

Smart and flexible parking by emerging technology

Autumn 2018



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- Increase in parking occupancy rate
- Innovative parking monitoring equipment
- Emission and traffic reduction

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.

Location: Stockholm, Sweden

Organisations involved: [City of Stockholm](#)

What is the solution?

The city of Stockholm has recently extended the area in which a fee is required for on-street parking. As a result, the city needs to cover a larger area for parking surveillance. To achieve this goal, this measure aims to research, test and evaluate new systems for smart, efficient and accurate parking surveillance, using laser radar and cameras on cruising vehicles. The measure also aims to test systems that guide drivers in Stockholm to currently unoccupied parking spots on the streets in Stockholm, providing live data in a parking app. This leads to more efficient use of available parking, more efficient parking management and thus also less “searching for available parking” - traffic.

How does it work?

Stockholm has implemented a new parking plan, including a major extension of flat rate on-street parking for residents in areas outside the inner city. In these areas parking used to be free of charge. To meet the need for parking surveillance in this area, the city of Stockholm is piloting two semi-automatic systems for on-street parking surveillance. The tested systems will simultaneously perform parking surveillance and gather and process data to provide citizens with real-time information about where to find available parking.

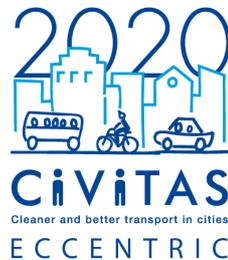
To set up this pilot, the Stockholm Traffic Department launched a procurement of innovation procedure for which suppliers were invited to give innovative suggestions on how to solve the task. A jury from the traffic department selected two out of twelve contributions for a test. The winning contributions use technology from Brickyard (a Dutch company) and Parkling (a German company). Both systems use vehicles cruising the streets gathering data about occupied and available parking spaces along the roads. Data collected by the vehicles is combined in real time and streets with available parking spaces are marked green in an app, developed for this purpose, guiding drivers to streets more likely to have available parking. As the car leaves the parking spot the app reports the spot as available again. Hence the more drivers use the app the more accurate the information.

In Brickyard's system, the parked cars are identified with license plate recognition. Information about the parked cars is electronically combined both with the system registering paid fees and with the system keeping track of where parking is allowed. To function effectively, Stockholm's most modern parking payment system must be in place, registering the plate number in connection to the payment. The above-mentioned parking app will also provide this function, alternatively, drivers can register their license plates when paying for their parking spot at a parking ticket vending machine. This allows the cruising vehicle to identify whether a license plate is connected to a parking payment.

Expected results

This measure will contribute to a more liveable suburban environment by reducing parking search time, improving traffic conditions and traffic safety, reducing emissions resulting from parking searches and optimising the available road space. The data collected will also give indications of the possibilities to reduce the number of parking spaces and increasing parking occupancy. The insights gained during the pilot phase of the tested solutions will give baseline data for possible full-scale implementation.

Evaluations from other cities show that using innovative parking solutions reduces the search traffic by 30 per cent relative to the control area, resulting in a CO₂ reduction relative to the control area of 24 per cent. If the same results can be achieved in Stockholm with 350 parking spaces the results would be a reduction of vehicle kilometres by 18,000 km annually and CO₂ reductions from road traffic by 9,5 tonnes annually.



THE CIVITAS INITIATIVE
IS CO-FINANCED BY THE
EUROPEAN UNION

Business model

This task is supported with 300 000 € from EU Civitas.

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