

# Replicate

## Final conference



Donostia/San Sebastián

26<sup>th</sup> March 2021



donostiasustapena  
fomentosansebastián



This project has received funding from  
the European Union's Horizon 2020  
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# IT'S (not) EASY TO SAY SMART CITY

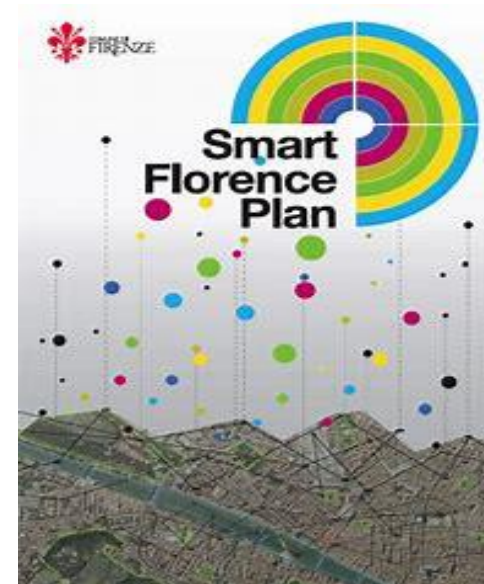


Alessandra Barbieri, City of Florence

## BLOCK I: SUCCESSFUL CITY MODELS FOR TRANSFORMATION OF DISTRICTS

# THE COMMITMENT

#planningforabetterlife #actingforabetterfuture



*from planning to action*



*smart city human-centric:  
people needs first*

the city as a "service" that should satisfy its customers and use adequate communication strategies to reach/involve them and understand their needs.

Parco delle Cascine

*the widespread city*

REPLICATE DISTRICT PROJECT  
Cascine/Novoli/Le Piagge





# FLORENCE PILOT



## energy

Shell insulation / Solar cells and preliminary project of the whole heating plan and distribution at Le Piagge.

Implementation of Smart Grids functionalities on HV/MV and MV/LV substations and sensors enabling the remote control and automation of distribution network assets.

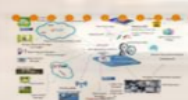
Smart lighting system matches with traffic control. New model of the lamp post smart lighting system matches with wifi and "light" surveillance system.



## mobility

The public tender of the 70 e-taxis has been closed and the e-licenses assigned.

4 Fast Recharge Plus 1G stations in public area for exclusive use of taxis.



## ICT

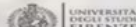
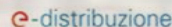
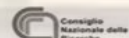
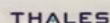
Bird's eye view of the Florence ICT pilot: the result of the planning.



## approach

Planning for a better life and a participatory method based on the system thinking methodology and the involvement and engagement of the people thanks to the marathon of listening.

Citizen approach - presentation of video at the Firenze Light Festival. Learn more>>



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*The aim was to realize an innovative, smart and integrated city district as defined in the Smart City Plan. The different pilot actions in **energy efficiency, sustainable mobility and Innovation Technology** have been deployed, tested and revised and then adapt and extended to the comprehensive and sustainable City Business Model to be replicated at city and metropolitan level and in other similar cities*



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# THE PILOT ACTIONS



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# ENERGY EFFICIENCY



*The energy actions have been concentrated on the same buildings ("Le Piagge"), integrating all different aspects (shell insulation, micro DH network installation, RES & seasonal thermal storage technologies integration) to study their technical and economical interactions.*

**300 dwellings**

**700 people**

**20.000 m<sup>2</sup>**

***Saving consumption >50% and -10% bills***

***Insulation & DH (first and second phase): exceeding the reduction of 320 tCO<sub>2</sub> in 2020.***

***Cumulative savings during project lifetime: >630 t CO<sub>2</sub>***





# SMART GRID DEMAND SIDE PLATFORM IMPLEMENTATION



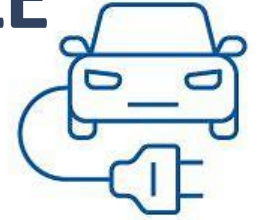
*advanced remote control and automation functionalities on L/MV network on **2 primary and 60 secondary substations** enabling services (e-mobility, active demand) and resilience,  
**600 smart info devices** distributed  
**25.000 citizen involved***

*- **3100 t CO<sub>2</sub>/year***

*The number of **interruptions** per customer have **dropped by 23%** in two years, increasing thereby the quality of the service*



