



ADVANCED LOGISTICS PLATFORM WITH ROAD PRICING AND ACCESS CRITERIA TO IMPROVE URBAN ENVIRONMENT AND MOBILITY OF GOODS



With the contribution of the LIFE financial instrument of the European Commission

September 7th, 2021

Project LIFE ASPIRE

Urban Logistics Innovation in a Mid-size Historic Town in Italy for a better air quality



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Città di Lucca



MUNICIPIA GRUPPO ENGINEERING

LUCENSE



Stockholms stad



GRAD ZADAR

LIFE POPULAIR - INTERNATIONAL CONFERENCE:

EFFECTIVE AIR QUALITY MANAGEMENT

7 – 8 September 2021, Dixon Hotel, Banská Bystrica

Stefan Guerra, LUCENSE



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Geographical distribution of Partners





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Project Consortium



City of Lucca (IT),
www.comune.lucca.it
LUCENSE (IT),
www.lucense.it
Memex (IT),
www.memex.it
Municipia - Engineering
Group (IT),
municipia.eng.it
City of Stockholm (SE),
start.stockholm
City of Zadar (HR),
www.grad-zadar.hr

Main Goals: Preservation and Development of the City Centre

- **To increase quality of life for citizens, tourists, visitors and city users**

High level of touristic flows:

- *City of Giacomo Puccini*
- *Many and various festivals*
- *Well preserved historic environment*
- *Surrounding green Tuscan environment*

- **To contribute to increase Air Quality in the area which is under an EU Ambient Air Quality infringement procedure**

- **To reduce externalities of heavy transport**
Such as damage to the built environment

- **To balance the different stakeholders' interests on land use in the city**
Such as parking, accessibility



URBAN CONTEXT, DEVELOPMENT AND IMPLEMENTATION OF CITY LOGISTICS IN LUCCA



Technological Objectives of the Project

Project objectives are addressed by using an innovative system composed by **3 technological parts**:

- 1.** An **intelligent control system to monitor access and exit of logistics vehicles** using 22 UHF RFID antennas which can collect data about entrances, exits and time spent in the RTZ



Example of RFID Gates in Lucca RTZ



A RFID tag for each RTZ Authorized freight vehicles

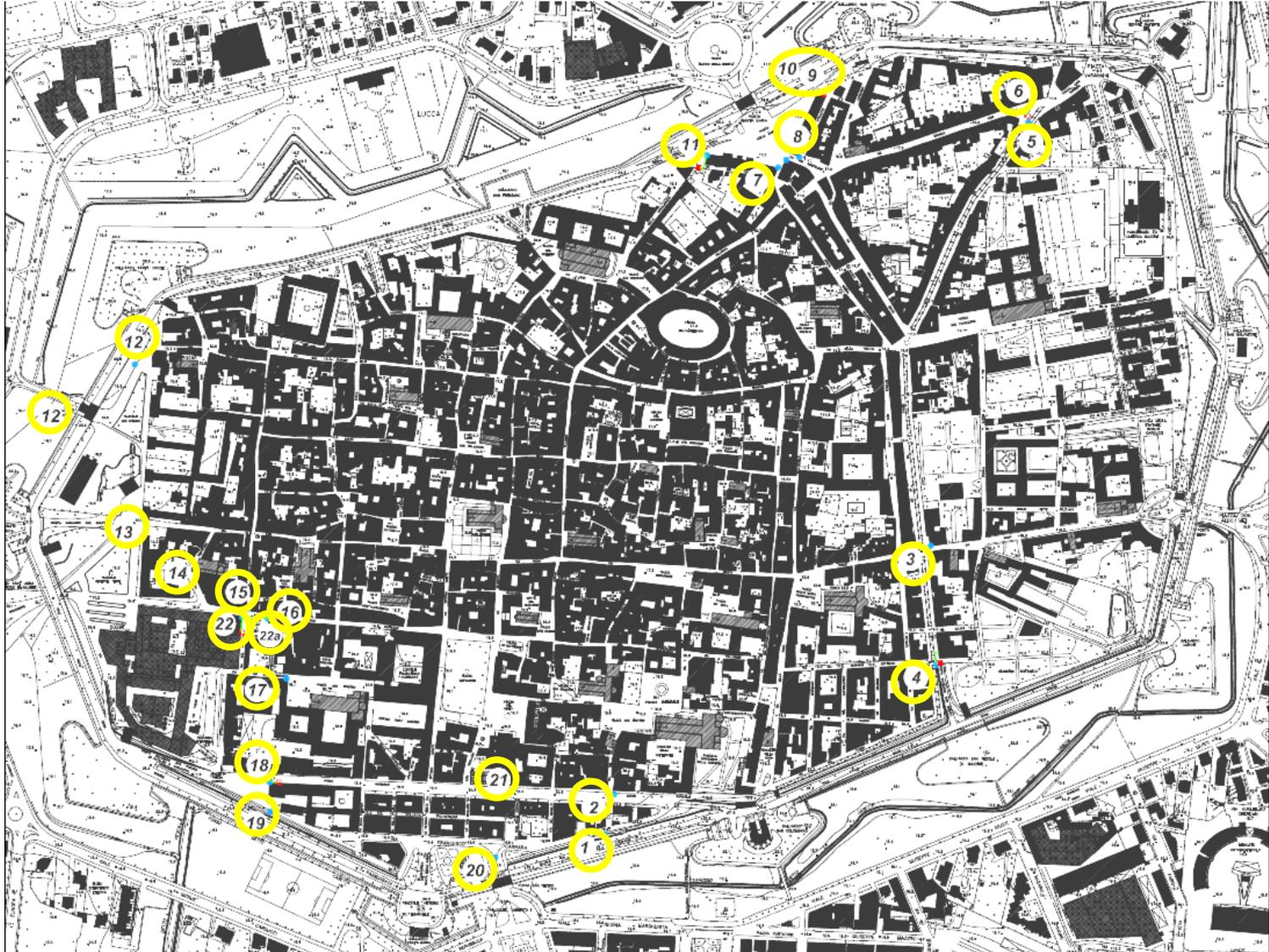
In order to monitor freight vehicles, during 2020 almost 3000 mobility pass with a RFID tag were distributed to different vehicles categories authorized to access the RTZ



