

# Layman's Report

ENGLISH

[www.life-aspire.eu](http://www.life-aspire.eu)



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

Partners



## *Project factsheet*

**Project no.:** LIFE16 ENV/IT/000004

**Project Title:** LIFE ASPIRE Advanced logistics platform with road pricing and access criteria to improve urban environment and mobility of goods

**Coordinating Beneficiary:** City of Lucca

**Associated Beneficiary:** Lucense SCaRL; MemEx Srl; Municipia SpA Engineering Group; City of Stockholm; City of Zadar

**Official website:** <http://www.life-aspire.eu>

**Official promotional video:**

<https://vimeo.com/595846334> (ENG VERSION)

<https://vimeo.com/595841356> (ITA VERSION)

**Start-End date:** 1st October 2017 – 30th September 2021

**Total budget:** : € 1.865.799,00

**Funding LIFE Programme:** : € 1.037.488,00

**Location:** Italy(Lucca), Croatia (Zadar), Sweden (Stockholm)

Lucca represents a typical European town of small-mid dimensions, with common problems related to city logistics: air quality impacts – PM<sub>10</sub>, NO<sub>x</sub>, “secondary pollutants”, CO<sub>2</sub> emissions, noise, energy consumption, etc. As well known, these aspects have serious negative effects on health and well-being of the population, in particular on the most vulnerable citizens (i.e. children, elderly people).

In Lucca, as in many other European towns, the environmental and traffic problems related to commercial fleet are emphasized in the historic area, characterized by a network with a dense grid of narrow streets and by additional constraints resulting from the presence of old and historical buildings, monuments, relevant pedestrian flows of tourists and visitors, etc. These conditions are also present, in different context and dimension in the historic centers of the cities of Stockholm (SE) and Zadar (HR) where the potential of transferability of the LIFE ASPIRE approach has been analysed.



