IEM

INNOVATIVE
PARKING
SOLUTIONS FOR
SMART CITIES

SENSORS

PrestoSense

VEHICLE DETECTION SENSOR

A better city center through a better management of on-street parking

PrestoSense sensors are installed on on-street parking bays. They not only detect a vehicle's presence, but also the parking duration of a car. The information is forwarded to the parking operator. He uses the data to analyze the load and turnover rate of his car park and to optimize enforcement. The motorist uses the information directly on his smartphone. The city's traffic guidance system or the motorist's GPS system guide him to the next available parking bay.

PrestoSense is another tool to create dynamic, citizen friendly city centers. Motorists optimize their travel time and route to the next available parking bay in the inner city even before they start their journey. Additionally, an optimized enforcement increases the rotation on the sought-after parking bays in city centers and thus lead to more potential customers for retail shops in inner cities.

Dual detection sensors

As second generation detection sensors, PrestoSense operates with an IEM patented sensing technology, based on magnetic and ultrasonic measurement. When changing the magnetic field, resulting in the movement of a metallic mass in the space close to the sensor, this one activates the ultrasonic detection to verify the information and thus exclude any interference that could affect the result. This double detection allows a reliability rate of 99%.

A measurement every 2 seconds

The measurements are cyclic and the duration between 2 measurements is of 2 seconds what ensures the vision of a fast change of vehicle. The information is sent via Lora to an interval lower than the minute.

Internet of Things technology

The sensors communicate via LoRaWAN (Low Power Wide Area) network, an open low cost telecommunications network, suitable for secure, low volume data transfer allowing multiple applications for smart cities.

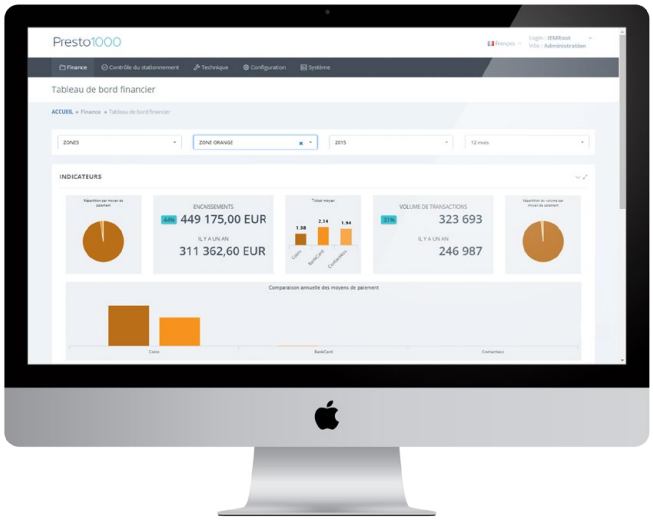
ACCURATE, DETAILED DATA

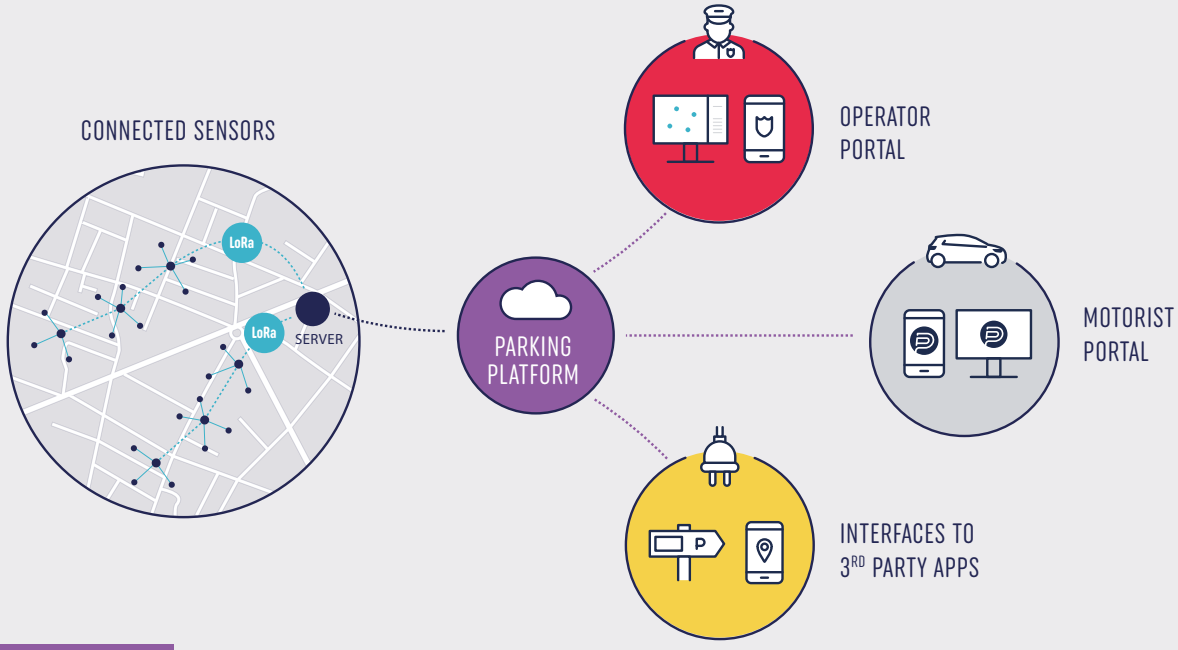
The PrestoSense sensor's dual detection system returns high-quality, real-time data. Not only does it detect a vehicle's presence, it also detects its arrival and departure, providing useful information about user behavior.

