Smart Public Pole

PUBLIC POLE

SENSOR HUB

LED LUMINAIRE

MULTI BRACKET

EV CHARGING MODULE

CitySys® PUBLIC POLE EV CHARGING

Smart Public Pole enables connection of different sensors (concentration of VOC and dustparticles), radars, actuators, meteo station, CCTV with videosurveillance service powered by AI or parking cameras and other devices (5G small cells, C2X, C2I autonomous cars infrastructure, AC EV chargers, Digital signage screens, PA speakers, SOS emergency button, …..)

If you think back to any city, town, country, or region you have visited, you may recall that Public streetlight poles are everywhere In fact, these poles are so expansive that we do not even notice them anymore. But here at CitySys, we know these poles are capable of so much more than providing lighting to cities they are the key to enabling the future of "smart cities" and driving a whole new economy that we call the "Public Lighting grid Economy" Let's open, what needs to happen to open up this economy

The good news is that there is a simple solution to all these problems CitySys and SmartPublicPole smart city edge platform provides the 3 Ps Power, Permitting and
Processing all in a single device that removes the friction and opens up Process of the "Public Lighting grid Economy" In a nutshell, platform helps improve operational and financial performance for cities, while providing an easy way for technology and service providers of varying sizes to take advantage of IoT opportunities

For the last decade, CitySys has worked with cities across the globe and identified several obstacles that come in the way of opening up the "Public Lighting grid Economy" This begins with an easy way to power devices and the ability to meter them, and that extends to the need for a secure communication network that can transmit the data back into the cloud after short action of interoperable edge processing.

Integration of central unit

Connectivity

CitySys platform
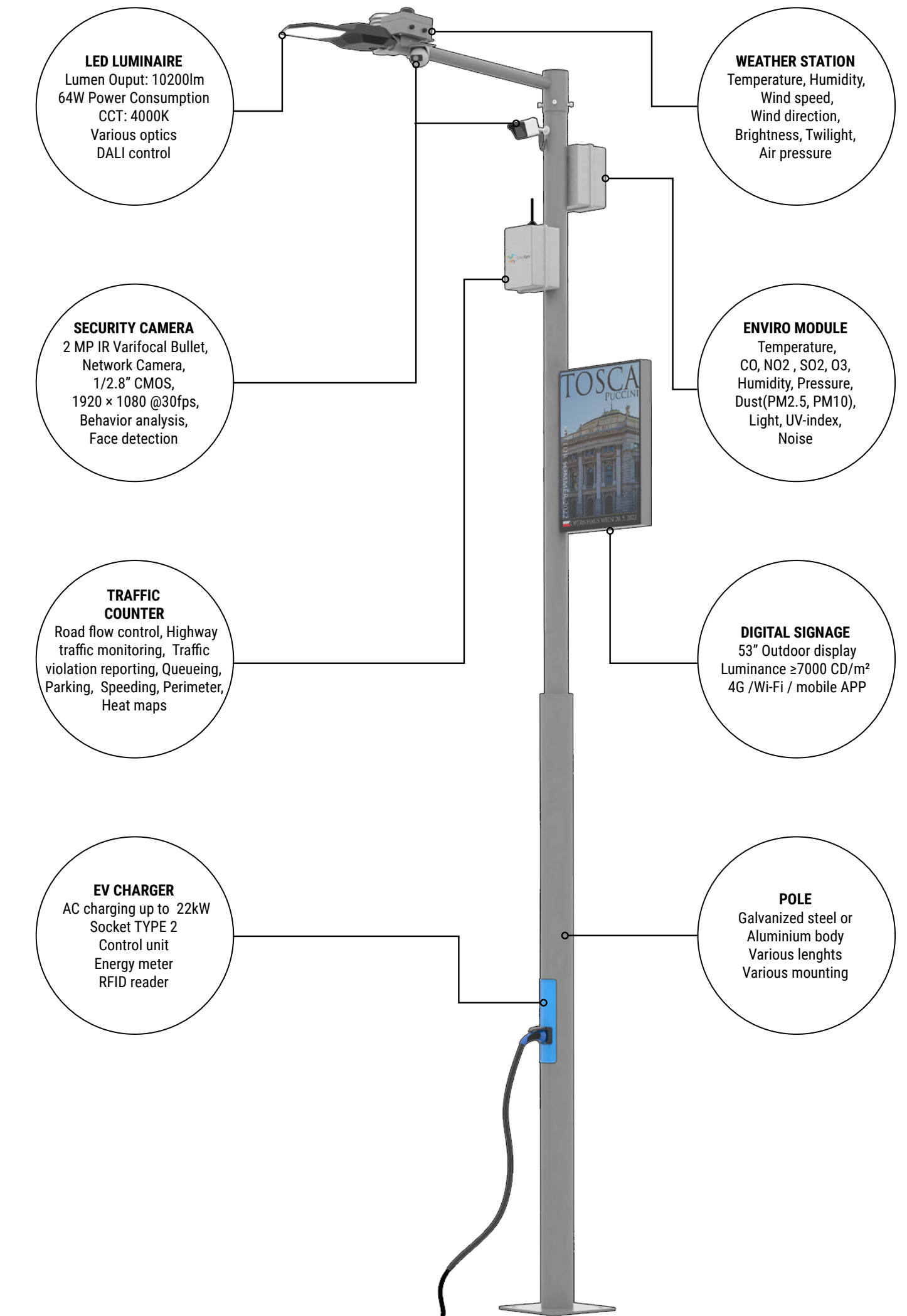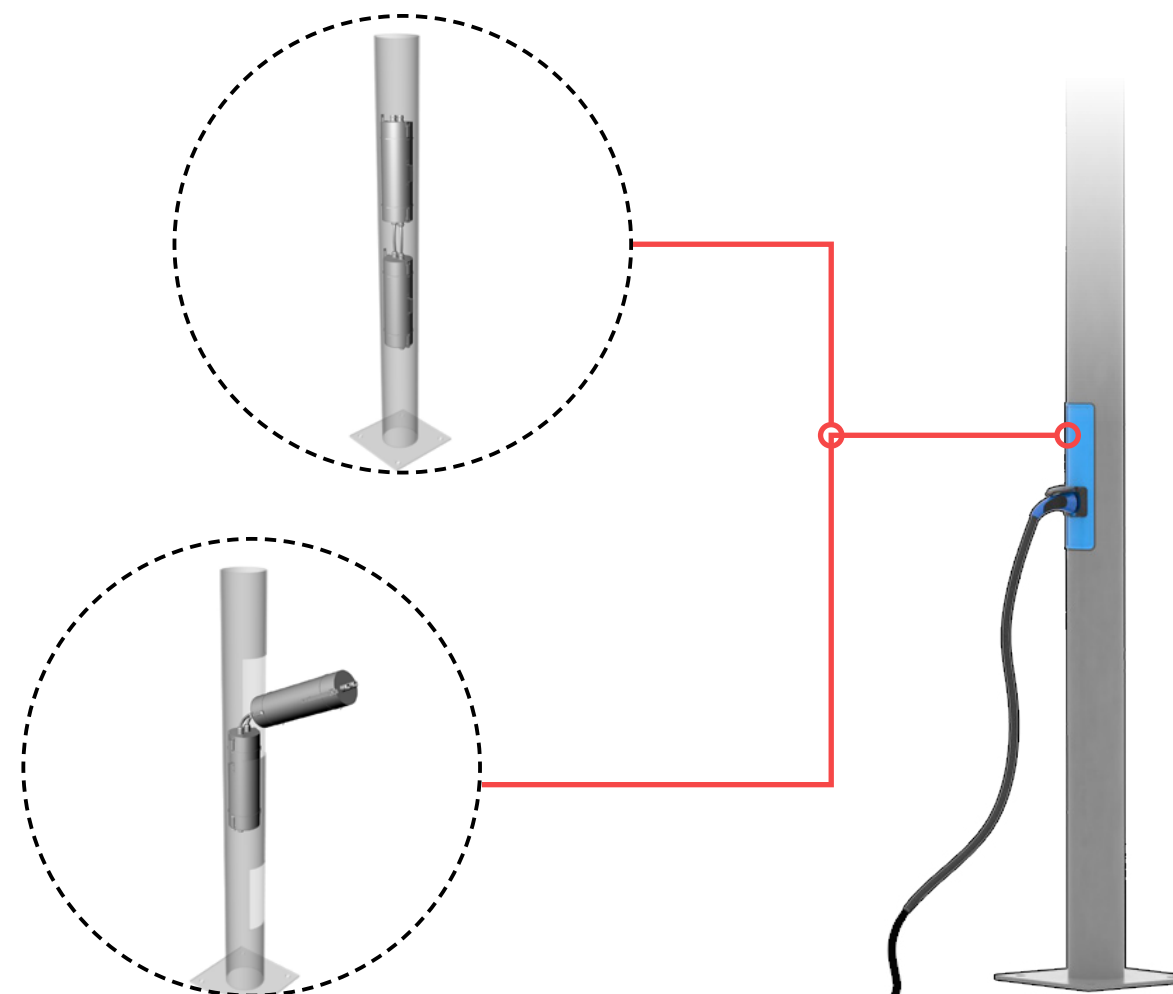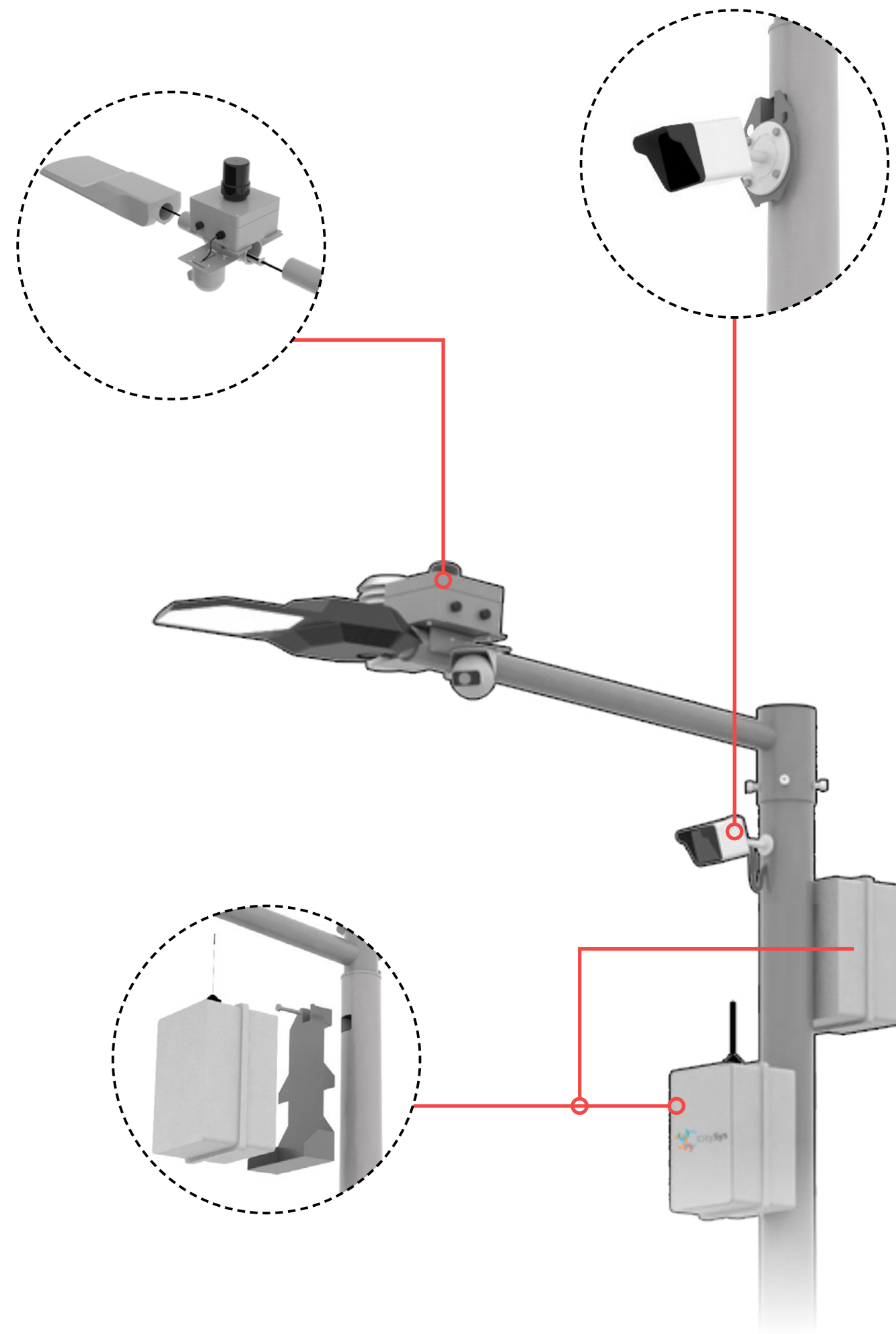
HW IoT devices

