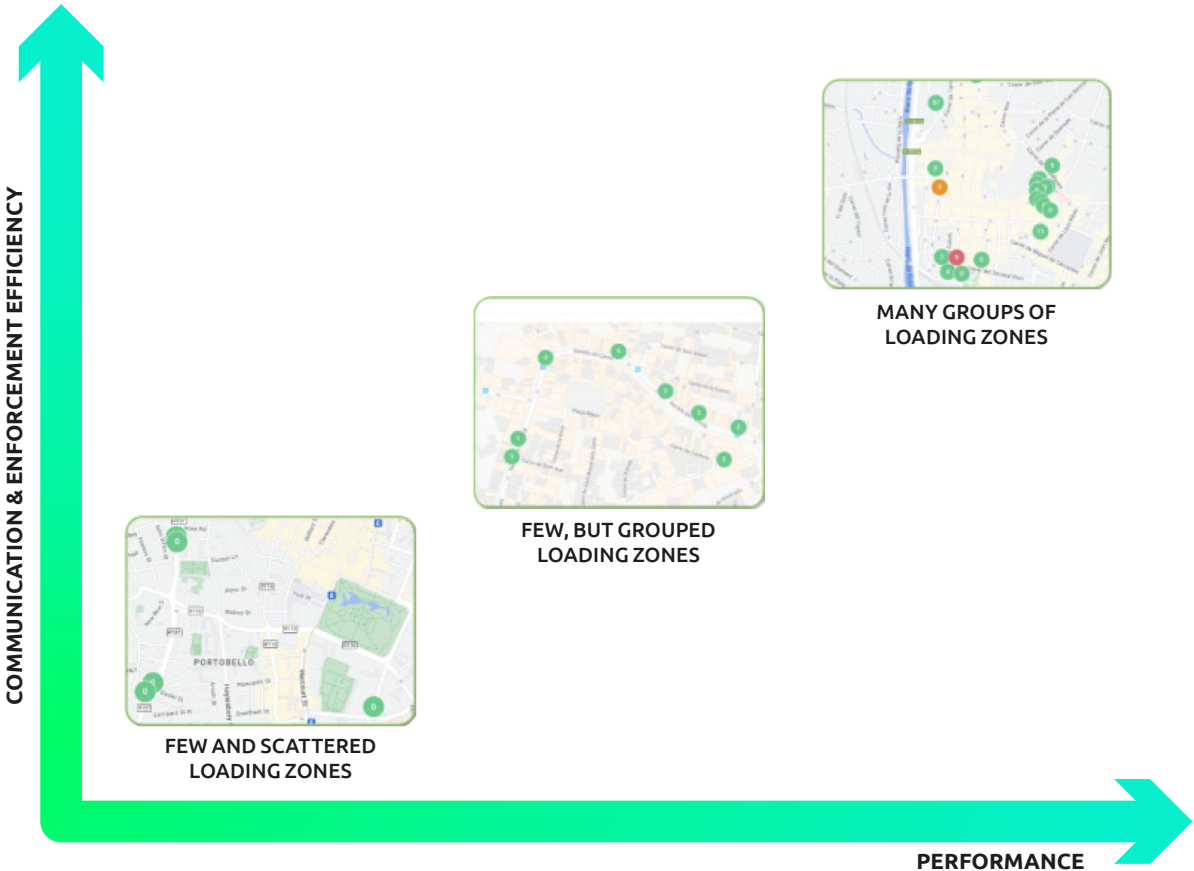
2. SELECT THE DEPLOYMENT AREA

For a first implementation, it is advisable to define the deployment area of the SLOADZ project taking into account the following characteristics:

- Central area in terms of delivery.
- High concentration of commercial activity.
- Large area with multiple loading zones, but contained in size to facilitate communication and socialisation of the project.
- Include the immediate area of the high-demand zone, to avoid neighbourhood issues.

TIP: Starting a SLOADZ as a pilot project, and not as a final project, will maximise the acceptance of the community and key stakeholders, and based on the results and feedback from users, allow you to make adjustments for a longer-term implementation that is more effective in achieving the stated objectives.

Once the first zone is in place, it is advisable to expand the number of clustered zones until a highly efficient SLOADZ model is achieved. As shown in the upper right quadrant of the figure below, a high density of clustered SLOADZ zones has the highest performance, and also maximises communication and enforcement efforts as it is done at the city level.



3. MEASURE A BASELINE

Once the SLOADZ area has been selected, it is time to understand in detail the current problematic situation. The baseline is key in a pilot phase to; 1) define the operating rules of the SLOADZ and 2) to ensure that the project objectives are measurable and demonstrable.

It is advisable to have an overview of the following indicators in the selected area:

- 1) **Parking rotation in loading and delivery zones.**
- 2) **Misuse of parking spaces: overtime, lack of permit, etc.**
- 3) **Traffic congestion due to double line parking.**
- 4) **Number of penalties imposed on logistics vehicles in the area.**
- 5) **Road safety issues related to loading/delivery activities.**
- 6) **Number and distribution of logistic vehicle per pollution levels and type of vehicle.**
- 7) **Delivery vans/trucks occupying cycle paths or pedestrian curbs.**
- 8) **High-peak and low-peak periods of loading/delivery activities.**
- 9) **Specific location or streets with high volume of loading/delivery activities.**

TIP: Use secondary information or existing sources of information (e.g. cameras, sensors, etc.) whenever possible - there is no need to invent the wheel every time!

TIP: Take into account seasonal changes in goods movements in the city centre when choosing the period to measure your baseline. Note that seasons such as Christmas, school holidays, etc. can drastically change delivery-related movements.



4. DEFINE THE OPERATING RULES OF THE SLOADZ

Based on project objectives and the measured baseline, the next step of the implementation is the definition of the specific operational rules of the S+LOADZ, including the following:

- **Technical definition of loading/delivery zones**, with clear explanation of their user and clear differences and similarities to other temporary use areas, such as public parking. Separating the loading/delivery zones from other type of zones will allow to define specific rules and sanctions for the specific use of loading and delivery.

TIP: Start with the existing loading/delivery zones, and keep it as simple as possible at the beginning. Making the rules more complex is a process, and user can handle more complexity when they have already adopted the new solution.

TIP: The locations should be validated by the main shippers. In this way, the zones will be where there is real demand.

- **Number and location of loading/delivery zones.**
- **Definition of the staying time limits per location.** It is important to have time limits to promote rotation of vehicles inducing a more efficient use of the space!
- **Type of vehicles allowed in each of the loading/delivery zones.** The technology facilitates multiple users and different rules for each user group. In time this can optimise the use of the space by including the definition of shared use loading zone (e.g. Night use of residents allowed).

TIP: Allow multiple uses of the S+LOADZ where necessary and possible, to optimise the use of public space and meet the needs of multiple users.