# SUSTAINABLE MOBILITY



**100 ev for taxi fleet**

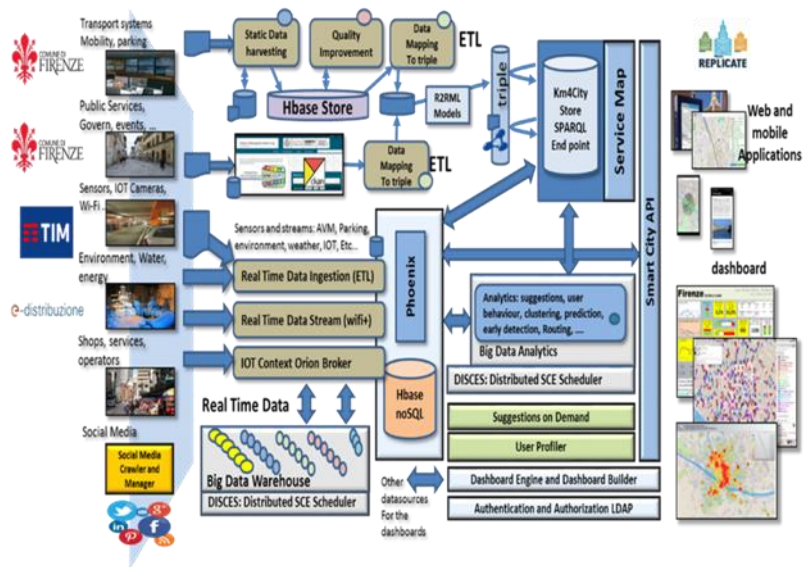
**6 superfast recharge for taxis**

**40 public recharging stations in the district**

**new services:** control system to user information, advanced mobility services to vulnerable citizen, ad hoc system and information for taxi fleets

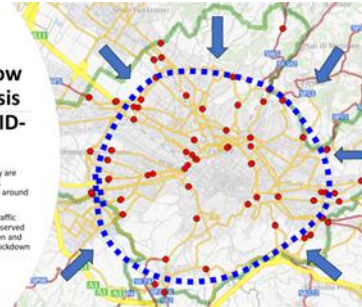
- **e-taxi action** -109 t CO<sub>2</sub>/y with **cumulated savings** during the project of 350 t CO<sub>2</sub>
- **fast recharging infrastructure:** in 2019 >10,000 recharges in a year.
- **public charging:** -180 t CO<sub>2</sub>/y with a **cumulated result** of 516 t CO<sub>2</sub> and a max of 60.000 recharges in 2017 and 2018





#### Vehicles flow data analysis in the COVID-19 time

- Vehicles entering the city are constantly monitored by 31 measuring stations located around the city center.
- During lockdown days, traffic flow reduction has been observed day by day to monitor citizen and city users activity and the lockdown regulations compliance.



#### Florence Smart Traffic Management Traffic flow dashboard



# ICT & INFRASTRUCTURE



Local IT Systems of Comune di Firenze integrated with **ICT Smart City Platform** concept. This platform will act as a citywide dashboard regarding smart measurements. Several services are deployed through the project platform organized by thematic dashboards “talking each others”, cyber proof and in compliance with the EU General Data Protection Regulation (GDPR)







# NETWORKING SENSORS & CAPILLARY NETWORKS



*smart benches*  
*smart waste bins*  
*smart irrigation system*  
*(connected to the Smart City Platform)*  
*CityLink smart call-boxes by TIM*

*Smart watering registered 30% saving*  
*in water irrigation per year*





# DIGITAL SERVICES



## *GoalGreen: energy app*

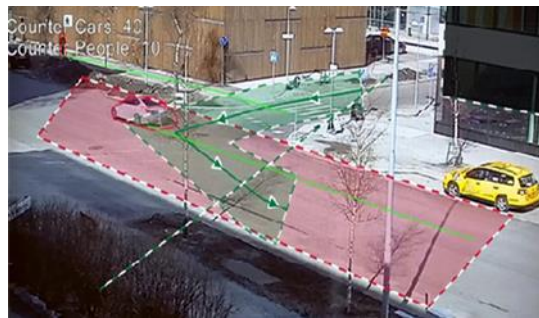
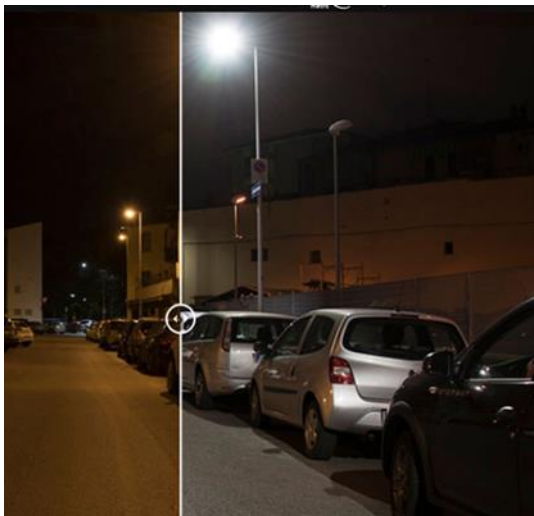
- *unique accesses and downloads after the test phase about 200*
- *average impact of -3 % in energy consumption for behavioural changes*

