smartparking
S Y S T E M S

Shape the future of tomorrow's cities

The Technology which **increase welfare**, cities **incomes** and citizens **satisfaction**
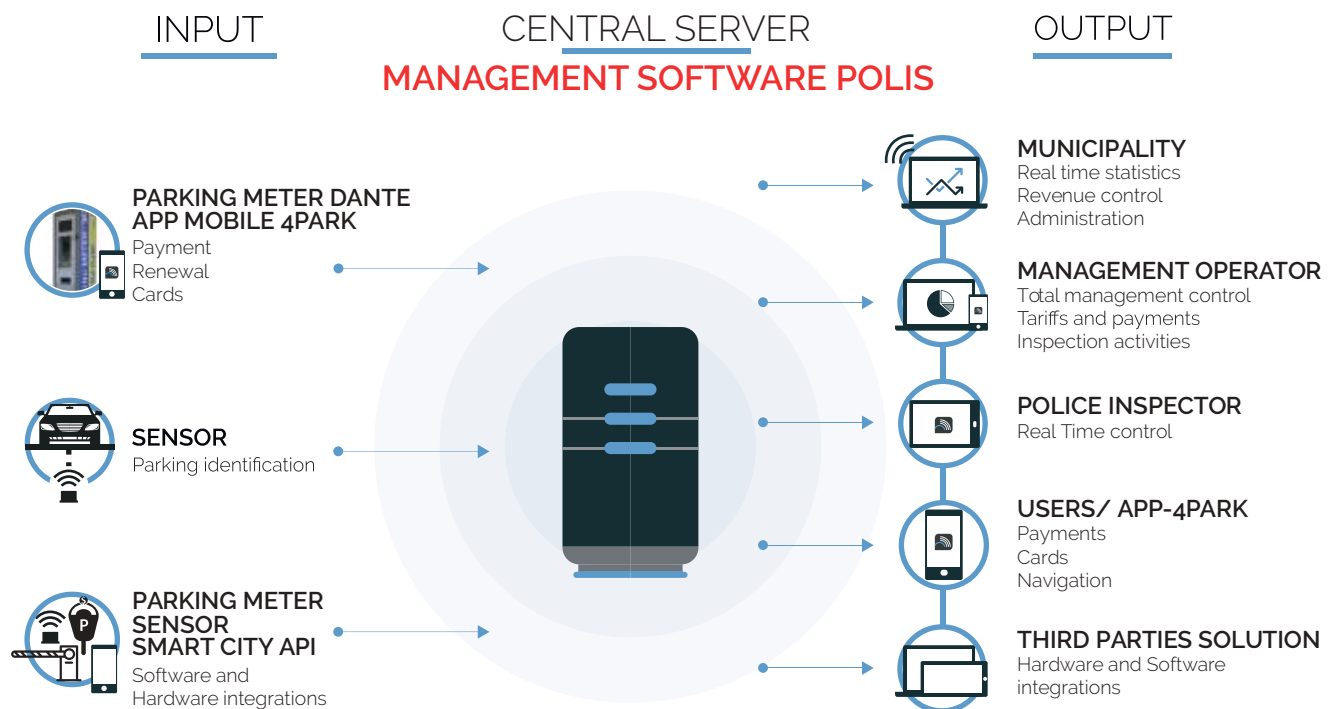
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Summary:

smart**parking**
S Y S T E M S

A **qualified parking management** allows the cities municipalities to realize **sustainable mobility projects** in smart cities.

Smart Parking Systems is the solution for a qualified parking management

▶ It is a **complete** and **integrated** solution, designed to ensure efficient management of all activities and all the problems that occur in the on-street parking conduction: **assessment** of the parking spaces, **reporting**, **maintenance**, **planning** and **guide users** to parking.

▶ The solution allows to exploit the city **parking**, ensuring a **functional** use of the planned strategies.