- **Exceptions.** Define which vehicles are expected from the loading/unloading rules zones. ie. Emergency vehicles.

TIP: If your cities are looking to achieve cleaner and more sustainable logistics, consider offering specific benefits to clean vehicles or include bans on certain types of vehicles based on their emissions.

5. ALIGN/ADJUST REGULATORY FRAMEWORK

This step is parallel to step 4, the SLOADZ operational rules, and consists of ensuring that the deployment and implementation of the loading/delivery zones are in line with the regulatory framework.

TIP: If it is the first implementation, as a pilot, it may be appropriate to maintain the existing operating rules. In a first phase, the focus will be on promoting the use of the application and ensuring the acceptance of the digitisation process. Once the users have gained familiarity with the system the operating rules can be revised and extended

Make sure that your pilot is in line with the following regulations of your local context:

- Traffic signs regulations: type, format, dimension, materials etc.
- Special rules for pilots and/or temporary projects
- Loading/delivery zones definition, location, and rules, that matches with the technical requirements.
- Communication requirements for pilot projects, new projects, or project extensions.
- Obligation to use a technological system to register loading/unloading activities.

TIP: Consider your context and work in the legal framework of SLOADZ between you city legal boundaries.

TIP: Pilots with a mandatory use of the technological solution, for checking in and out of loading areas, have proven to be more efficient in the use of the App, and the enforcement of the correct use of the S+LOADZ. When possible, work on a framework of mandatory use.



6. INSTALL TRAFFIC SIGNS AND TECHNOLOGY

This step aims to ensure that all infrastructure, signs, and technology is in place and technically functional before the launch of the pilot project. Following the key components to consider:

• HORIZONTAL SIGNS

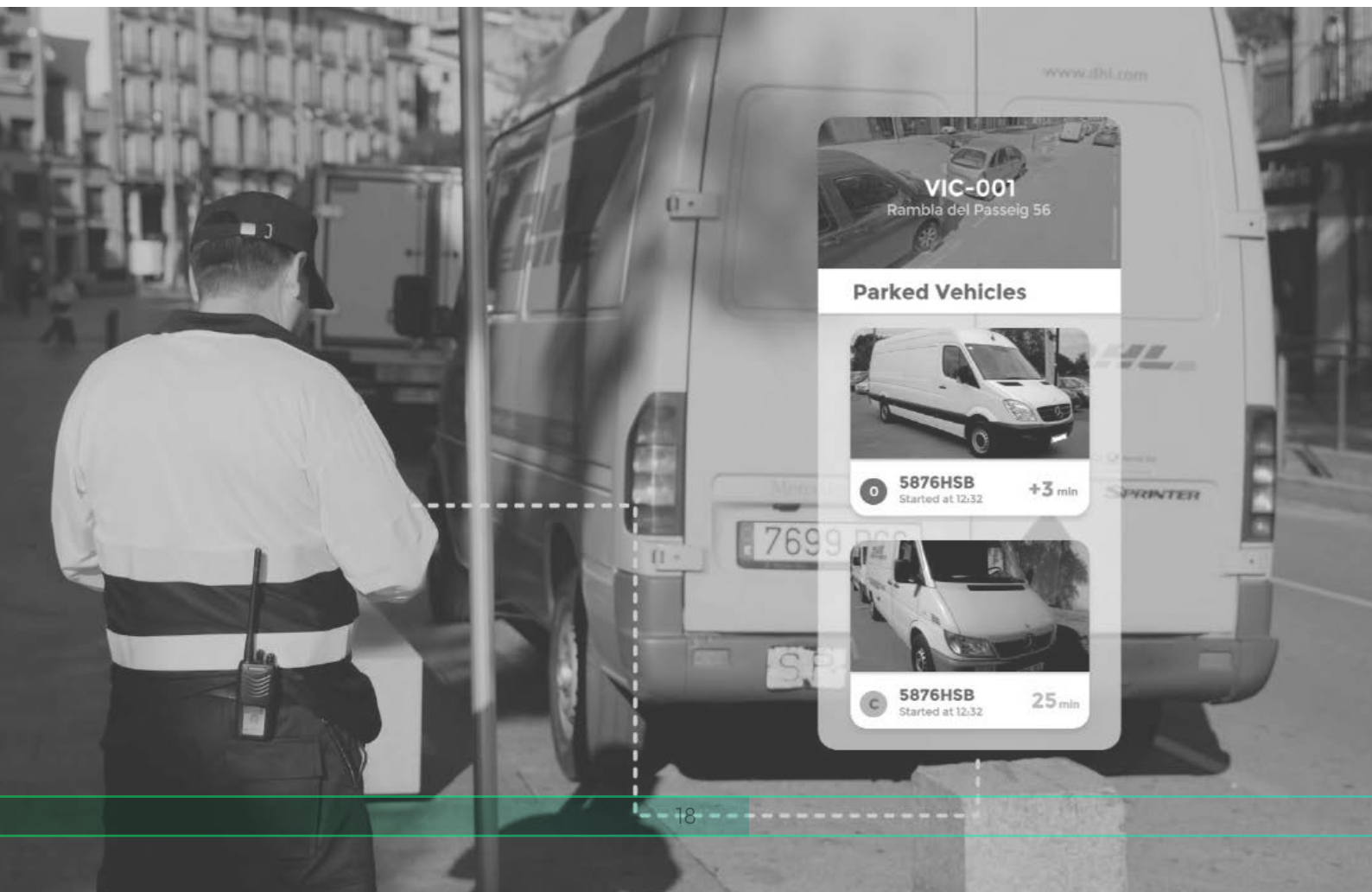
Implementing horizontal signage of loading and unloading zones can be useful to guide drivers and promote the correct use of the zones.



S+LOADZ horizontal signs. Argenteuil, Métropole du Grand Paris



S+LOADZ, chemists' pilot, horizontal signs. Vic



• VERTICAL SIGNS

The vertical signs in the project have two purposes; to inform and to hold the Bluetooth device. Related to the traffic signs design and content, please consider the following good practices:

- Road signs with official parking symbols.
- Include parking regulation hours.
- Include few digital parking instructions.
- Include parking zone code.
- Include QR code to download the App.



