



INNOVATIVE
PARKING
SOLUTIONS FOR
SMART CITIES

Presto Ecosystem

PARKING SOLUTIONS
FOR SMART CITIES





ON-STREET PARKING TODAY AND IN THE FUTURE

The urban population grows with rapid speed. Mobility and on-street parking become a dominant issue in politics, since energy consumption and environment pollution in inner cities increase steadily due to a constantly growing traffic volume. In their search to solve these issues, cities and municipalities orient themselves more on intelligent services and products based on new technologies.

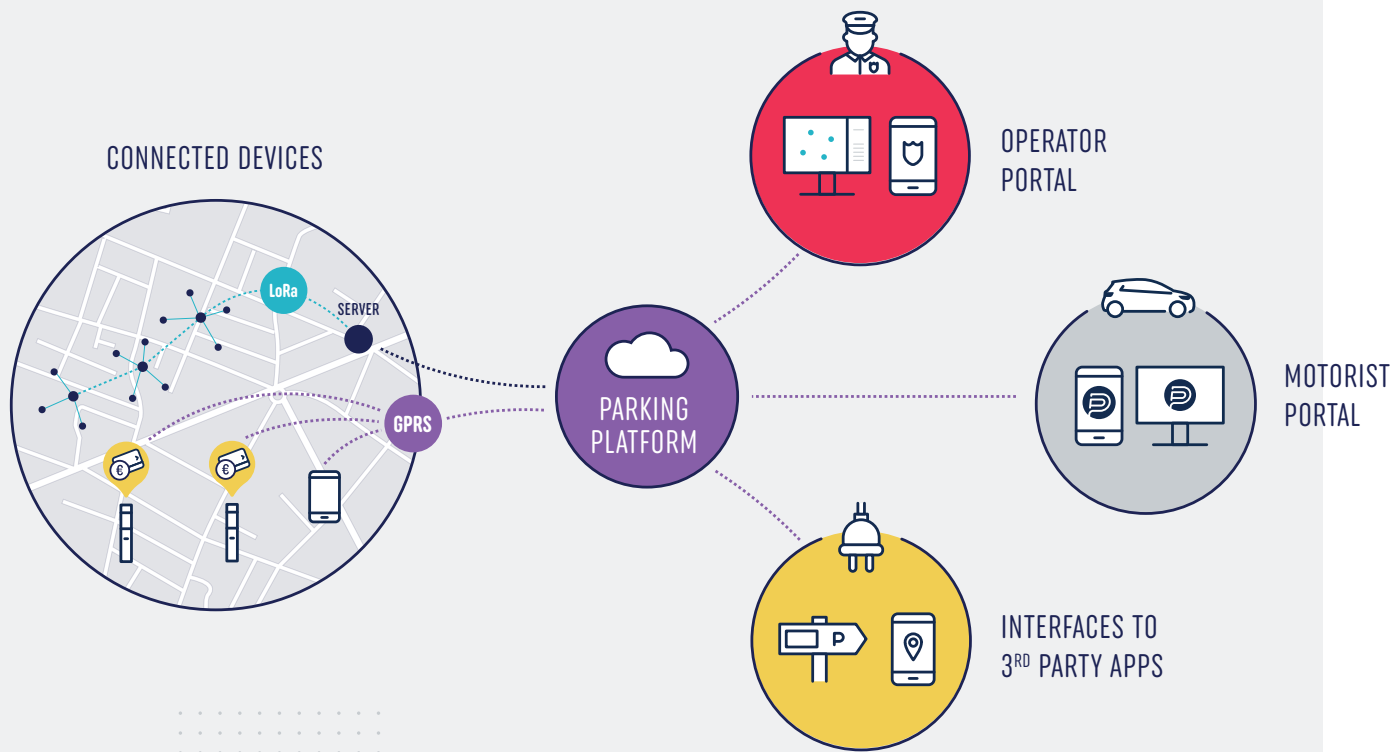
We at IEM support the initiatives of cities and municipalities with [Presto, our ecosystem](#). This is a global management system for on-street parking spaces.

The system comprises of devices and cloud services and fulfills the requirements of parking operators as well as motorists with 3 distinctive solutions: smart parkmeters, virtual services and monitoring of on-street parking bays.

