DP and Smart Cities

October 2021

01. **DP Group**

02. **Smart City**

03. **DP and the city of the future**

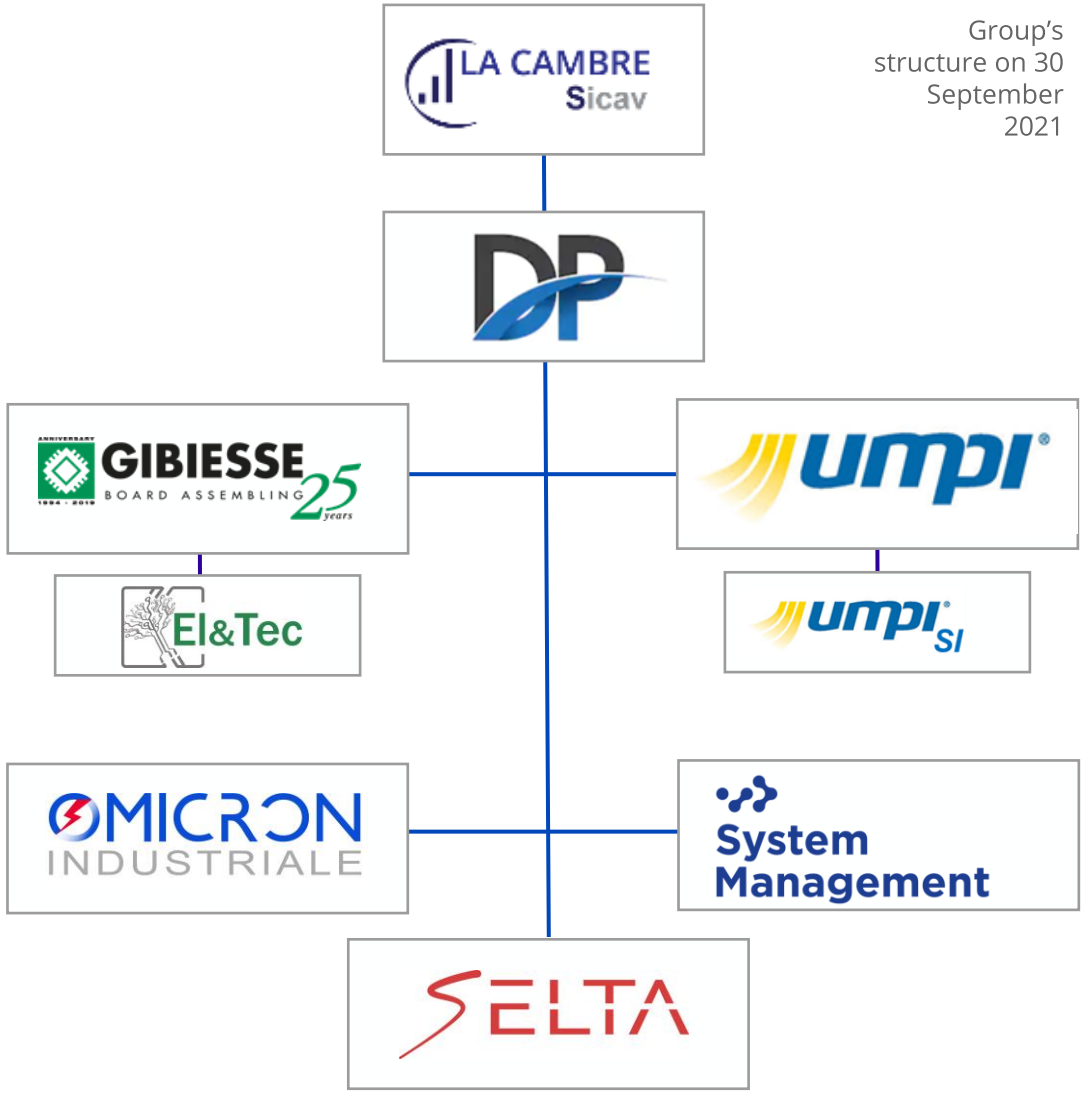
04. **Offered services**

05. **References**

DP Group

- DigitalPlatforms SpA (DP) is an **Italian industrial group**, **rapidly growing**, operating in the sector of **Internet of Things, Cyber and digital technologies**;
- DP primarily addresses critical infrastructure managers in **Italy and abroad**, in the **energy / utilities, telecommunications, transport and defense sectors;**
- **DP is a full liner player**, present in all the elements necessary to create **end-to-end IoT solutions**, starting from the development, design and production of sensors and industrial electronics products, passing through command and control systems and technologies, up to IoT platforms, system integration for heterogeneous environments and cybersecurity;
- **The DP Group is now made up of seven companies / BUs**, employs 400 resources including engineers, researchers, developers, program managers and production workers, and has a turnover of 70 million. of €.

Group's structure on 30 September 2021



DP Group companies

To date, the holding's composition sees the presence of:

GIBIESSE was founded in 1994 for the production of electronic boards featuring high quality standards, thanks to the application of increasingly reliable production devices. In particular, it designs and manufactures microprocessor and power logic boards for the electromedical, oil and automotive equipment sectors as well as for industrial automation systems in general.

EL&TEC srl deals with the production and testing of electronic boards and equipment. The company proposes itself as a qualified technological partner for the customer, able to offer skills and experience from production to final testing, making itself available to the customer for the problems resolution related to the production of its own products.