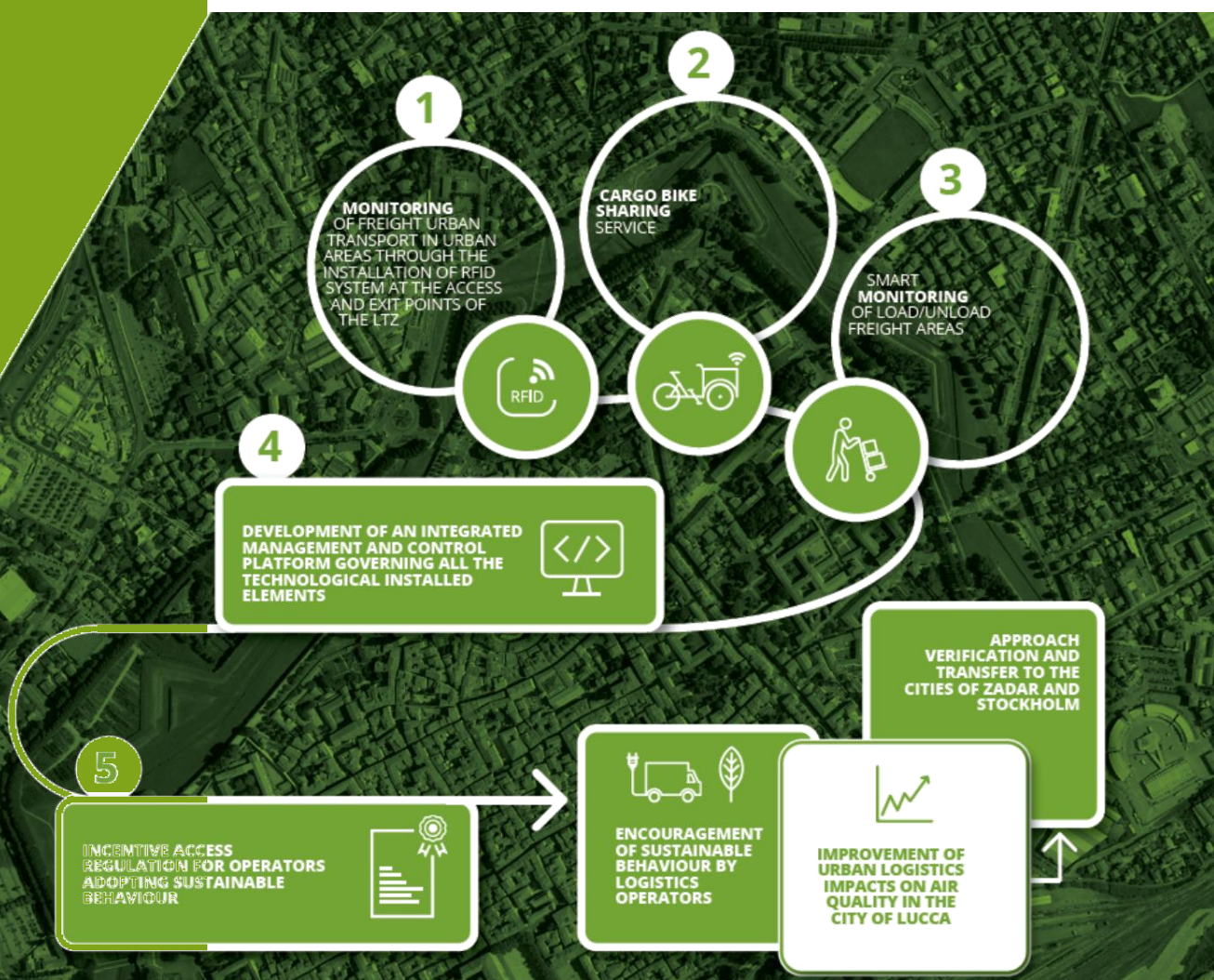
ASPIRE

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## LIFE ASPIRE project's Objectives

LIFE ASPIRE aims to put in place a number of actions leading to a significant improvement of sustainability of freight mobility processes in urban areas and resulting in a reduction of polluting emissions and improvement in air quality, urban environment and quality of life (especially of residents and city users).





## Developing and streamlining sustainable urban logistics in Lucca

LIFE ASPIRE developed an innovative system by implementing a set of regulatory, organizational and operational measures.

3 technological systems were tested in Lucca urban area:

- **access/exit monitoring system** for light duty commercial vehicles, within the RTZ, using UHF RFID sensors
- a service of **cargo-bike sharing** dedicated to the freight operators
- an innovative system for monitoring **loading/unloading bay areas**

The integrated management and control of these systems is allowed by a dedicated software platform (**LOCMAP**), a device that will allow to manage freight urban mobility in a "smart" way.

### 1. UHF RFID ANTENNAS at the RTZ boundary



n. 22 RTZ access/exit gate ("Mobility Gate RFID") in order to read the related tagged permit ("Mobility Pass")  
n. 2596 RFID tags distributed



## 2. CARGO BIKES SHARING STATIONSs for deliveries with zero-emission vehicles



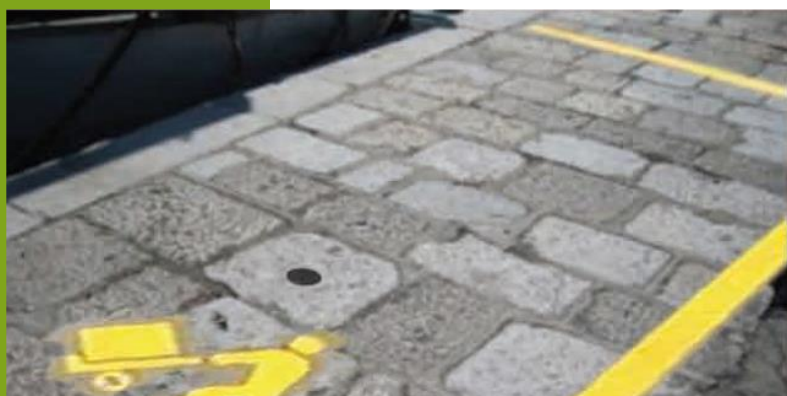
N. 3 cargo-bikes stations with 3 cargo bikes each installed and connected with LOCMAP



