

Measure title : On-street parking enforcement and management through a sensor system
Country: Italy
City: Treviso

A1 Objectives

The main objective of this measure was to improve the city's parking policy both in terms of efficiency and in terms of user friendliness. This has been achieved mainly through:

- A massive use of Information and Communication Technology (ICT) to manage the parking area, namely the use of sensor technology;
- A reduction in the enforcement costs (i.e. less wardens);
- The use of the data generated by the system to be able to better evaluate the effects of parking policy and to help the (political) decision making process.

A2 Description of the CS

Since 2010 the city of Treviso has used of the lpark system to manage the inner-city parking area, called TREVISOSTA. This parking management system utilises sensor technology to manage approximately 2,400 on-street parking spaces in the city centre. Each parking space is provided with a sensor and a number (see figure 1). The sensor is able to detect the presence of a vehicle and to send this information to the system. A car driver must pay for parking at the parking meter: he has to enter the number of the parking bay where he parked and the amount of time he wants to stay. It is not necessary to put the ticket issued by the parking meter in the car's front window. The system automatically checks whether there has been a payment for the parking bay where the sensor detects a vehicle. There is no need for wardens to check the area. In case of any deviation – i.e. a sensor detects a vehicle in a bay for which no payment has been made – the monitoring team (wardens) can easily identify the vehicle that has not paid and issue a fine.

If the user wants to extend the parking time he can do it from any other parking meter in the central area (there are 54 parking meters in the whole area) or via mobile phone by indicating the number of the parking bay where he/she parked the car. This has increased the user friendliness of the parking system.

The main advantages of the system are: more efficient enforcement (i.e. lower costs), a higher user friendliness and the generation of detailed parking data that are used to shape the parking policy. Additionally, the user friendliness of the system contributes to better acceptance of the parking management measure, namely paid parking.



Figure 1: Sensor, parking bay number and parking meters of the TREVISOSTA system.

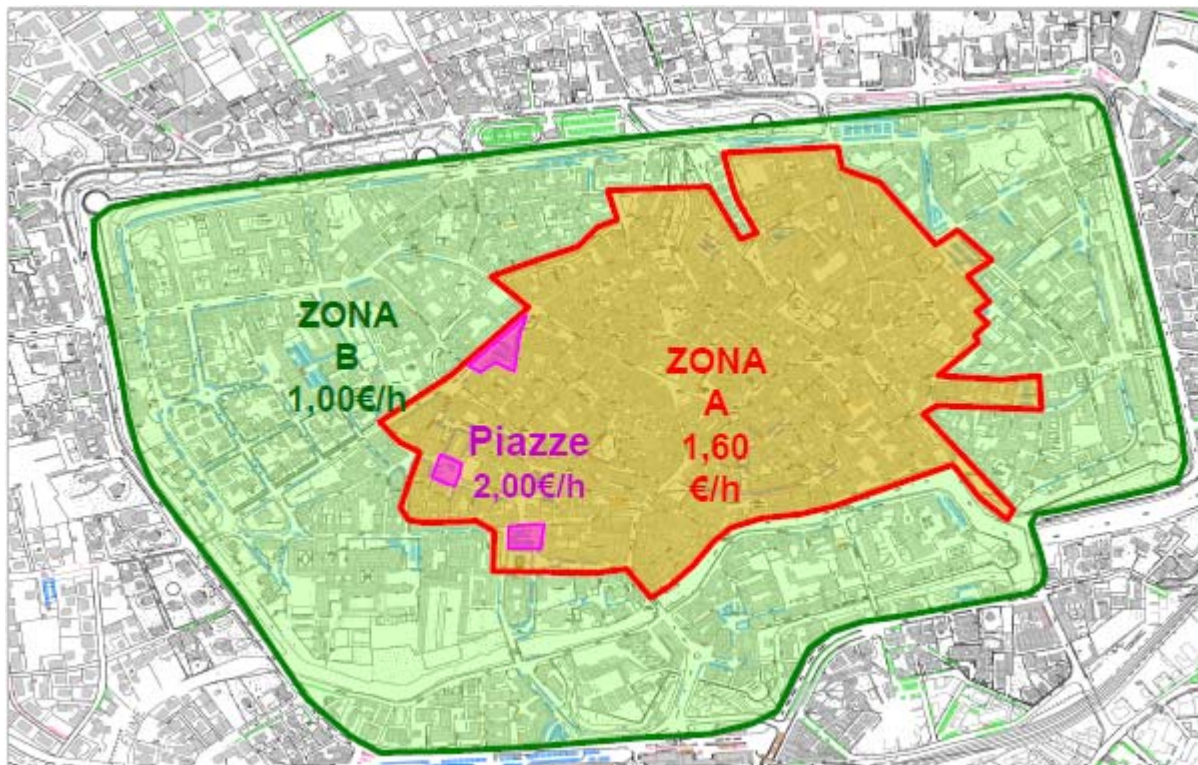


Figure 2: the parking management area in the innercity has two zones (A and B) and three tariffs.