Designed and developed by our engineering team, the parkmeters, on-street sensors and our systems for distance payments generate millions of parking transaction data, which are stored on our servers. These informations are prepared and analysed and serve various appli-

cations, designed to make a parking operator's and motorist's live easier.

All stakeholders in on-street parking, be it parking operators of cities, motorists, or third party solution providers, find in Presto a suitable application or performance analysis report, to understand and manage on-street parking according to individual needs.



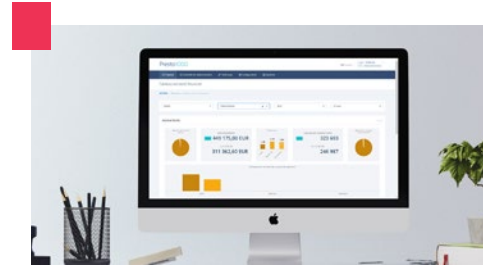
PRESTO ECOSYSTEM

PRESTO ECOSYSTEM

With Presto, IEM created a set of products and services making its urban on-street parking offering the most complete in the industry. IEM's use of state of the art technology provides smart and creative tools for the operator and offers a pleasant parking experience to the motorist.

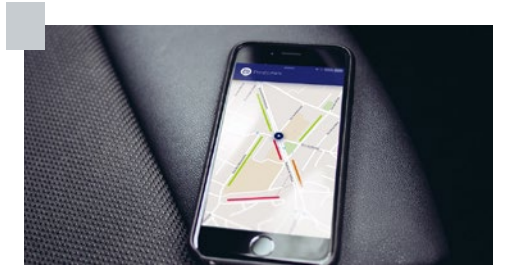
CONNECTED DEVICES

IEM engineers and produces all devices required to capture on-street parking data: parking meters, smart occupancy sensors, e-payment terminals and smart-phone apps. All these systems and devices collect billions of relevant data, disclosing motorist preferences and deliver data to the operator to support parking policy definition.



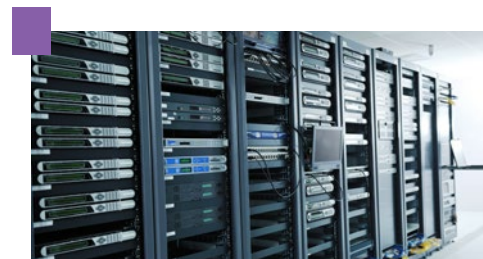
OPERATOR PORTAL

A powerful operator portal is prerequisite for mastering big data, provide decision making fundamentals and managing daily operations. IEM has developed a user friendly, web-based system for management, control and analysis of a city's on-street parking infrastructure. Information for efficient monitoring, supervision, cash collection, enforcement and maintenance are readily accessible and on hand. Real-time key performance indicators presented in an attractive dashboard in combination with analytical data arranged in meaningful statistics provide the information required to create, revise and fine tune a city's parking policy.



MOTORIST PORTAL

PrestoPark is a software portal intended to make a motorist urban parking experience and getting around in the city as convenient as possible. PrestoPark offers a different, driver centric view on data, provided by a city's parking infrastructure. A set of apps are intended to support the driver in buying virtual tickets, subscriptions, finding the nearest parking spot and inform him about alternative transportation means. All informations are on a fingertip's distance be it on a smart phone, tablet or notebook computer.



PARKING PLATFORM

The parking platform collects and stores all transaction data from parking meters, e-payment terminals and driver applications. It is IEM's Data Warehouse used for daily management of the infrastructure, reporting and data analysis. It serves as central repository for all driver or operator centric applications as well as for third party interfaces.



INTERFACES FOR 3RD PARTY APPS

Influencing people's mobility preferences and thus reducing energy consumption and pollution requires a top information offering to the motorist, ready on hand on his preferred device. IEM supports complementary 3rd party systems and offer standard- and individual interfaces between the IEM data portal and external applications like navigation systems, a city's parking guidance system or time table information from public transport.

SERVICES

We at IEM understand, time is money. IEM is on call for any unexpected incident to keep a city's parking infrastructure working at all times. IEM offers customizable maintenance plans based on effective and efficient allocation of resources and spare parts. IT services like hosting, cloud computing and credit card processing are offered in cooperation with well established partners. As engineering and manufacturing company, IEM is controlling its products and services at 100%. This let IEM become the partner of choice for any customer individual project.