S+LOADZ horizontal signs.
Argenteuil, Métropole du
Grand Paris



S+LOADZ vertical sign.
Vic



S+LOADZ vertical sign.
District x, Paris



S+LOADZ. Vertical signs.
Ankara

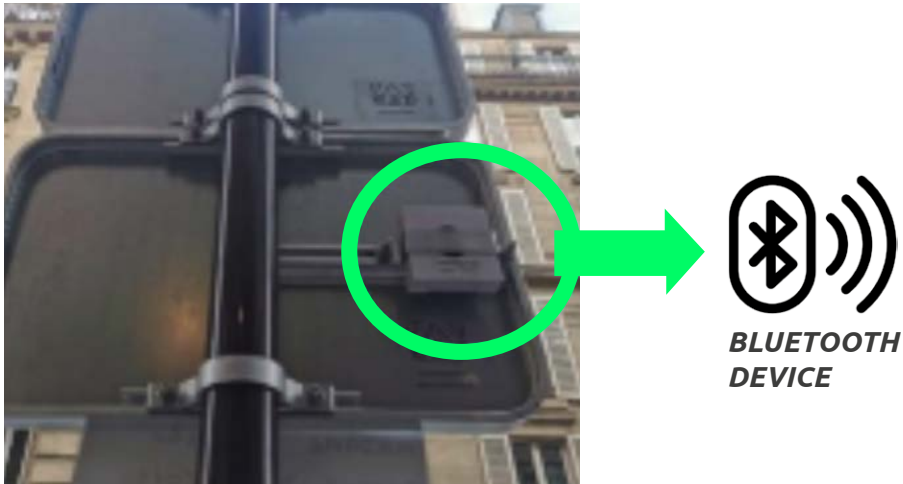
Tip: When possible, use existing traffic signs infrastructure

Tip: In case of new infrastructure, anticipate the need of a tender

Tip: Make your traffic signs as accessible as possible, using different colours and iconography.

• THE BLUETOOTH SENSOR

Installing the Bluetooth behind a vertical signal or light post per zone is the way to delimit each zone to identify parking conditions and connect the logistic vehicles with the digital platform. Without the need for Wi-Fi.



• THE DIGITAL TWIN IN PARKUNLOAD PLATFORM

In the Parkunload dashboard for cities, there is a digital representation of the S+LOADZ system deployed in the real world. There, cities can check that the Bluetooth devices are programmed correctly with the right zone number, and most important can monitor the use and operation of the loading/delivery zones.



7. COMMUNICATION TO KEY STAKEHOLDERS

Communication and dissemination is a key aspect in order to deliver a compelling message to the target audience during the project lifetime. The communication strategy is twofold: from one side, it is highly important to keep informed local stakeholders and potential users of loading zones, and on the other side, to communicate the positive impact of the project to citizens and politicians.

S+LOADZ target audience focus. HIGH influence HIGH involvement



Following, specific tips to master the communication of S+LOADZ:

> Communicate to the drivers how easy it is to use of the App

One successful way to communicate the drivers over the use of the App is by leaving leaflets in the vehicles that are doing loading/delivery activities, including information over:

- Project goals
- Project objectives
- Use of the App instruction
- Contact information

Livres, utilisez l'application mobile PARKUNLOAD
et localisez en temps réel les aires de livraison disponibles dans le 10^e arrondissement

Vous pouvez ainsi :

- Localiser en temps réel les aires de livraison disponibles
- Obtenir un ticket numérique - Gratuit pour les livraisons, au lieu d'utiliser le papier bleu européen de stationnement

Simple et rapide
installez l'application mobile PARKUNLOAD

- TELECHARGEZ L'APPLICATION
- ENREGISTREZ VOTRE VEHICULE
- ENREGISTREZ VOTRE VEHICULE

EN CAS D'INCIDENT OU DE DOUTE : HELP.PARKUNLOAD.COM

S+LOADZ TRANSFORMING CITY LOGISTICS

FIRST STEPS
How to start using the Parkunload app to use the loading bays in 3 easy steps. You only have to do this once!

- FREE DOWNLOAD**
Download the app free from App Store or Google Play. You can do this by scanning the QR on the left or by searching for the app on the mentioned digital platform.
- REGISTER, FREE**
Register using your mobile phone n°, and you will receive a code via SMS in your account.
- ADD VEHICLES**
Then enter vehicle details: number, make and model of the vehicle(s). You can enter additional vehicles if you have a fleet.

HOW IT WORKS...
Once registered, it is simple to manage your stay

- PARK AT THE BAY**
Open the Parkunload app. The app automatically detects where you are and allows you to start
- START PARKING**
When you start, you will see (graphic colour) the remaining time available. The app will also advise you when the time is down to 5 minutes and when the time has finished.
- WHEN YOU LEAVE**
Don't forget to finalise your stay when you are ready to leave the charge point zone.
- LEAVE THE PARKING SPACE**

PROBLEMS
If you experience any difficulty when using Parkunload go to: HELP.PARKUNLOAD.COM

Co-funded by the European Union

S+LOADZ

LES AIRES DE LIVRAISONS CONNECTÉES ARRIVENT À ARGENTEUIL

L'application PARKUNLOAD, dédiée aux livreurs et transporteurs en expérimentation dans le Centre-ville

Vous pouvez :

- Optimiser l'occupation des aires de livraison
- Améliorer la visibilité

Simple et rapide
installez l'application mobile PARKUNLOAD

1. Téléchargez l'application PARKUNLOAD
2. Enregistrez votre numéro de téléphone portable afin de recevoir un code de validation par SMS. Cette validation est nécessaire qu'une seule fois lors de l'inscription.
3. Enregistrez votre véhicule
4. Indiquez les principales caractéristiques de votre véhicule (immatriculation, marque, modèle...)

Comment ça fonctionne ?

1. Téléchargez l'application et activez la connexion Internet sur votre smartphone. Trouvez une place de livraison libre en localisant l'application.
2. En sélectionnant sur une aire de livraison PARKUNLOAD, obtenez votre véhicule et vous pouvez automatiquement la durée maximale de stationnement autorisée (55 minutes).
3. Fin de stationnement. Modifiez par d'ailleurs le fin de votre stationnement dans l'application lorsque vous quittez l'aire de livraison. Cela permettra au système utilisateur de savoir que l'aire que vous quittez est libre.

EN CAS D'INCIDENT OU DE DOUTE : help.parkunload.com

Co-projet et financé avec l'aide de :

Métropole Grand Paris

> **Train the traffic agents to enforce the correct use of the loading/delivery zones**

A training with a theoretical-practical approach for traffic officers in your city is advisable to ensure the commitment of the enforcement agency and the long-term success of the project.