**Fast Booking:** booking app is in use by taxi Drivers (100) scaled app in JuicePass (EnelX app)

**Pilot Florence:** webapp study visit (more efficient way to present the outcomes of the project Widespread on a large area )







# SMART LIGHTING



*1000 led lights (of which 286 only changing the bulbs and 695 with a complete refurbishment of the network and adaptive lighting in 70 lighting spots) and techno equipment for value added services (WIFI, sensors, traffic control, 30 cameras video-surveillance...)*

*-372 MWh/y in 2020 with a **cumulated reduction already of 1.223 MWh** at December 2020*

*-180 t CO<sub>2</sub>/y, the **cumulated reduction** since the beginning of the project is of **about 600 t CO<sub>2</sub>**.*





# MEASURING THE IMPACT



*Covid pandemic has affected the implementations in terms of delays for the works and impacts, especially for those measures related to mobility.*

*The assessment of results and comparison have been more difficult, but in some cases full results had been already registered for 2019.*

*On the other hand, this peculiar situation has highlighted the flexibility of ICT technologies to be used for further scopes (video-surveillance, wi-fi, smart city platform....).*

*The social acceptance of all the actions (buildings, smart grid, sustainable mobility, ICT infrastructure...) has improved thanks to the increase of sensibility towards green and sustainable life in urban areas*





### environmental impact

ENERGY SAVINGS PER YEAR: **3.827 MWh/y**

CO2 SAVINGS PER YEAR: **791 t/y**

CUMULATED ENERGY SAVINGS OF THE PROJECT (2016-2020): **10.150 MWh**

CUMULATED CO2 SAVINGS of the PROJECT (2016 – 2020): **2.100 t**

### financial impact

TOTAL COST: **8,8 M€**

### social impact

PEOPLE ENGAGEMENT, SOCIAL INCLUSION, ENERGY POVERTY, AFFORDABLE AND SUSTAINABLE HOUSING, NEW SERVICES VULNERABLE PEOPLE, SECURITY AND EMERGENCY ISSUES, SOCIAL ACCEPTANCE.

A special mention should be made of the role of the **Smart City Platform** during the Covid-19 crisis: it has supported analysis about mobility and air quality and has facilitated decision making crisis phase changes (public transport, flexible schools and work schedule...).