IoT Equipment
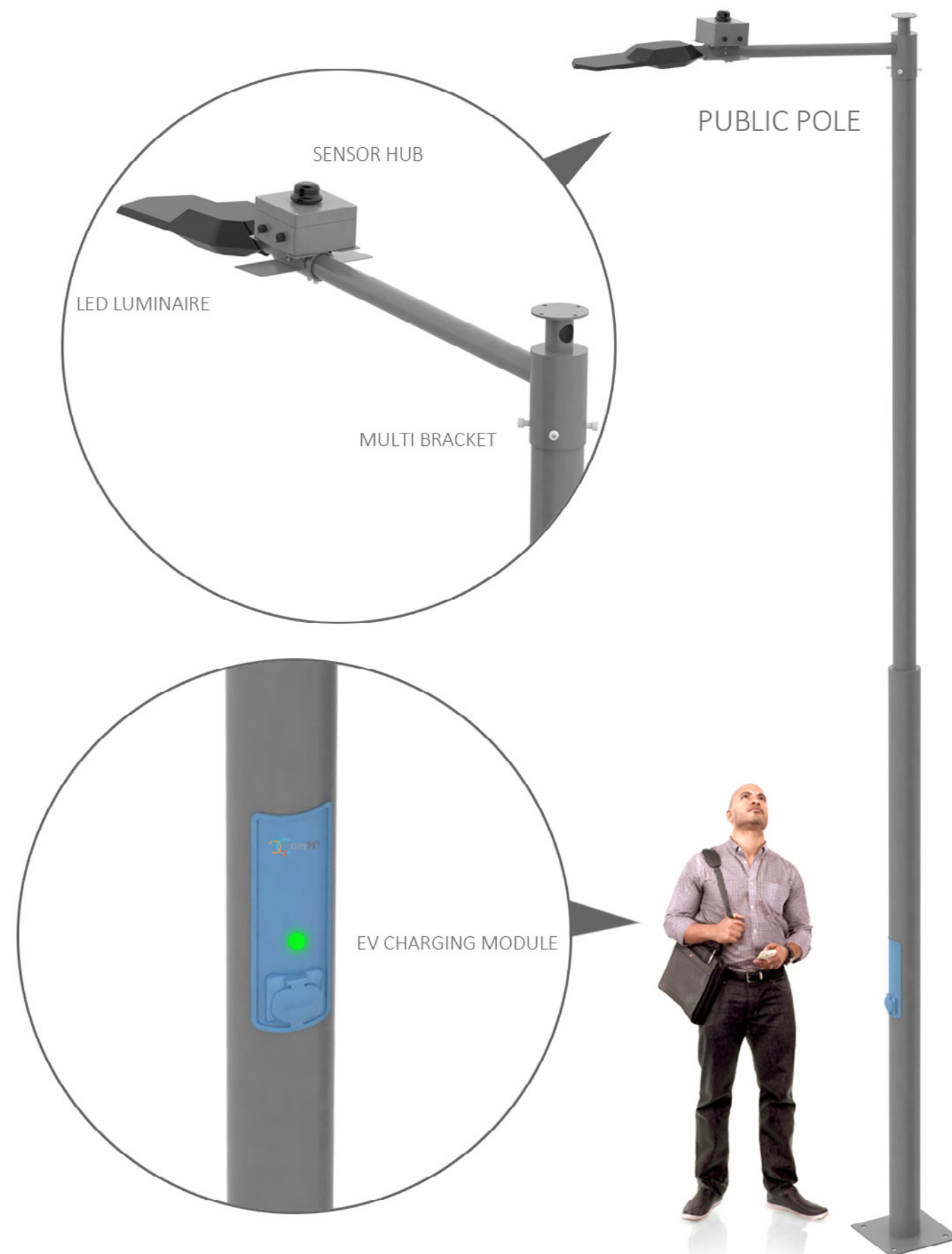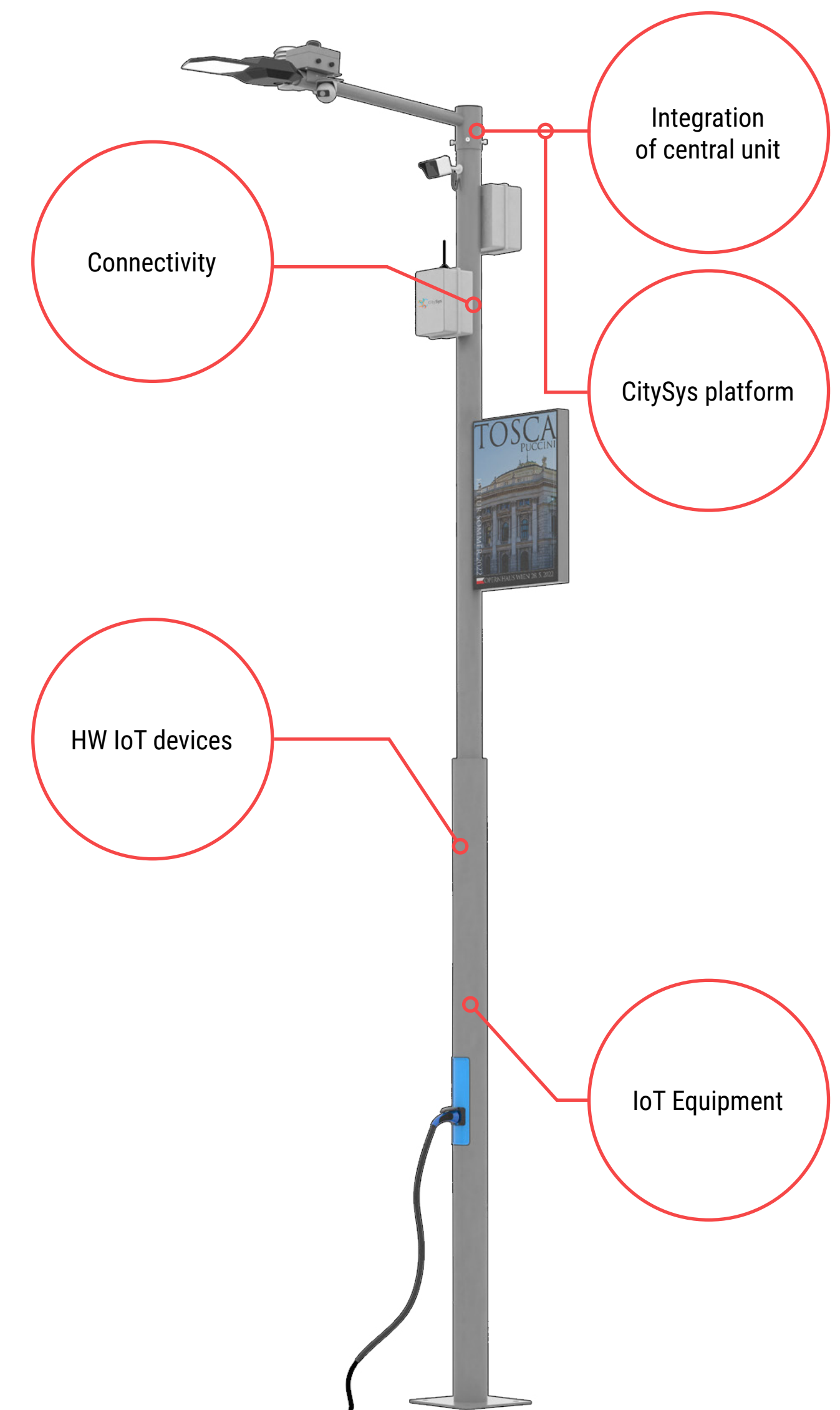
Smart Public Pole
Technology Description