Omicron Industriale S.r.l. designs and produces, in ISO 9001 regime, the Energy Stations for Telecommunications equipment (fixed and mobile networks). Through constant investments in research and development for cutting-edge technology, Omicron Industriale S.r.l. can cover, in the energy field, the full range of needs for telecommunications and broadcast equipment, allowing rapid and technologically advanced solutions geared to the specific needs of the customer.

UMPI is a company with completely Italian technology that manufactures intelligent products and systems based on powerline and radio wireless technology for outdoor and indoor applications. Umpi solutions, from the remote management of public and private lighting to the infrastructure monitoring, enable companies and public entities to save energy, preserve the environment, reduce management costs, increase efficiency and introduce new services and business models.

Umpi SI is the Umpi's new business unit "System Integration" with the mission of guiding the LCI Group large customers during the products and services innovation, in particular in the development and pre-series of high-tech products in the Smart Cities, Home & Building Automation, Infrastructure monitoring sectors.

System Management is an IT company qualified in Business Consulting, ICT Integration, Software Solution & Digital Experience Design, Big Data Analysis, Security. SM operates with four different business lines (LOBs): Professional Services, ICT/IOT infrastructures, Big Data Analytics and Information Systems, SaaS services and UX. With its Know-how and many years of experiences System Management offer solutions with added value for its Clients' business.

SELTA is an Italian technology company born and raised with the aim of innovating and supporting the digital transformation process of the markets. It is leader in the Automation and Smart Grids sectors for energy and transport, public and private Telecommunications, Enterprise Communications and Smart Working, Cyber Security.

Mission

DP's **mission** is to provide IoT and Cyber competences, technologies, innovative solutions to the leading infrastructure players, in energy/utility, telco, transportation sectors, in Italy and abroad, in order to support their efforts to digitally transform their infrastructures.

DP aims to ensure that the ongoing digital transformation leads to the creation of safe, secure, resilient and efficient infrastructures.

To achieve this goal, DP enhances the capabilities and competences of Italian SMEs and excellence's centers in order to customers full control and visibility of the technological components included in their infrastructure.

DP's **strategy** is to aggregate into an industrial holding the companies, business units and startup that contribute to create an IoT end to end solution, from the R&D on new devices, sensors, systems, to the manufacture of the IoT objects, to the development of IoT platforms, algorithms, data analytics up to the cybersecurity of infrastructures and devices.

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Smart City

2X

urban population

the world's urban population will double by 2050

7/10

people

by 2050, 7 out of 10 people will live in a city

60 ml

residents in the city per year

the number of residents in the city is growing by 60ml every year

What does Smart City mean?

According to Eurostat statistics, today 75% of the European population lives in cities. A figure destined to grow also worldwide. According to UN reports, 70% of the global population will live in cities by 2050.

At the same time, and while occupying a space of 2-3% of the total land surface, due to this concentration of people and activities, cities are responsible for 70% of the carbon dioxide and pollutants emissions as well as of an important energetic consumption. It is therefore necessary to find "intelligent" solutions, that is, highly efficient and sustainable on the one hand, but which generate economic prosperity and social well-being on the other.

Therefore, we can define a Smart City as follows:

The **smart city** is **a city that manages resources intelligently, aims to become economically sustainable and energy self-sufficient**, and **is attentive to the quality of life and the needs of its citizens**. In short, it is a territorial space that knows how to keep up with innovations and the digital revolution, but also sustainable and attractive.