Theoretical part

- Main characteristics of the loading zones and operation rules
- Relevance of the use of the App for enforcement
- Step-by-step on how to use the App



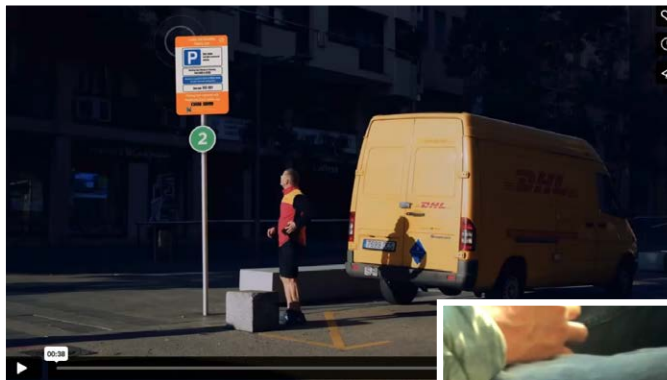
Practical part

- Learn by doing: Test the use of the App in the field

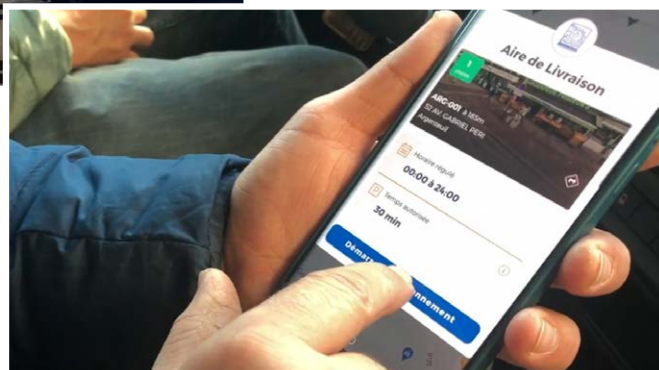
> **Communicate the project to public**

To reach a wider audience and ensure that key stakeholders receive the messages, it is advisable to post videos on the official website of the municipality or on social media channels, or to publish press releases on the main dissemination channels of logistics companies and the local public in general. Here are some examples:

 **Videos**



Videos to train the drivers

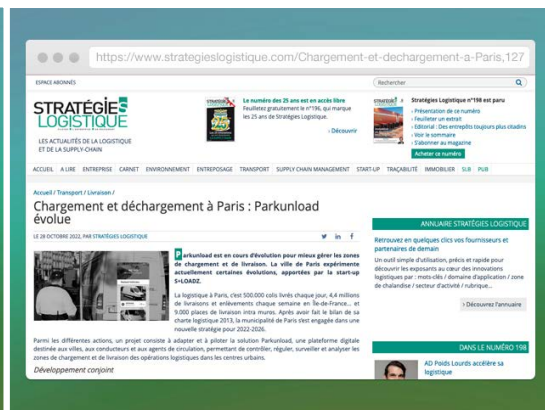
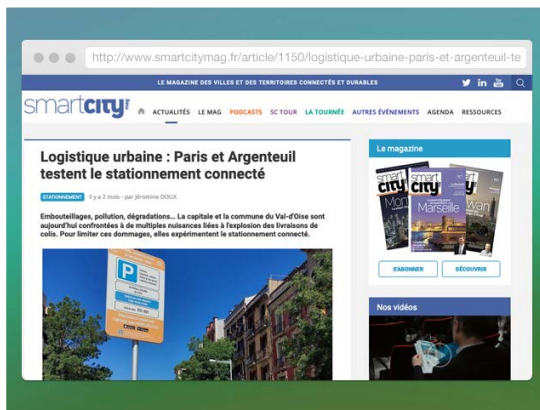


Learn from the Métropole du Grand Paris -> Videos to train the drivers and communicate the main objectives of the project

 Communication on cities website



 Press releases



> **Identify and contact key partners**

Disseminate your S+LOADZ project among alliances, associations and federations of logistics or local trade.

8. LAUNCH OF THE SLOADZ PILOT

In this phase, the loading/delivery zones have already been established and key stakeholders have been trained in the use of the loading zones, the use of the application and main objectives of the project. The project launch marks the official start of the pilot and the beginning of important tasks such as implementation, monitoring, evaluation, and improvement of the solution. And don't forget! Communication with users and other key stakeholders (step 8) continues throughout the life of the project.

9. ENFORCEMENT

The enforcement strategy will largely depend on the legal aspects of the use of the app: Is it mandatory or not?

If the use of the app is voluntary, we encourage you to communicate with drivers via advisory notes:

- Very good performance.
- Warning for vehicles overstaying or without authorized parking permit.
- Additional instructions to download and use the App.
- Clear advice before possible penalty notes.



Ajuntament de
Cerdanyola del Vallès



PARKUNLOAD

AVÍS ESTACIONAMENT INDEGUT

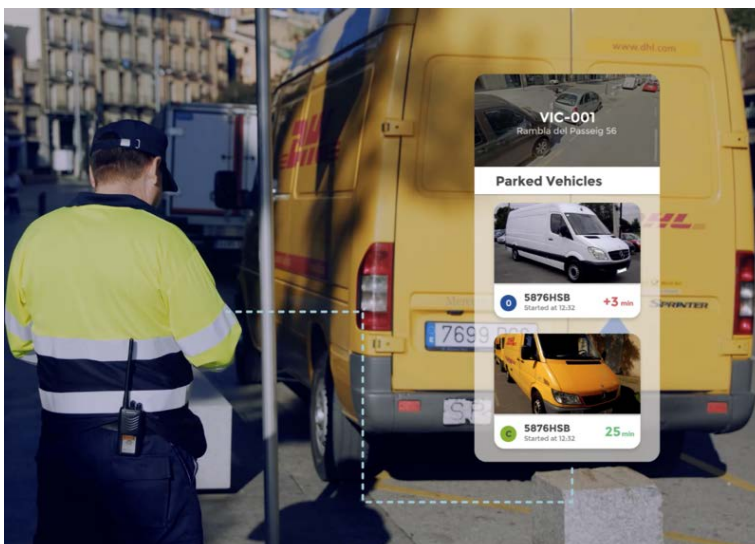
El seu vehicle no disposa de tiquet d'estacionament vàlid en la zona d'estacionament gratuït i amb temps limitat.
Si us plau, obtingui un comprovant digital per evitar sancions.
Més informació trucant al telèfon d'atenció: 669 86 60 74

INSTRUCCIONS APLICACIÓ MÒBIL PARKUNLOAD



1. Descarregar App **Parkunload**.
2. Registrar núm. telèfon i dades del vehicle.
3. Iniciar tiquet d'estacionament per al codi de zona del senyal més proper.
4. Finalitzar el tiquet al sortir.

If the use of the App is mandatory, we suggest enforcing the regulations with penalty notes (or fines), the most effective way to ensure the correct use of the loading/delivery zones. Using penalty notices will result in higher performance of the S+LOADZ solution and it will improve the efficiency of the enforcement.