It works as server and data communication bus from all devices integrated into pole and as a communication channel between devices and CitySys IoT platform or any selected IoT platforms according to your requirements.

List of devices integrated into pole used as a communication bus between IoT devices and IoT platform
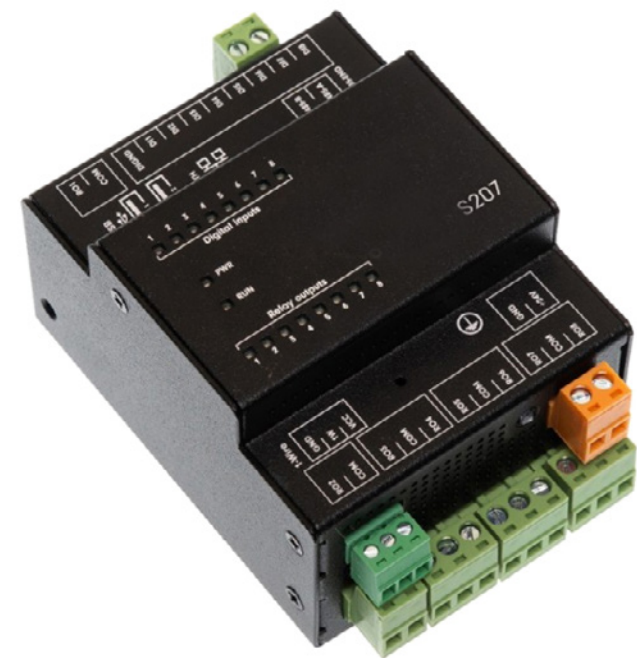- Central logic machine
- Wireless Access Point
- IoT Sensor Gateway
- Industrial Switch
- Digital/Analog I/O
- PoE Injectors
- Fiber Panel
- Power Panel
- PLC Ethetnet Bridge
- 5G router
- Router Power source

LED LUMINAIRE
Lumen Ouput: 10200lm
64W Power Consumption
CCT: 4000K
Various optics
DALI control

WEATHER STATION
Temperature, Humidity,
Wind speed,
Wind direction,
Brightness, Twilight,
Air pressure

SECURITY CAMERA
2 MP IR Varifocal Bullet,
Network Camera,
1/2.8" CMOS,
1920 × 1080 @30fps,
Behavior analysis,
Face detection

ENVIRO MODULE
Temperature,
CO, NO2 , SO2, O3,
Humidity, Pressure,
Dust(PM2.5, PM10),
Light, UV-index,
Noise

TRAFFIC COUNTER
Road flow control, Highway
traffic monitoring, Traffic
violation reporting, Queueing,
Parking, Speeding, Perimeter,
Heat maps

DIGITAL SIGNAGE
53" Outdoor display
Luminance ≥7000 CD/m²
4G /Wi-Fi / mobile APP

EV CHARGER
AC charging up to 22kW
Socket TYPE 2
Control unit
Energy meter
RFID reader

POLE
Galvanized steel or
Aluminium body
Various lenghts
Various mounting

The Company reserves the right to change any product specifications without prior notification.

Smart Public Pole

HW IoT devices

CENTRAL LOGIC MACHINE

is a programmable logic controller (PLC) and gateway designed for automation, control, regulation and monitoring. The S207 features a combination of digital inputs and relay outputs while retaining its compact size. That makes it applicable in a wide range of applications in simple installations that include monitoring, reading data from binary sensors and switching of external devices via relay outputs. The S207 also features a single RS485 serial interface for connection of extension modules or gateways and a 1-Wire interface for connection of digital temperature or humidity sensors.

IOT SENSOR GATEWAY

IoT Sensor Gateway is a flexible device for simple interfacing of various sensors into CitySys or WorkSys platform. Great compatibility and easy installation on poles from different manufacturers makes it the perfect choice for remote data collection.

PLC ETHERNET BRIDGE

By using PLC Ethernet Bridge user can build LAN IP network in plug & play way. It allows connection of different IP devices such as cameras and sensors, without necessity of extra wiring, by using power grid as communication medium.

POE INJECTOR

PoE+ Ethernet switch conforms to IEEE 802.3at. Includes four PoE+ ports and one standard RJ45 port, all with 10/100 Mbps speeds.

WIRELESS ACCESS POINT

LTE CAT4 INDUSTRIAL CELLULAR ROUTER

Most feature rich device. Equipped with Dual-SIM, 4 x Ethernet, WiFi and RS232, RS485, USB interfaces and Inputs/Outputs. RUT 1 comes with RutOS advanced software features such as Modbus, SNMP, TR-069, NTRIP, MQTT protocol support and custom GNSS tracking protocol that is compatible with Global AVL tracking platforms.

POWER SUPPLY

Power supply for DIN rail 13.8V DC 4.3A 59W. The input is 3-pin. Input voltage is 90V to 264VAC or 127V to 370VDC. The power supply has protection against overvoltage, short circuit and overload. Output voltage regulation 12V-15V.

FIBRE OPTICS CONVERTOR

1000Base-T to 1000Base-X Fiber Media Converter
Link copper to multimode or single mode fiber
Advanced Features: Link Pass-Through, Far-End Fault, Auto-MDIX
Triple Power Input: Dual Terminal block power connector & T-Bus

ELECTRIC METER

Three-phase electric meter
MID Annex MI-003 certified
Accuracy ±0.5% RDG
IP51

Smart Public Pole

IoT Equipment

WEATHER STATION

The interface for the instrument is digital, and consists of an RS485 interface. Together with the IDbased communication the interface facilitates the operation of the weather station in a bus. The instrument has a GPS receiver. It serves for the determination of position and time. The sun position is calculated herefrom additionally.

WEATHER TRANSMITTER

is a unique series of sensors with parameter combinations that allow you to choose what is right for your application. Weather Station 2 is a flexible, integrated building block for weather applications. Weather Station 2 series improves your grip on weather.

EVNIRONMENTAL MODULE

Sensors and ranges:
CO   0….500 ppm (0….617 mg/m3)
NO$_2$ 0….20 ppm (0….40,5 mg/m3)
SO$_2$ 0….50 ppm (0…141 mg/m3)
O$_3$ 0….20 ppm (0….42,3 mg/m3)
Temperature   -40….125 °C
Pressure   260…1260 hPa
Humidity   0….100 %RH
Light   (VIS, UVA, UVB)
Iluminance   0..16496 lx
Noise   0..120 dB
Dust   (PM2.5) 0….1000 µg/m³
                (PM10) 0….1000 µg/m³

PARTICULATE MATTER (PM) SENSOR

is a technological breakthrough in optical PM sensors. Its measurement principle is based on laser scattering and makes use of Sensirion's innovative contaminationresistance technology. This technology, together with high-quality and long-lasting components, enables accurate measurements from its first operation and throughout its lifetime of more than eight years. In addition, advanced algorithms provide superior accuracy for different PM types and higher-resolution particle size binning, opening up new possibilities for the detection of different sorts of environmental dust and other particles. With dimensions of only 41 x 41 x 12 mm3, it is also the perfect solution for applications where size is of paramount importance, such as wall-mounted or compact air quality devices.
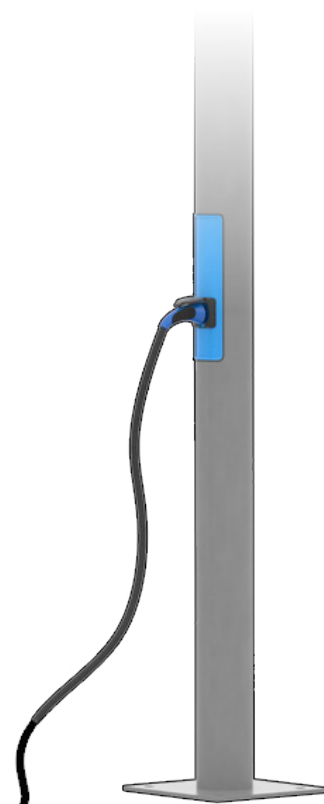
EV CHARGER

AC charging up to 22kW
Socket TYPE 2
Control unit
Energy meter
RFID reader

CAMERA

With upgraded H.265 encoding technology, Eco-savvy series brings high efficient video compression capability. It can save bandwidth and storage. Meanwhile, the series features starlight, smart IR technology and intelligent image analysis techniques. This series supports reminder function, meanwhile fully protected from dust and water, certified to IP67 and vandal resistant to IK10 standard.