## 3. LOADING/UNLOADING BAYs equipped with sensor system

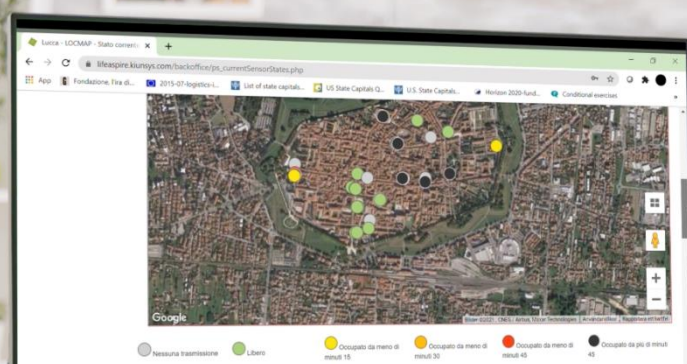
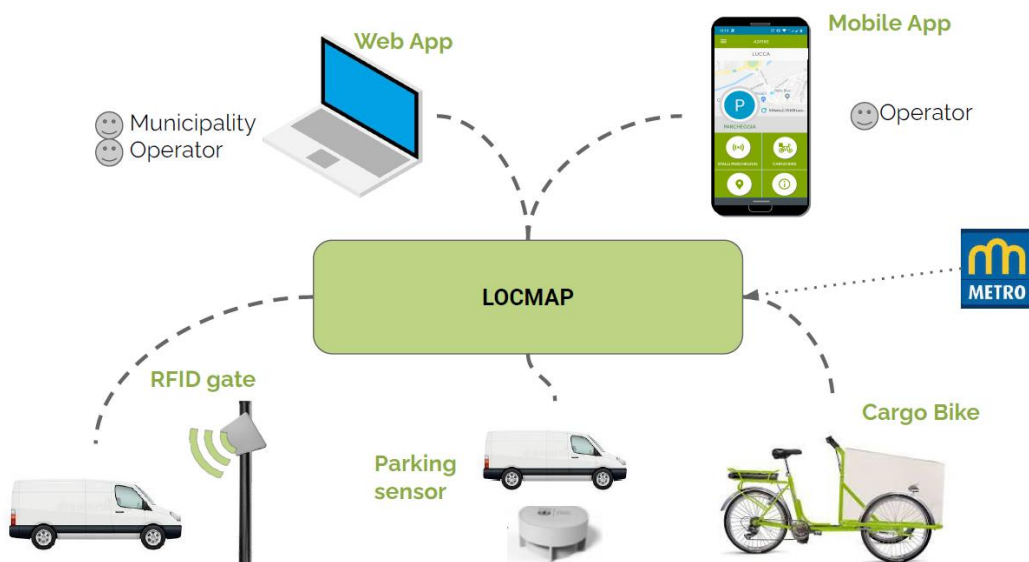


N. 34 smart L/U parking lots equipped by installing wireless sensors under the road surface and connected with LOCMAP



**Logistics Credit Management Platform - LOCMAP** - is the integrated management and control platform governing all the LIFE ASPIRE technologies deployed.

LOCMAP is a multi-tier software application with a mobile front-end App for the logistics operator and a separate back-office for the City Administration allowing to have a complete statistical view on collected data in compliance with the GDPR.



**CARGO BIKE SHARING**  
monitoring



monitoring of  
**LOADING/UNLOADING AREAS**



monitoring of  
**FREIGHT TRANSPORT VEHICLES**  
WITH A **SYSTEM OF RFID ANTENNAS**  
AT THE **ENTRY AND EXIT GATES** OF THE RTZ

THE **LOCMAP PLATFORM** CALCULATES THE **ECOPOINTS** ASSIGNED TO EACH VEHICLE BASED ON SPECIFIC **SUSTAINABILITY PARAMETERS** DEFINED BY A **MUNICIPAL REGULATION**

**LOCMAP**  
PLATFORM



The **LIFE ASPIRE AWARD PROGRAMME** considers a lot of parameters, including those related to the vehicle features (e.g. emission standards) and those related to the operator's behaviour.

Data collected by the whole integrated system allows to calculate ECOPOINTS related to each parameter feeding the final score which allows to identify most sustainable operators.

NOTE: data acquired during the demonstration pave the way to an evaluation of the relevance and the contribution of different parameters.

LIFE ASPIRE is an **AWARD PROGRAMME** provided with monitoring technologies to **REWARD SUSTAINABILITY** leaders in city logistics in Lucca



Incentivize logistics operators' **CHANGE OF BEHAVIOUR** optimize their activities in the historic centre in a more sustainable way thus reducing their environmental impact



ON THE BASIS OF THE  
ECO POINTS  
ACQUIRED  
THE **MUNICIPALITY**  
REWARDS  
THE MOST  
VIRTUOUS  
OPERATORS

## Results achieved

ASPIRE



- **Round 2700 commercial vehicles monitored** equipped with an RTZ access permit provided with RFID.  
Commitment of the Lucca administration to extend the access monitoring system to other user categories
- **1504 vehicles entering the RTZ** each working day
- **Smart Load/unload bays:** occupation for more than 60% of the available time
- **Cargo bikes sharing:** interest shown by different user categories ( the use of the service will be open for all users after project duration)
- **Contribution to greater attention toward zero-emission and low-carbon transport**
- **Incredible promotion tool for sustainable transport**