▶ It allows to **increase revenues** from the first day of implementation without being a burden on the user, but acting on the rise of the **rotation** of parking spaces, providing innovative services which will make everyday life easier to process managers, citizens, residents, economic operators, protected categories.

PARKING METER DANTE APP MOBILE 4PARK
Payment
Renewal
Cards

SENSOR
Parking identification

PARKING METER SENSOR SMART CITY API
Software and
Hardware integrations

MUNICIPALITY
Real time statistics
Revenue control
Administration

MANAGEMENT OPERATOR
Total management control
Tariffs and payments
Inspection activities

POLICE INSPECTOR
Real Time control

USERS/ APP-4PARK
Payments
Cards
Navigation

THIRD PARTIES SOLUTION
Hardware and Software
integrations

Payment and parking: **Georeferenced**

Network: L0RaWAN e NB IoT

The solution

▶ **GUARANTEES PRIVACY** to people, without recording private data, if not subjected to the use of individual service permits.

▶ It allows to gather **comprehensive information** on **economic data** and **use** of the **parking spaces**, enabling the correct drafting of tariff plans and urban mobility thus becoming a powerful planning tool and control available to municipalities and managers.

▶ **It administers** the **organization** of **spaces** and **services**.

▶ **Integrate** other **services** or **third-parties solutions**, as for example the data provided by managed parking spaces.

▶ A sustainable mobility project is **achievable through a technological strategy** which combines **automatic payment** pairing and **stationing** to a **parking space number**.

▶ The combination of these two elements is the only way to ensure a **total control of all the elements** and of all of the critical issues of the on-street parking management.

▶ Controls and functions are foreclosed to the systems which do not handle payment for parking space and/or the detection of the presence of the motor vehicle on the same.

What is made of

The main elements that compose the solution are:

▶ **SENSOR**, the tool that provides real-time information about the **status of free or busy** car parking;

▶ **PARKING METER** and **APP** provide to the system the information regarding the **payment** or the **title** that authorizes the user to stop.
The App also **leads people** to the **parking available** on their path to the destination.
The data generated by the use of the tools are identified by the system with the combination to a PARKING PLACE NUMBER. This combination allows the **GEOREFERENCING** of the payment and of the stationing of a MAP, along with a wide range of additional features;

▶ **CENTRAL SERVER** receives all the data from the sensors, the parking meters and the App through a network of radio communication that makes use of alternative communication protocols or co-present such as GSM, LoRa INTERCOMP, LoRa Wan, NarrowBand IoT, etc.;

▶ **MANAGEMENT SOFTWARE** (POLIS) installed on the server. It **processes the data** received and makes them **immediately available**, via the Internet, on the different terminals (PC, Notebook, Smartphone, Tablet, Handheld) for **use** and **consultation** by stakeholders: municipalities, managers, assessors, members.