SMART TRAFFIC CAMERA

TrafficCamera is an ideal choice for monitoring smaller areas or not so complex scenes such as two-lane roads, tunnels, pedestrian paths, entries or exits etc. Thanks to an onboard fully featured video analytic engine capable of processing and evaluating the extracted traffic data in a fully customizable way, it can send real-time alerts or directly control other connected devices including signs or gates. All statistics could be visualized on a camera dashboard. It is a fully functional stand-alone traffic monitoring solution without the need of a server-side part of its operation.

SMART TRAFFIC COUNTER

is a real-time video analysis unit which turns any IP camera into a smart multipurpose sensor by just plugging in a cable. Based on deep neural networks, Embedded represents a new generation of edge solutions enabling all the features of a distributed video-analytics environment. It is powered by the most advanced traffic analytic framework CitySys FLOW which makes it an ideal choice for any monitoring and control task in the field of intelligent transport systems, smart cities, security or retail.

Smart Public Pole

IoT Equipment

ESTREET LUMINAIRE

Light source » LED, AC voltage » AC 220–240 V / 50–60 Hz, Connection » leading out cable » leading out cable with connector (G) » without cable (WO), Driver » electronic driver with surge protection L/N-Ground 10 kV, Surge protection » additional surge protection 10 kV (S), Fuse » fuse 6,3 A (J), Dimming » non-dimmable (not labeled) » DALI » night dimming (A) » preparation for wireless communication NEMA (N) » Zhaga (Z) » 2× Zhaga (Z2), Constant lumen output » CLO (C), Color rendering index » Ra > 70 » Ra > 80, Color temperature » AMBER » 2 200 K » 2 700 K » 3 000 K » 4 000 K » 5 000 K, Service life » > 100 000 hours (L90B10)

CSTREET LUMINAIRE

With the new and innovative street light CHALLENGE CITY, it´s a highly "sustainable" luminaire, offering to the urban lighting a product that combines design with a perfect heat dissipation.

TSTREET LUMINAIRE

Low-glare lens optics that deliver any of 12 different LIDCs means there is a TORCUS for any application – from roads and pavements through squares and paths to junctions and pedestrian crossings.
Optical system has been carefully designed by experienced optical engineers to ensure its suitability for areas where glare control is important according to Luminous Intensity Classification EN 13201-1 Appendix A1.

SPEAKER

10W Class D, built-in amplifier

Dust and water tight – IP 65

97 dB SPL (1m)

Ideal for Micro Zone PA and systems that require a limited number of speakers

Each speaker is individually addressable and monitored
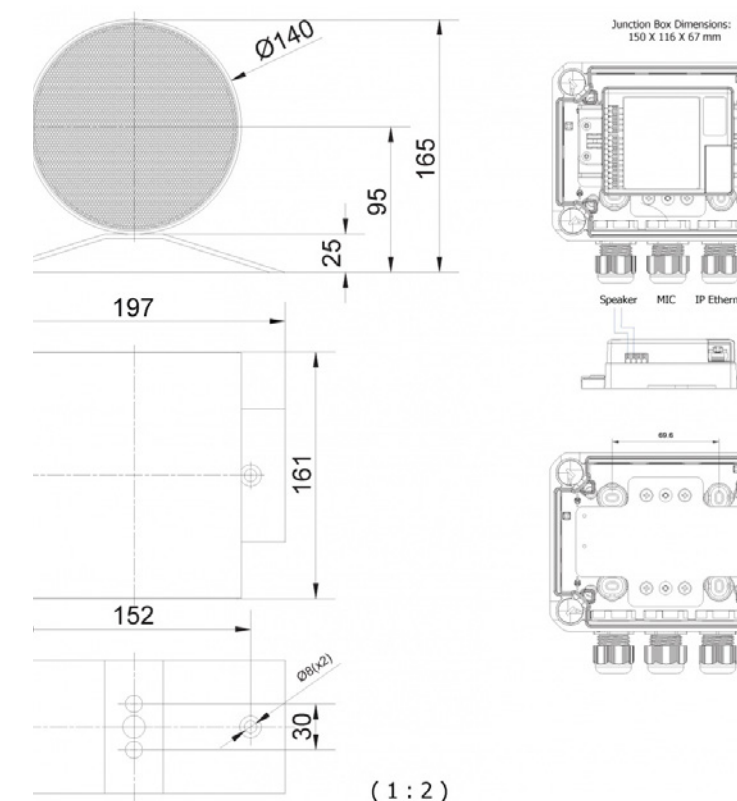
ONVIF Compatible

Ideal for speakers installed in remote locations, e.g. roads and railways

Remote software upgrade and configuration

Relay output for remote control, e.g. doors, signal lamps, gates

Powered from the IP network cable using Power over Ethernet (PoE)

Ideal for Building Security, Infrastructure and Industrial projects

Junction Box Dimensions: 150 X 116 X 67 mm

Ø140

197

165
95
25

161

152

30

Speaker   MIC   IP Ethernet

(1 : 2)

OUTDOOR LED POLE SCREEN

Ideal replacement to following existing banner/posters:
City Street Pole Banner: Fixed contents Low brightness.

LED Pole Screen is an ideal replacement for the traditional light pole banner. With a cluster controller, the LED displays can be changed the videos or photos by mobile phone or computer in realtime.
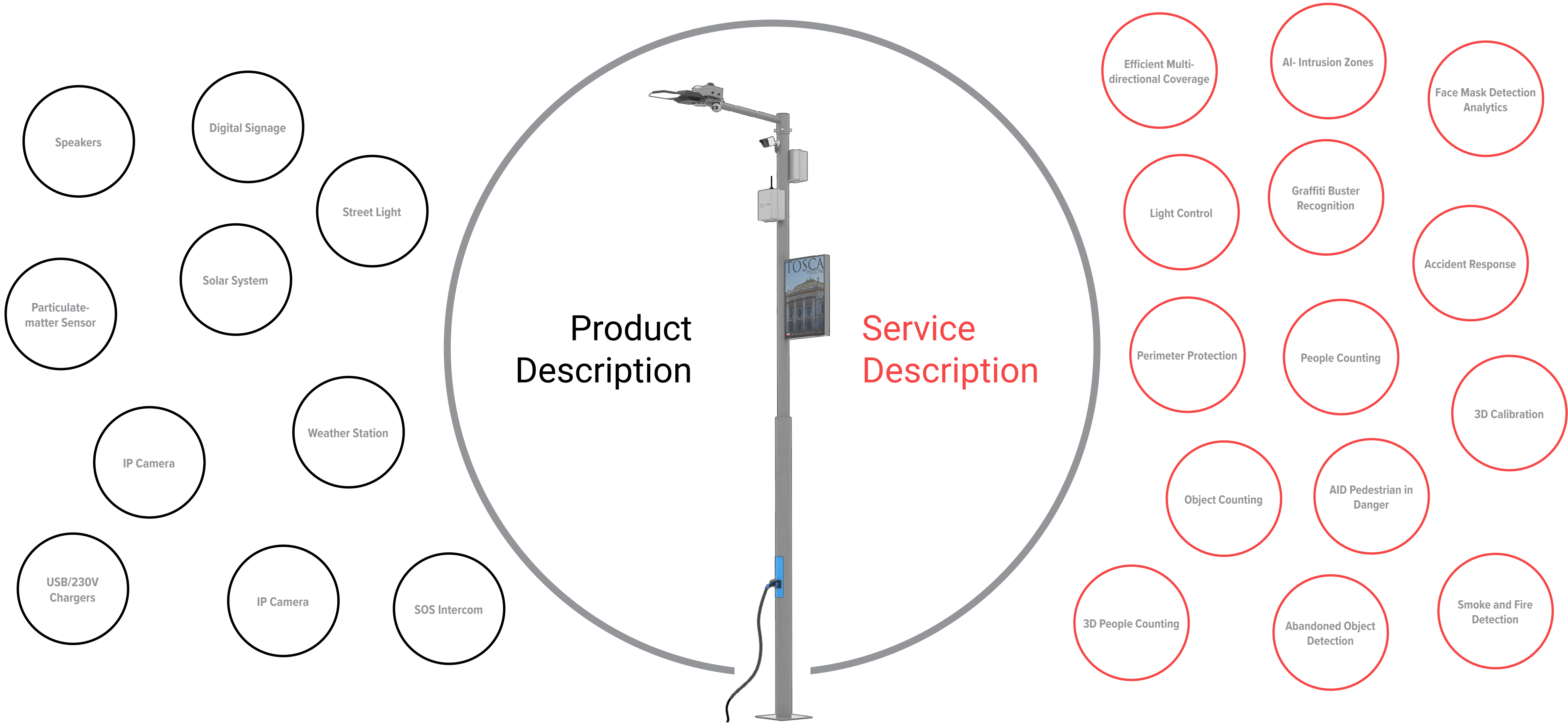
Features
• Display area: 600x1200mm, 53"
• High resolution and definition, with P3.57 LED SMD, 168 x 336 = 56448dots highly impactful image available
• High brightness, up to 7000nits, visible contents
• even during the day time under the sunshine
• Energy-saving, low power consumption
• User-friendly, plug and play device, with all the
• configurations already pre-set.
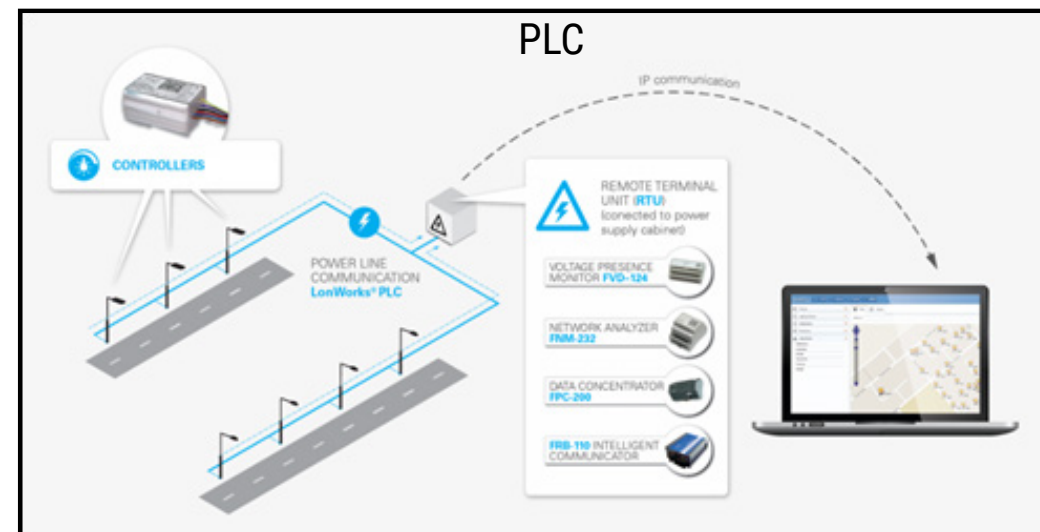• Intelligent remote control
• Designed for outdoor use