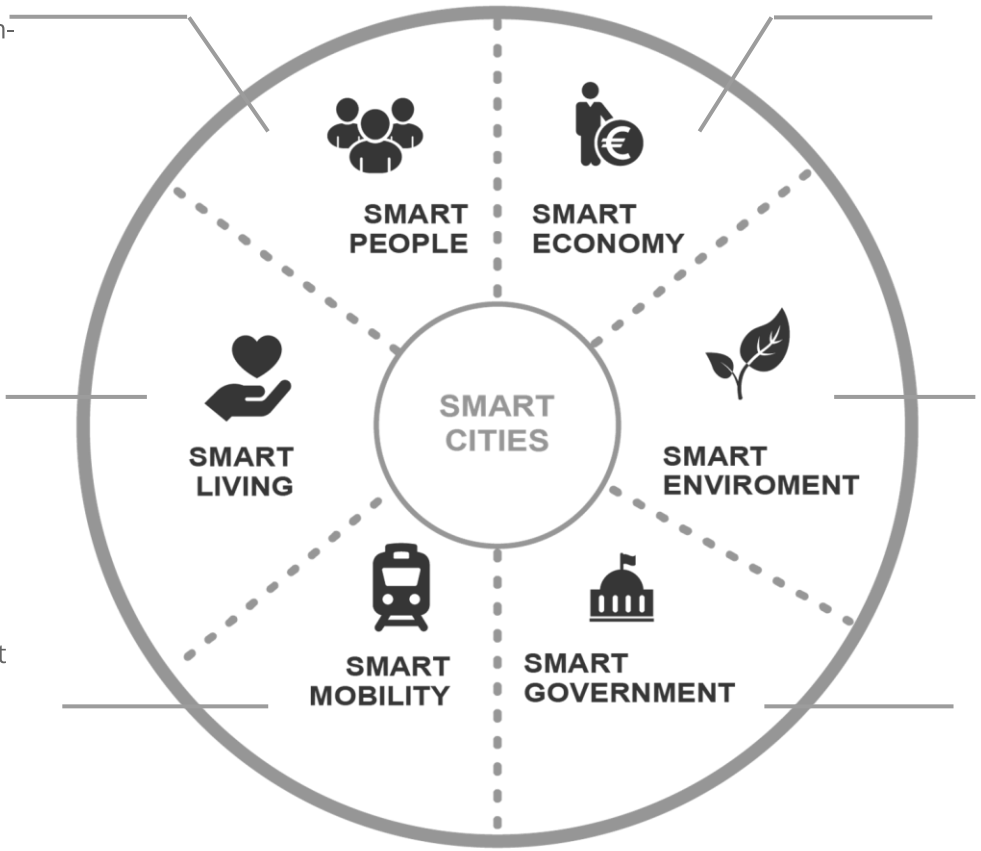
Smart City dimensions

When the European Union talks about Smart Cities it includes 6 dimensions:

People (citizens) must be involved and made involved. We talk about bottom-up decision-making (from bottom to top) and participatory policy.

The comfort and well-being level that must be guaranteed to citizens linked to aspects such as health, education, safety, culture, etc. they are also of priority importance.

Intelligent mobility solutions, from e-mobility to sharing mobility to other forms of mobility management, must look at how to reduce costs, reduce environmental impact and optimize energy savings.



The urban economy and commerce must be aimed at increasing productivity and employment within the city through technological innovation. An economy based on participation and collaboration and which focuses on research and innovation.

Sustainable development, low environmental impact and energy efficiency are priority aspects of the city of the future.

The administration must give centrality to human capital, environmental resources, relationships and community assets.

Smart City layers

The smart city is divided into four layers which must be connected and interconnected with each other:

1.Infrastructures and networks at the base of the smart city:
The first layer represents the foundations on which all the services and activities of the smart city are based. It is the layer of networks, infrastructures and enabling technological equipment for the construction of a smart city such as transport, telecommunications, energy ...

2. Sensors and IoT for the smart city:
This second layer concerns the sensor networks and IoT devices necessary to collect and analyze the big data of the city regarding the environment (air, water ...), user behavior and the infrastructures state in order to activate management and maintenance remotely. Sensors can for example detect the safety of buildings and smart metering, they can act for environmental control, for the road network ...

3. Service Delivery Platform:
The service delivery platform must be able to process and enhance the territory big data generated by the other layers to improve existing services and create new ones. It must act as a kind of "operations center".

4. Smart cities applications and services:
The fourth layer, the last, concerns the creation of value-added services for citizens through mobile and web applications. This scenario includes all aspects related to health, tourism, mobility and government (eg identification systems) which must necessarily be inserted and integrated with the other three levels.

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DP and the city of the future

The DP unique management platform

ONE INFRASTRUCTURE, MANY SERVICES.

Where there is a light point ... there is an infrastructure that can evolve making the city economically sustainable, energy self-sufficient and attentive to the quality of life and the needs of its citizens. Thanks to the DP single management platform, the city becomes a territorial space that knows how to keep up with innovations and the digital revolution, but also sustainable and attractive.

The public lighting network and Smart Cities

The public lighting infrastructure has three key elements to become the platform for the development of smart cities: **capillarity; electrification and connection**.

The street lamps are always installed near the key points of the city infrastructure and are a source of energy 24/7.This means that urban planning and management can take on a whole new dimension. Traffic systems, video surveillance, bus stops, electronic payment terminals, information screens, etc. they can now communicate thanks to the system via a data network that simplifies and interconnects the interfaces of existing systems in the city.

Public lighting as part of a smart grid is a means of implementing a central management system to achieve better coordination (lighting, electric vehicle charging, renewable energy production, ...) and generate overall cost reductions (investment , operation, maintenance).

To build the cities of the future with DP

In the increasingly populated cities of the future, it will be increasingly difficult to guarantee safety, manage mobility and, in general, be attentive to the quality of life and the needs of citizens. Cities must therefore evolve, becoming innovative, interconnected and with a low environmental impact i.e. cities in which technology enables a substantial improvement in the quality of life of citizens and in which public services are optimized and renewed.

Better life quality for citizens

DP systems make it possible to improve the citizens lives thanks to the enabling of various services (such as Smart Parking, pollution and CO2 emissions reduction, greater safety thanks to video surveillance infrastructures, traffic regulation systems, etc.).