## TOTAL IMPACT OF THE PILOT



# REPLICATION



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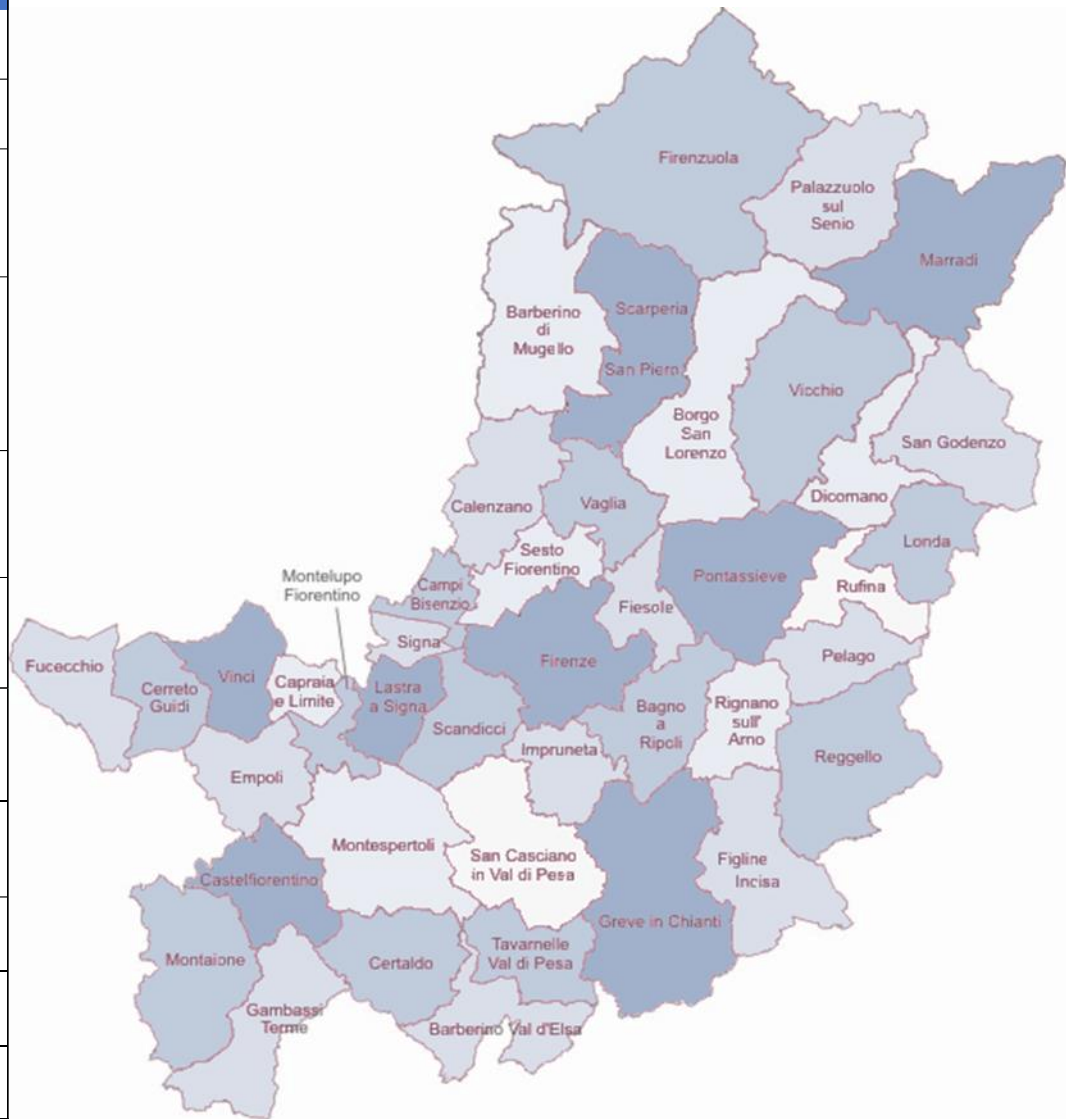