Smart Public Pole

Speakers

Digital Signage

Street Light

Solar System

Particulate-matter Sensor

Weather Station

IP Camera

USB/230V Chargers

IP Camera

SOS Intercom

Product Description

Service Description

Efficient Multi-directional Coverage

AI- Intrusion Zones

Face Mask Detection Analytics

Light Control

Graffiti Buster Recognition

Accident Response

Perimeter Protection

People Counting

3D Calibration

Object Counting

AID Pedestrian in Danger

3D People Counting

Abandoned Object Detection

Smoke and Fire Detection

Smart Public Pole
Connectivity

PLC

The Powerline network is a powerful communication technology for advanced street light systems. Power Line Communication (PLC) is a technology that enables sending data over existing power cables. This means that, with just power cables running to an electronic device (for example) one can both power it up and at the same time control/retrieve data from it in a half-duplex manner.
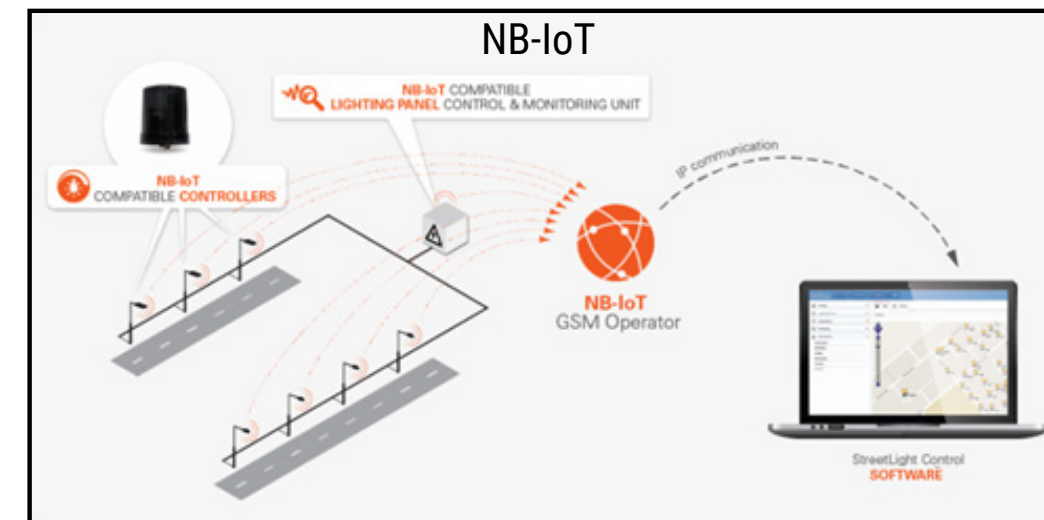

NB-IoT

Narrow-Band IoT (NB-IoT) is a narrowband RF communication technology specially designed for the Internet of Things. It connects devices more simply and effciently on already established mobile networks, and handles small amounts of infrequent 2-way data, securely and reliably. The special focus of this standard is on very low power consumption, excellent penetration coverage and lower component costs, deployed in GSM and LTE regulated frequencies.
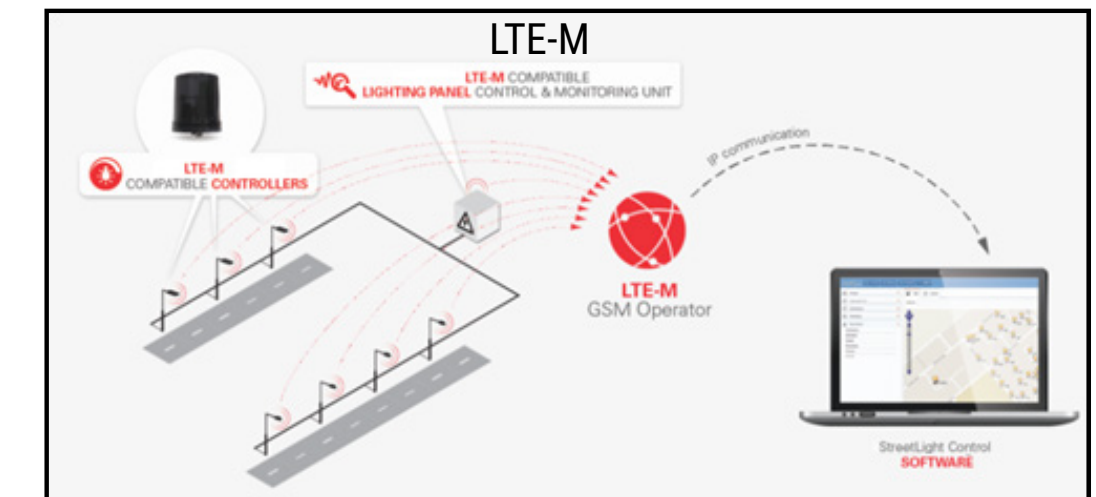
LTE-M

LTE-M is a low power wide area (LPWA) technology standard published by 3GPP. It supports IoT through lower device complexity and extended coverage, while allowing the reuse of the LTE installed base. Supported by all major mobile equipment, chipset and module manufacturers, LTE-M networks will co-exist with 2G, 3G, and 4G mobile networks and benefit from all the security and privacy features of carrier-grade network.
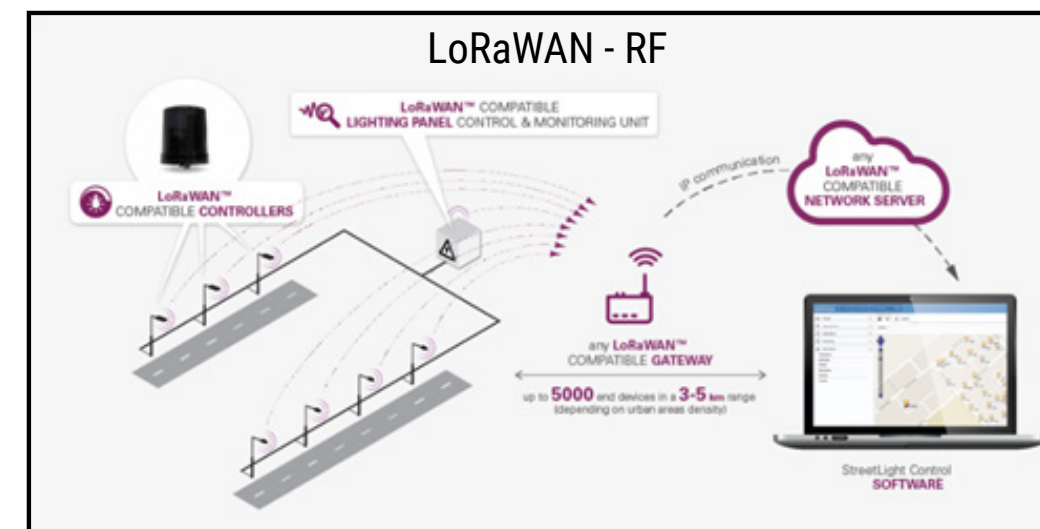
LoRaWAN - RF

LoRaWAN™ is a Low Power Wide Area Network (LPWAN) specification that targets key requirements of Internet of Things such as secure bi-directional communication, mobility and localization services. It provides seamless interoperability among smart things without the need of complex local installations and gives back the freedom to the user, developer and businesses, enabling the rollout of Internet of Things.

