



Powering the IoT Revolution

 **ALEF**
DISTRIBUTION


libelium



Libelium Smart World

Air Pollution

Control of CO₂ emissions of factories, pollution emitted by cars and toxic gases generated in farms.

Forest Fire Detection

Monitoring of combustion gases and prescriptive fire conditions to define alert zones.

Wine Quality Enhancing

Monitoring soil moisture and trunk diameter in vineyards to control the amount of sugar in grapes and grapevine health.

Offspring Care

Control of growing conditions of the offspring in animal farms to ensure its survival and health.

Sportsmen Care

Vital signs monitoring in high performance centers and fields.

Structural Health

Monitoring of vibrations and material conditions in buildings, bridges and historical monuments.

Quality of Shipment Conditions

Monitoring of vibrations, strokes, container openings or cold chain maintenance for insurance purposes.

Smartphones Detection

Detect iPhone and Android devices and general any device which works with Wi-Fi or Bluetooth interfaces.

Perimeter Access Control

Access control to restricted areas and detection of people in non-authorized areas.

Radiation Levels

Distributed measurement of radiation levels in nuclear power stations surroundings to generate leakage alerts.

Electromagnetic Levels

Measurement of the energy radiated by cell stations and Wi-Fi routers.

Traffic Congestion

Monitoring of vehicles and pedestrian affluence to optimize driving and walking routes.

Smart Roads

Warning messages and diversions according to climate conditions and unexpected events like accidents or traffic jams.

Smart Lighting

Intelligent and weather adaptive lighting in street lights.

Intelligent Shopping

Getting advice in the point of sale according to customer habits, preferences, presence of allergic components for them or expiring dates.

Noise Urban Maps

Sound monitoring in bar areas and centric zones in real time.

Water Quality

Study of water suitability in rivers and the sea for fauna and eligibility for drinkable use.

Waste Management

Detection of rubbish levels in containers to optimize the trash collection routes.

Smart Parking

Monitoring of parking spaces availability in the city.

Golf Courses

Selective irrigation in dry zones to reduce the water resources required in the green.

Water Leakages

Detection of liquid presence outside tanks and pressure variations along pipes.

Vehicle Auto-diagnosis

Information collection from CanBus to send real time alarms to emergencies or provide advice to drivers.

Item Location

Search of individual items in big surfaces like warehouses or harbours.

New IoT sensor platform worldwide certified



Features:

- Faster and more accurate IoT platform
- Compliant with the latest radio and cloud technologies
- Adds more than 10.000 developers' feedback
- New energy saving modes extend nodes lifetime from 5 to 10 years
- Fully certified with: CE (Europe), FCC (US), IC (Canada), ANATEL (Brazil), RCM (Australia), PTCRB (US) and AT&T (US)



Interoperability for the IoT

Connect **any Sensor** using **any wireless technology** to **any Cloud Platform**



Three elements common to all IoT projects: INTEROPERABILITY is the key



Wasmote, the sensor network hub OEM Version

Features

Ultra low power (7 μ A)

120+ sensors integrated on 10 Sensor Boards

16 radio technologies:

Long range: 4G / 3G / GPRS / GPRS+GPS / LoRaWAN / LoRa / Sigfox / 868 MHz / 900 MHz

Medium range: ZigBee / 802.15.4 / DigiMesh / WiFi

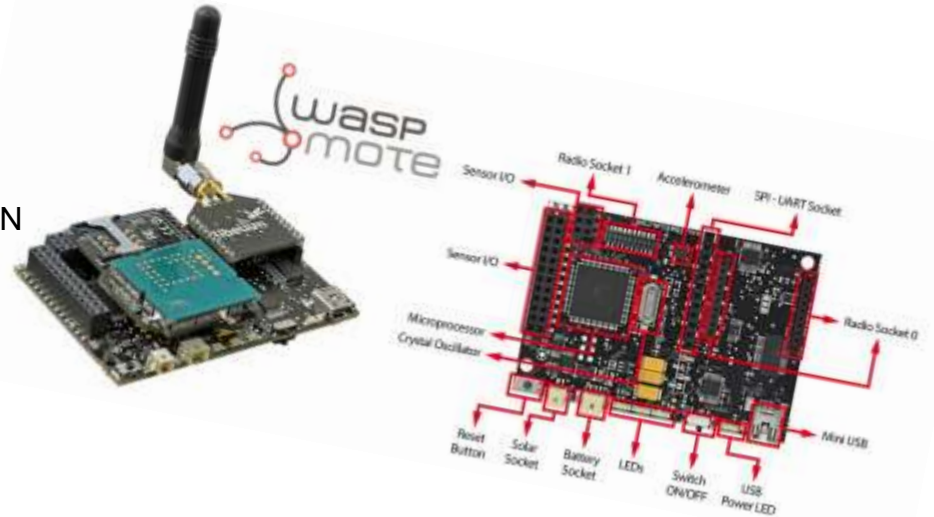
Short range: RFID/NFC / Bluetooth 2.1 / BLE

