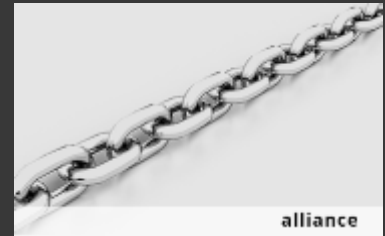




LoRa® Alliance
Wide Area Networks for IoT

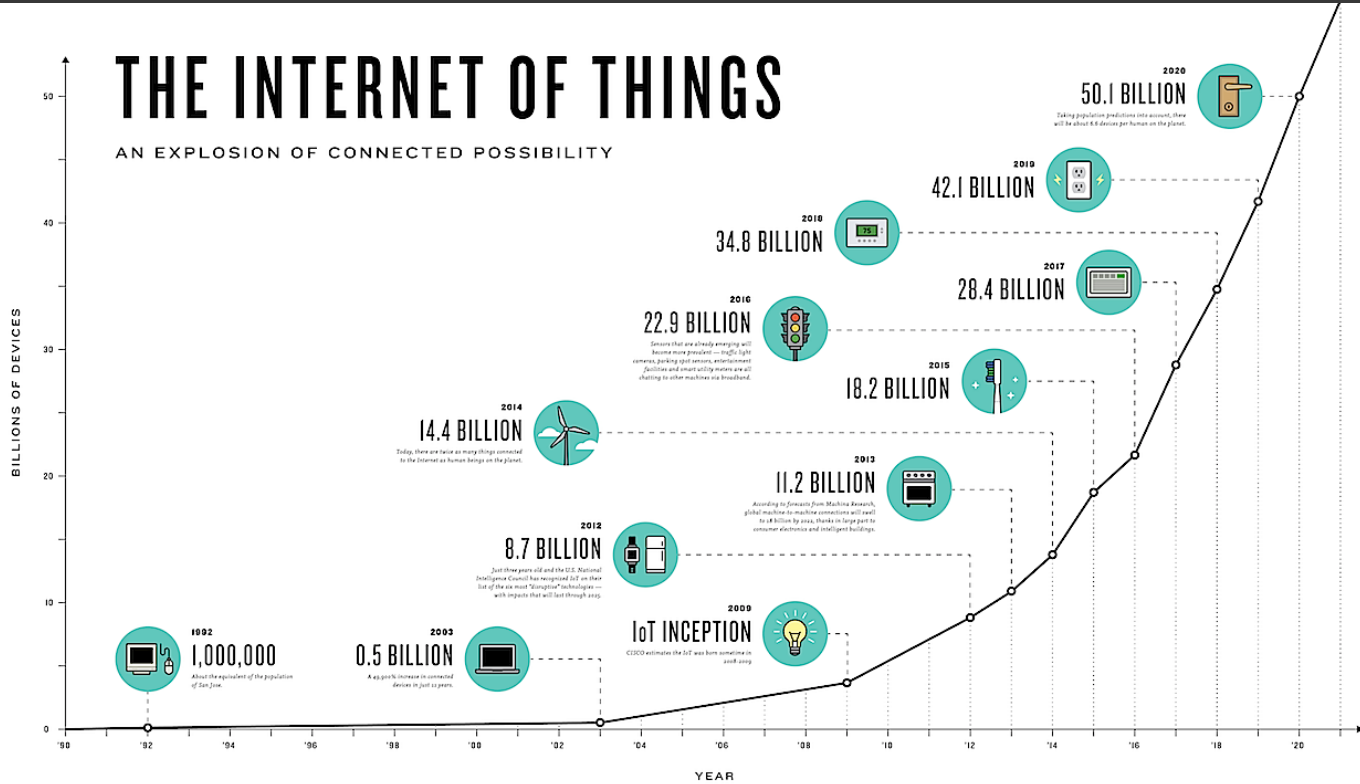


The LoRa™ Alliance

“ENABLING THINGS TO HAVE A GLOBAL VOICE”

