

# The Internet of Things (IoT) with LoRaWAN®

## SENSOR SETUP GUIDE

### What Is the *Internet of Things (IoT)* and LoRaWAN?

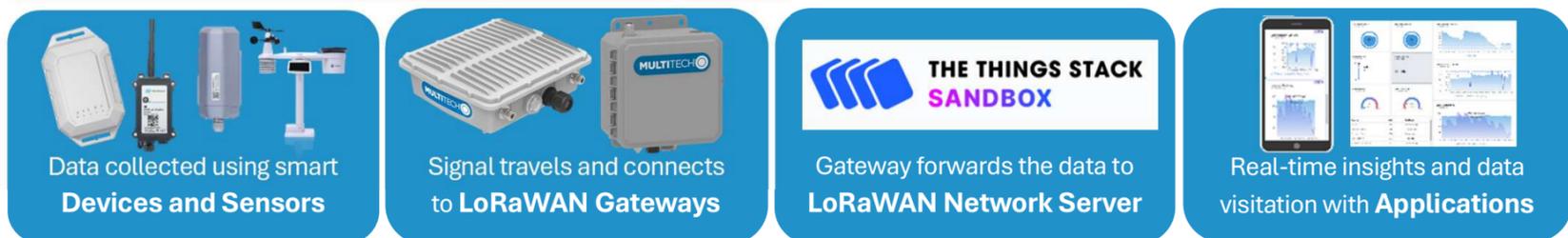
The **Internet of Things (IoT)** is a network of physical devices or ‘things’ connected to the internet that sense something and create some data from what they have sensed. **LoRaWAN** is a communication system that helps these devices or ‘things’, especially sensors, connect over long distances with very little power.

LoRaWAN is therefore considered a specific way for simple, battery-powered sensors to talk to the internet over large areas without relying on cellular or Wi-Fi networks, making it increasingly popular in agriculture and farming.

Wide variety of applications: Soil moisture/ temperature/ pH, weather, water tank levels, gate, equipment and asset monitoring, livestock tracking.

Why it helps: Long range, battery lasts years, low cost, ruggedised sensors for different environments, large ecosystem of devices and applications.

### HOW IT WORKS IN A NETWORK



### 1. PLAN YOUR SETUP

STEP	CONSIDER
Pick application	What do I want to measure? <i>e.g. Soil moisture</i>
Choose sensor	What fits the job? Outdoor or indoor? Solar or battery powered? <i>e.g. Capacitive soil probe</i>
Find location	In range of a LoRaWAN Gateway? Within 5-10 km Line-of-Sight (LOS)? Check The Things Network coverage map for registered Gateways- <a href="https://ttnmapper.org/heatmap/">https://ttnmapper.org/heatmap/</a>
Register the device	Follow <b>step 3</b> below. A wealth of support and guidance available online.
Data use/visualisation	Who needs to see it? Does the data need to be saved and retained? Need automated alerts sent?

### 2. SET UP THE HARDWARE

- Consider how your LoRaWAN sensor/ sensors should be placed/mounted for data collection.
- Consider environment protection and durability
- Consider sensor access to a LoRaWAN Gateway and LOS.

### 4. VIEW YOUR DATA

- Forward the data to a Dashboard (Datacake, Ubidots or Grafana). 
- Link your account, decode raw data and create charts or alerts.

### 3. CONNECT THE SENSOR TO THE NETWORK

- Create an account on a LoRaWAN Network (The Things Stack, Helium, ChirpStack).
- Register your sensor with individual information (DevEUI, AppEUI, AppKey).
- Follow the device instructions if any are remaining.
- Once powered on, test sensor connectivity and stability.
- Check your network dashboard for incoming data packets.

