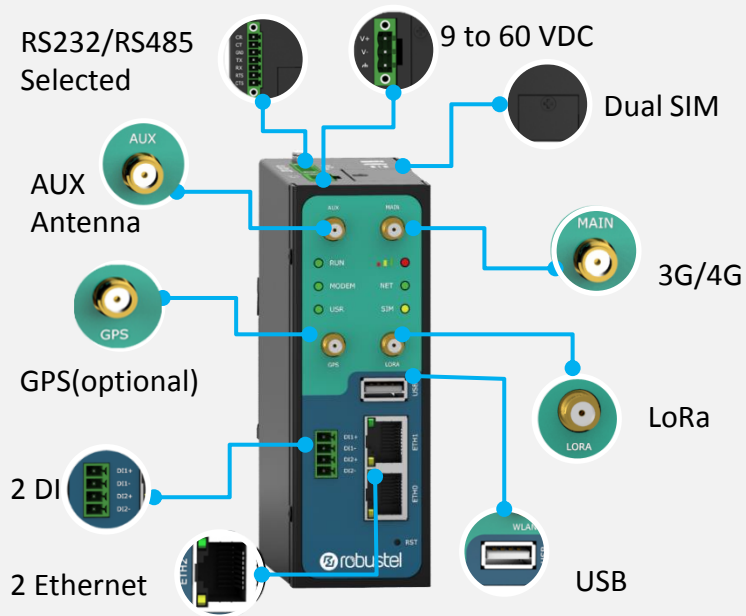


The background of the slide is a city skyline at dusk or dawn, with a network of glowing white lines and nodes overlaid on the image, suggesting a global communication network. The skyline features several prominent skyscrapers, including the Willis Tower in Chicago.

# Robustel LoRaWAN Solution

# Hardware Structure



## LoRa Interface

- Frequency of LoRa WAN: 470/868/915/902 MHz
- Reception capacity: Supporting 8 channels
- Transmission Power: 24.5 dBm LoRa
- Receive sensitivity: Max -142 dBm
- Distance: 15 km
- Node number: 1000+

## Other Specification

- Interface: 1 x WAN+2x LAN, 2 x SIM, 1 x USB 2.0
- 1 RS232/RS485, 2x DI
- Supports SDK, various function by APP installation.
- Supports RobustLink & RobustVPN platform
- Approval & Detective: CE

## LoRa Supported



Cellular gateway +  
LoRa, long range  
and high capacity  
with low power  
consume.

## Industrial Grade



Ruggedized, able  
to operate in wide  
temperature  
ranges, high EMC  
level

## RobustOS Embedded



Modular designed,  
Open SDK, meet  
more requirement in  
various applications

## Rapid Deployment and Scalability

- ❑ Built for LoRaWAN solution
- ❑ No wiring, small amount of deployment
- ❑ Flexible location, small size
- ❑ Wireless environment for up to 10 years

## Cost-effective

- ❑ 1000+ nodes, distributed application and access, reduces base station input.
- ❑ ISM band, selectable frequency, power & sensitivity
- ❑ Low threshold, low cost of industrial equipment and service

## Secure Transmission

- ❑ Always online with multi back up datalink
- ❑ Large noise capacity, overcome complex environment
- ❑ Multi-level encryption and spread spectrum to provide secure channels