Flexibility and customizations already made for important municipalities have further increased the quality of the solution.
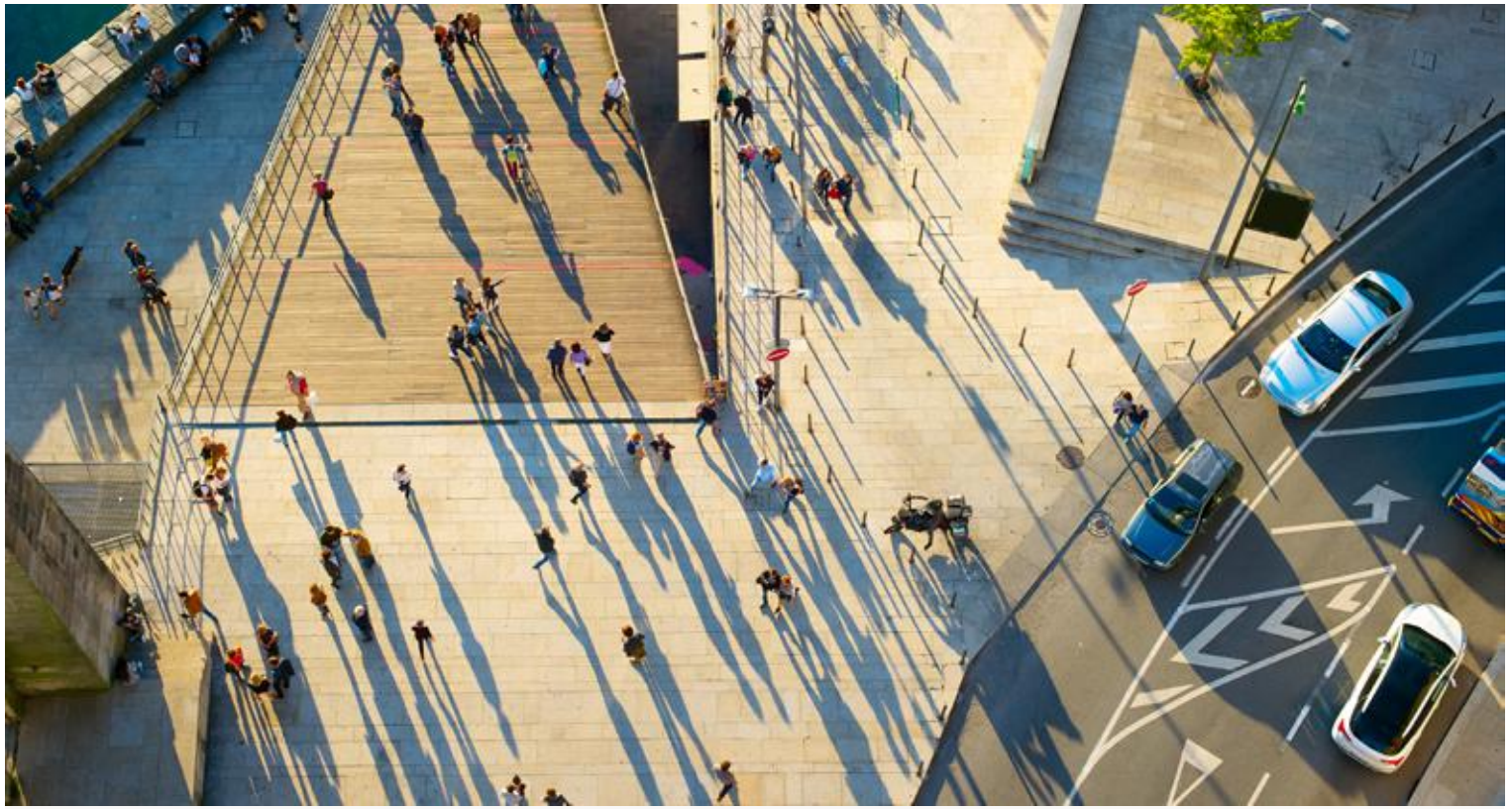
The mobility of the future

Cities change as people's behaviours and needs.

▶ Municipalities must answer to changes adopting **choices** and increasingly **complex strategies** due to the articulation of transport mode and the needs of **different user categories**.

▶ Public space is a limited resource through which is possible to **generate collective economic and social well-being**.
The technology of transport is constantly developing. The self-driving cars alongside car sharing, car pooling, public and private services, tram, metro, public and private taxis, trains and planes.

▶ This situation compels to find better solutions for mobility management to realize an excellent response through the government of parking solutions. As far as traffic evolves, the **qualified parking space is one of the possible answers to move well**, with the least waste of time and resources.