Lucca Mobility Pass

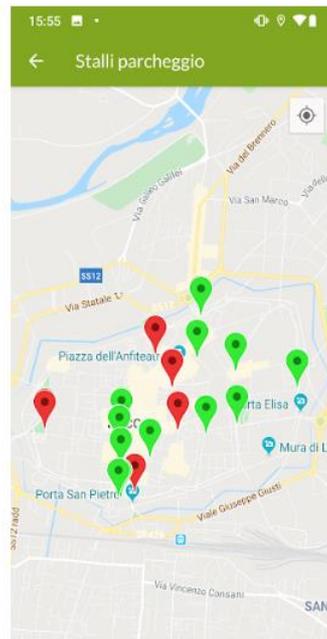


24 UHF RFID antennas – OVERVIEW MAP



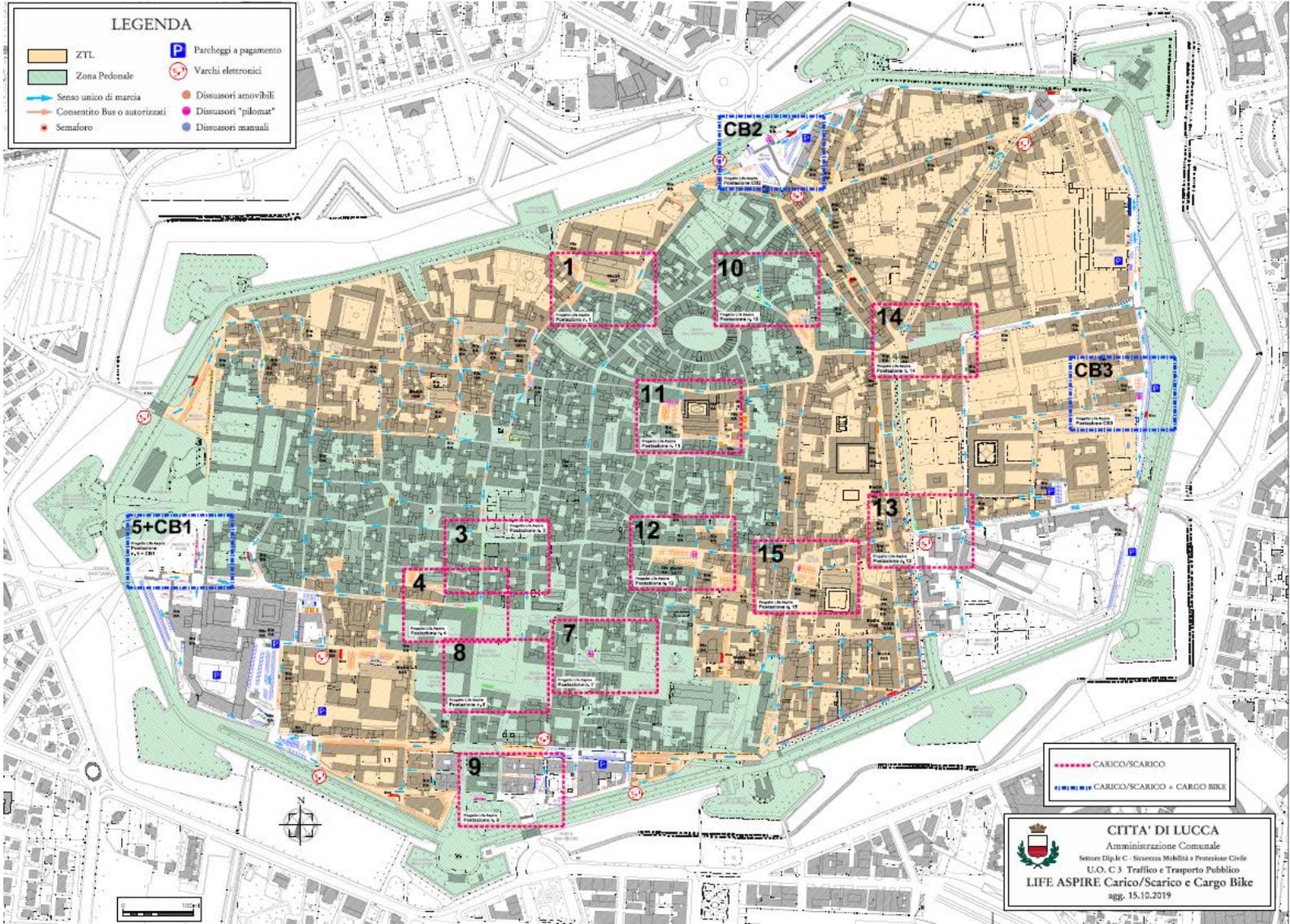
Technological Objectives of the Project

2. An **innovative loading/unloading bays digital system** (34 parking lots) which makes parking stalls "smart" allowing logistics operators to use them more easily during the goods distribution in the most touristic areas of the city centre.





Smart parking sensor – OVERVIEW MAP





Technological Objectives of the Project

3. A "pilot" cargo-bike sharing system for the transport of goods in areas of the historic center inside the RTZ: such a service allows operators to perform less bulky deliveries in the historic center with zero-emissions vehicles and to access to the RTZ beyond time windows allowed for motorized vehicles.





Potential policy implications of the project

LIFE ASPIRE aims to contribute to possible update and improvement of environmental policies (at local, regional, national, and where appropriate, European) related to the project topic and activities

The participation of the Italian Ministry of transport and Tuscany Region to the Technical Scientific Committee of the project led to promising:

- **Discussion about possible future exploitation of the RFID technology in traffic monitoring in the RTZ,**
- **Discussion about the effective implementation of rewarding policies to streamline city logistics processes**





Potential policy implications of the project

➤ Involvement of socio-economic categories

Development of participatory approach: round-table of logistics operators and commercial categories representatives





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Potential policy implications of the project

Involvement of relevant European projects consortium in the evaluation of the impacts (CSSF - Cities & Stakeholder Supporting Forum)



THE CIVITAS INITIATIVE IS CO-FINANCED BY THE EUROPEAN UNION





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LIFE ASPIRE AWARD PROGRAMME definition

**LIFE ASPIRE is an AWARD PROGRAMME with a defined set of goals,
provided with monitoring technologies
to REWARD SUSTAINABILITY leaders
in city logistics in Lucca.**



OBJECTIVE: incentivize the logistics operators' change of behaviour, in order to optimize their activities in the historical centre in a more sustainable way and to reduce the environmental impact



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LIFE ASPIRE LOCMAP and REWARDING POLICY

The innovative **Logistics Credit Management Platform (LOCMAP)** manages the **whole technology system**, reporting on the several logistics factors considered in ASPIRE purposes.