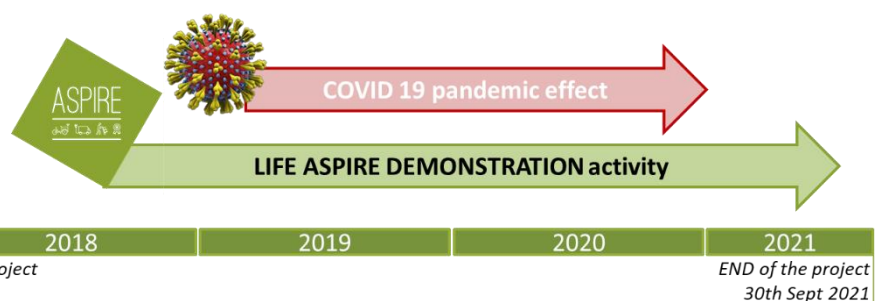
The rewarding approach to encourage the transformation toward more sustainable city logistics is the big outcome of LIFE ASPIRE and its most relevant legacy:

- Requires the involvement of the targeted operators and stakeholders: interest and suggestions were collected from transport companies
- Requires appropriate and effective communication campaigns
- The rewarding approach can improve the ecological transition of the cities more than enforcement schemes

### The city logistics in Lucca at the COVID-19 pandemic time

COVID-19 pandemic had a disruptive impact on daily life activities, including mobility of people and goods. Citizens and businesses are severely affected by the crisis.

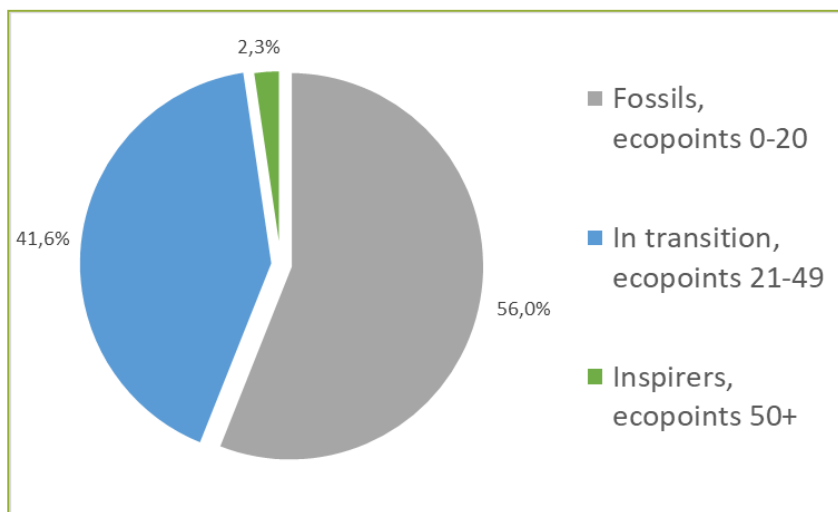
The City of Lucca worked from the outset of the pandemic in an attempt to mitigate the socio-economic impact of COVID-19 on mobility, as well as on other sectors relevant to the city. During pandemic, LIFE ASPIRE Consortium effort were dedicated to put in place contingency plan in order to reach project objective even if the COVID-19 slowed down some project activities and also modified some distribution practices in the logistics sector with a relevant increase of home deliveries.





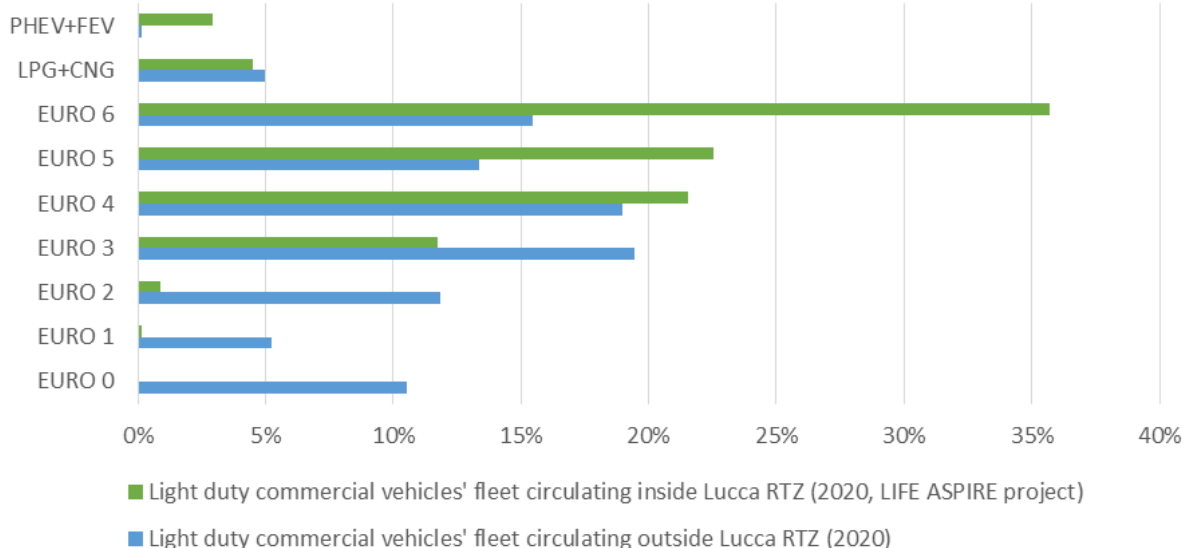
## Building the LIFE ASPIRE rewarding approach

