Actility
Connecting with intelligence

*LoRaWAN is the new global standard for low power and long range IoT communication. With a range of up to 15km and battery life measured in years, LoRaWAN is supported by major global network operators including Orange, Comcast, NTT, Softbank, Proximus, KPN, Swisscom etc. LoRaWAN networks are idealy suited for industrial IoT applications including connected buildings, smart metering, smart cities and precision agriculture. Many industrial use cases require the ability to precisely determine the position of an object and to track it*

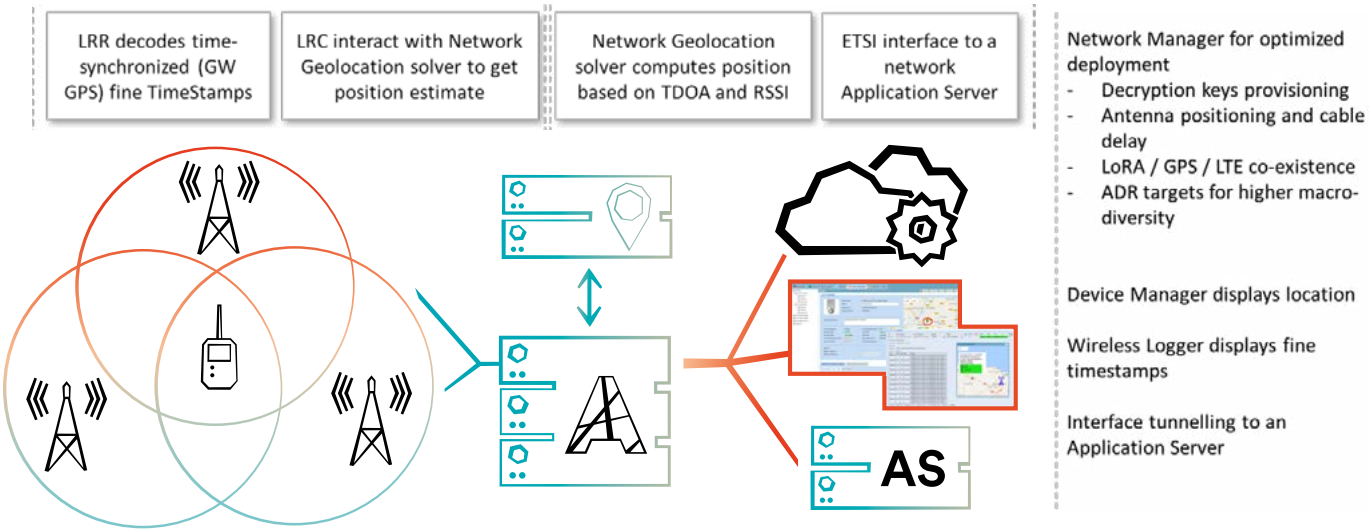
# From connected to smart building: Building Management reinvented