THE INTERNET OF THINGS

AN EXPLOSION OF CONNECTED POSSIBILITY





Deploying the IoT

Reaching for 50 Billion Devices

Communication is key

Low power is critical

Distance is essential

Open standards are imperative



LPWA – Low Power Wide Area

Battery operations for years
10s of kilometers
< \$10 BoM

The time is **now** right



LPWANs

Low Power

PICK TWO

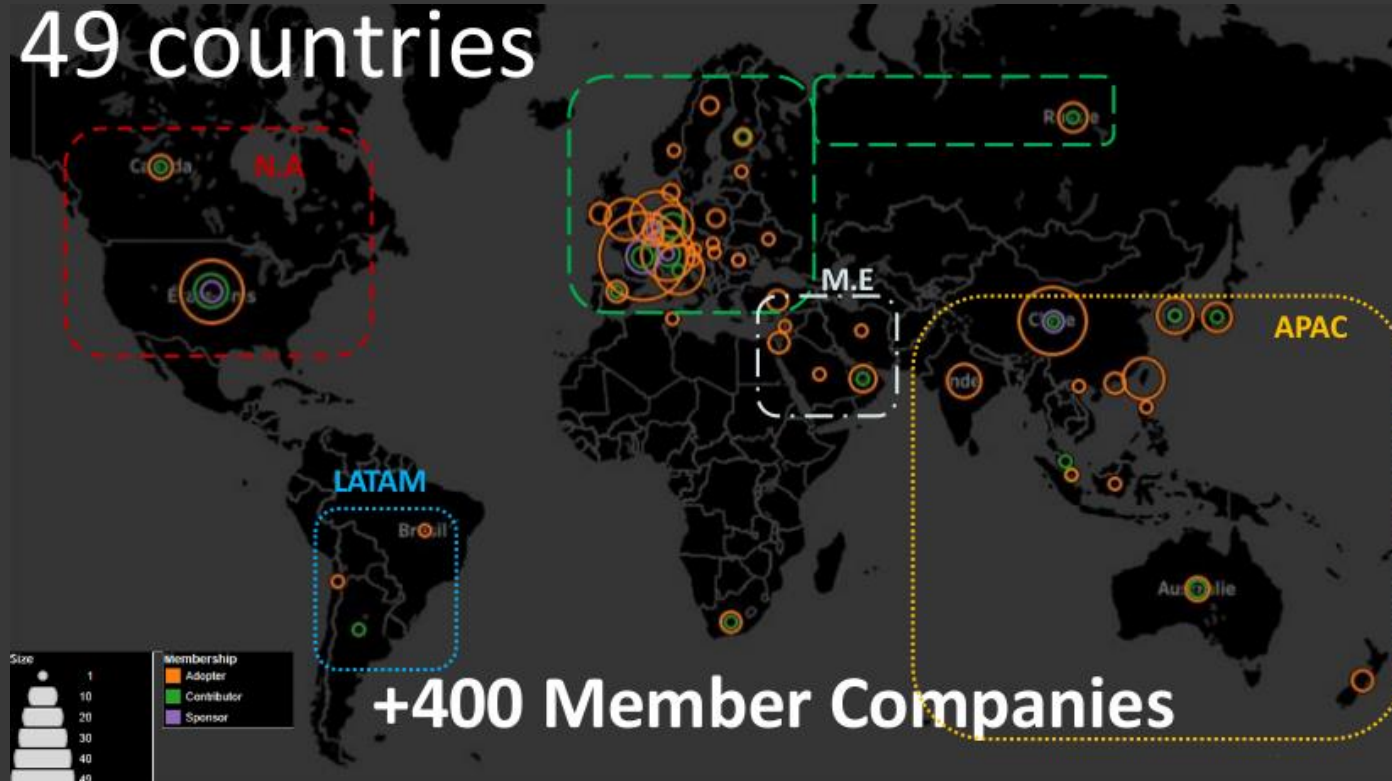
High Speed

Long Distance



The Alliance

49 countries



LoRaWAN™ IoT ECOSYSTEM – Multi-source value chain

CHIPSET



SEMTECH

MICROCHIP

ST
life.augmented

MODULES



LoRa™ Long-Range Sub-GHz Module
(Part # RN2483)

murata
Innovate in Electronics

MICROCHIP

FOXCONN

MULTITECH

DEVICES



BOSCH

Mueller SYSTEMS

Schneider
Electric

HOMERIDER SYSTEMS

BASE STATION



everynet
CISCO

SAGEMCOM

kerlink
electronics

MULTITECH

NETWORK SERVER



IBM hp

OrbiWise

actility
Making Things Smarter

everynet

SAGEMCOM

APPLICATION SERVER



senet

libelium

digi
mondo

WIPRO
Applying Thought

iSECUR

LoRaWAN – Unique & Sustainable Differentiators



Security

- Device unique
- Network
- Application



Coverage

- Scalable
- Bi-directional
- Broadcast



Energy Efficiency

- Coin-cell batteries
- Energy harvesting
- Device classes



Location

- Increase value
- Network driven
- Indoor/Outdoor

LoRaWAN Certified..