▶ It is possible to drive users to their destination directly to the parking space, with the best economic characteristics and connected to other transport opportunities.
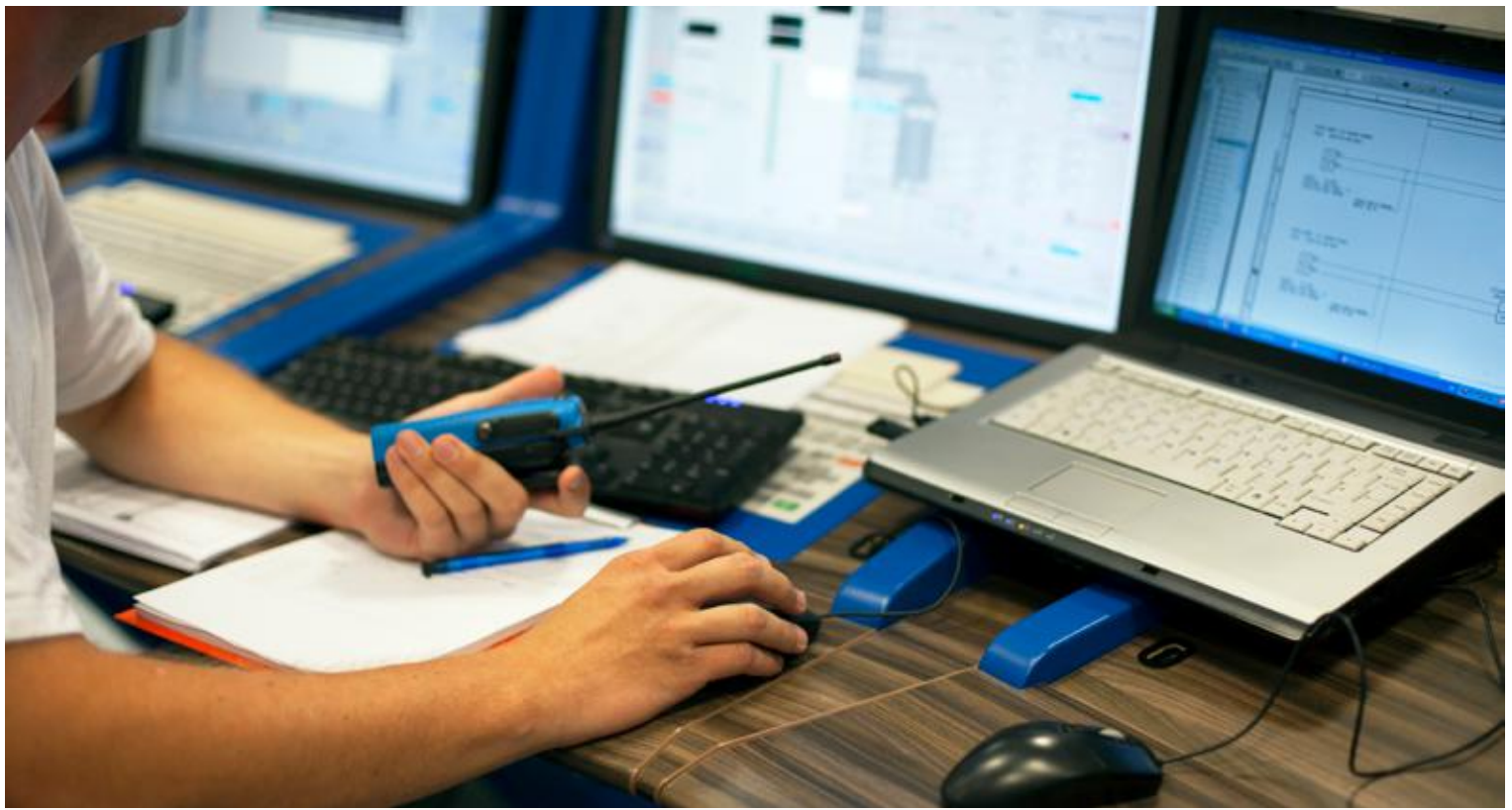
Collecting information

▶ Smart Parking Systems is the **best technology** to **collect data** that will allow operators and public authorities to shape the urban road network following their economic and social development strategies.

▶ Municipalities have developed specific mobility projects. **Flexible projects** in order to be modify due to the **growth of the inhabitants** or because of the new movement needs dictated by behavioural changes and technology.

