

Smart parking

REFERENCE
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One of the most famous modern phrases in 21st century is called **Internet of Things**. The question is: can we also use it in the public administration sector (and how)? The answer is quite simple: we can. The unprecedentedly rapid development of technologies can help with connecting locals and the city administration. In general, it is sometimes called SMART City. In this reference, we are connecting smart sensors with a modern visualization tool to ensure reliable and quality services.

A SMART City could have many faces. This reference will be focused on parking in the middle-sized city because this issue often has to be solved by the management of the city. The aim is to simplify interaction between cars and pedestrians to prevent the conflicts between them and also make parking easier and well-arranged. Based on the research, smart parking increases the effectiveness and helps with the collection of parking fees. Smart parking has increased the amount of collected fees up to 120% in some cities – that result declares smart parking as a good and profitable investment for city management and could be a significant source of revenue.

The environment characteristic before SCADA visualization

The project is situated in Kolin (Czech Republic) in the main square. There are 60 parking spaces (a few of them for the City Hall workers and local business people) and the current situation on the square is marked by heavy traffic and drivers who are looking for a parking spot.

The obsolete parking machines were not able to communicate with the database system and neither administration nor control were possible. There was no option to pay via contactless card, which is very popular and almost necessary to have in this century.



Targets and project assignment

The main target is to get the **traffic and the parking under control**, calm the traffic on the square, inform drivers where they can park the car, and send them to the parking place directly. It will reduce the driving time, which, in turn, will reduce the air pollution that automobile traffic causes. The partial goals are to test the new paying and controlling methods.

Customized parking solution

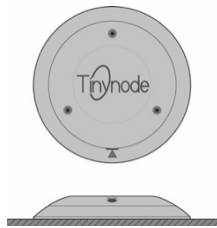
SPEL company (solution provider) was challenged to come up with a brave solution in a very short time to ensure the decrease of the traffic in Kolin. SPEL already has the sensors (hardware) but they were looking for a software which could fit the requirements – **to visualize data from the sensors** immediately and accurately.

The **unlimited number of clients** (in this case: local inhabitants) who will have online access to the visualization through web browser, was also necessary condition of the client. The software solution has to meet the requirements and also be simple enough to use for the end users. mySCADA met all of these conditions.

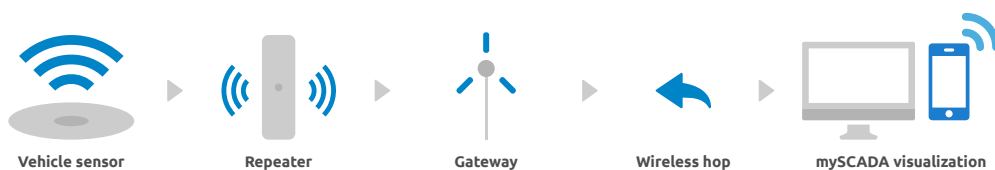
The smart parking system is also applicable to covered parking ramps. For both cases it needs these: *wireless sensors* to monitor the parking place and the software for *visualization of the measured data* – mySCADA.

Step by step installation

1. Each parking space has its own wireless sensor that monitors the occupancy of the place.



2. This information is sent with the repeater to the gateway and then to the central database of the parking system.



- The status of the parking space is shown in the visualization immediately (occupied/available). This visualization is available on the **web browser** or **mobile application** which is free to download online.



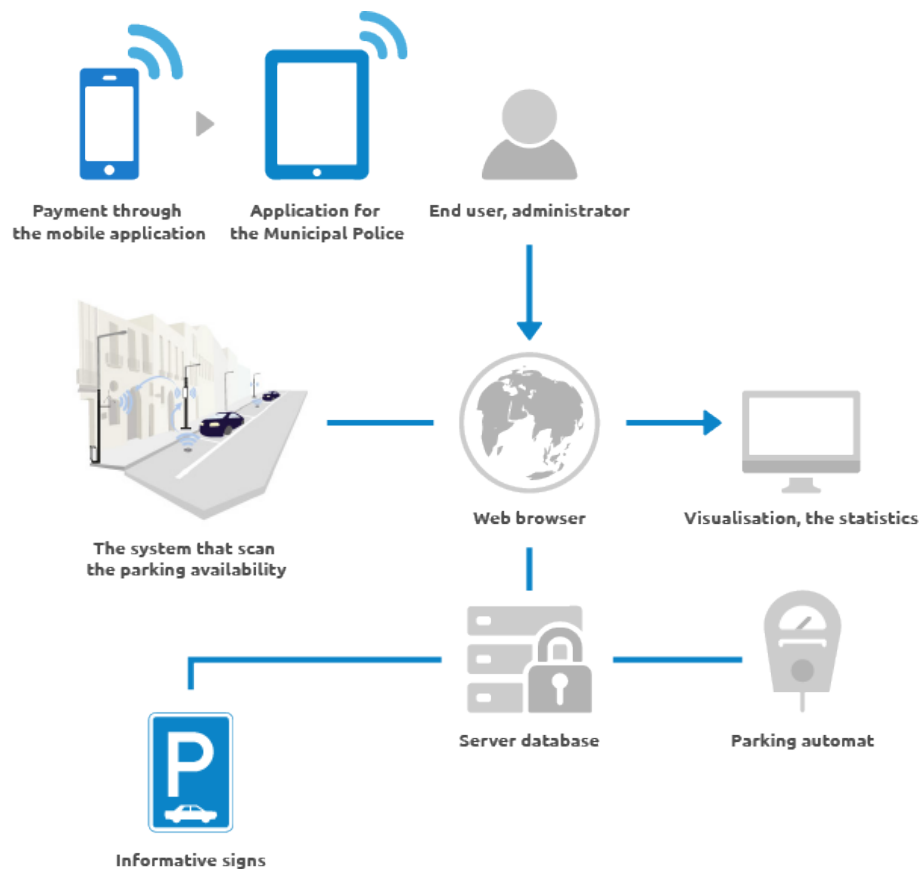
Note. Sensor is easy installable in a parking space. It is water and temperature resistant. The sensor is not only able to send the information about the parking status but also about the battery condition.

SMART service for end users

The current status of the parking spot is displayed in the informational panels which are placed on the streets around the main square so the drivers can see the availability of the parking spot just in real time. The other way is to check the situation through a web browser or **download the application to the smart device** (smart phone or tablet). The application enables **cashless payment** or the extension of the parking time online. This feature is frequently used and highly appreciated by busy drivers because they do not have to come back and pay at the kiosk.

The end users are not prosecuted by the Municipal Police if they do not expose the proof of payment properly because the police has its own application which is connected to the current system and shows all information about the payments and so on.

Overview of the parking system



The added value of the system

Thanks to the connection of sensors and the visualization system, there is an easy way to get the information the user is looking for.

In Kolin, there are at least three types of users. The *drivers* who arrive to the city need to find a parking spot immediately. With the mySCADA visualization they can find it just in time of arrival. The system also allows seamless payment, which saves customers time. Through the visualization, they are able to **see the current situation from anywhere at any time**.

On the other hand, the system can easily be used by the *employers* of the Municipal Office. In this case they are using the data for optimization of the parking in the city – the data is **exported to MS Excel** and then statistically processed and evaluated. The first month of use has demonstrated that this system became a convenient and profitable investment for the City Hall and their citizens. The collection of the parking fees is more effective and much faster than ever before.

The last, but not least, user is the *Municipal Police* already mentioned above. They control the payments via online databases placed in their application. According to the analysis, the traffic situation has significantly improved over the past months.



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