LoRaWAN™ Certified Products



1M2M - ED1608

1M2M's ED1608 is an out of the box, ready to use universal Low Power WAN Smart Sensor/GPS Tracker. It has on board 3D accelerometer, GPS, temperature/humidity sensor, air pressure sensor, hall switch, 3D magnetometer, Bluetooth, 2 analog inputs, 2 digital outputs, a serial interface, I2C interface and a 1Wire interface. It comes with a versatile firmware that is configurable via download messages. It detects vibration and can send regular updates or alarm messages. There are three versions, The full version, equipped with all sensors, the basic version, configured as tracker, with only GPS and Accelerometer and the radio-only version, with no sensors, but all the external interfaces. They all come in a IP67 housing with either a 8.800 or 2.200 mAh primary battery pack. [Test House Report](#)



AcSIP Technology Corp. - S765

The S765 is designed & manufactured in a smallest form factor - SIP (System in Package). It integrate with Semtech SX1276 and a 32-bit ultra low power Cortex-M0L MCU (STM32L073x), supporting global 868 MHz or 915 MHz ISM-Bands. Capable of 2-way communication and reach over 1.6 km (1.0 miles.)

- Alliance
- Technology
- Developers
- IoT Challenge

Testimonials

The LoRaWAN™ hardware is ideal for smart

battery & applicable cellular

Richard

Chief Op

With LoRa can be a no longer and man as in the made IoT infra

Olivier F

Chairman

To encour



IMST - Mote II

The Mote II is a demonstration of the low power, bidirectional radio temperature sensor. Additionally [Report](#)



Laird - RM1xx Series LoRa + BLE Module

The RM1xx series of modules offer a powerful, convenient solution for long-range Enterprise IoT (EIoT) deployments. Laird innovatively combines Bluetooth v4.0 with LoRaWAN™, the emerging standard in Low Power Wide Area Networks (LPWAN) into one module. RM1xx modules aggregate and transmit data from Bluetooth® Smart (BLE) devices and sensors over LoRa® to gateways up to for 15 km (10 miles) away. This bridges the personal area network to the wide area network in a unique way. [Test House Report](#) | [Product Link](#)



Microchip RN2483 - Transceiver Module

The RN2483 is a fully certified 833.984 MHz module based on wireless LoRa® technology. The RN2483 utilizes a unique spread spectrum modulation within the Sub-GHz band to enable long range (over 20 miles), ultra-low power, bi-directional communication with LoRa gateways. The RN2483 is ideal for Smart City, Sensor networks



OnYield - OY1100 868

Temperature and humidity data are two of the basic information elements in a smart building solution. The information can be used as the basis for individual monitoring of actual energy consumption for heating, optimizing heating/cooling and also give the property owner a possibility to supervise the humidity to avoid building damages. The sensor can also be used to monitor humidity in basements, attics, storage rooms, containers, boats or any place where there is a risk for moulding or other damage due to too high humidity. The OY1100 temperature sensor from OnYield is LoRaWAN™ compliant and operates in the 868 MHz band for the European market. The built in battery will last for 10 years of maintenance-free operation. [Test House Report](#)



RisingHF - RHFM076

The RHFM076 is a RisingHF RH76-GS2 module based LoRa™ UART AT command interface. Benefit from on board SX1276 to RHFM076 could cover full Sub-GHz ISM band and supports CE, FCC, ANCC standard frequency plan. And the RHFM076 is (less than 1.5uA) and the easy-to-use AT command interface into their products to speed up development. [Test House Report](#)



Sensing Labs - SenLabT Outdoor Wire

The SenLabT is a smart LoRaWAN™ sensor with a high precision accuracy. The ruggedized and IP68 design mean this SenLabT is monitoring in harsh environment. Sensing Labs advanced sensor as DataLogging (24 points / Radio Transmissions), High and Low "over the air" reconfiguration. [Test House Report](#)



Mirimoco AG - FMLR Modules, Modems and Sensors

The smallest and feature richest LoRaWAN™ modules available - FMLR modules, modems and sensors enable wireless connection of almost all devices, systems and sensors over a distance of up to 100km thanks to LoRa™ and the integrated Low Noise Amplifier. No compromises have been taken to optimize power consumption to run the modules from small batteries, such as coin cells, for several years, while the integrated wake on radio (WOR) feature allows the system to be convertible. The integrated ARM-Cortex M328 micro controller runs the entire RF stack and has plenty of resources available for additional applications. On-board sensors for temperature, humidity and barometric pressure (optional) enable to build out-of-the-box IoT sensor networks. All FMLR modules and sensors are prepared for seamless integration into LoRaWAN™. The LoRaWAN™ software stack is available as open source. Modules and Sensors are available with extra on-board flash memory to allow for the log-uptake. [Test House Report](#) | [Product Link](#)