▶ All plans on mobility have the objective of **encouraging travel** trying to **shorten the time** to reach the destination, by providing an integrated system of services, but above all trying to break down parasitic traffic which has a serious impact on quality of life in cities.

▶ The data collected by sensors, App and parking meters provide a complete set of **data on car routes, periods on stopping car**:

- **Parking rotation index** (divided by area)
- **Control** of **operator** activities
- **User classification** (residents, occasional, special categories)
- **Traceability** of economic **transactions**
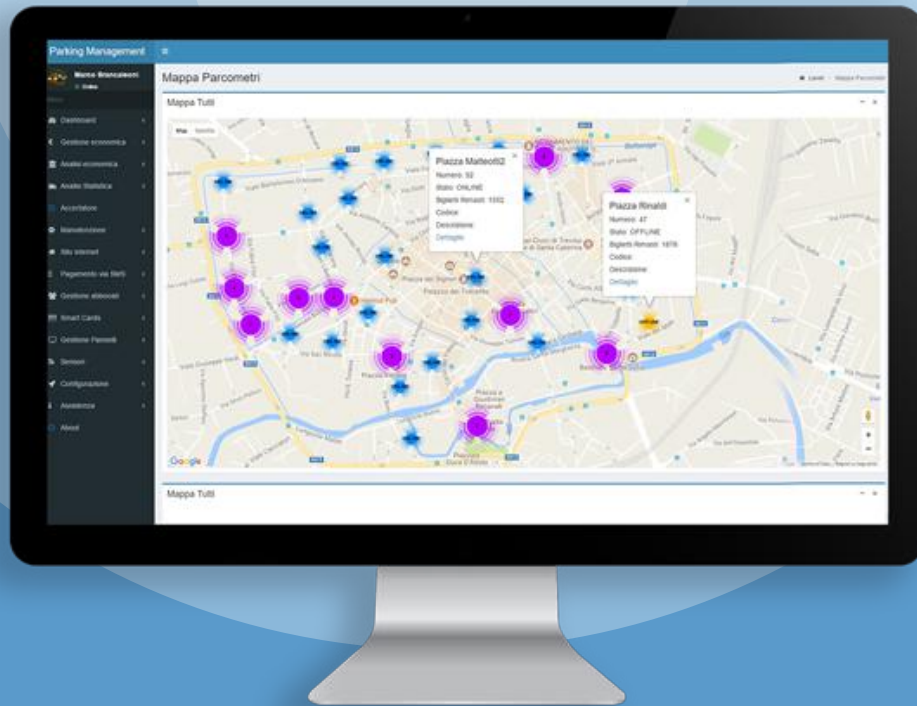
Dynamic database

▶ **Information** regarding **parked cars** allows to be **integrated** with those resulting from **traffic analysis** and on the use of different kinds of transport for a **complete view** of what is happening in the area of **public transport**.

▶ The Smart Parking Systems solution **classifies** the types of **subjects** who **use parking** areas (residents, subscribers, special categories, occasional markets, ports, etc.) and with this information it is possible to check the correct implementation of the specific policies set out to overcome the current issues.

▶ The database corresponds to the **mapping of the facts relating to car parking**. It can be interrogated in different ways and provides detailed information on the quality of the car park.

▶ The determination of the parking **rotation frequency** in all areas of the city is one of the key data provided by the solution. With these data we can understand and react to solicitations which emerge such as:

- **Increase** of the number of **parking places**
- **Diversification** of **tariffs**
- Third-parties **integration**

Creating mobility strategies

The data collected are information needed to develop an effective mobility plan by allowing to:

▶ Implement traffic policies as **incentives** for **long** or **short stop**, **comparing them** in **real time** with the **user response**.

▶ **Integrating mobility policies** with other **transport services provided** in the city, the data on the rotation in some parking areas may become useful elements to **decide** the **positioning** of public or shared transport **services** such as bike sharing.