INTELLIGENT PARKMETERS

In today's concepts of smart parking, parkmeters are not simple pay stations. They become veritable electronic counters for motorists, which goes far beyond payment of hourly tickets.

IEM developed its range of parkmeters exactly with this focus in mind, adapting features and functions to any given requirement a parking authority might have, integrating various payment means and manage parking subscriptions and virtual tickets.

EQUIPMENT

PARKMETERS

IEM developed its latest generation of parkmeters using state of the art components and providing excellent comfort to the motorist. With its alphanumeric keypad, the **PrestoEuropa** offers additional functionality based on number plate input. **PrestoInteractiv** differentiate itself from other parkmeters with a large touch screen providing the option for more sophisticated user interfaces. For pay by space management, **PrestoConnect** is the machine for paperless parking.

OPERATOR PORTAL

Presto1000 is the system which allows the operator to remotely manage and monitor each parkmeter. Based on granted user rights, the operator Portal allows the user to remotely modify and set any given parameters on any parkmeter connected.

PARKING PLATFORM

IEM's parking platform contains the parking business logic. The powerful tariff calculator is easily configurable for any given tariff structure on any given point of sale, be it parkmeters or smartphone apps. The Parking platform is the data source for all payment and technical transactions, which are visualized and processed in Presto1000, the operator portal.

MOTORIST PORTAL

The motorist is capable of managing his parking subscription status directly in **PrestoPark**. Additionally, he can purchase virtual tickets for any given zone in the city and manage and analyse his transactions on his user account.

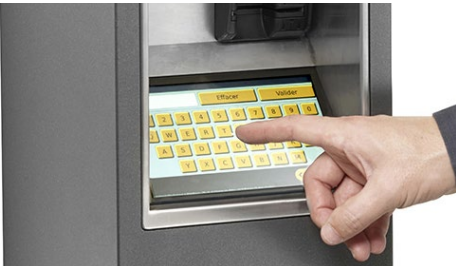
APPLICATION

Permanently communicating with the parking platform, the parkmeters provide a large amount of qualified parking data, that can be processed and analysed by Presto 1000 the operator portal. Add-on functions allow municipalities to provide innovative features to motorists which can be customized to individual user needs.



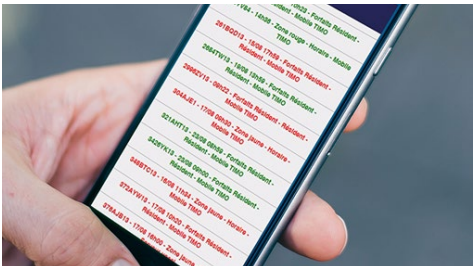
PAYMENT MEANS

To overcome the lack of cash and adapt to new ways of payment, IEM offers several payment options for its parkmeters. Samples are credit cards based on chip or NFC technologies which became a standard in modern parkmeters, E-wallets or SMS payments.



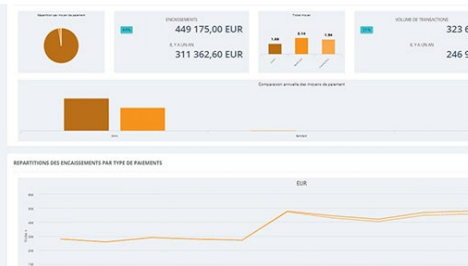
SUBSCRIPTION MANAGEMENT

Any given parking permission can be granted to any vehicle which is registered in PrestoPark. Connected to IEM's parking platform, the intelligent parkmeter applies the correct parking fee for an individual vehicle based on parking conditions and duration requested. The management of other privileges like free parking days or coupons can be done with a few mouse clicks.



ENFORCEMENT OPTIMIZATION

IEM parkmeters support virtual tickets, where each transaction is associated with a vehicle. For this, the input of the license plate number on an alphanumeric keyboard is required. Once payment is made, the virtual ticket is saved and searchable by the enforcement officer on his PDA. The payment transaction is recorded in real-time. Virtual tickets reduce maintenance costs, provide the driver the comfort of not putting a ticket behind the windshield and optimize the enforcement officers' work because he has to scan the license plate only.



STATISTICS AND REPORT

Powerful analytics- and decision making tools support the parking operator in daily management of the parking activities. The Presto 1000 portal handles all data transmitted from the parkmeters to the parking portal. The system tracks all technical and financial transactions and provides statistics like sales by period, region, payment method or method of parking. An overview of the parking activities is displayed in a pre-configured dash board.