The occupancy rate and turnover rate are used to monitor on-street parking in detail. The aim is to check whether supply matches demand, and whether decisions need to be made about urban parking facilities or mobility services.

Data on parking duration is used to focus enforcement checks on vehicles that have exceeded the time limit. Fining illegally-parked vehicles helps to increase the turnover rate and therefore the number of available parking spaces.

Once correlated with payment information, it is used to calculate the payment compliance rate. The latter is measured on a permanent basis in targeted periods and zones to test the effectiveness of the parking policy and the range of available payment methods and enforcement methods.





WHAT HAPPENS TO THE DATA ?

PARKING SERVICE OPERATORS

The operators use the data to analyze user behavior and occupation of the parking spaces under their management. The data reports are invaluable decision aids for designing an efficient parking policy.

ENFORCEMENT OFFICERS

Enforcement officers cannot systematically check every vehicle, so need to efficiently target enforcement to boost user compliance with parking regulations.

IEM's platform is interfaced with the enforcement systems and instantly informs enforcement officers of parking spaces where paid parking has expired, potentially after a specified grace period.

By analyzing parking violations per zone, the city can optimize enforcement officers' surveillance rounds and target the places and periods in which users are most likely to be illegally parked, thereby pushing up the payment compliance rate.

MOTORISTS

Motorists in their vehicle will receive real-time information about available parking spaces so that they can optimize their routes. Information sent to their smartphone, GPS system or the city's information panels will guide them to available parking spaces and reduce their journey time. This will help keep traffic flows moving in inner-city areas.

MOBILITY-RELATED APPS

Two data-processing operations may be of interest to developers of mobile apps for motorists.

To provide a complete range of services for users, real-time information about available parking spaces could be included in the mobile apps used to pay for parking. It could also be incorporated into the apps that collate all of the city's information, or more specifically information about mobility and the car (on-street and off-street parking).

This same data collected in several periods and zones can be incorporated into apps in the form of algorithms, using predictions and statistical modeling to guide users to available parking spaces.

ONBOARD INFORMATION SYSTEMS

As an additional service for motorists, information about available parking spaces in a city could be sent directly to the vehicle by the vehicle manufacturers or to mobile GPS devices. Automobile industry stakeholders, in their constant search for driver aids, are working hand-in-hand with manufacturers in the parking sector.

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INSTALLATION

Surface mounted

The sensors are mounted directly on the road surface and secured in place by a mount ring. Installation is rapid and at limited cost. The sensor is sufficiently resistant to withstand the weight of any type of vehicle.

Recessed

For an even more unobtrusive installation, the sensor can be set into the asphalt. Because the sensor is not very high, drilling the recess hole in the road surface is a simple operation and does not affect the sealing layer. The visible part of the sensor is only 12.4 cm in diameter. It is level with the road surface, so no damage is caused when snow plows drive over it.

TECHNICAL INFORMATION

PrestoSense	
Size	Diam210 x H25 mm with ring Diam124 x H25 mm whithout ring
Weight	560 g with ring 330 g whithout ring
Material	Resistant resin, withstanding constraints of urban streets
Power supply	Lithium battery
Detection technology	Magnetic and ultrasonic Detection distance : from 0 to 90 cm
Measuring cycle	Time between 2 measurements: 2 seconds (allows to see a quick change of vehicle) Time to send information via Lora: less than 1 minute
Reliability	Life span 8 years Regular traffic, up to 10 tons Temperature : -30°C to +70°C Surface mounted or recessed
Protection	IP 67 Waterproof housing
Data	Data transmission to Parking Portal via LoRaWANTM classe A network Maintenance and data collection alarms in real time
Communication	Presto1000, PrestoPark

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