1. Assignment to each vehicle a specific number of ecopoints according to static and dynamic parameters
2. Ranking of vehicles/operators according to the assigned number ecopoints
3. Inspirers are the rewarded operators that can prompt change an innovation among the operators in the transition phase



NOTE: Full Electric Vehicles (FEV) are among the «inspirers»

## Effects of the LIFE ASPIRE activities on the greening of the light duty commercial vehicles accessing the RTZ of Lucca



LIFE ASPIRE contributes to the ecological transition of the city of Lucca in terms of:

- 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 with an overall urban mobility improvement
- Environmental improvement:

### Pollutant emissions saving achieved:

NO<sub>x</sub>: - 1158 Kg/y,  
CO: - 864 Kg/y  
PM<sub>10</sub>: - 266 Kg/y  
PM<sub>2,5</sub>: - 259 Kg/y

### Greenhouse gases emission savings:

CO<sub>2</sub>: -151 t/y  
N<sub>2</sub>O: - 9,2 Kg/y

Contribution to the air quality goals set in the Tuscany Regional Air Quality Plan (round **-17% PM emission** with respect to overall foreseen PM reduction for the transport sector in the demo area)

- Reduction of heavy traffic externalities (e.g. health/safety hazard, cultural heritage damage)
- Life quality Improvement for residents, tourists, and visitors



## Transferability of project results

The demonstration activities in Lucca has been shared with other cities partner of the project, Stockholm (Sweden) and Zadar (Croatia) taking into account the peculiarity of their different contexts. The two cities share with Lucca the need to promote a mobility that is more respectful of people and environment, to the benefit of tourism and commercial activities development in the historic centres.

**TRANSFERABILITY AND REPLICABILITY EVALUATIONS  
OF THE SOLUTIONS TESTED IN LUCCA**

**SWEDEN**

STOCKHOLM

**TRANSFERABILITY AND REPLICABILITY EVALUATIONS  
OF THE SOLUTIONS TESTED IN LUCCA**

**CROATIA**

ZADAR

## City of Stockholm

**Last mile solution for zero emission deliveries and waste collection in the Old town.** Creation of a micro-terminal or a hub where deliveries to the terminal can be carried out at night-time, outside of the Old town and close to the major road network.

**Sharing systems for residents and commercial owners in the Old town.** The system will provide about 150 cargo bikes and will be in place in spring 2022.

**Traffic monitoring,** increase adherence of the regulations in the Old town through access control system in cooperation with the police.

## City of Zadar

**Development of video surveillance software** that will count vehicles that have entered the pedestrian zone.

**Installation of RFID antennas** for tracking vehicles in the pedestrian zone (to make it easier to find out how long they stay and how much everything affects residents and the environment).

**Setting up of lifting poles** at all entrances to the pedestrian zone.

**Introduce new regulatory measures** to have a better and more comprehensive strategy for the management of delivery vehicles in the pedestrian zone of the Peninsula.







**CITY OF LUCCA (Lucca, IT)**  
Project coordinator, main technological site



**LUCENSE (Lucca, IT)**  
Design and management of the demonstration site  
Technical support for demonstration activities



**MEMEX (Livorno, IT)**  
Technical support and environmental impact assessment



**MUNICIPIA SPA ENGINEERING GROUP (Roma, IT)**  
ITS manufacturer, development of the integrated system managing RFID antennas, parking bays and cargo bike stations (LOCMAP)



**CITY OF STOCKHOLM (S)**  
Assessment of logistical schemes and transferability to metropolitan areas



**CITY OF ZADAR (HR)**  
Assessment of logistics schemes and transferability to other small and medium-sized historic cities



Demonstration site located  
in the Lucca urban area,  
Tuscany, IT

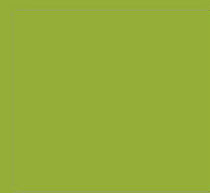


**3 EU MEMBER STATES**  
CROATIA - ITALY - SWEDEN



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