CLOUD SERVICES

Lifestyle and consumption patterns have greatly evolved with new technologies, especially with remote services. Intelligent parking today is a 7x24 accessible, practical, connected parking, which is operated directly by the motorist, using his smartphone or computer. With its cloud services, IEM offers on-street parking users the option of managing their tickets and subscriptions on line 7x24 hours.

EQUIPMENT

MOTORIST'S SMARTPHONES AND COMPUTERS

Frequent users of online services no longer need to visit a counter to get parking subscriptions or a park-meter to pay for parking. They can simply use their Smartphone or computer, connect to PrestoPark and manage their parking needs from any given location.

PARKING PLATFORM

The parking platform is data storage for all customer data, vehicle information and parking transactions. Both, PrestoPark, the motorist portal and Presto1000, the operator portal, utilize the data to provide analytical information, statistics and other valuable functions to their respective user group.

MOTORIST PORTAL

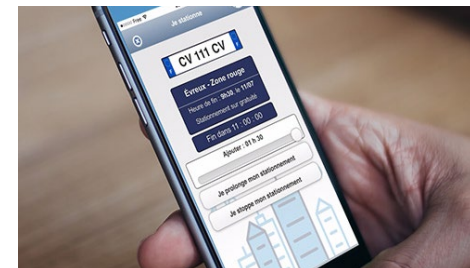
Each user can create his account within **PrestoPark**. This creates the opportunity to use cloud services a city offers to purchase tickets, order subscriptions and directly manage his own account with all parking transactions.

OPERATOR PORTAL

Through **Presto1000**, the operator manages the customer relationship based on a complete set of documents, subscriptions and transactions.

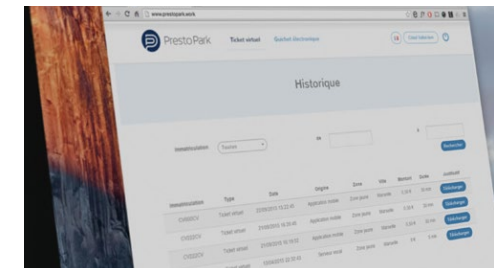
APPLICATION

The implementation of cloud services is changing the lives of parking users significantly. They can purchase a parking ticket or get a parking subscription 7x24 without actually visit the device or counter. Cloud services will also ease the operator's work. By simplifying and streamlining the underlying processes, IEM ensures better payment behaviour and improved motorist management.



PAYING PARKING TICKETS ON-LINE

Short of cash or a permission? Parking payment can be done online, be it short or long term. The ticket pricing can be done on effective duration. IEM partners with credit card payment experts and telecom firms for SMS payments (based on invoices or prepaid packages). Fix subscription fees or fines can be paid online by entering a respective identification code.



SINGLE USER ACCOUNT FOR MULTI-CITIES

After registration for the service, the user will have an account to manage personal information and vehicle data. He will find a log of his transactions and subscriptions. He can print receipts for all paid parking transactions as proof if required. In case of company fleet management, the company manages the whole fleet under one account and has the option of evaluating each transaction individually.



ELECTRONIC COUNTER

IEM offer municipalities the reduction of administrative overhead, by allowing motorists to manage their own subscriptions online. The motorists enters his subscription request on the PrestoPark application, uploads accompanying supporting documents and the parking request is ready for approval. The city administrator has all relevant information ready on hand and can grant the respective parking status or special rates on requested locations or devices online. Periodic subscriptions can directly be downloaded from PrestoPark.

Abonnements - Clients											
Activité											
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CUSTOMER MANAGEMENT

Presto1000 is the central customer application; it manages all customer records and all subscriptions, whether hourly or periodically. Any update on the operator portal automatically leads to changes in the vehicle owner's personal account. The operator portal also allow to produce statistics on subscriptions and transactions from any connected device.



MONITORING OF PARKING SPACES

The urban population continues to grow year by year and mobility of citizens become a growing issue with ecological aspects on stake. The cities are looking for intelligent solutions in order to increase comfort of motorists using individual transportation means whilst reducing its negative environmental impact.

With the implementation of on-street sensors, IEM provides a precise view of any on-street parking activities. This innovative solution meets the needs of communities to better manage traffic in inner cities and reduces the search traffic for motorists and thus reducing pollution.