▶ Determination of **custom tariffs** depending on the areas so as to move the traffic to the less congested areas.

Control and traceability

▶ The solution is able to **control** and **track** all the economic flow of incomes, allowing **simulation and preliminary assessment** to the drawing up of new tariff plans able to satisfy the public and private needs.

▶ It monitors and **tracks** all **assessment activities**, **withdrawal** of security box and **reporting**, indicating the **route** and **time** at which the parking auxiliaries can **maximize** their activity in terms of **efficiency**.

▶ It **directs without fail** the controller towards the **vehicle in violation**.

▶ It promotes the implementation of **new strategic solutions** to **satisfy the citizens behaviours**.

▶ It governs the timely management of parking places associated with different access modes, it encourages supervisors, providing them with **detailed graphs, tables and reports**.

▶ **Analysis** of all the **events** of the **questioned period**: day, week, month and year allowing **comparison** of **data** and drawing a flow.

▶ It is possible to realize an **economic analysis** of the **results** in order to verify the coverage of costs and the amount of receipts for each type of classified service and correspondence with the planned project.

Assistance and maintenance

▶ **Alert** system is able to notify the operator of **any device connected to the system**, so the assistance team can immediately go to the critical point.

▶ **Geo-reference of criticality.** In case of any problematics along the peripherical devices, the operator can evaluate their **degree of importance** in order to solve immediately the problem, where the money waste is higher.

▶ The Alert informs about the **nature of the problem** within the device, in order to prepare the operator to the type of intervention.
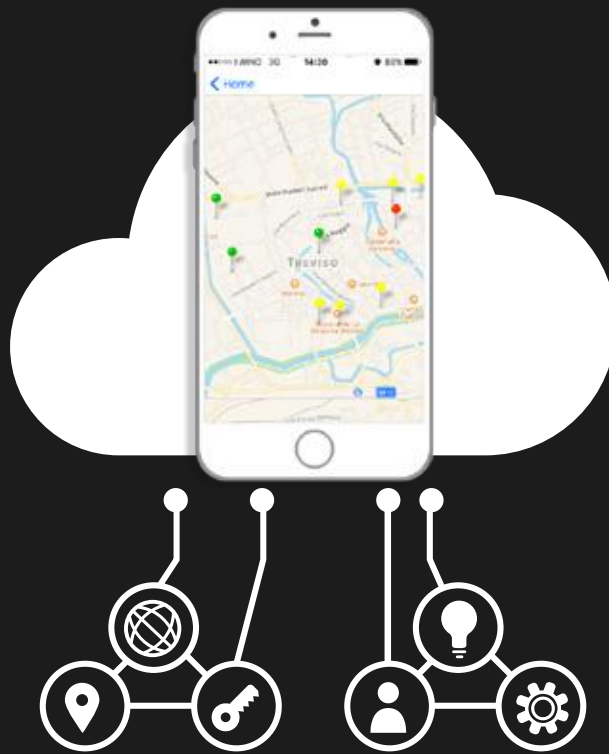
User satisfaction

▶ **Booking, renewal and payment** with **all existing methods**, with the ability to obtain and virtualize **social category cards** (for mothers, economic operators, disabled people, etc.).

▶ **Payment for consumption** without the need to expose the ticket.

▶ **Total privacy** (no camera or license plate input).

▶ **Facilitated rates**.

▶ **Parking navigation App** and related **information** on **traffic congestion**.

▶ The user must receive a qualified service that has a **positive and efficient impact** in the **management** of his **time**, and more generally of the **city traffic**.

▶ Some important information makes **the citizen more aware** of the commitment to problem solving and how much this commitment has improved their lives.