Over the Air Programming (OTA)

Encryption libraries (AES, RSA, MD5, SHA, Hash)

Certified encapsulated line ([Plug & Sense!](#))

Industrial Protocols: RS-232, RS-485, Modbus, CAN Bus, 4-20mA



Wasmote Plug&Sense!

Features

10 models. More than 120 sensors.

Add or change a sensor probe in seconds

Robust waterproof IP65 enclosure and special brackets for installation in street lights

Solar powered with internal and external panel

Radios: 802.15.4, 868, 900, WiFi, 4G, Sigfox and LoRaWAN

Industrial Protocols: RS-232, RS-485, 4-20 mA, Modbus, CAN Bus

Over the Air Programming (OTA)

Fully certified for the main markets: CE, FCC, IC, ANATEL, RCM, PTCRB, AT&T



Meshlium

Meshlium is the best Internet Gateway for Waspote. It is a Linux-based router, totally modular and specially designed for harsh conditions without compromising flexibility in the installation. Meshlium can directly send sensor data from Waspote to many 3rd party Cloud platforms.

Any scenario	<ul style="list-style-type: none">• Communication:<ul style="list-style-type: none">- Waspote → Meshlium: 802.15.4, 868/900MHz- Meshlium → Internet: Ethernet and 4G/3G/GPRS• WiFi and Bluetooth interface detection to detect smartphones (traffic congestion applications)• GPS receiver
Fast configuration	<ul style="list-style-type: none">• GUI to configure in a visual and easy way (includes factory presets to make installation even faster)• Integrated with 3rd party Cloud platforms, required agents installed by default in all Meshliums
Easy installation	<ul style="list-style-type: none">• Special holders and brackets to install in street lights and building fronts• Elbow connectors included in all models to place antennas horizontally• External socket for SIM card
Easy maintenance	<ul style="list-style-type: none">• Get the latest software version with just one click• Robust waterproof IP65 enclosure• Notifications buzzer
Fully certified	<ul style="list-style-type: none">• CE (Europe)• FCC (US)• IC (Canada)• ANATEL (Brazil)• RCM (Australia)• PTCRB (cellular certification for US)• AT&T (cellular certification for US)



Smart Cities



"The global Smart Cities market is projected to reach \$1.56 trillion by 2020."



Smart Cities solutions are specially designed to cover applications in urban spaces such as air quality control, waste management, building structural health, noise maps, smart adaptative lighting and traffic congestion.

Sensors:

- CO
- CO₂
- O₂
- CH₄
- NH₃
- NO
- NO₂
- O₃
- H₂S
- HCl
- SO₂
- H₂
- H₂O
- HCl
- Temperature
- Humidity
- Pressure
- Ultrasound
- Luminosity (Luxes Accuracy)
- Noise Level Sensor (dBA)
- Particle Matter (PM1 / PM2.5 / PM10) - Dust Sensor

Calibrated

Industry 4.0



Investing in greater digitization and support for enterprise-wide integration is predicted to increase 118% by 2020 in support of Industry 4.0 globally.



We provide solutions for M2M auto-diagnosis and assets control (industrial protocols), indoor air quality measurements, temperature monitoring, ozone levels, indoor location and vehicle auto-diagnosis. Interoperability provides endless possibilities for industry sector.

Waspote Plug&Sense! is compatible with the most widely used industrial protocols RS-232, RS-485, CAN-Bus, Modbus and 4-20mA.



MySignals



Self healthcare monitoring technology could save \$3 billion yearly to public health services in avoidable hospital admissions and fewer demands on primary care.



MySignals is a development platform for medical devices and ehealth applications. You can use MySignals to develop you own eHealth applications (Web, Android, iOS) on top or add your own sensors in order to build new medical devices. It allows to measure more that 20 different parameters.