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ACTION	FI	ADAPTATIONS	STRATEGY/PLAN	
DH & RES	Mid-long	<ul style="list-style-type: none"> <li>- detect optimal conditions for replication (different size, different kind/mix of users, less boundaries)</li> <li>- analyse the heating map for scale up areas</li> <li>- add an EDM system for heating</li> </ul>	SECAP, municipal Operational Plan	
Retrofitting	Mid	<ul style="list-style-type: none"> <li>-Facilitate fiscal detractions transfer (from 65 to 85%) from private single owners and buildings managers to ESCOs.</li> <li>-Promote the actuation of “volume zero” and SCP concepts</li> <li>-agreements with private sector for insulation</li> </ul>	SECAP, municipal Operational Plan	
EDM, Smart Homes, Energy APP	Mid	<ul style="list-style-type: none"> <li>- Regarding electricity consumption, the BCC smart homes experience should be analysed for replication together with e-distribuzione (DSO) and industrial players (Symens as Milan partner).</li> <li>- For heating networks, the Piagge management model under development could be compared and “contaminated” by the SS experience.</li> <li>- inclusion of other topics (plastic-free, etc) in the APP on going</li> <li>- possible extension of the APP to any interested municipality in the metropolitan area/region</li> </ul>	- SECAP	-Urban Plan
e-mobility infrastructure, e-taxi fleet, smart grid	Short	<ul style="list-style-type: none"> <li>- Monitor the data and optimise the use of the network.</li> <li>- Update technology to reduce recharging periods in public network</li> <li>- Extend the network to metropolitan area (SUMP)</li> <li>- Exploit national supporting framework</li> <li>- Extend to the whole taxi fleet and to the neighbouring municipalities (SUMP)</li> <li>- Open the dialogue with mobility managers for other fleets</li> <li>- Promote installation on private areas (tourism and commercial sectors)</li> <li>- Involve more and more tourism sector to prioritize e-mobility</li> <li>- Definition with the DSO of extensions (replication in other cities already under development) and of the possible services connected</li> </ul>	SUMP already adopted at metropolitan level: - New stations by private sector and Fast recharge for 4M€ 2026-2030 -1,5 M€ for the complete conversion of the fleet 2020-2025 Smart City Plan & SECAP: - smart & resilient grid -E-mobility	
e-bus and flexible smart services	Short	<ul style="list-style-type: none"> <li>- E-bus:</li> <li>- Analyse the on-going test results.</li> <li>- Involve the PT company and exploit the national subsidies to improve the fleet (80%) at metropolitan level (SUMP)</li> <li>- Support the infrastructure deployment (SUMP)</li> <li>- Promote information campaign (linked to the green shield)</li> </ul>	Already tested and included in the SUMP for the metropolitan area -40M€ for the urban PT fleet conversion into Electric/Ibrid 2026-2030 -70 M€ for the realisation of the “bus rapid transit” lines with electric busses and recharges at the stops 2021-2030	
e-bikes sharing	Short	<ul style="list-style-type: none"> <li>- Project on E-bikes started</li> <li>- Many other sharing opportunities already in place (cars, e-cars, bikes).</li> <li>- SUMP already adopted for the extension to the metropolitan area</li> <li>- sustainable Sharing systems revamped post Corona-crisis</li> </ul>	included in the SUMP for the metropolitan area: -Bid for additional 3000 e-bikes provided by private operator in free flow modality (2021-2025). -New parking areas for 1.250.000€ and new lanes (bicipolitana, super-ciclabile, new-lanes, “ricicature”, retrofitting of areas...) for more than 100M€ by the municipality	
mobility APPs	Short	<ul style="list-style-type: none"> <li>- Comprehensive info mobility app foreseen at metropolitan level in the SUMP.</li> <li>- Parking app: info foreseen but gathered by sensors and ticketing system. Cost of about 1M€ but more income for 10 M€/y for a better use of free spaces</li> <li>-Multimodal app trial available since Sept 19. Differences with other systems (google): more precise local PT timetable, more updated municipal decrees and works blocks, few but targeted info notices, users’ choices to be tracked and analysed, e-ticketing links available</li> </ul>	Infomobility App already foreseen in SUMP and in post-covid Renaissance Plan to better manage possible congestion effects	
ICT platform	Short	<ul style="list-style-type: none"> <li>- Smart City Control Room under development thanks to synergies with PON METRO financing</li> <li>- REGIONAL EXTENSION ALREADY DECDED</li> <li>- Develop further dashboards and train more users.</li> <li>- Involve further services</li> </ul>	-SUMP: 3M€ for integration of new services and 8M€ for full ITS system within 2025, -Smart City Plan, - Regional agreement (national exemplar test for PAs cooperation for AGID)	
IoT	Short-mid	<ul style="list-style-type: none"> <li>- Analyse the extension of smart irrigation to other parks</li> <li>- replication of smart waste in place by Alia</li> <li>- define the data management system or combination to be implemented among those in place in the pilot</li> </ul>	Smart City Plan	Green Plan
Smart lighting	Short	<ul style="list-style-type: none"> <li>- Extension in place in the whole city (PON METRO)</li> <li>- Smart crosswalks within 2025 (2M€ PUMS)</li> <li>- possible replication in metropolitan area and region</li> <li>- possible exploitation of Silfi know how (design and tendering docs)</li> </ul>	Already on going with PON-METRO program support Related strategy/Plan: Smart City Plan, SECAP	
Citizens’ participation	Short	<ul style="list-style-type: none"> <li>- Evaluate together with Silfi/Linea Comune the possibility of replicating some aspects of the approach to arrange a feasible and sustainable model</li> <li>- surveys and citizens participation on the web will be enhanced (starting from the new Renaissance plan for post-Covid recovery)</li> </ul>	-Smart City Plan - Cabinet decision to start the Digital factory for digital capacity building (CSPCL 90.000€/year)	





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**SHORT TERM REPLICATION**

**CO2 SAVING PER YEAR: 30.000 t/y**

**INVESTMENTS ALREADY PLANNED: 320 M€**



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RENAISSANCE OF PLACES  
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*everything has been possible thank to a consortium based on public/private big local players cooperation: municipality (together with inhouse as third parties), university and national research centre, SMEs, big enterprises and ...*







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# Any Questions?

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COMUNE DI  
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