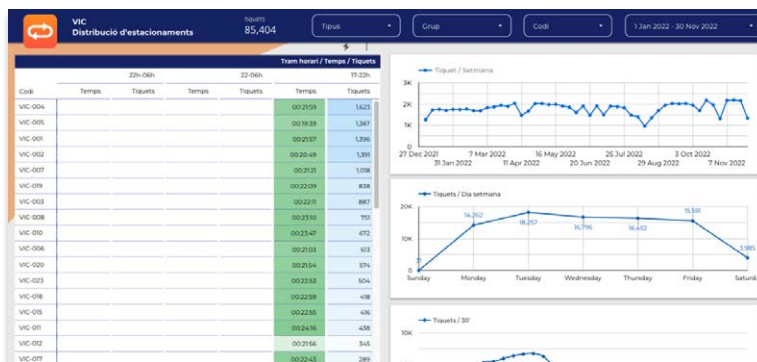
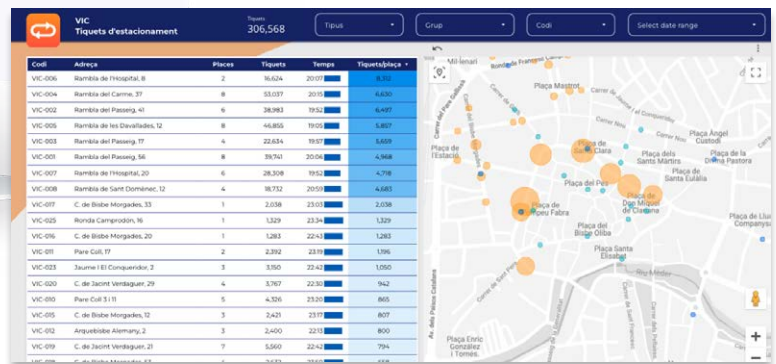


Tip: Fines for non-use of the APP should be set slightly higher than fines for overstaying the time limit.

10. MONITORING AND EVALUATION

In S+LOADZ Parkunload has successfully developed a Big Data tool that, together with the IoT Dashboard, can facilitate data analyses to:

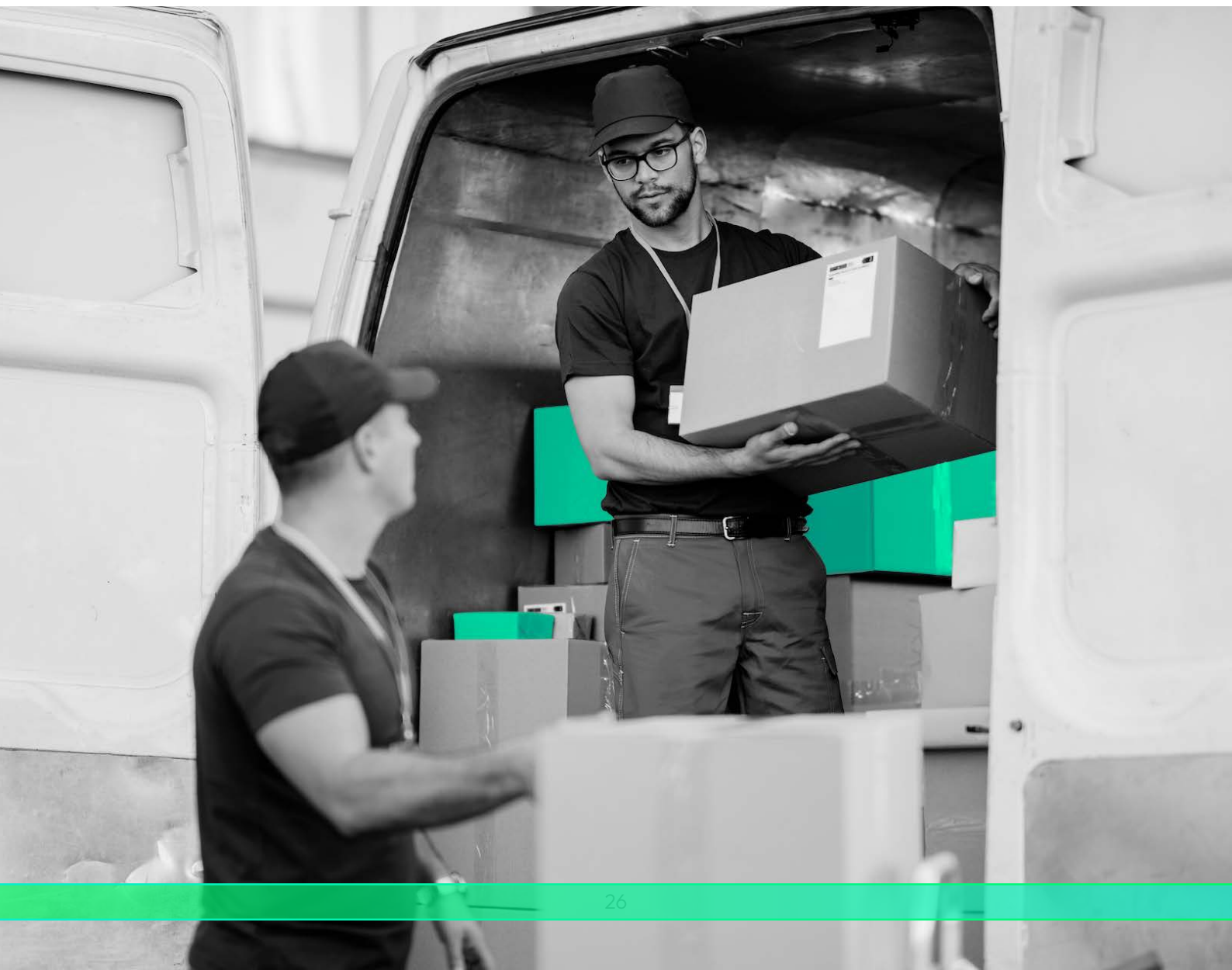
- Monitor the use of the loading zones, and identify the need of adjustments of current regulations
- Follow up policy objectives in terms of type of vehicles distribution
- Follow up the baseline indicators (step 3)
- Don't forget to communicate your results among all stakeholders!



11. IMPROVE AND SCALE UP SLOADZ

Public decision-makers should make use of technological solutions for loading zones, such as Parkunload, which enable real-time data acquisition as an important guideline for more sustainable urban logistics concepts. Analysing the data in the cities' dashboard and evaluating the development of your project will give you valuable clues about the following:

- Zones where more enforcement is needed due to high levels of illegal behaviour or lack of compliance with the rules.
- Possible location of new zones.
- Redundant zones, which are no longer needed.
- Change type of zones.
- Impact of low-carbon vehicle policies.
- Accuracy of policy time-limit for loading/delivery activities.
- Acceptance of the solution by end-users.





**SMART PLANNING,
SUSTAINABLE
CITY LOGISTICS**

The management of kerbside, including loading and unloading activities in a context of unrestricted growth in deliveries and a high demand from governments to mitigate related air pollution, is a complex challenge for which multiple solutions exist, but the optimal one that maximises social welfare may be difficult to find. To address such a problem, **data-driven policy making** seems to be a key tool for public administrations.

WHAT IS DATA DRIVEN POLICY MAKING?