Encouragement of sustainable behaviour of logistics operators



Improvement of urban air quality due to reduction of urban logistics impacts in the city of Lucca

Monitoring freight urban transport in Lucca through the installation of RFID system at the access and exit points of the RTZ

Logistics Credit Management Platform - LOCMAP integrated management and control platform governing all the technological installed elements

Cargo bike sharing service



Smart monitoring of load/unload freight areas



Enhance access regulation for operators adopting sustainable behaviour



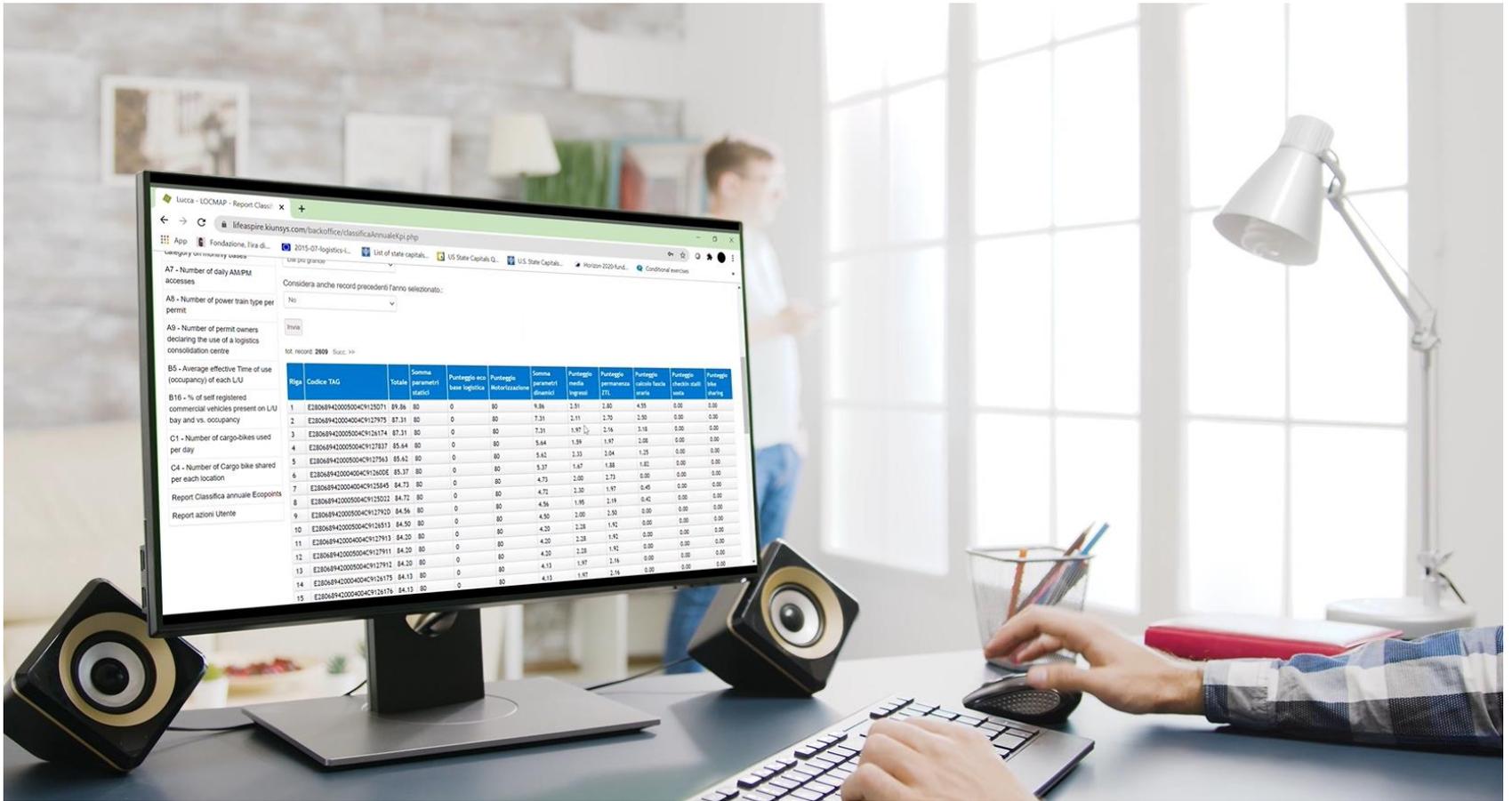


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LOCMAP Platform - Logistics Credits Management Platform



Back-office management and control of all the technological elements of the system



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LIFE ASPIRE AWARDING MODEL

2 different categories of PARAMETERS

Static parameters:

- vehicle technical characteristics: typology of Engine/Fuel and dimensions/GVM category.
- Use of a consolidation centre nearby the city centre.