5G
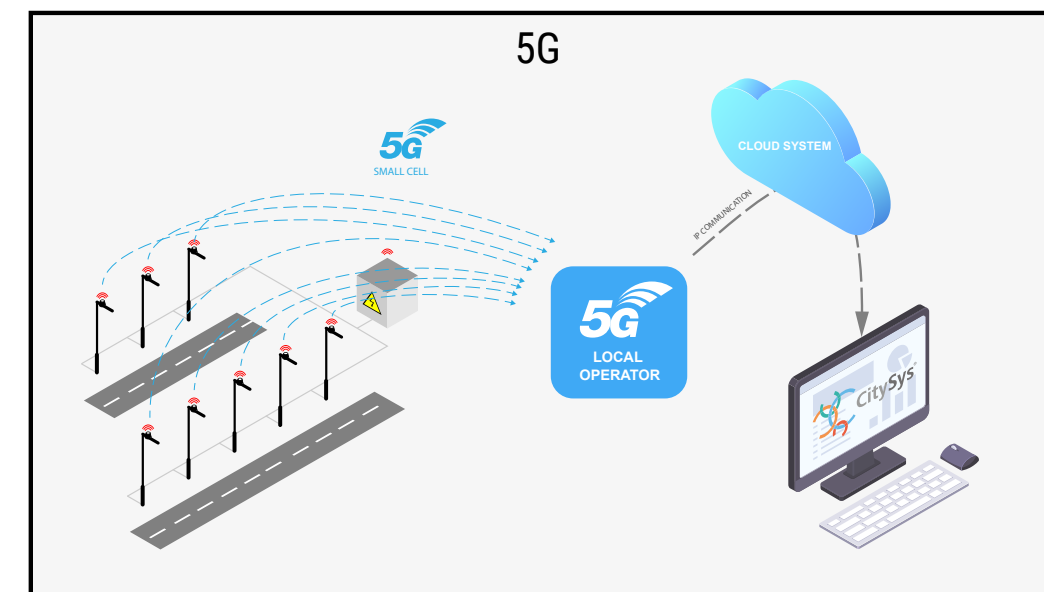
5G networks are vastly improving high-speed Internet connectivity around the globe and opening the door to a revolution in the Internet of Things (IoT), the wider bandwidth and more efficient spectrum usage of 5G networks will allow far more devices to operate in close proximity without interfering with one another. 5G's average data speed is five times faster than 4G, and in theory, it could reach speeds more than 100 times faster. The better the connection, the better systems perform. It's supported by all major mobile equipment, chipset and module manufacturers and benefits from all the security and privacy features of carries-grade framework.
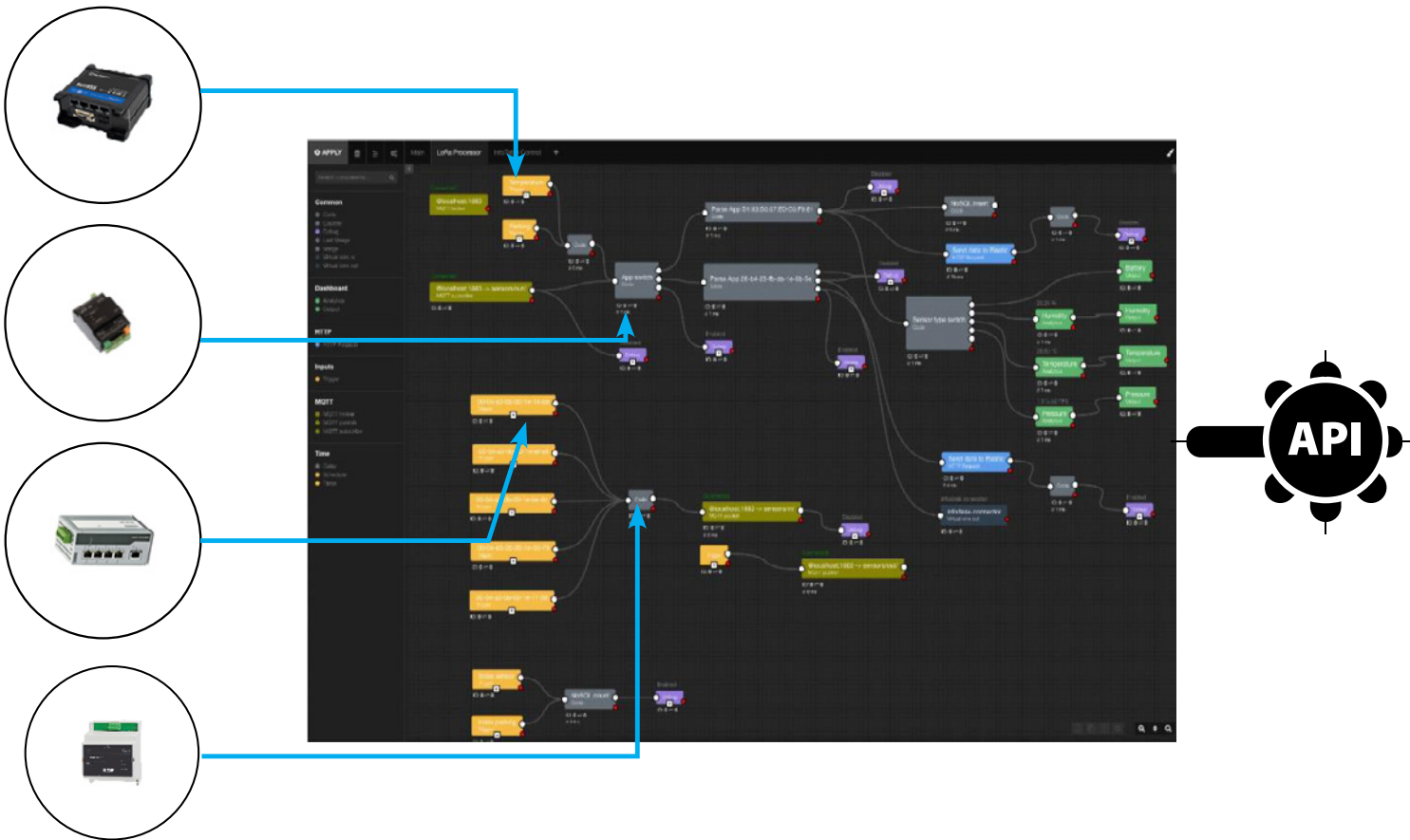
Smart Public Pole
Integration on Central unit level

SW INTERFACE FOR DEVICE MONITORING

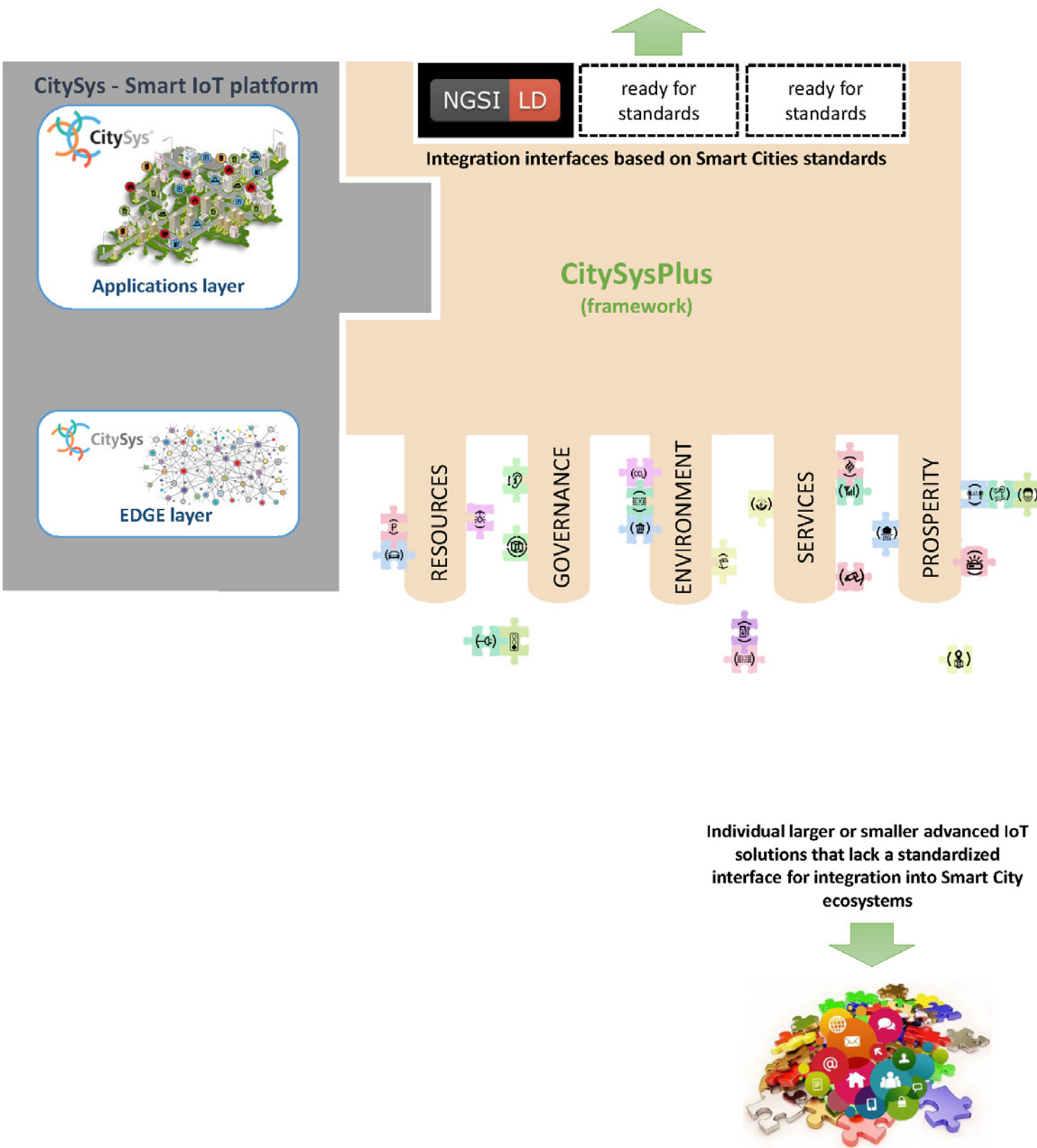Integration of Central unit for each Pole. Helps connect standalone devices and applications.