Sensors:

- Pulsioximeter (SpO2)
- Electrocardiogram (ECG)
- Airflow
- Blood pressure
- Glucometer
- Temperature
- EMG
- Spirometer
- Body position
- Snore
- Alert patient
- Sound
- Body scale
- Galvanic Skin Response (GSR)

Smart Agriculture



“By 2050 worldwide food production should increase by 70% to feed 9.6 billion people.”



Smart Agriculture solutions are designed to perform crops monitoring for enhancing production and preventing diseases, selective irrigation on sports fields, control conditions in greenhouses, improve wine quality and support decision systems about agricultural operations among others.

Sensors:

- Temperature
- Humidity
- Pressure
- Soil / Water temperature
- Solar radiation
- Leaf wetness
- Trunk diameter
- Stem diameter
- Fruit diameter
- Luminosity
- Soil moisture (1.5 m)/(4.5 m)/(8 m)
- Anemometer + Wind vane + Pluviometer
- Ultrasound (outdoor IP67)

Smart Water



“The use of smart water management technologies can help save more than \$12 billion revenues for utilities annually worldwide.”



Applications for Smart Water are suitable for potable water monitoring, chemical leakage detection in rivers, remote measurement of swimming pools and spas, corrosion and limescale deposit, fish tank monitoring and seawater pollution levels.

Sensors:

- NO_3^-
- Br^-
- Cl^-
- Ca^{2+}
- Cu^{2+}
- F^-
- NH_4^+
- BF_4^-
- ClO_4^-
- I^-
- Li^+
- Mg^{2+}
- NO_2^-
- NO_3^-
- Na^+
- K^+
- Ag^+
- pH
- Turbidity
- Conductivity
- Dissolved Oxygen
- Soil / Water Temperature

Logistics



“More than 70% worldwide transport companies are looking for IoT to provide timely and accurate location information.”



Applications for logistics are as varied as Quality of Shipment Conditions (vibrations, strokes, container or cold chain maintenance), Item Location, Storage Incompatibility Detection or Fleet Tracking with GPS and 4G cellular triangulation.

Any sensor can be added to a position monitoring system to give a holistic solution.

- Ultrasounds
- Presence
- Temperature
- Humidity



Smart Parking



Drivers in major cities spend between 3.5 and 14 minutes searching for a space each time they park increasing traffic congestions.



Smart Parking allows to detect available parking spots by placing the node on the pavement. It works with a magnetic sensor which detects when a vehicle is present. Traffic congestion and gas emissions are dramatically reduced with this technology.

Features:

- Double radio: LoRaWAN and Sigfox
- Smaller size, reduced over 50%
- Higher accuracy and reliability
- Faster time of detection
- Installed on the road surface
- No-dependance from temperature
- Lower power consumption
- Certifications with CE/FCC/IC marks

Smart Environment



It is estimated that up to 3.7 million people die per year in the world, prematurely, due to exposure to pollution in cities.



Solutions for Smart Environment enable the Air Quality Index (AQI) calculation, thanks to 16 gas sensors providing extremely accurate ppm values and a high-end particle matter sensor. Smart Cities, Industries and Civil Works are some scenarios to run this application.

Sensors:

- CO
- CO₂
- O₂
- CH₄
- NH₃
- NO
- NO₂
- O₃
- SO₂
- PH₃
- H₂
- H₂S
- HCl
- Temperature
- Humidity
- Pressure
- Solvent vapors
- Luminosity
- Volatile Organic Compounds
- Liquefied petroleum gases
- Air pollutants
- Particle Matter (PM1 / PM2.5 / PM10)

Retail



By 2020 retailers worldwide will spend \$2.5 billion in IoT-related hardware including beacons, RFID tags, other types of sensors and installation costs.

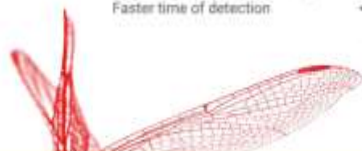


Libelium technology allows monitoring basic environment parameters and develop indoor positioning applications. Container movements and impacts control, Supply Chain Control, Cold Chain Maintenance, Intelligent Shopping Applications and Smart product Management are common uses.

Sensors:

- Temperature + Humidity (Sensirion)
- Luminosity (luxes accuracy)
- Accelerometer

Meshlium Scanner can detect WiFi and Bluetooth devices, like smartphones and tablets to calculate the number of people passing through the range area.



+2500 customers in +100 countries





Powering the IoT Revolution