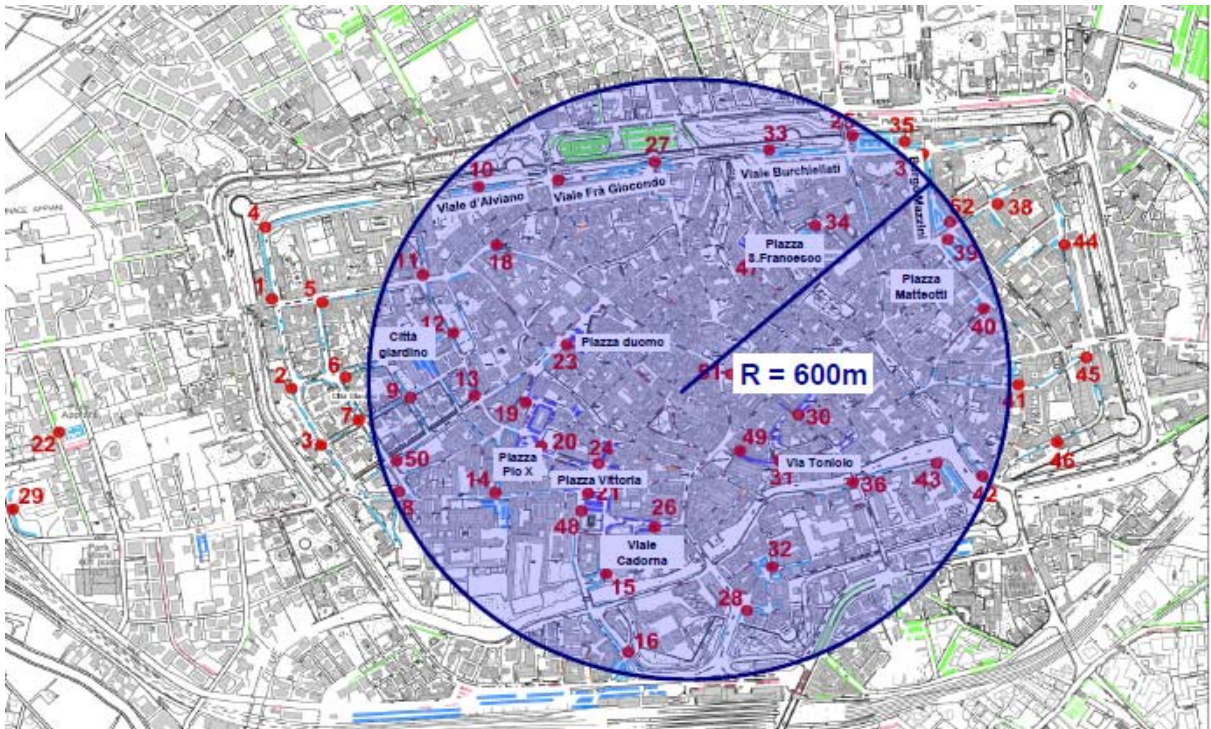


Figure 3: 52 parking meters are enough to cover the whole parking management area, which includes 2,400 parking spaces on-street.

B Costs and who paid them

The parking management system has been paid by the (private) company that runs the system. Accordingly it did not lead to any extra costs for the municipality. The private company running the systems gets a fixed percentage of the revenues as fee.