It is the process in which reliable and objective data, such as those generated by Parkunload sensors, guide governments in the development, implementation and evaluation of public policies (e.g. loading zones), in order to improve the efficiency and effectiveness of policy interventions.

The main objectives of data driven policy making, in the context of loading/delivery zones, may include the following:

- **IMPROVING THE EFFICIENCY OF LOADING ZONES USE**
By collecting data on the use of loading zones, policy makers can identify patterns and trends in loading zone utilization and identify opportunities to improve the efficiency of these areas. This may involve adjusting the location, size, and number of loading zones to better meet the needs of delivery companies, local businesses, and residents.
- **REDUCING CONGESTION AND IMPROVING TRAFFIC FLOW**
With real-time data on the use of loading/delivery zones, policy makers can identify areas where delivery activities contribute to congestion and develop strategies to address these problems. This may involve adjusting the time limit, timing and location of the loading zones or implementing other traffic management measures.
- **PROMOTING TRANSPARENCY AND ACCOUNTABILITY**
Using data and evidence to inform policy decisions enables policy makers to be more transparent and accountable in their decision-making process. This can help build trust among key stakeholders in the S+LOADZ policy process.
- **ENHANCING SAFETY**
The data collected can help policy makers identify areas where loading zones may induce safety risks, such as areas with high pedestrian traffic or near schools. Based on this information, governments can implement strategies to mitigate these risks and improve safety for all road users.

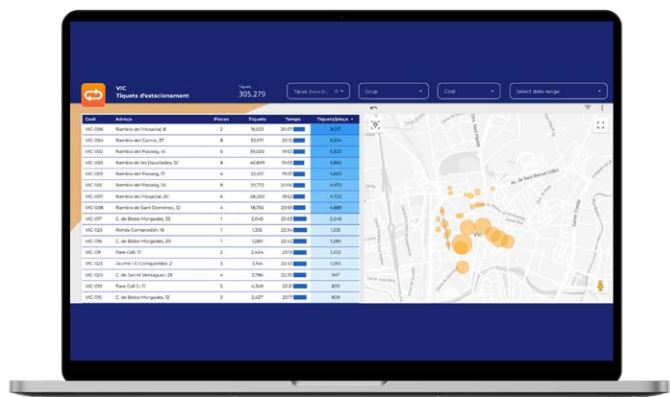
- **IMPROVING AIR QUALITY**

By cross-checking information on the use of loading zones with vehicle-specific emissions, air quality sensors and environmental targets per zone, government authorities can adjust the type of vehicle allowed based on its emissions to monitor and improve environmental conditions.

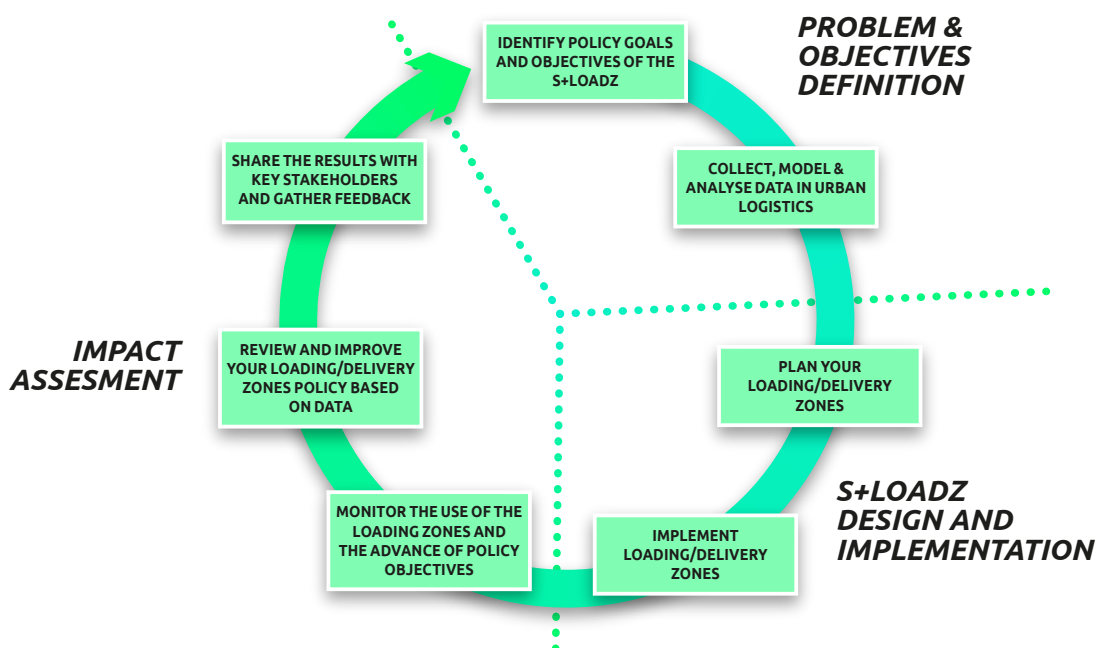
- **SUPPORTING ECONOMIC DEVELOPMENT**


By using data to identify areas where loading/delivery zones with the highest demand, policy makers can support economic development by ensuring that businesses have access to the loading/unloading facilities they need and that citizens have access to the goods they need or desire.

For example, by organising loading zones digitally and integrating vehicle emissions databases to the big data retrieved through the Parkunload app, the municipality of Vic is enabled to develop advanced, data-driven policies to optimise urban freight aligned with their air quality strategies, which also include the management of electric vehicle fleets, cargo bike hubs and night-time deliveries.



For smart planning of loading and unloading zones, based on data-driven policy making, it is advisable to follow the following virtuous planning cycle, so the city policy of loading/delivery zones evolve with the needs of the users, citizens, and business:





**BEST PRACTICES:
THE USE CASE
OF VIC**



BEST PRACTICES: THE USE CASE OF VIC

The city of Vic is located 70 km north of Barcelona, in Catalonia, Spain, with a population over 50.000 inhabitants in a total urban surface of 31 km². The city’s strategy places the quality of life and the health of its inhabitants at the centre of every municipal policy and of the action plans that have been implemented in recent years, such as the Municipal Urban Master Plan, the SUMP, the Accessibility Plan, aiming to create more safe and sustainable mobility. Since 2018, the city of Vic has made great efforts to digitalise the use and enforcement of loading/delivery zones – initially with a project called Z-DUMA – and, most recently, with S+LOADZ.

WHAT WERE THE CITY’S OBJECTIVES?