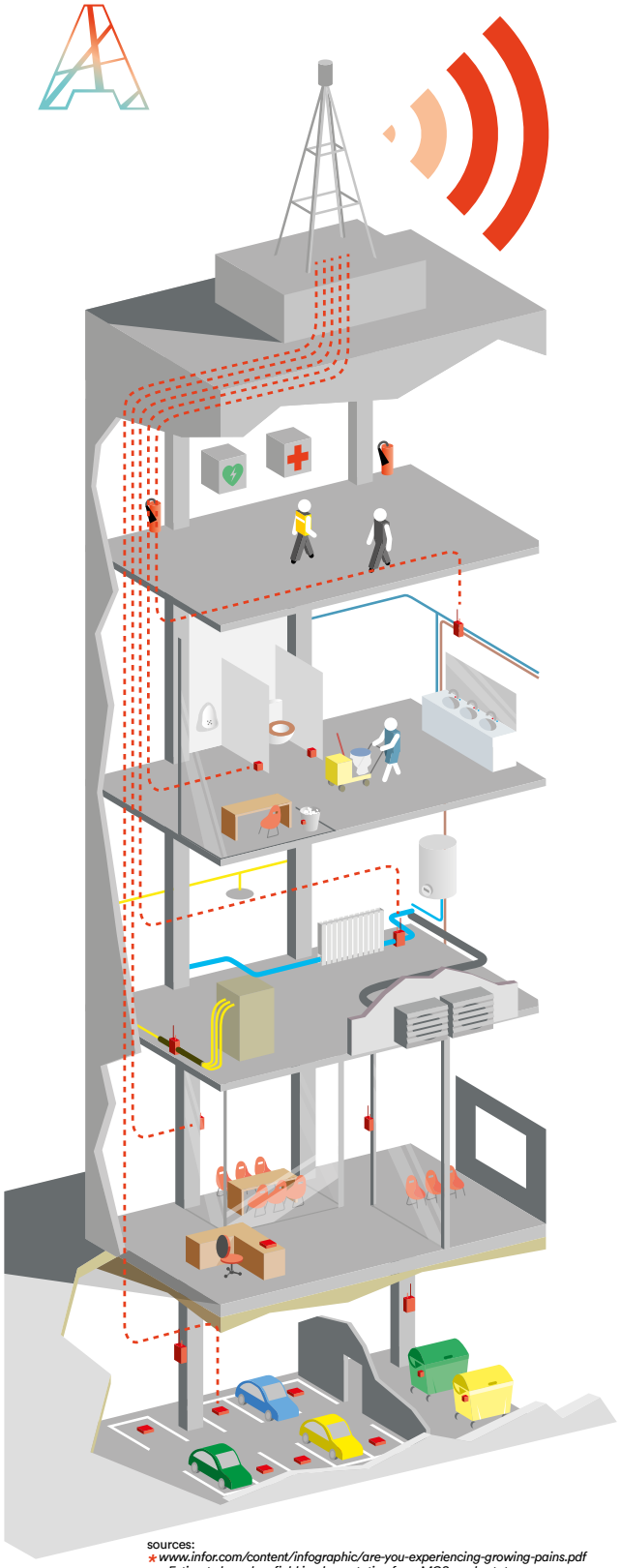
## Introduction

IOT offers alternative mechanisms to make buildings more sustainable and productive.
Simple, low-cost sensor devices provide valuable contextualized data in real-time; this is a connected building. The next step is to make automated decisions.
Building Management companies can connect countless battery powered « things » allowing to gather different data from sensors like temperature, humidity, CO2, electricity, water, parking , etc. The sensors can communicate over a very long distance and connect to a network of IoT base stations. The data is fed to centralized intelligent systems to propose improved operations and intelligent building management.

## Key Benefits

- Location estimate for ANY LoRaWAN sensor
- Reduced cost and power consumption
- Packaged end-to-end location solution for faster time-to-market
- Early & exclusive access to latest Actility Location Server in SaaS





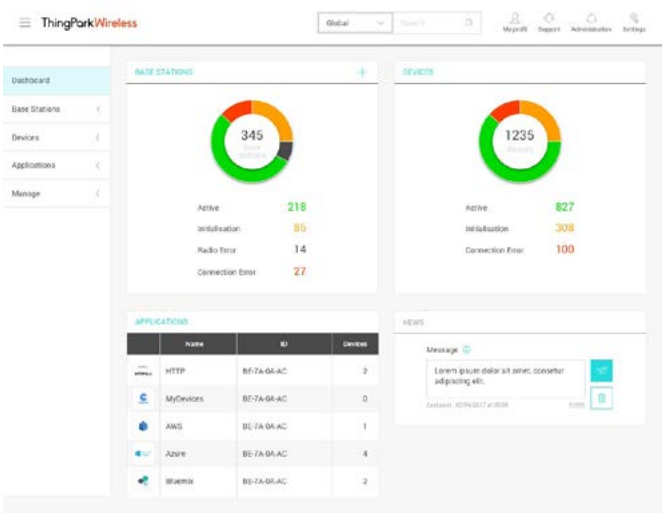
sources:
* www.infor.com/content/infographic/are-you-experiencing-growing-pains.pdf
** Estimate based on field implementation from MCS, real estate, FM and workplace software provider
*** www.media.navigatored.com/images/smart+parking+infographic.png