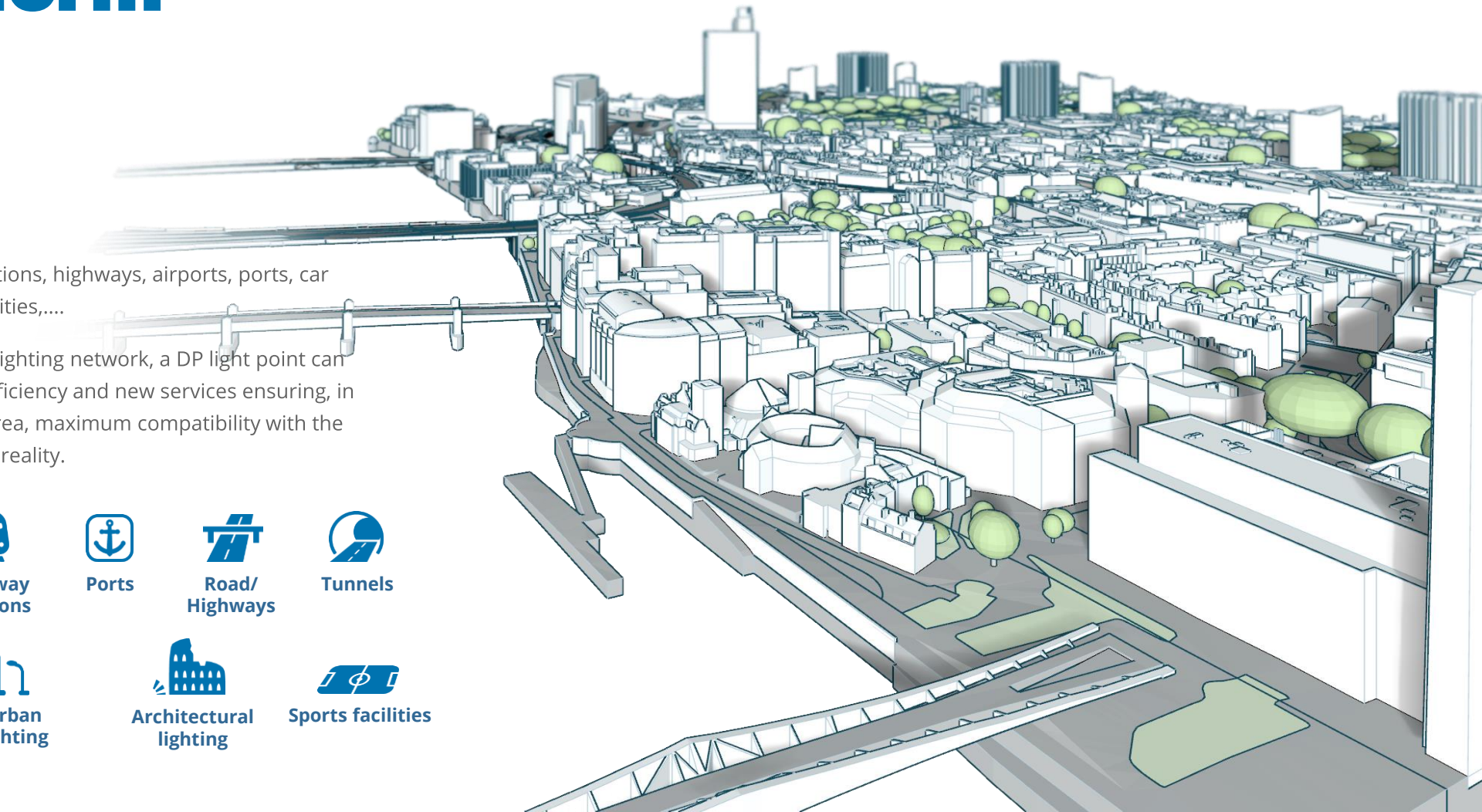
Innovation for Public Administrations

Through DP systems, the Public Administration can make the territory interactive and an active provider of useful information for the innovative services provision and save people time on tasks, obligations, commitments to the community.

Energy efficiency

The DP systems new technologies can become a valuable tool for reducing pollution and CO2 emissions through advanced energy monitoring and management systems.

DP single management platform



Cities, railway stations, highways, airports, ports, car parks, sports facilities,....

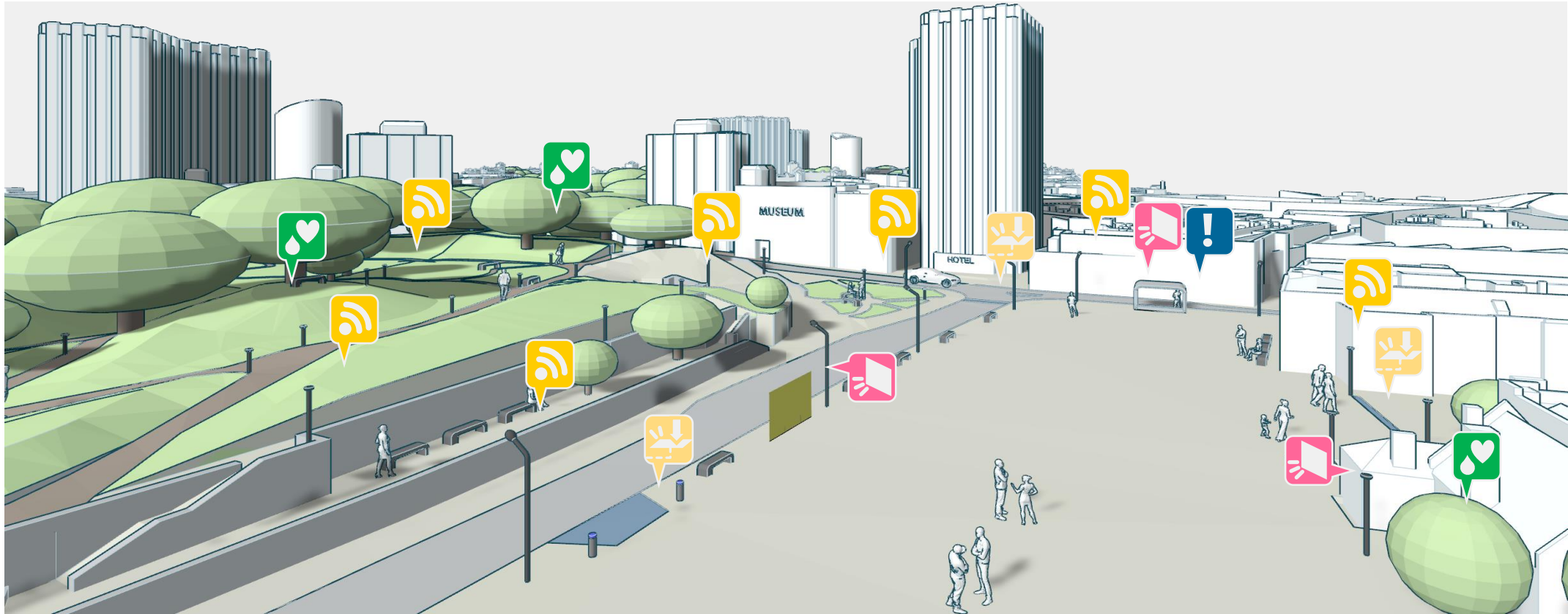
Where there is a lighting network, a DP light point can create savings, efficiency and new services ensuring, in any application area, maximum compatibility with the existing technical reality.