▶ The citizen can consult the **relevant information** provided **by the municipality** regarding the management of the parking space.
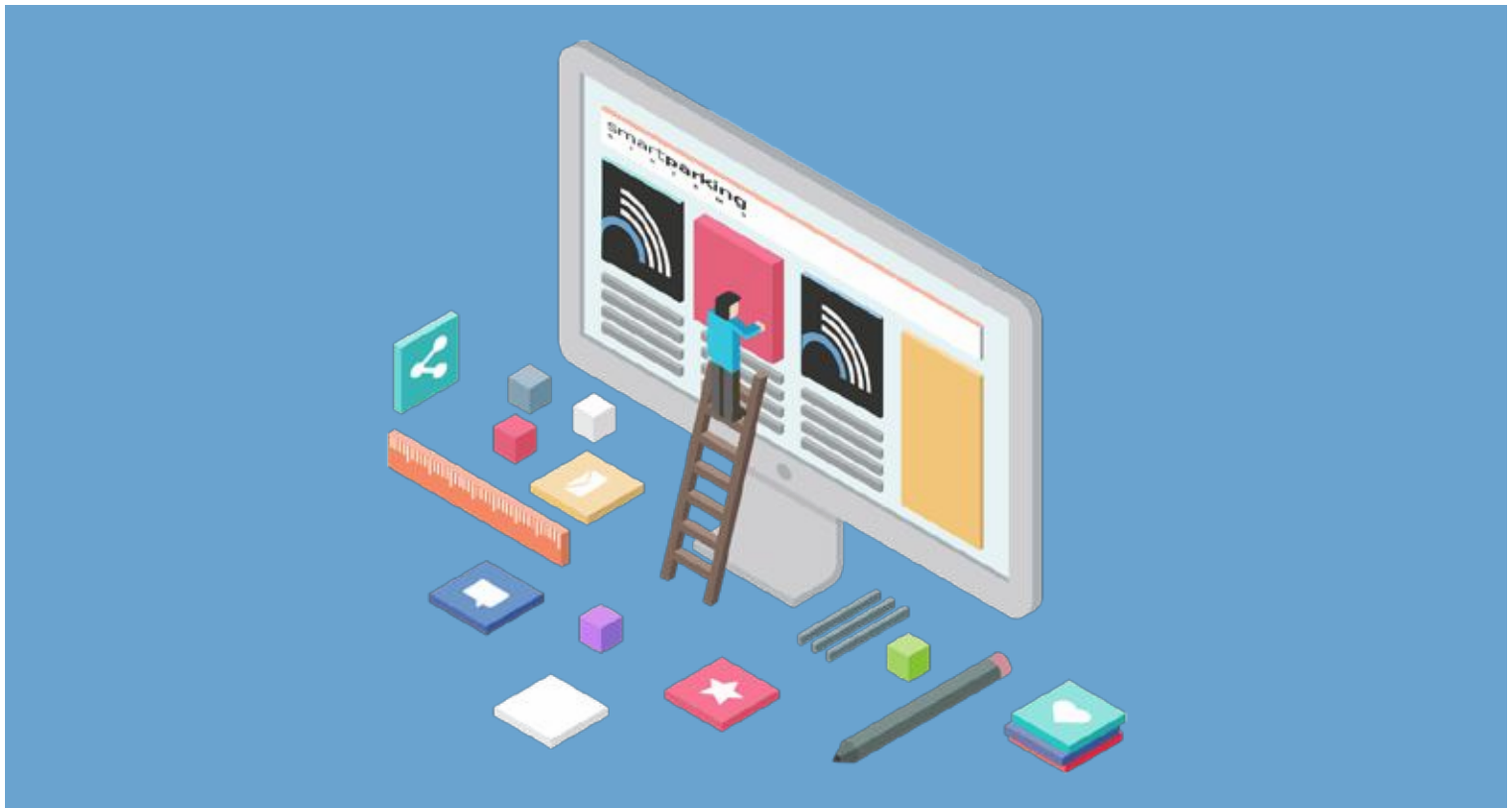
Types and installation models

▶ In each area covered by Intercomp's Smart Parking Systems solution, municipalities can experience an **increase of their incomes up to 45%**, compared to previously used systems without affecting citizenship.