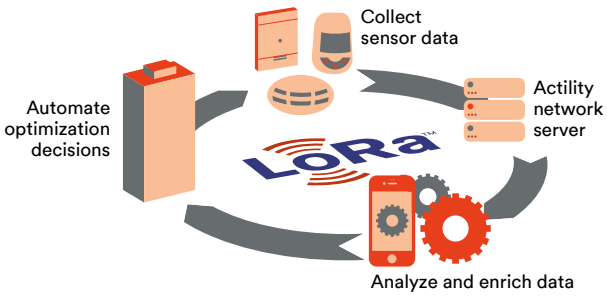
data route
LoRa sensors
LoRa gateway
Electricity
Gas
Hot and cold water

## How it works:

The LoRaWAN protocol is a global standard that offers long range (up to 15km) bi-directional communications with very low power consumption, allowing operation for up to 10 years on the same battery. LoRaWAN is using the unlicensed ISM (Industrial, Scientific, Medical) radio bands for cost-efficient network deployments.

Data from sensors will be send to a gateway(s). The gateway is a simple packet forwarder and will translate the data from LoRa into IP. A backhaul network (ethernet, WIFI, GPRS, Satellite, ..) will be used to connect to the network server. The network server is the heart of the communication system. It will handle the information packets from the sensors and the routing to the application server of the solution provider. Next to the network server Actility is offering an OSS system that helps you to easily deploy and add devices and gateways to the network via the cloud. It offers you the possibility to avoid a vendor lock-in for your hardware. The solution gives all the diagnostics to monitor and maintain the connectivity of your network.



# Package content

## LoRaWAN Ufispace V2 gateway

- Long range LoRa WAN compliant, Support worldwide Sub-1G multiple ISM band
- Backbone network with 10/100/1000 POE Ethernet or 3G/4G LTE (Option)
- High performance ARM Cortex-A8(1GHz) CPU
- Installation and configuration through WiFi
- Complete LoRa Gateway localization V2 solution
- Multi-SF and base band interferer rejection support

| ITEM | TECHNICAL INFORMATION |
|---|---|
| Processor | AM3352BZCZA100_ARM Cortex-A8(1GHz) |
| Memory | DDR3 4Gb |
| eMMC | 4 GB |
| Sensors | Build-in temperature sensor & pressure sensor |
| External console port | IEEE 802.11 b/g/n 2X2 |
| Internal console port | UART, Mini-USB 2.0 |
| Backhaul | 10/100/1000 Mbps and M2 connector for LTE module |
| GNSS | GPS, GLONASS, BeiDou (NEO-M8T) |
| Antenna | 2 N-type external antenna with 1dBi/5dBi |
| DC PWR | Max50W, POE 802.3af compliant |
| Regulatory | CE |
| LoRa Frequency Band | 865-868MHz (SAW filter B39871B3717U410) |
| Antenna Gain | 1dBi/3dBi/7dBi |
| Transition Power | 27dBm |
| Channel number | 16 × 125kHz Channels |
| Rx Sensitivity | -138dBm |
| Data Rate | 250bps to 50kbps |
| Classes Application | Class A, Class B, Class C |
| Network Server Scheme | Adaptive Date Rate (ADR) |
| Operation Temperature | -20~60 oC |
| Humidity | 90% |
| Ingress protection | IP67 |
| UV resistance | ISO4892 UV |
| Total Weight | 1.6Kg |
| Dimension | 269 × 184 × 85 mm |

## Adeunis V2 Field Test Device

The LoRaWAN Field Test Device by ADEUNIS RF is a ready to use system which provides connection to any operated network using the LoRaWAN V1.0 protocol. It allows to transmit, receive and instantly view the radio frames on the used network.

Equipped with a large LCD screen, you can check all operating information (GPS coordinates, temperature, battery ...) and use of the network (uplink, downlink, SF, Packet Error Rate ...). Its ultra-fast and precise GPS optimises geolocation operations.

