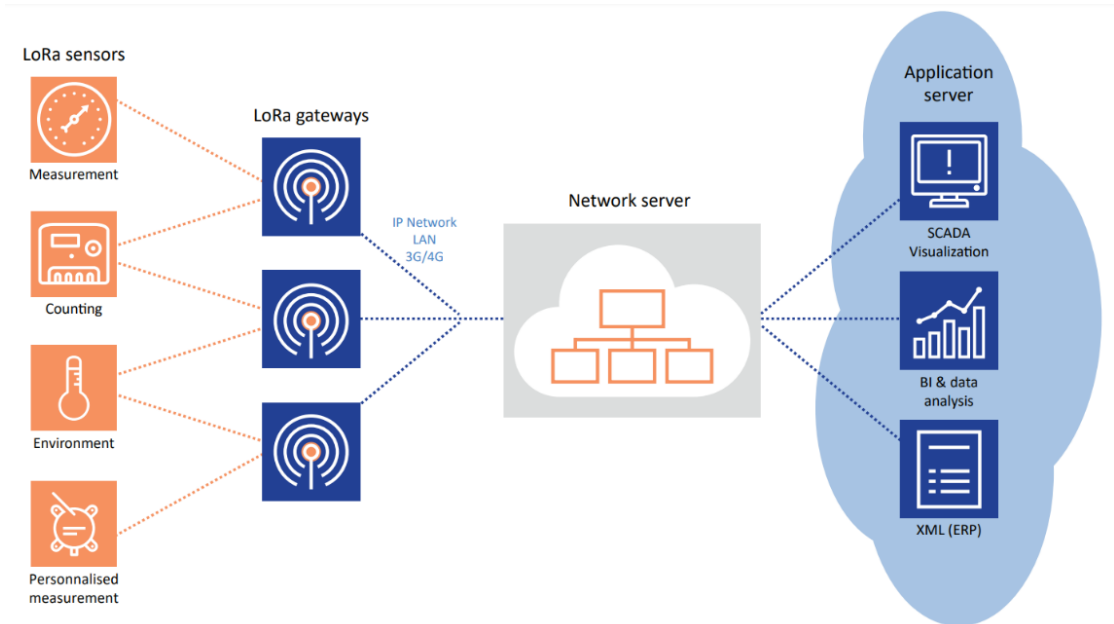# LoRa / LoRaWAN / IIoT

Since 2015, LoRa technology, an acronym for Long Range, has been gaining popularity in the field of data acquisition and the Internet of Things (IoT).

What is LoRa technology?

LoRa is a long-range network technology that enables low-speed communication of small data rates. The LoRa protocol makes it possible to transmit both outdoors and indoors over long distances. Outdoor, LoRa antenna can cover a practical range of 2 to 15 km.

Extending the network only requires the addition of gateways. There are connected to the network core in Ethernet or possibly 3G/4G and their addition does not require any radio planning licensing.

LoRa operates on license-free frequency bands, so that anyone can, by deploying the necessary infrastructure, declare themselves a LoRa operator and thus renounce the offers of telecom operators.

Features

Outdoor: Range from 2 to 15 km

Indoor: Better than 3G / 4G

Low flow rates: 6 values every 10 minutes

Battery-powered sensors, lifetime > 5 years

Network structure

LoRa sensors

LoRa sensors are electronic boards with LoRa transmitter modules and one or more implemented sensors.

LoRa gateways / antennas

The gateways or antennas receive the data from the LoRa radio module and then transfer it to a connection system. This part of the LoRa network can be Ethernet or any other type of wired or wireless telecommunications. Gateways are connected to the network server using standard IP connections.

Network server

The LoRa network server manages the data flow from gateways / antennas and sensors. The server acts to eliminate duplicate packets and adapts the data rate.
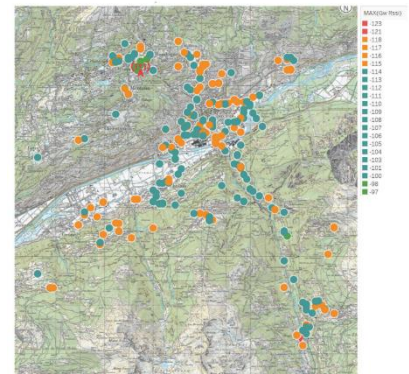
Application server

Applications are the final destination with which end devices communicate. Generally, it can be an application with a REST API that receives, manages and reacts to packets from end devices depending on their nature. The possibilities here are endless and depend on the purpose of the end devices.

Network coverage

The green dots represent a sufficient radio signal for remote reading of sensors or meters in the first basement.

The orange dots represent a sufficient radio signal for the remote reading of sensors or meters on the ground floor inside a single-family house.

Network coverage map of the Sierre Energie service area

Applications

SCADA

- Multiple communication protocols
- Adaptation of the technology to the existing system
- Alert generation (SMS, email)

BUSINESS INTELLIGENCE

- Optimised database storage
- Easy connection with analysis tools (Power BI, Table, Qlik, etc.)
- Optional: HTML Elvexys visualisation tools

XML BILLING

- Generation of XML files compatible with market tools (Innosolve)
- Development of data connectors on request