- Airports
- Railway stations
- Ports
- Road/ Highways
- Tunnels
- Parks
- Urban lighting
- Architectural lighting
- Sports facilities

One infrastructure, many services

The public lighting network is present in a capillary way in every place and represents a resource that can be exploited to provide even more services! DP makes available an innovative communication and control system which, in addition to guaranteeing the typical functions of an advanced remote control, will form an "intermodal" communication network, capable of carrying data and signals from specialist vertical subsystems.

The system architecture aims to make usable, through a single common infrastructure, the value services development, for public utility and also commercial, in a flexible way and open to continuous integration.



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All DP services

- Conversion, energy efficiency and monitoring
- Smart Lighting
- Security and video surveillance
- Smart Road
- Smart Parking
- Electric vehicle charging
- Proximiting Advertising/Marketing
- Environmental monitoring
- Waste abandonment monitoring
- Water resources monitoring
- Public Green
- Smart Metering
- App for the citizen
- Control room
- Cyber security

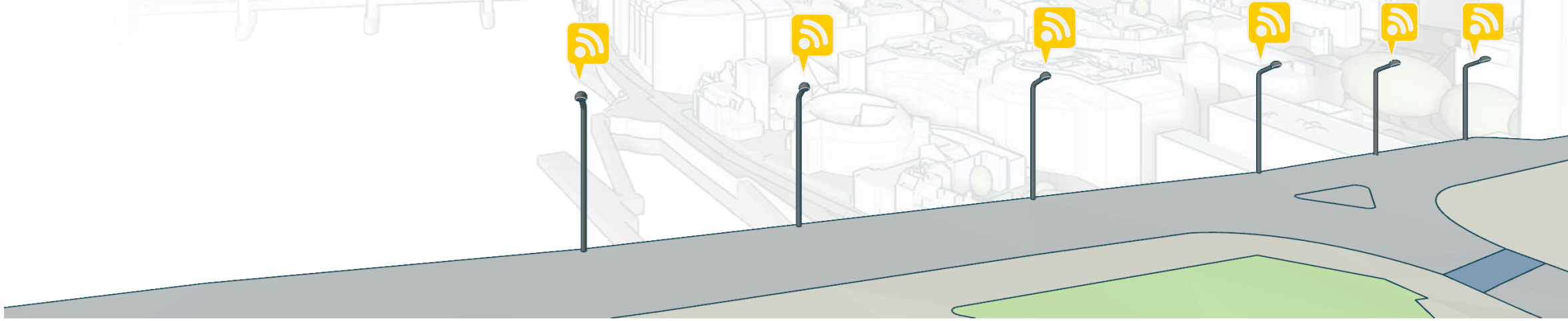
Conversion, energy efficiency and monitoring

DP is present in the design and construction of Energy Stations for telecommunications and industrial infrastructures and systems based on three main technologies:

- conversion;
- energy efficiency;
- monitoring / metering.

These technologies are currently used to produce power stations and switchboards for three categories of companies:

- Telecommunications operators;
- Energy distributors;
- Utility / Infrastructure Services.



Smart Lighting

Light point remote control

With a simple click, it is possible to monitor the operating status of the lamp 24 hours a day and detect any anomalies or failures in detail, program the on / off and the reduction of the luminous flux in a personalized way to achieve the desired energy savings.

Automatic statistics

Automatic statistics are created with detailed reports on each remote controlled lighting point. It is thus possible to view all faults divided by type, to know how many lamps are on, off or on at reduced power and their operating hours.

Cartographic visualization of plants

It is possible to view all the system status information in cartographic format on the map of the territory. For example, it is possible to search, insert, move and remove light points and switchboards in a defined area.

Real time anomaly reporting

It is possible to view the operating status of the panel in real time. It is possible to click on the panel (from the map or from the menu) to get the status of the inputs / outputs / Wattmeters / consumption / groups and also send ignition commands with a click.

Scenario creation

It is possible to create groups of lamps through multiple selection directly from the map and immediate assignment of the group to which they belong. It is also possible to include light points also relating to different electrical panels or to create mixed groups between various panels.

Not just light, a new smart network

The lighting network becomes the most widespread communication infrastructure already present in the area and the lamp post a new intelligent support capable of integrating public utility services to make cities smarter, safer and more eco-sustainable.