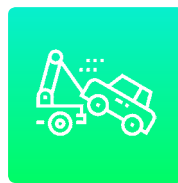
The objective was to manage the high demand for logistics (temporary) parking spaces and:



**INCREASE
ROTATION
AND THUS
AVAILABILITY
OF PLACES FOR
USERS**



**OPTIMIZE
THE SHARED
PUBLIC SPACE**



**REDUCED
ILLEGAL
PARKING
BEHAVIOUR**



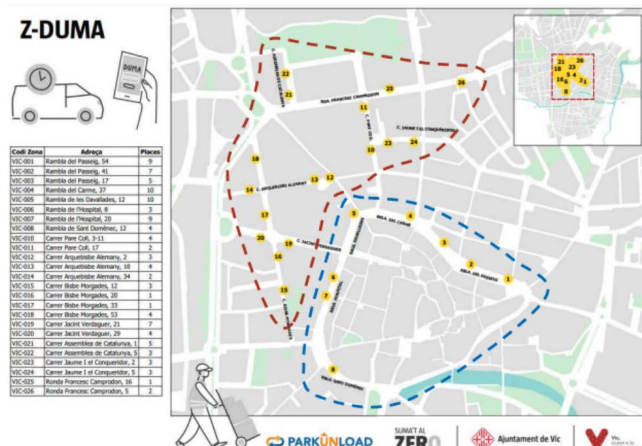
**REDUCE
TRAFFIC
CONGESTION**



**REDUCE
EMISSIONS**

WHAT WAS THE Z-DUMA PILOT ABOUT?

In 2018, the Mobility Department of the City of Vic agreed to trial the Parkunload technology and solution applied to 8 large loading zones on the perimeter of the pedestrianised centre (the blue dotted area in the figure below). The city authority designed the pilot establishing new regulations that made it mandatory to use the APP and it undertook extensive communications with the stakeholders before implementing the scheme. Based on the KPIs of the this 8-zone trial, Z-DUMA was then expanded in 2019, adding 17 new zones (red dotted area in the graphic).



WHAT WERE THE PROJECT OPERATIONAL RULES?

Authorized vehicles:

Trucks, vans, mixed two-seat vehicles, people with reduced mobility, neighbours, and local traders



Time:

Professionals and 1 veh./commercial activity: 30 minutes

Neighbours: 10 min



Hours:

6 h to 20 h

8 h to 20 h



Enforcement:

Z-DUMA enforcement team

Fine for non-use of the app: **100 €**

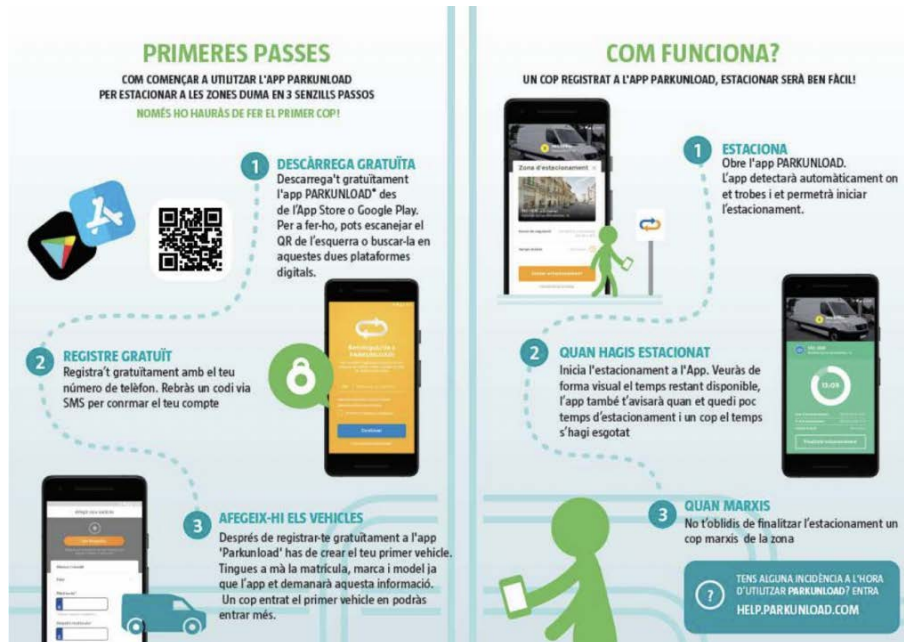
HOW COULD THE DRIVERS IDENTIFY THE ZONE IN THE FIELD?

The zones were painted with special identification and accompanied by a vertical signal including the loading zone rules.



HOW WAS THE PROJECT COMMUNICATED?

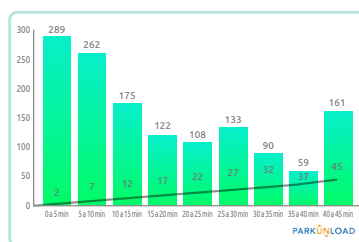
Leaflets were leaved to drivers in the vehicles, and project information was shared in official website and social media of the municipality.



PROJECT RESULTS

1. Better operation of the loading zones and more benefits for the citizens

The following graphic summarises the KPIs of the original 8-zone trial¹:



Vic Preliminary Key Findings:
78% of all unloading operations made in < 30 mins.

Near-total compliance:
an interestin dataset for modelling future scenarios



2. High rates of technology adoption by the delivery operators in the long term (2018-2020)

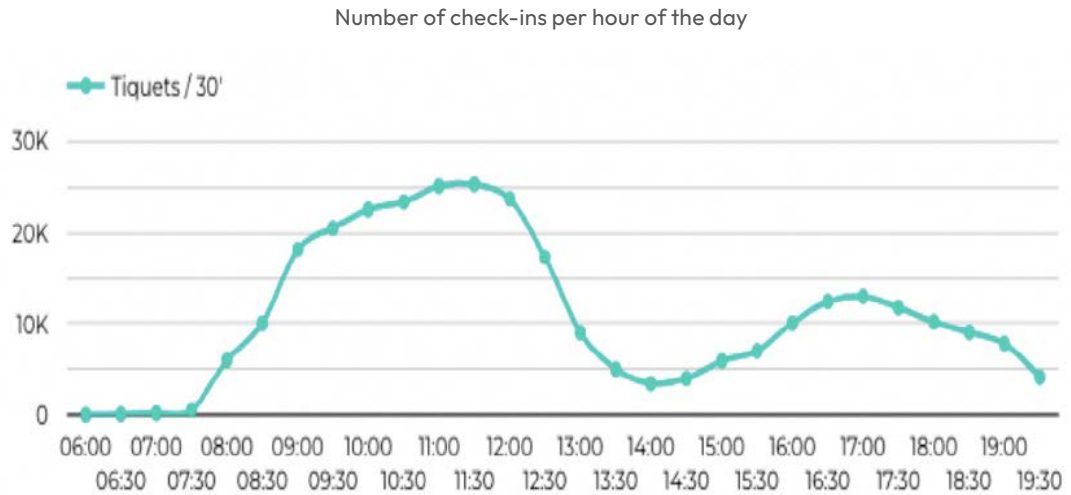
More than 305,000 check-ins from Drivers through the App from 2018 to Dec 2022

