Why do +10,000 worldwide customers choose Libelium?
+120 countries

11 years in the IoT industry

- Proven technology: 3rd generation of products
- Easy to install and maintain: solar powered and re-programmable via Internet
- Xbee, LoRaWAN, Sigfox, 4G, WiFi
- Certifications (CE, FCC, IC, Anatel, KC, JP, AU)
Waspmote: The Standard Platform for the IoT

- Connect any sensor
- Through any communication protocol
- To any cloud platform
Interoperability for the IoT: Waspmote, Meshlium and Plug & Sense!

Connect any Sensor using any wireless technology to any Cloud Platform

Sensor Nodes  →  SDK / API  →  Gateway  →  Cloud Connection + Analytics

Join us at any point
New Industrial IoT Sensor platform worldwide certified: Waspmote, Meshlium and Plug & Sense!

Industry 4.0 main goals:

- Reducing Costs
- Improving Efficiency
- Increasing Revenues
Multiple vertical solutions:
Industrial Protocols: Modbus, CAN Bus, 4-20 mA

All Plug & Sense units compatible with industrial protocols:

- Read and transmit wireless industrial data
- Connect 4-20 mA industrial sensors to P&S
Multiple vertical solutions:
Industrial Protocols: Modbus, CAN Bus, 4-20 mA

- 1st APPLICATION: Connect any sensor to an existing industrial bus
Multiple vertical solutions: Industrial Protocols: Modbus, CAN Bus, 4-20 mA

- 2\textsuperscript{nd} APPLICATION: Add Wireless connectivity to wired buses
Multiple vertical solutions:
Industrial Protocols: Modbus, CAN Bus, 4-20 mA

- 3rd APPLICATION: Connect Industrial devices to the cloud
Multiple Industrial solutions:
4-20 mA Current Loop

- Add wireless connectivity to existing 4-20 mA devices and connect them to the cloud
- Application to sensors and instruments, remote transducers
Multiple vertical solutions:
Smart Environment PRO

- Air Quality Index (AQI) calculation
- 16 calibrated gas sensors (CO, O3, NO2, S02, CO2, CH4, etc.)
- High-end Dust Particle Matter sensor (PM1 / PM2.5 / PM10)
Case study

Smart Factory: Reducing Maintenance Costs and Ensuring Quality in the Manufacturing Process
Smart Factory: Reducing Maintenance Costs and Ensuring Quality in the Manufacturing Process

- **Challenge:** Smart Factory solution with Waspmote and Microsoft Azure combines efficiency and regulatory compliance with sensor technology and Cloud access.

- **Client:** Polibol.

- **Place:** Zaragoza, Spain.

- **Sector:** Smart Factory.
Smart Factory: Reducing Maintenance Costs and Ensuring Quality in the Manufacturing Process

Cloud partner: Microsoft Azure
Communication protocol: 802.15.4

Measurements:

- **Workers Conditions:** CO2 concentration and noise level.
- **Industrial Process:** air temperature around printing machines and in pipes.
- **Environmental Emissions:** Volatile Organic Compound (VOC).
- **Product Storage Conditions:** light intensity, temperature and humidity on the final products.
Smart Factory: Reducing Maintenance Costs and Ensuring Quality in the Manufacturing Process

Deployment:
Multiple Industrial solutions: Meshlium Scanner

**Scanner model:** able to detect iPhone and Android devices and in general any device which works with WiFi or Bluetooth interfaces.
Multiple Industrial solutions: Meshlium Scanner

Applications related to shopping and street activities

• Number of people passing daily in a street

• Average time of the stance of the people in a street

• Differentiate between residents (daily matches) and visitants (sporadic matches)

• Walking routes of people in shopping malls and average time in each area
Case study

Gas station monitoring traffic volume to empower sales strategy.
Gas station monitoring traffic volume to empower sales strategy.

- **Challenge:** monitoring traffic volume to empower sales strategy.
- **Client:** Zoilo Rios.
- **Place:** Zaragoza, Spain.
- **Sector:** Smart Cities.
Gas station monitoring traffic volume to empower sales strategy.

OBJECTIVES:

- Decide to promote special services only in case of regulation.
- Verify if the extra cost of personal recruitment invested in special dates is returned.
- Adapt the prices of the products depending on the expected demand.
IoT Marketplace: Smart Factory Solution Kits

Smart Factory - Products

- Libellium-Techedge Smart Factory Solution Kit
- Libellium Smart Industrial Protocols IoT Vertical Kit
- Libellium-Techedge Smart Industrial Protocols Solution Kit
IoT Marketplace: Smart Factory Solution Kits

Libelium Techedge Smart Factory Solution Kit

- Environmental parameters in factories
- Compliant with Industry regulations
- Improving worker safety
- Increasing worker productivity
Libelium Techedge Smart Industrial Protocols Solution Kit

- Easy connection to industrial networks
  - Modbus: RS485, RS232
  - Canbus
  - 4-20 protocol
- Monitor everywhere in real time using a cloud application