C Project objectives, indicators, data and impact/results

OBJECTIVE	INDICATOR	DATA USED	IMPACT/RESULTS
<i>Reduce the enforcement costs</i>	<i>Number of wardens used for the enforcement</i>	<i>All data come from the Parking Management System of the city</i>	<i>The local authority utilizes only a few people for enforcement</i>
<i>Improve the user-friendliness of the system</i>	<i>Surveys</i>		<i>Surveys among users suggest that both drivers and local entrepreneurs are happy with the parking system</i>
<i>Improve the monitoring system for the local authority</i>	<i>Real time data on occupancy</i>		<i>Creation of a dataset that allows the local authority to monitor the effects of new policies (i.e. change in tariffs)</i>
<i>Use of data to better shape policy</i>	<i>General data collection</i>		<i>Data are now used during the decision making process for new policy</i>

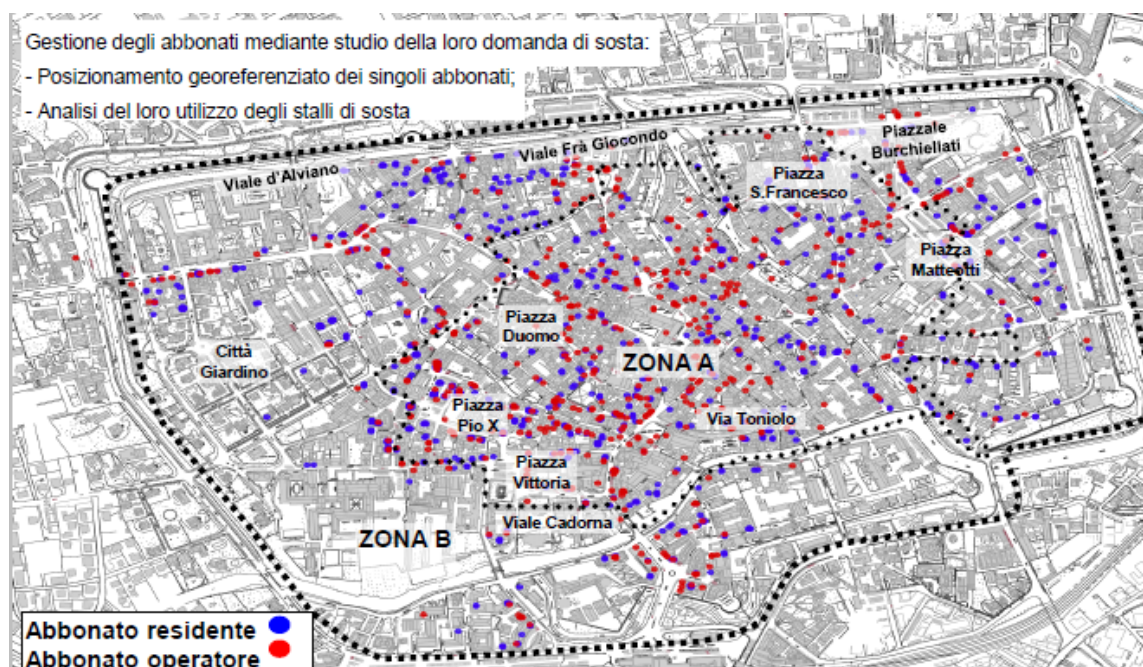


Figure 4: example of the data provided by the system: blu dots are residents holding a permit, red dots are non residents holding a parking permit.



Figure 5: example of the data provided by the system: real time information about the occupancy ratio per parking lot.

D Implementation process

D1. Stages

In 2010 the local authority decided to invest in new technology in order to manage the parking system in the central area. It has been decided to make use of sensor systems: each parking lot has been equipped with a sensor (see figure 1) that is able to detect a vehicle parked.

D2 Barriers

No specific barriers and/or problems have been encountered. The funding issue has been solved by outsourcing the whole parking management system. The total investment – i.e. the installation of the sensors in each bay and of the new parking meters – has been paid by the private company that operates the system. The company gets a fee of the total parking income and is responsible for the functioning of the system.

D3 Drivers –

- **The city was willing to invest in ICT to improve the management of the parking area** – The advantages offered by the sensor system were one of the main reasons to adopt this kind of parking management system.
- The **technical possibilities** of the sensor system provided several benefits both for the drivers – increased user friendliness of parking – and for the local authority – reduce enforcement costs, better monitoring and state-of-the-art information to better shape policy.

- **Funding** has been facilitated by the outsourcing of the exploitation aspect of parking. The whole investment has been made by the private company operating the system, which gets a fee of the total parking income. No extra costs were incurred by the local authority.

The description was based mainly on two reports:

- Gini, S., Mingardo, M., D'Allanol, M., Ambrosino, G. and Liberato, A. (2014), *Sustainable mobility governance in small and medium historic town: the LIFE + PERTH project approach*, Transport Research Arena 2014, Paris;
- Mingardo, M. (2014), *Le città' cintate al tempo della smart city: modelli, strumenti e proposte per lo sviluppo sostenibile*, conference presentation, Lucca, 10th October 2014.