EQUIPMENT

SENSORS

The second generation of IEM's **PrestoSense** sensors feature dual detection, both magnetic and ultrasonic. Presence or absence of a vehicle is detected and transmitted in real time with a 2 second detection cycle. The reliability of this patented technology is as high as 99,5%. The installation is simple, done with 3 screws into the ground. The lifespan of a sensor is 8 years under normal usage conditions.

COMMUNICATION VIA LORAWAN™ NETWORK

The PrestoSense detectors use Internet of Things technology, based on LoRaWANTM (Low Power Wide Area Network) to communicate with the Parking Platform. The technology is optimized for the transmission of small data volumes with very little power consumption. The network can be deployed either by IEM, the city or a telecom operator.

PARKING PLATFORM

The detector status' are transmitted to IEM's parking platform. Besides the presence data, the platform collects payment data from parkmeters and virtual payment data from smartphone apps. All these information are processed and analyzed in the Presto 1000 operator portal.

OPERATOR PORTAL

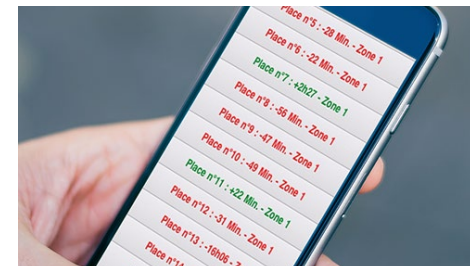
Presto1000 provides an overview of a cities parking situation. Sophisticated reports inform the operator about occupancy and motorist's behaviour.

MOTORIST PORTAL

Motorists can view parking occupancy via **PrestoPark**, a cities service offering for motorists. The driver can use his smart phone to check available parking spaces and optimise his travel time.

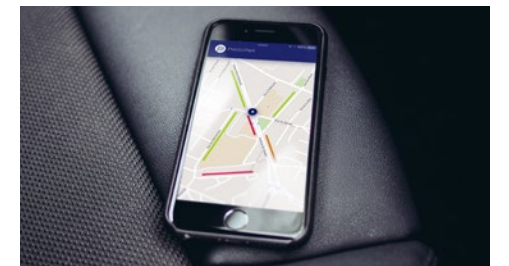
APPLICATION

The prestoSense detectors provide real time occupancy data of a city's on-street parking spaces. They will be used by the city for various applications from analytics of parking occupancy to influence motorist's behaviour.



REAL TIME MONITORING

The Presto1000 operator portal provides an overview of the technical conditions of detectors and their current status (occupied, free, or parking violation). The enforcement officer uses his PDA to locate any vehicles with violations, Alerts can be set for a quicker response. IEM's enforcement application also provides a control path optimization, guiding the officer to the next vehicle with parking rule violations.



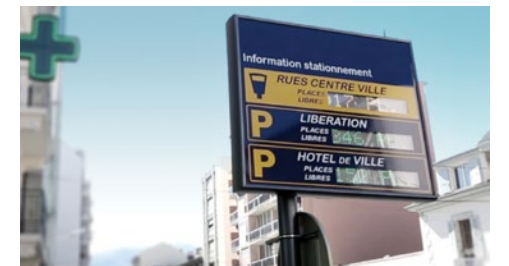
INTELLIGENT GUIDANCE

Reduction of search traffic and thus reduction of air pollution are key objectives when putting a detector network in place. Guiding motorists to the next available parking space, the sensor infrastructure is reducing search time by up to 15 minutes on average. IEM has developed PrestoPark and interfaces to dynamic panels installed in the city to visualize free parking spaces. Additionally, free spaces can also be displayed on the on-board GPS system.



PARKING SPACE MONITORING

As valuable analysis- and decision support tool, Presto 1000 records all parking activities on the parking spaces equipped with sensors. Presto 1000 supports the operator to understand motorists parking behaviour by measuring the occupancy rate over time, the vehicle turnover rate as well as the compliance with parking rules. The PrestoSense detectors support municipalities in defining their parking policy and allow them to measure the results.



INTERFACES TO THIRD-PARTY APPLICATIONS

IEM grants access to detector data collected and stored on the parking platform via a web interface. Third party application can be used to feed real time detector data into a city's dynamic parking guidance system or independent or built-in GPS devices.



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