This Field Test Device is particularly suitable for the validation of applications like sensor networks, asset tracking, smart buildings, metering, security or M2M.

- Ready-to-use device
- Range up to 15 km
- LoRaWAN V1.0 network protocol
- Class A & C
- High precision GPS
- Self-powered and rechargeable
- Dedicated web app.


### Performances

**Range:** up to 15 km
**Power:** 25mW
**Radiated RF power:** 14dBm
**Sensitivity:** -140dBm
**Frequencies:** 863-870MHz
**Modulation:** LoRaTM

### Consumption & needs

**Battery:** 2000mAh
**Autonomy:** approx. 10 hours

### Hardware

High precision GPS
**Micro USB:** batt charging & configuration
**Buttton:** frame transmission

### General information

**Dimensions:** 180 × 72 × 21mm
**Weight:** 150g
**Operating temperature:** -20°C /+75°C
Certified EN300-220 V2012

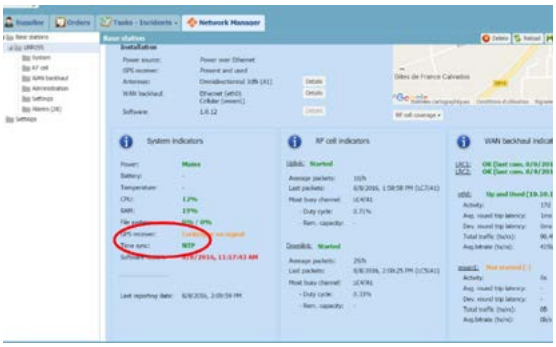
### Firmware

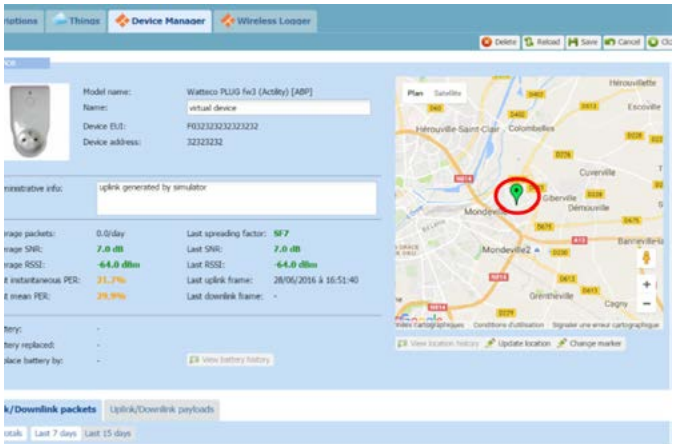
LoRaWAN V1 network protocol

# Actility ThingPark Tools

## Network Manager

The ThingPark Network Manager is a standard ThingPark application which its core functionality enables ThingPark Wireless Operator and Network Operator users to self-provision and manage their base stations (LRRs). The Network Manager also enables the provisioning of a Base Station positioning location, without a GPS receiver. The location provisioning is done into the LRR via the LRC. This feature enables much more flexibility for Operator and Network Manager for configuring and maintaining a large scale network. It enables a flexible way to provision their Base Station locations as well as enable the configuration of location based on GPS services or not.






## Device Manager

The ThingPark Wireless Device Manager is a standard ThingPark application whose core functionality enables ThingPark Wireless subscribers to self-provision and manage their devices.

Its value to subscribers lays in its easy to use capabilities that provides a complete end-to-end device management solution. From geographical system information where subscriber's devices are located, through detailed statistics and reports on device activity, the ability to add new devices, manage Connectivity Plan subscriptions and up to application server routing profiles management.

## Wireless Logger

ThingPark Wireless OSS intelligent logger is an optional module, which enables, network partners, developers, integrators and subscribers, as well as operators, to view and analyze end devices RF traffic, visualize base stations with best link to each sensor, monitor SNR levels, LRR and LRC connections and more. It enables the decoding of payload data and other application layer messages and frames for some partner devices.

## Network Survey