INTEGRATION OF 3RD PARTY SOLUTIONS

Integration on middleware where you integrate via one interface for all central units placed in poles. Helps integrate application to each other with data and functionality.

3rd party solution

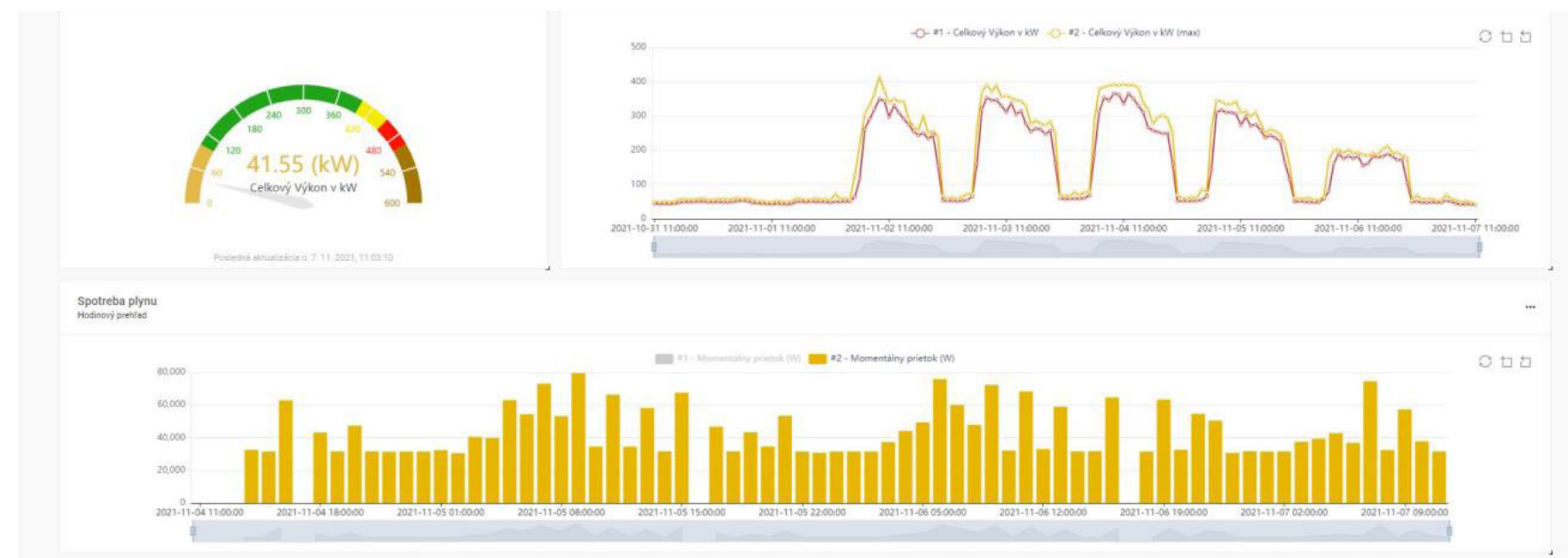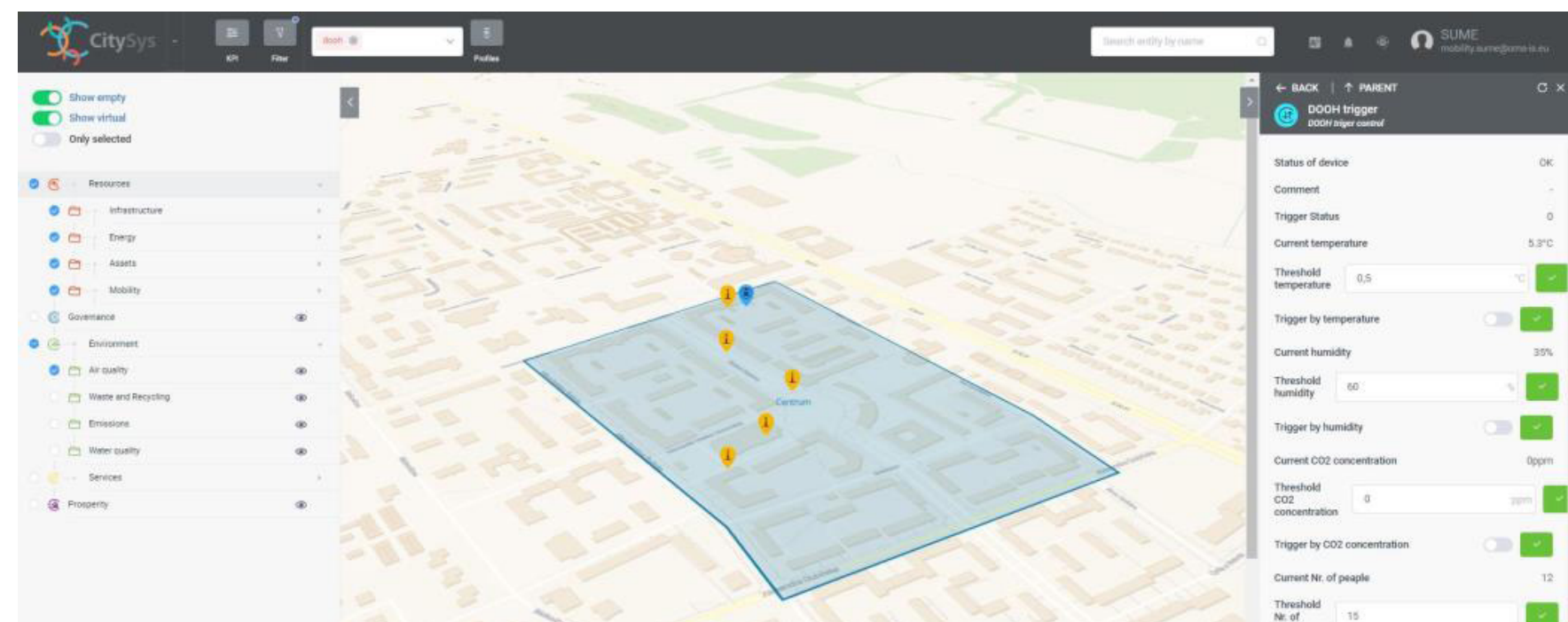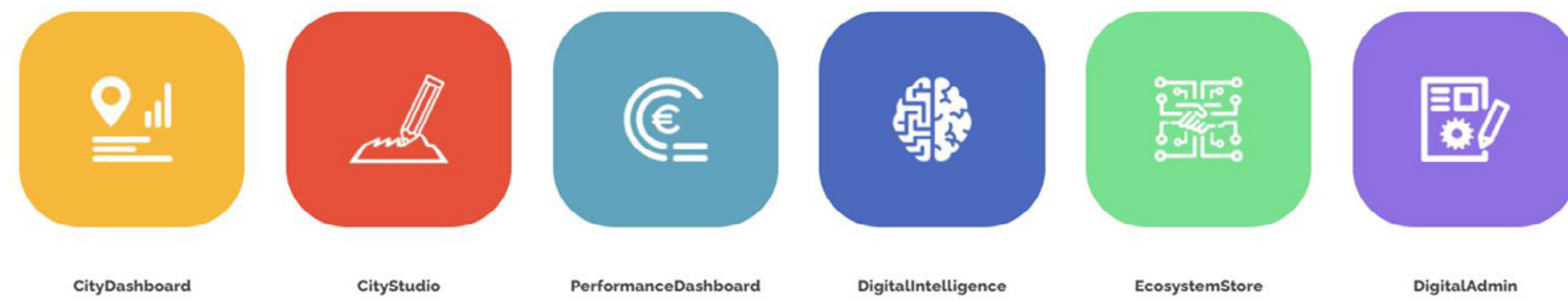## DEVICE INTEGRATION AND DATA MANAGEMENT