¹ HAYES, S.(2021) Innovations towards Kerbside Delivery as a Service: K-DaaS in The 4th VREF Conference on Urban Freight

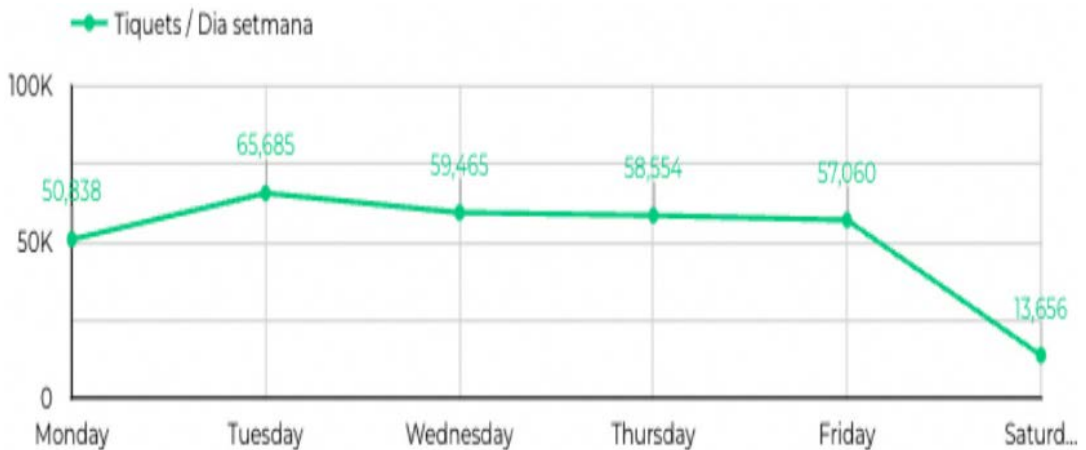
3. Gather relevant data to identify the logistic patterns and plan adjustments in loading/delivery zones.

The following figures summarises the results of the extended area from the initial trial period in 2018 to the extended version in December 2022.

AT WHAT TIME DID THE MOST LOGISTICAL MOVEMENTS OCCUR?

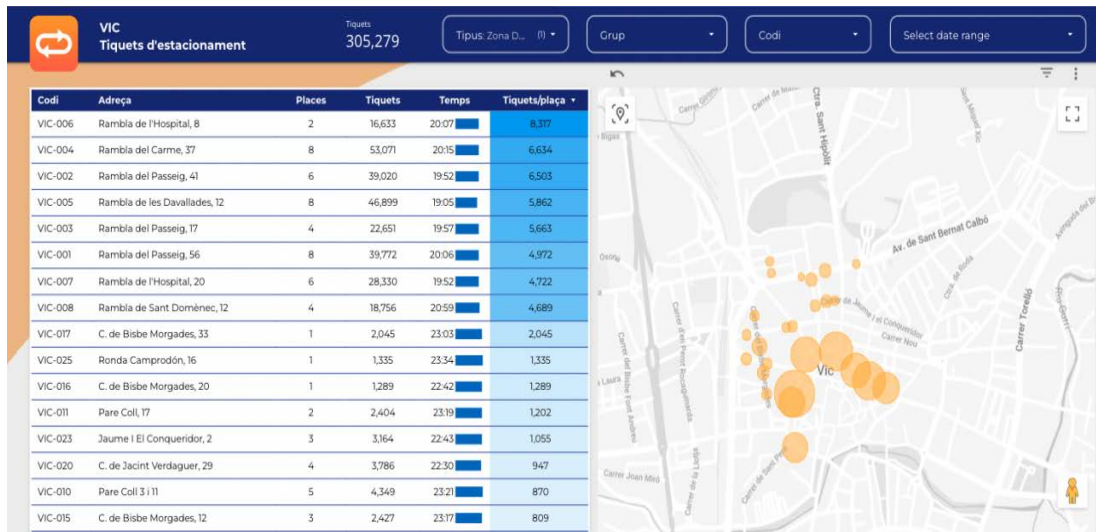


WHICH DAY OF THE WEEK DID THE MOST LOGISTICAL MOVEMENTS OCCUR?



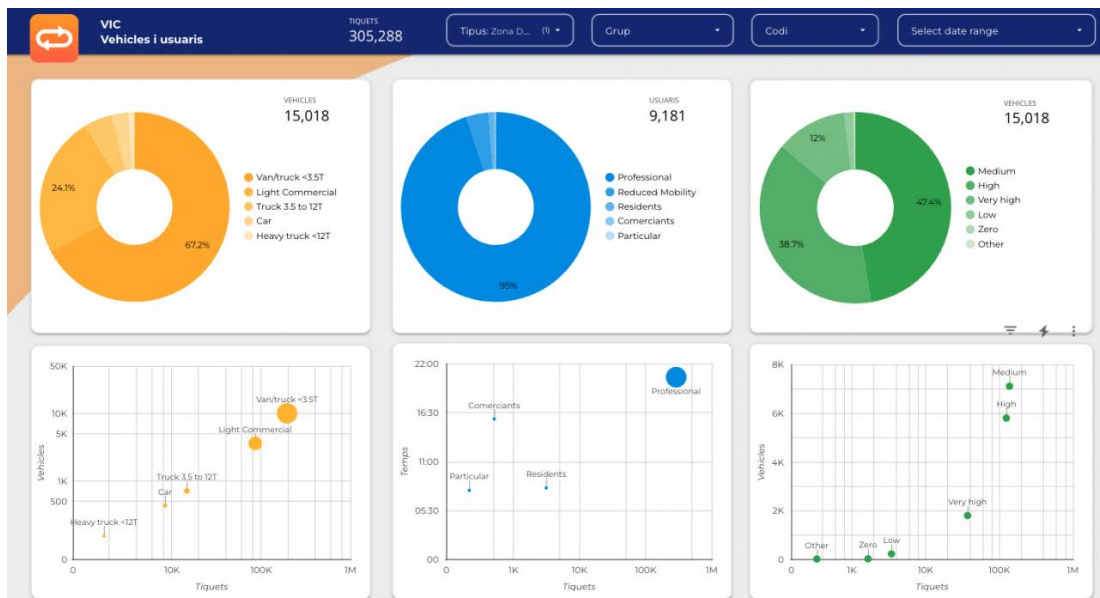
WHAT IS THE DEMAND PER LOADING ZONE? WHICH ARE THE MOST/LEAST USED?

Check-in per loading zone



WHICH TYPE OF VEHICLES ARE USING THE LOADING/DELIVERY ZONES?

Use of the loading zone per type of vehicle



Source: Parkunload dashboard for cities. Data of Z-Duma, period 2018-2022



S+LOADZ