Dynamic parameters

- Frequency of daily trips
- Duration of the stay inside the RTZ
- Utilized time window
- Use of L/U parking lots services
- Use of Cargo-bike sharing services



**EcoPoint
score**



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Eco-Points LIFE ASPIRE

Static parameters			
n.	Parameter		Eco point
1	Emission standards/ powertrain	Euro 3	0
		Euro 4	0
		Euro 5	20
		Euro 6	30
		LNG	30
		Methane	30
		Hybrid	30
		Bi-modal (EV mode)	50
		Hybrid PHEV (EV mode)	50
		FEV	80
2	Consolidation of goods loading index	Presence of a logistics base in the vicinity of the city (5 km from the city centre)	10



Eco-Points LIFE ASPIRE

Dynamic parameters

n.	Parameter	Considered period	Permit category	Eco point	
1	Daily number of accesses to the RTZ, calculated as the daily average of the number of accesses to the RTZ, for only working days	monthly basis	D, EM, EL, EI, ED, ET, EV	Not applicable	
			EC, U, M	>3/g	0
				3/g ÷ 2/g	1
2	Daily duration of stay within the RTZ, average duration for only working days	monthly basis	D, EM, EL, EI, ED, ET, EV	Not applicable	
			EC, U, M	>90'/g	0
				90'/g ÷ 31'/g	1
3	Percentage of use of the morning and afternoon time window	monthly basis	D, EM, EL, EI, ED, ET, EV	Not applicable	
			EC, U, M	% morning prevalence	5
				% afternoon prevalence	0
4	Use of monitored L/U bays, number of uses	monthly basis	D, EM, EL, ET, EV, EI, U	Not applicable	
			EC, ED	>5	2
				<5	0
5	Use of the cargo-bike sharing service, number of uses	monthly basis	D, EM, EL, ED, ET, EV, EI, U	Not applicable	
			EC, M	>5	10
				<5	0



Ecological transition of the city

Less energy and less pollutants emissions, with a relevant contribution to the air quality goals set in the regional AQP (e.g. Particulate Matter: roughly - 8% to foreseen reduction, first estimation)

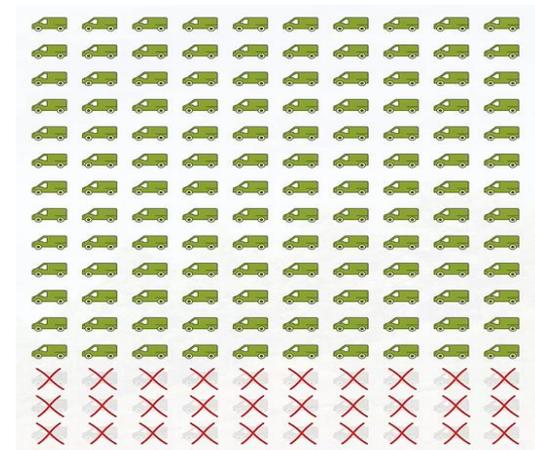
Due to the:

- reduction of the number of vehicles circulating in the RTZ;
- Increase of the number of zero-emissions vehicles accessing the RTZ;
- provision of services streamlining city logistics processes.

Before LIFE ASPIRE



After LIFE ASPIRE





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Future commitments for the after projects duration

Transform the LIFE
ASPIRE system
into a fully
operational city
logistics monitoring
system

Define the strategy for
the dissemination and
replicability of the
results, identifying
interested target cities

Consolidate the choice of
the rewarding price for the
most environmentally
sustainable transport
operator



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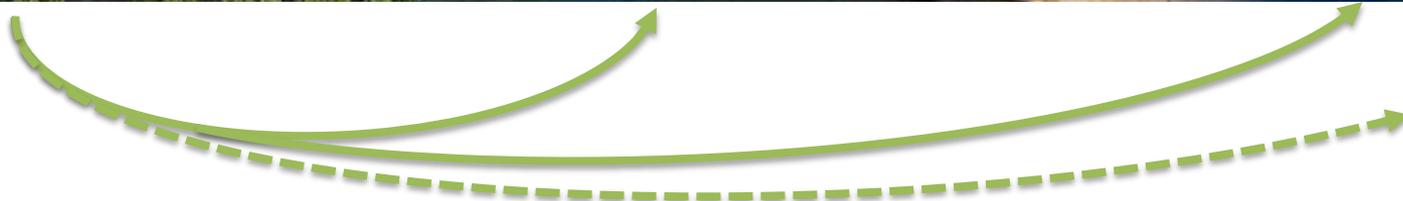
LIFE ASPIRE Replication and Transfer: from Zadar and Stockholm to other European cities



Lucca

Stockholm

Zadar



Other
EU cities



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Official launch of the project video

<https://vimeo.com/595846334>



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Thanks for your kind attention!

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