▶ The increase in revenues is due to the efficiency of the solution: in Treviso, the penalties have not increased, while **people who pay for parking have increased**.

▶ It leads to a culture of legality: it **is easier to pay for an advanced and effective service**. It is a solution that can be **adapted to the needs of individual cities** and its ecosystems facilitating integration with other public services provided.

1 **Small** municipalities

- ▶ From **300** to **1000 sensors**
- ▶ From **10** to **25 parking meters**
- ▶ APP
- ▶ **PMS POLIS** *light version*
  Control support and
  ascertainment

2 **Medium** municipalities

- ▶ From **1000** to **5000 sensors**
- ▶ From **25** to **125 parking meters**
- ▶ APP
- ▶ **Subscription** management
- ▶ **PMS POLIS** *full version*
  Virtualization of subscriptions
  and online registration

3 **Large** municipalities

- ▶ Over **5000 sensors**
- ▶ Over **125 parking meters**
- ▶ APP
- ▶ **Subscription** management
- ▶ **PMS POLIS** *full version*
  Virtualization of subscriptions
  and online registration
- ▶ **Tables** with variable messages

Small municipalities

- From **300** to **1000 sensors**/parking lot
- From **10** to **25 parking meters** - 1 parking meter every 25-30 sensors
- **APP**
- **PMS POLIS** *light version* - control and inspection support

- For municipalities where it is necessary a **structural change of the road management** and where there is not a Mobility Manager or Urban Strategic Planning Officer, this kind of solution is essential. Because it allows to **quickly create** a **proper functioning** of the **parking management** activities.

- It **helps Police officers and controllers** as a powerful instrument of **control** and **detection** of **violations** taking place in real time:

    - It allows the manager to **supervise** all **activities** and all the people who contribute to the **organization** and **control** of park management
    - It provides **parking information** to **users**
    - It provides **analysis** on the **results** achieved

- The manager or the company using the solution can **implement advanced services** even in small contexts but with great benefit for everyone.

Medium municipalities

- From **1000** to **5000 sensors**/parking lot
- From **25** to **125 parking meters** - 1 parking meter every 40 sensors
- **APP**
- Subscription **management**
- **PMS POLIS** *full version* - virtualization of subscriptions and online registration

- For those municipalities that want to **provide a qualitative value to the parking activities**, optimizing viability through a combination of planning strategies.

- The Mobility Manager and its staff will be able to use **parking lot rotation data** to implement specific tariffs policies in order to move the traffic in other areas of the city.

- It also allows you to classify traffic within specific categories, so the Mobility Manager can **implement facility policy** for a better city living.

- It **integrates with any third-parties services** in the city. For example it will be possible to evaluate in which areas a bike sharing service should be installed rather than new communal services, as well as to connect it with third-parties peripheral if already present at the moment of the implementation.

Large municipalities

- **Up to 5000 sensors**/parking lot
- **Over 125 parking meters**
- **APP**
- **Virtual subscription** management
- **PMS POLIS** *full version* - virtualization of subscriptions and online registration
- **Variable message** on **tables** - indicate the amount of parking lots in some areas of the city

- The technology of the Smart Parking Systems solution allows to enhance value to the data that are aggregated in the system. These features will allow to understand how citizens move around the city:

  - **Rotation rates** divided by areas
  - **Types of citizens** and **user experience** of parking spaces

- Thanks to a detailed data support, it will be smooth to implement mobility **strategies**, facilitating the use of the system and making **less busy the most critical areas** of the city.

- Through a strategic management of tariffs it is possible to **encourage its use** to certain categories of people or in some commercial areas **promoting the short or combined stop** with other **public or private services**.

- The mobility plans will complement each other allowing users to smoothly use other public services, such as **combining parking areas with extra-urban parking** with transport services to reach the main points of the city.

- The parking management is an advanced service that can allow to **distribute strategically people and traffic**.

THANKS

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