Security and video surveillance

DP's Smart systems allow effective and efficient management of urban security through the use of artificial intelligence applied to territorial monitoring services through **IP cameras**.

With our innovative solutions, users can easily and comfortably interact with CCTV systems and monitor the area in real time.

Smart Road

Traffic monitoring, predicting in real time changes in vehicular flow, is no longer a problem thanks to DP solutions, consisting of innovative technologies in the field of "sustainable and safe mobility".

In particular, it refers to the production and advanced management of data relating to urban and extra-urban traffic aimed at providing services related to mobility.

Our systems provide for the management and monitoring of roads and highways thanks to sensors powered by a low voltage and wide range power supply, capable of detecting and transmitting information such as:

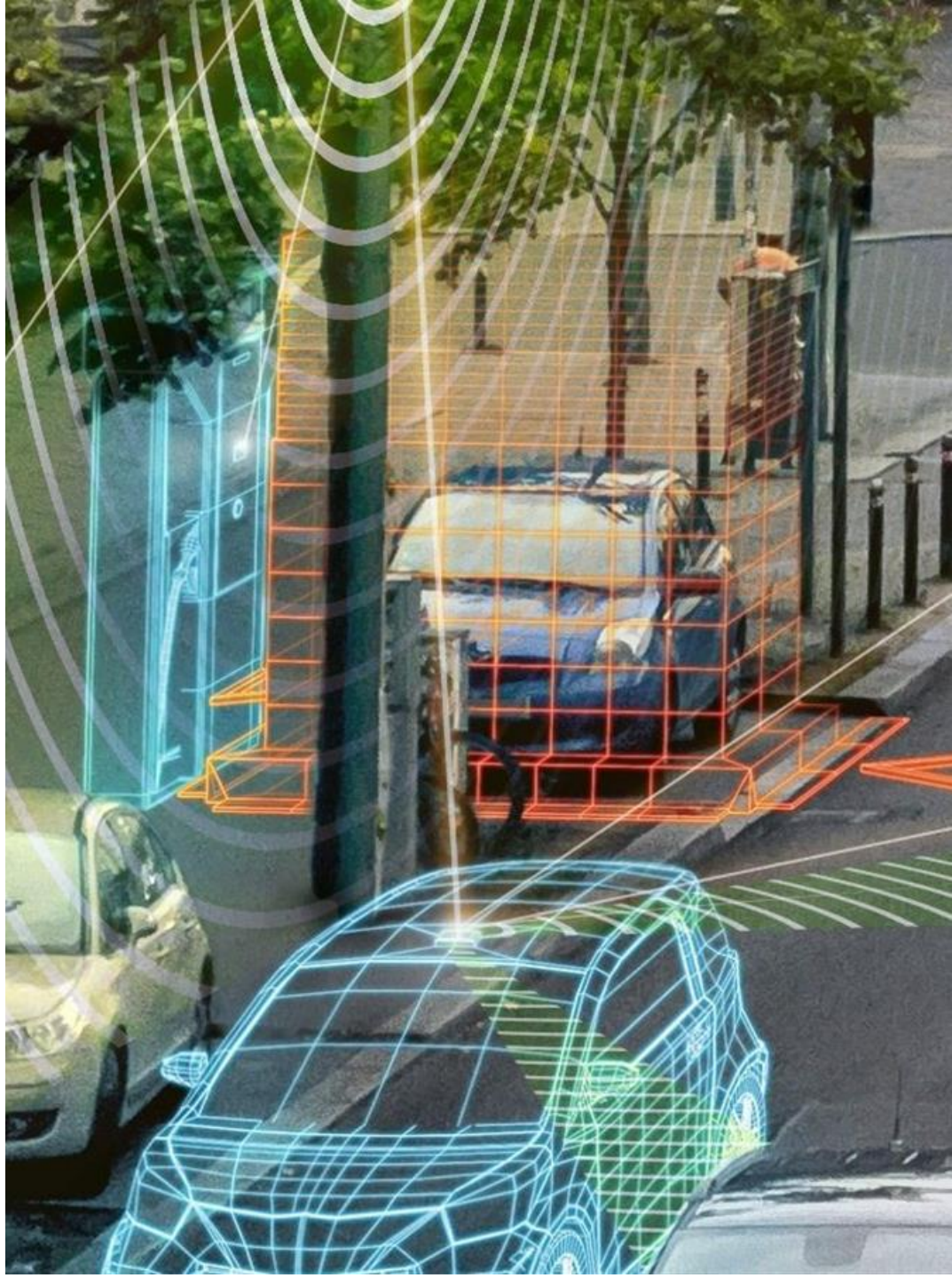
- Temperature;
- Humidity;
- Shock / Impacts;
- Traffic direction and intensity;
- Warnings to the driver of dangers or emergencies through visual effects (LED).

Smart Parking

Having useful information to find parking in a short time is a solution to reduce mobility problems and reduce city pollution.

DP products and systems offer innovative solutions for the management of parking lots in urban and extra-urban areas.

Our solutions also allow customized management of parking services reserved for city users with specific needs and particular attention is given to services in support of fragile people.



Electric vehicle charging

Thanks to the DP systems it is possible to efficiently manage the charging stations of electric vehicles by monitoring and providing all the system data, such as:

- charging time statistics;
- the analysis of externalities that can disrupt the charging process (state of charge of the storage systems, environmental variables, etc.);
- the identification of suitable control actions aimed at ensuring the proper coordination of resources.