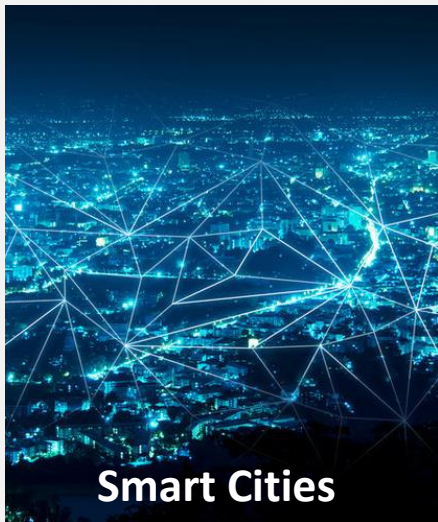
## Quality & Scalability





**Smart Industry**

- ▶ Telematics
- ▶ Product Management
- ▶ Security Alarm



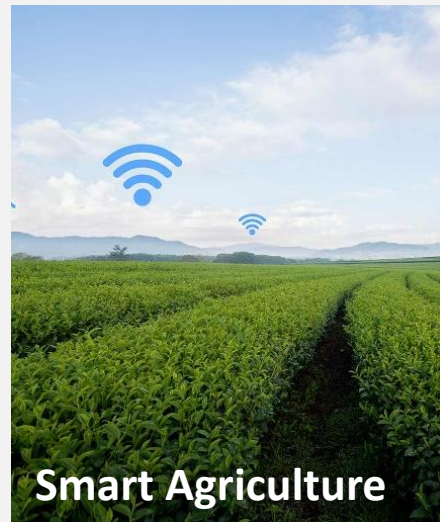
**Smart Cities**

- ▶ Smart Parking
- ▶ Street Light
- ▶ Waste Management



**Smart Buildings**

- ▶ Metering
- ▶ Entrance Management
- ▶ HVAC Management

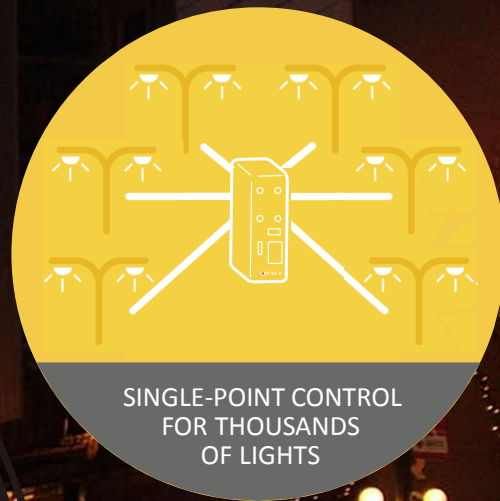


**Smart Agriculture**

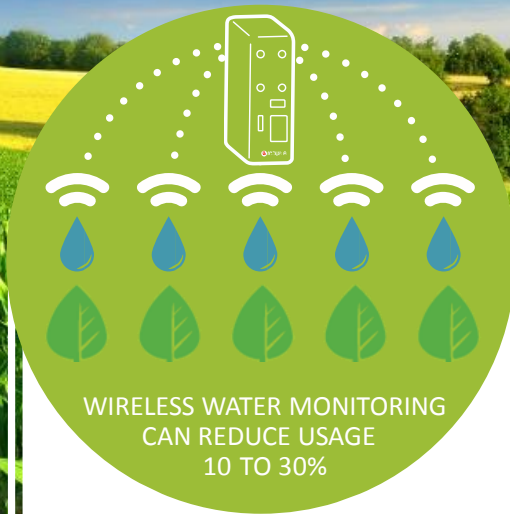
- ▶ Soil Monitoring
- ▶ Temperature Monitoring
- ▶ Livestock Tracking

## **R3000 LG Solution for Lighting Control**

- Immediate maintenance from Municipal office
- Wirelessly and Real-time manage the exterior lighting of building
- Color balance LED lights to create different moods
- Brighter walkways when people are using them.
- Saving energy and more smart







## **R3000 LG Solution for Water Savings in Agriculture**

- Monitor the moisture in soil at various depths
- Daily report to a central irrigation management system
- Event trigger Alarm to maintenance engineer,
- Water consumption can be cut from 10-30% depending on crops and soil
- Yields can be increased by up to 7%

# Robustel LoRaWAN Package

## TPH6700

Professional water/dust proof installation box.



Installation & Protection

## R3000-LG

Industrial-grade LoRaWAN gateway, integrated with LoRaWAN wireless



## M1200



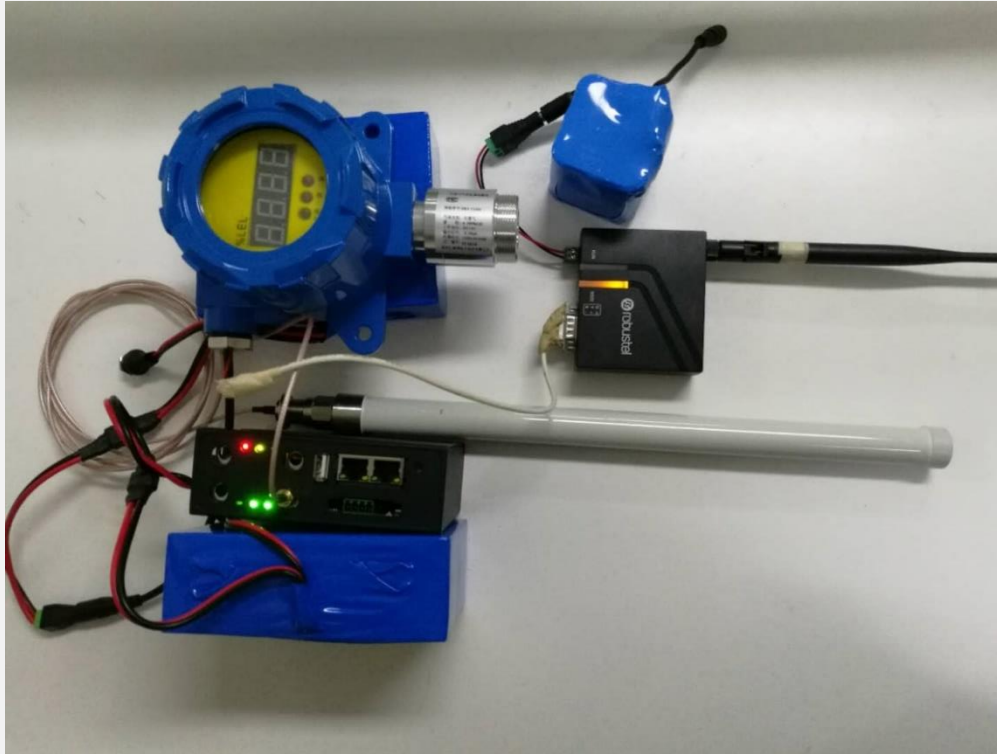
M1000 LoRa Node Gateway



- Industrial-grade LoRaWAN gateway, integrated with LoRaWAN wireless.
- Allows access to various types of LoRa application nodes
- Multiple access to the cloud platform
- Equipped with TPH6700, for reliable LoRaWAN data transmission between node and LoRaWAN server.



# Demo of Gas monitoring in mine



## Process

- 01 The gas sensor detects the flammable gas density in the current environment.
- 02 The M1000 LoRa work as Lora node, collects gas sensor data through RS485 and is wirelessly sent to R3000 LG by LoRa.
- 03 R3000 LG receive data from M1000, then send to network server.
- 04 The network server analyzes the data uploaded by R3000 LG and extracts the current combustible gas density.