CitySys application layer level (for monitoring and management of individual Poles with the possibility of SW management). We are able to prepare hybrid combination of the above integrations.
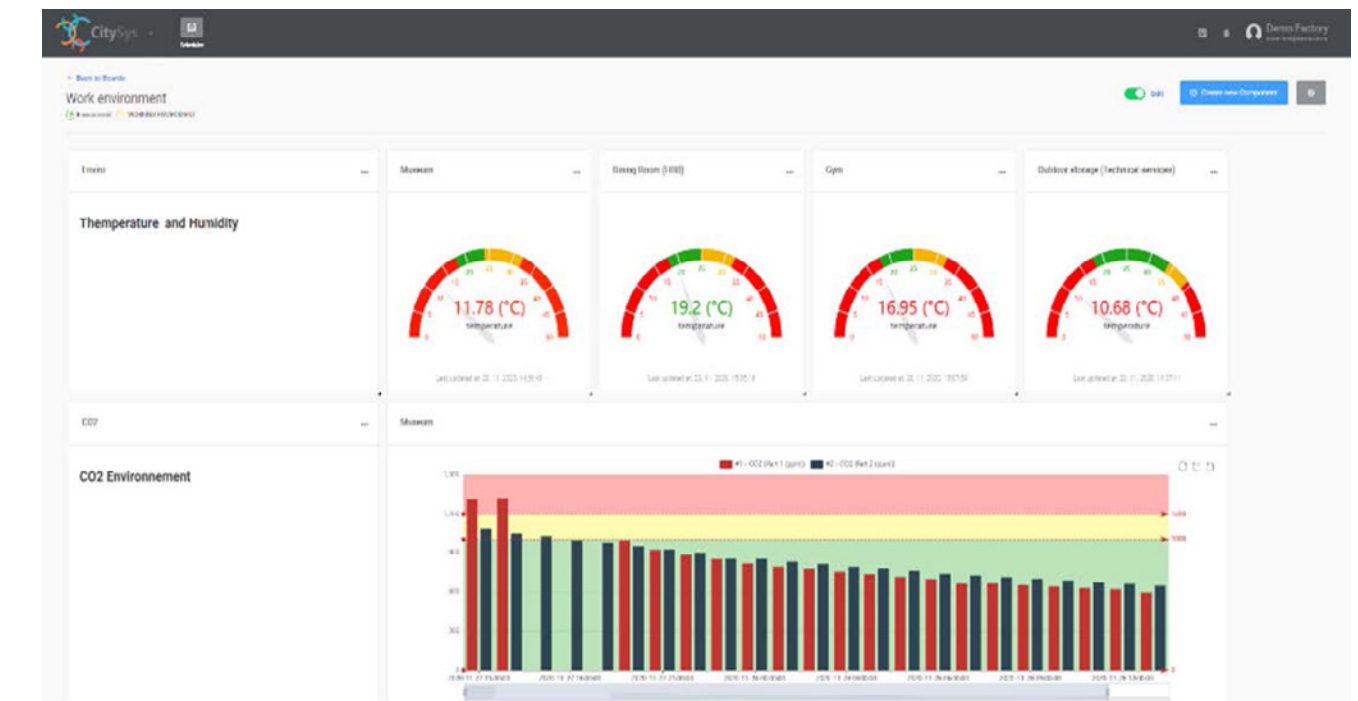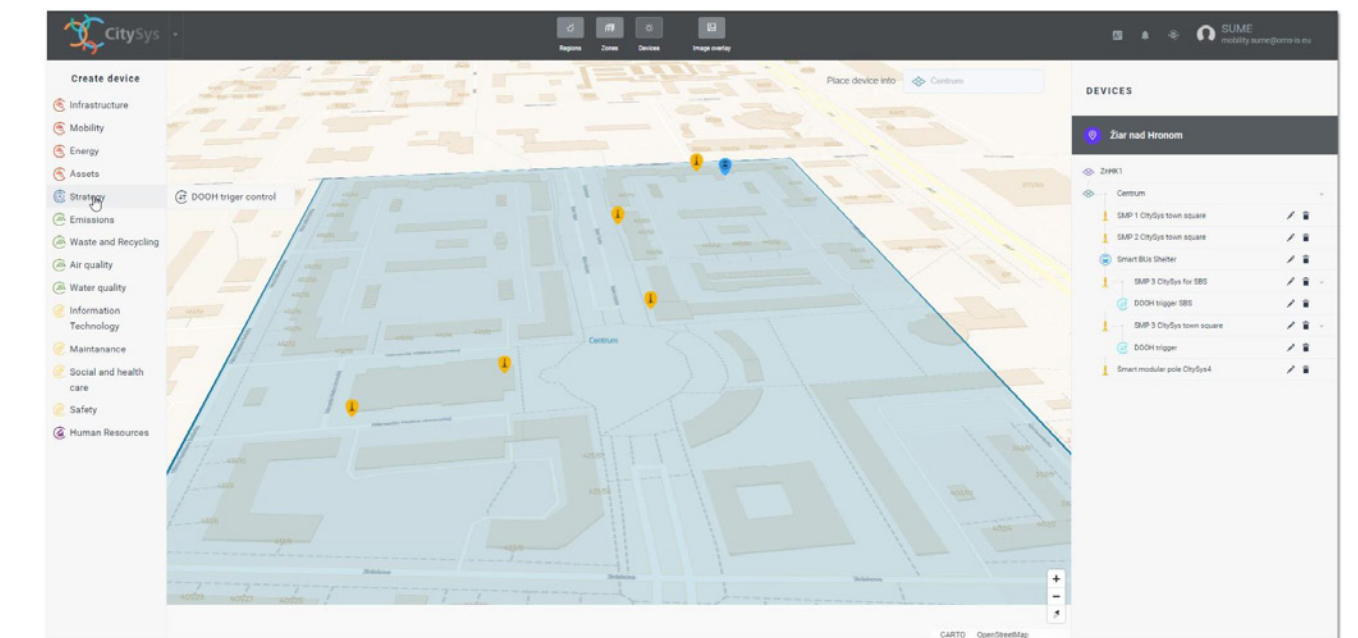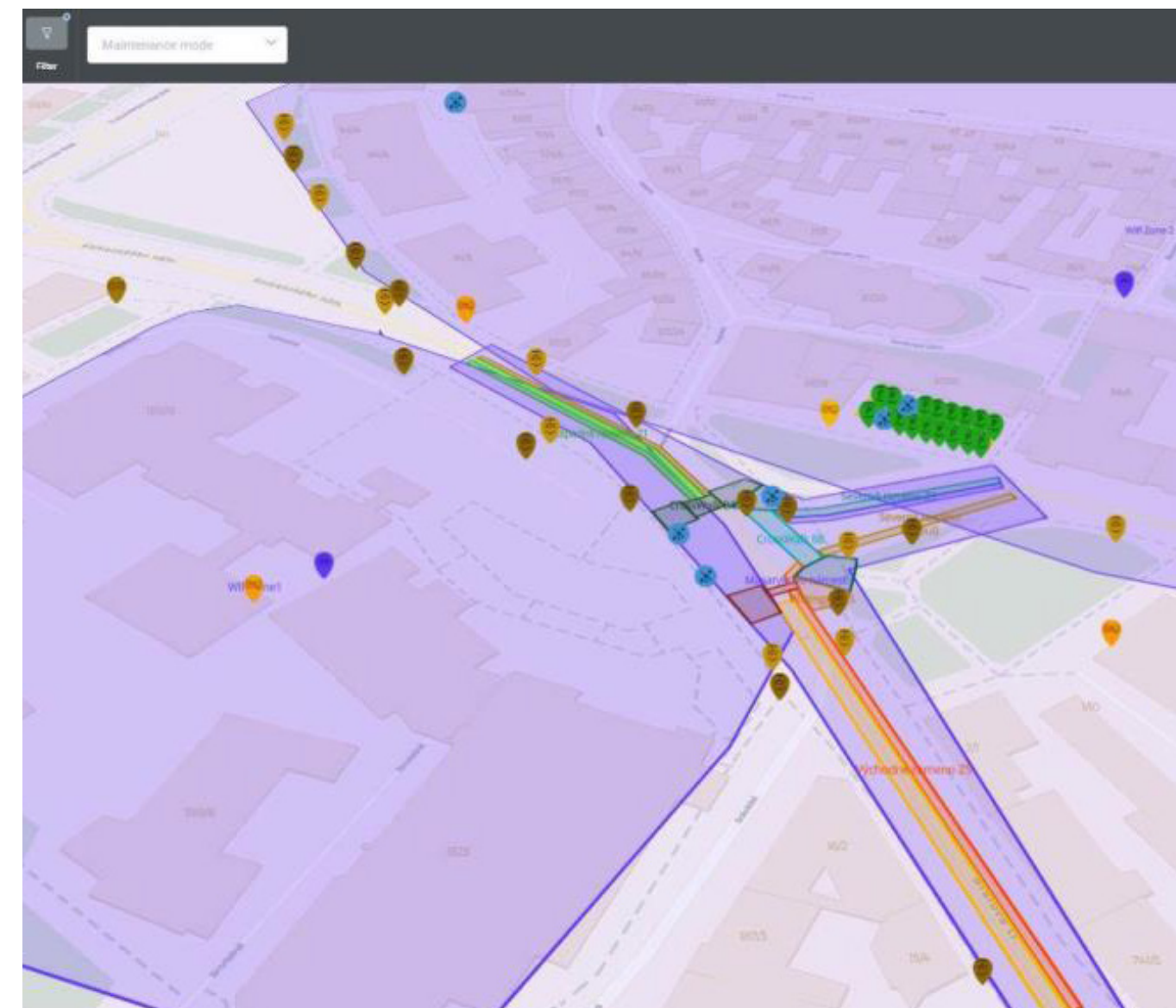

CitySys - Smart IoT platform

CitySys
Applications layer

CitySys
EDGE layer

NGSI LD | ready for standards | ready for standards

Integration interfaces based on Smart Cities standards

CitySysPlus
(framework)

RESOURCES GOVERNANCE ENVIRONMENT SERVICES PROSPERITY

Individual larger or smaller advanced IoT solutions that lack a standardized interface for integration into Smart City ecosystems

Smart Public Pole

CitySys Platform

CityDashboard   CityStudio   PerformanceDashboard   DigitalIntelligence   EcosystemStore   DigitalAdmin

• Visualization on map layer The level of the central logical unit individually for each pole

• Effective monitoring and remote maintenance via CitySys platform

• Prepare for future interoperability scenarios In case of interconnected devices, you have an immediate response and direct fast communication between them

• Cloud Solution effective for operating costs and independent solution for the preferred type of cloud

3rd party applications