MultiTech - MultiConnect mDot

The MultiConnect™ mDot™ is a CC-FCC & LoRa Alliance Certified LoRaWAN™ module, supporting global 868 MHz or 915 MHz ISM-Bands. Capable of 2-way communication over distances in excess of 10 miles / 16 km with excellent noise immunity and the ability to generate sleep into buildings. The mDot reduces time to market and the cost of developing LoRaWAN™ enabled end devices while improving interoperability by leveraging 5G International Regulatory & Industry certifications, lower integration complexity, built-in intelligence and decision making to the very edge of the network. Featuring a low power ARM-Cortex-M0 processor running ARM® mbed™ OS, complete with developer friendly libraries to easily control and monitor remote sensors, devices and field assets. [Test House Report](#)



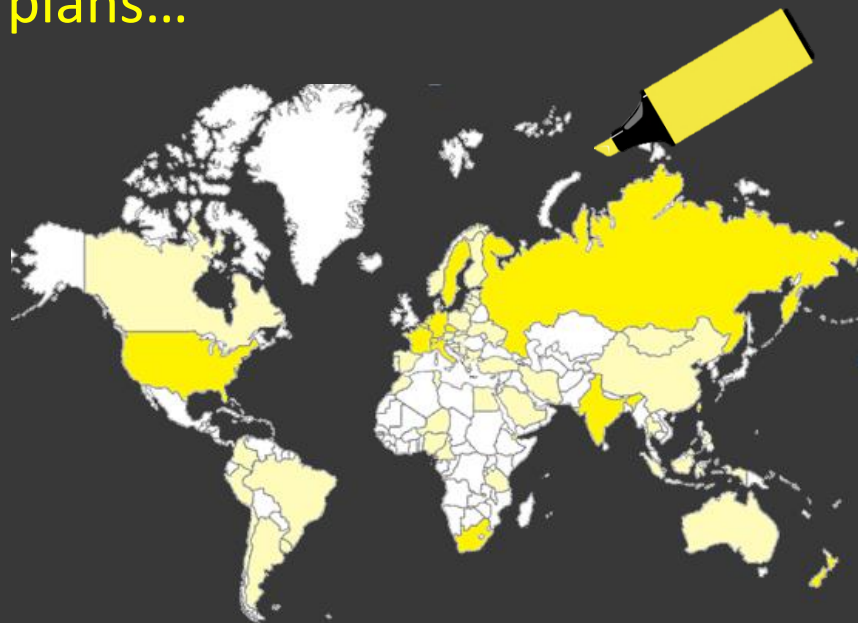
MultiTech - MultiConnect xDot

The MultiConnect™ xDot™ joins the MultiTech family of LoRaWAN™ communications devices which also includes the programmable MultiConnect™ ConduIT™ gateway, MultiConnect™ mDot™ modules and MultiConnect™ mDot™ gateway accessory cards. This latest addition to the LoRa™ product line



LoRa Alliance Certified Products Page

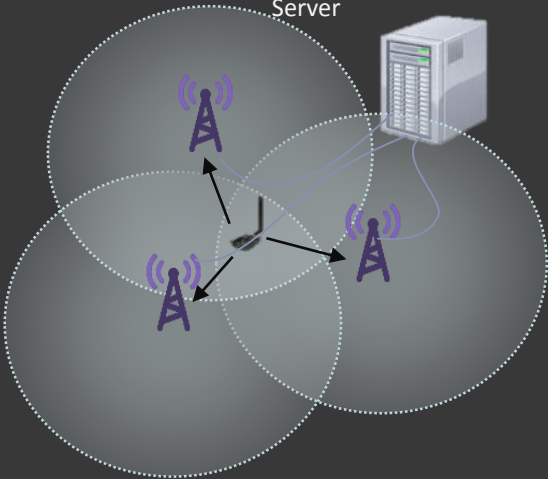
LoRaWAN – National deployment plans...



27 Announced national deployments
> 150 regional or city deployments

Localization with LoRa

Network &
Location
Server



- All base stations share a common timebase
- A LoRaWAN sensor transmits a packet
 - Packet received by at least three base stations
 - Each base station reports the time of arrival & other meta data such as signal strength, signal to noise ratio
- Algorithms compare the time of arrival and other signal parameters
 - Computes the most likely position of the sensor
 - Differential Time Of Arrival
- Accuracy
 - Rural – 20 to 50 meters
 - Urban – 120 to 200 meters



OPEN for Business

Openly available Specification

Based on Open Standards

Functional Certification

Open Business Model



THANK YOU

The LoRa™ Alliance

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