Proximiting Advertising/ marketing

DP systems offer a modern platform for the creation, management and distribution of digital content capable of fulfilling, in a reliable and efficient way, the needs of information's dissemination and presentation. This takes place through a distributed network of **information and advertising displays, multimedia totems, variable message panels.**

Through IoT sensors it is possible to interact with users near the information point, enabling the provision of services to citizens such as **tourist information** and on **the proximity of a cultural place** such as a museum, a theater, etc., in addition to the detection of data useful for the market analysis.

Environmental monitoring

Through the DP systems it is possible to view in real time, the detail of all the **weather parameters** recorded on a territory (humidity, wind, temperature, pressure, rain, UVA rays intensity) thus providing a real forecast service. Through information displays or text messages, the end user can be warned in the event of particular dangerous conditions (eg: ice, excessive wind intensity, heavy rainfall).

In addition, various kinds of sensors can be integrated into the system, such as the sensors for **air quality or noise pollution monitoring**, that can provide relevant information on which to plan activities regarding the city and its resources. The platform can also integrate **flood risk sensors** in the most vulnerable areas of the town, without requiring the placement of expensive fixed monitoring stations.

Waste abandonment monitoring

Thanks to the DP systems it is possible to monitor, in full respect of privacy, urban and extra-urban areas where there is a ban on unloading, alerting the police in real time to be able to intervene promptly, in order to guarantee compliance of the regulations against the abandonment of waste.

It is also possible to remotely reconfigure in a simple and fast way the monitoring service, which is thus flexible and adaptable.

Water resources monitoring

IoT DP platforms can integrate innovative low-consumption sensors and make available a flexible and efficient monitoring network that makes the status of the levels of rivers and canals available in real time, in addition to the basic parameters for defining water quality.

The smart monitoring network can be reported on proprietary control platforms as well as on third-party platforms already available to end users.

Public Green

Through the DP systems it is possible to monitor the water needs of green areas.

This management is based on advanced IoT sensors and specific algorithms for the analysis of local microclimatic conditions, providing forecasts of real irrigation needs and cutting needs.

This system allows a rational use of resources and guarantees real savings in the management of public green.

Smart Metering

Thanks to the infrastructure created by the DP systems, it is possible to easily integrate smart gas and water meters remote reading systems. The DP system also allows integration with proprietary gateways and / or through standard gateways and custom applications including diagnostic applications, with leaks detection, load anomalies, abnormal consumption patterns.

In this way management costs are reduce since the readings, being carried out automatically and more frequently by the system, no longer require the operator's intervention on site.

App for the citizen

DP creates customized multi-platform mobile applications for each PA.
The apps can aggregate different communication flows and create a "landing page" for citizens in which to enter all the main information about a municipality.

News, Official Communications, Events, Private Messages on a single page. It is possible to classify and segment users through different characteristics such as age, location / geographical area, language, social category, interests, social tags and many others and provide personalized information.

The apps can enable citizens to provide reports directly to the Administration.
Through the message service it is possible to inform the citizen about report's taking charge. In addition, the app can provide useful information to citizens to help them with separate waste collection.

Control room

DP is able to provide control room solutions capable of processing large amounts of data and information coming from any urban device in a centralized way and in real time.

The DP system is designed to be customizable, interoperable and open, capable of communicating with most of the existing protocols and designed to integrate third-party services, applications, solutions.

The system represents a fundamental tool to have a complete view on the city's situation, as well as to highlight problems or anomalies and to make forecasts.

Cyber security

A smart city is based on the use of IoT devices, clouds, sensors and technologies.
The increase in interconnected IOT devices makes it necessary to develop security technologies both for the data collected by the sensors and for their operation to defend against the risk of cyber attacks or threats by cybercriminals.

The transition from Smart City to Safe City therefore involves to prioritize not only to the people ‘s physical safety but also to IT security. Cyber security becomes an essential aspect for any digital initiative applied to smart cities.

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Enel Worldwide

Umpi, a DP Group company, has achieved further important successes thanks to its ability to innovate and its flexibility in developing ad hoc solutions.
By winning the Enel tender for the supply of Smart Lighting systems with an opening towards Smart City solutions, Umpi will also provide its solutions in South America by building a modular offer adaptable to the different standards present in the various countries.
Argentina, Brazil, Chile, Colombia and Peru will be the first countries to be able to take advantage of DP innovations

New technologies, new communication frequencies (915MHz) and specific communication protocols (NBIoT, 6LoWPAN, WiSUN) have been added to the Umpi proposal, producing and certifying dozens of new products and further expanding the range of smart solutions.

Enel Pescara

Enel X, in partnership with Umpi, a DP Group company, has signed a contract for the supply of approximately 22,000 LED lights, replacing the previous ones.
For the city it is a turning point in technology and efficiency. The lights will all be remote controlled one by one, monitoring them at a distance, turning them on, adjusting them and turning them off individually. In this way, management savings are added to the economic convenience of LED technology.

What was installed?

- Public Lighting remote control;
- 270 fully managed boards;
- 22,800 remote controlled light points;
- Consumption control and analysis;
- SMART CITY Services Infrastructure.

The advantage is both economic and environmental: energy savings of 10,609,127 Kwh are expected a year (71% compared to before), for an annual greenhouse gas emissions reduction of 6,335 tons of equivalent carbon dioxide.

Qatar – Lusail City

The new city, still growing, of Lusail City was born in a desert area, 15 kilometers from Doha, the capital of Qatar.
Umpi, a DP Group company, has provided a remote control and remote management system for electrical panels and lamps in point-to-point mode for public lighting in the Marina & Gardens area and in the access roads to the city.

Specifically, Umpi supplied the modules for the remote control of 8,000 light points and integrated the Minos system with the centralized control system of the city.

Despite the global critical moment caused by Covid-19, Umpi continues with its expansion and strengthens its presence in the middle-east area even more.

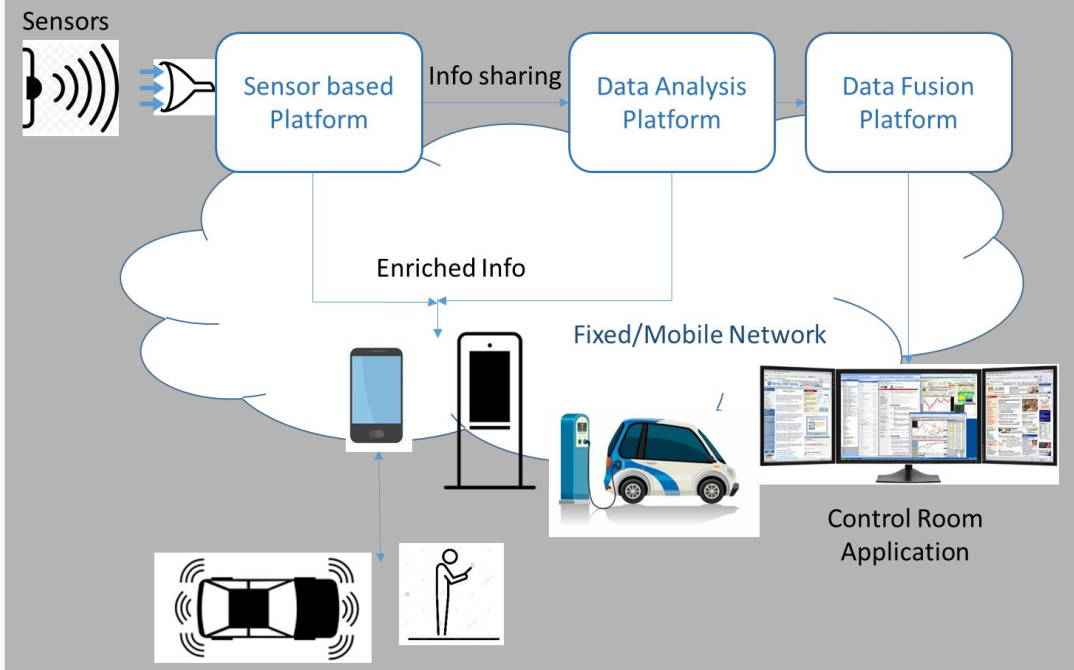
Rome

The public lighting management in Rome is renewed thanks to the technologies proposed by Umpi.
Thanks to the development of RTU solutions (Remote Terminal Unit) required by Acea / Areti specifications, over 3,500 public lighting systems are currently managed and remotely controlled in real time.

The systems are integrated on the operator's SCADA platform and the dedicated software developed by Umpi allows, in addition, the full control of each panel through the protection status remote reading, the electrical operating parameters verification, the sending commands possibility and all alarms management.
High performance is therefore guaranteed and inefficiencies promptly reported and managed in the shortest time possible.

Borgo 4.0

System Management, a DP Group company, is involved in the implementation of two of the 19 development plans that make up the **Borgo 4.0** initiative:
«P-Mobility: Platform Borgo 4.0 for the COnnectivity and urban Smartness MObility – **COSMO**»,
«**VIRGILIO**»: Smart Mobility solution, intended for the Lioni Municipality.
System Management covers, in this project, the role of Lead Partner.
COSMO provides for the creation of an experimental system that allows to support and assist the vehicles intelligence in autonomous driving conditions, creating an autonomous driving model based on the environment condition.
The System Management goal is to create an environment, through an IoT & Data Analysis management platform, which extends the "event horizon" perceivable by a single vehicle and builds an overall scenario (big picture). This scenario can be sent to each vehicle to increase the "vision" capability of the context in which it moves.
The **VIRGILIO** project, on the other hand, aims to experiment some of the innovative technologies in the "sustainable and safe mobility". In particular, it refers to the generation and advanced management of data relating to urban and extra-urban traffic aimed at providing services related to mobility.



Smart Road

DP is developing with Umpi a management and monitoring system for highways consisting of:

- Sensors, powered by a low voltage and wide range power supply, capable of detecting and transmitting information such as temperature, humidity, bumps / impacts, traffic direction and intensity, warnings to the driver of dangers or emergencies through visual effects (LED);
- Concentrator for the collection and processing of the information transmitted by the sensors;
- Remote Management, i.e. cloud System.

The system is capable of showing:

- the entire system impact values in the case of a collision with one or more barriers;
- the vehicles count passed through;
- the alarms signaling following a collision;
- the alarms signaling following an identified wrong-way traffic;
- automatic propagation of the alarm signal command through LEDs in case of danger;
- the possibility to control and modify the LEDs' function to signal, for example, the construction site presence.

Thanks.

Your Innovation will come true with us!