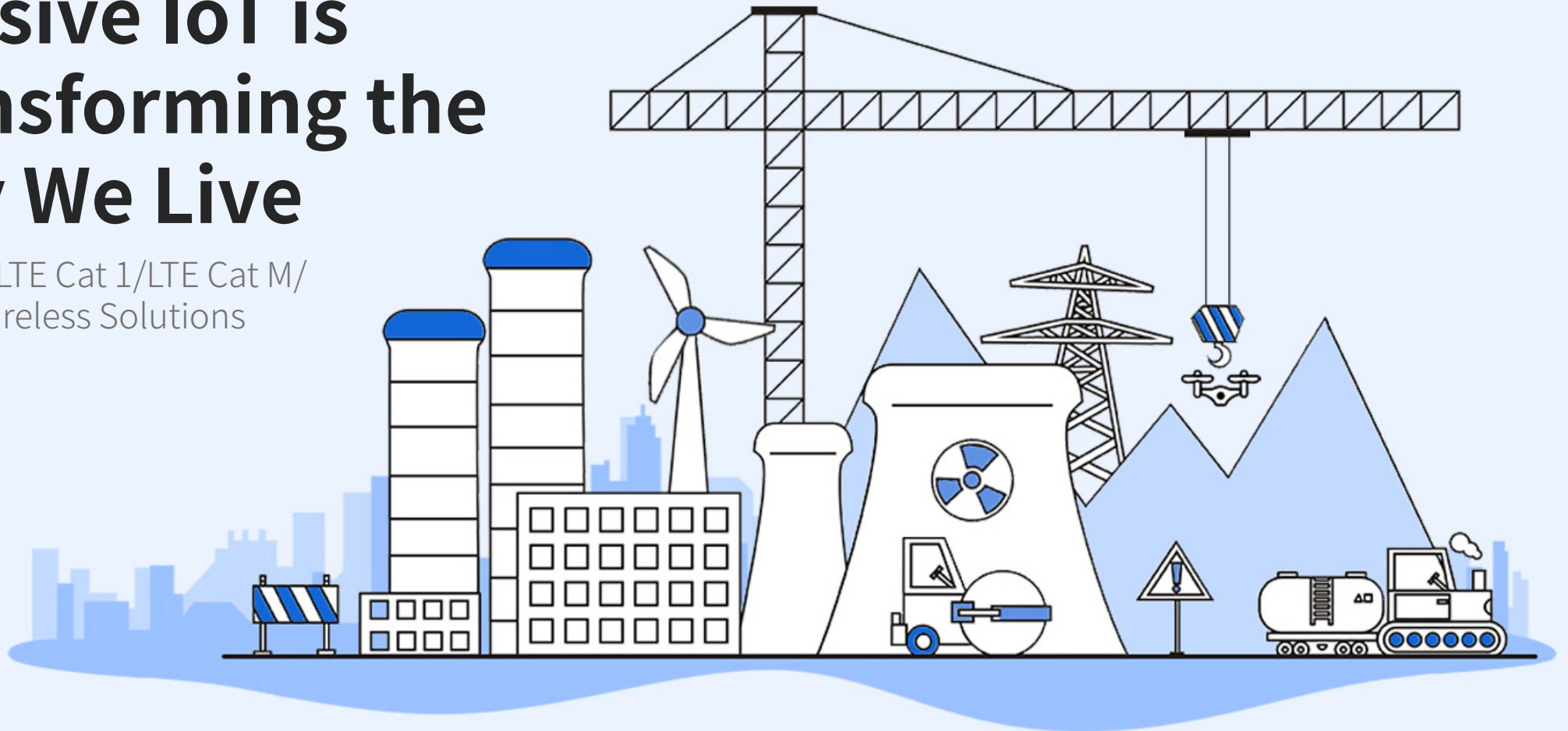


# Massive IoT is Transforming the Way We Live

Fibocom LTE Cat 1/LTE Cat M/  
NB-IoT Wireless Solutions



# Fibocom LTE Cat 1 Module – L610 & L610 MiniPCle



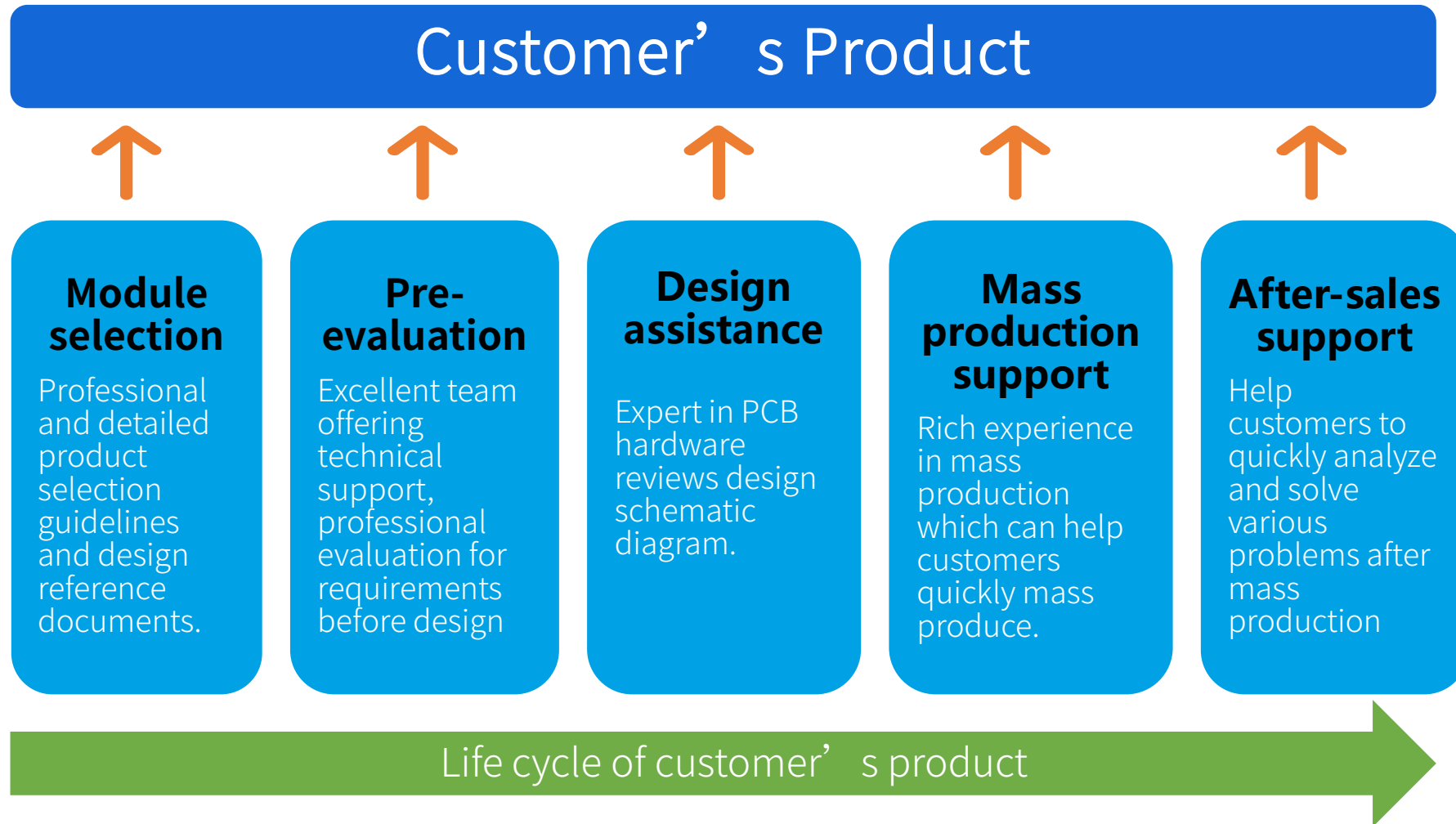
- Support LTE Cat1 bis/GSM/GPRS and full netcom and single operator configuration are optional
- Support LCD and camera and complete design enables customers to install and operate in one step
- Support BT/WiFi-scan, offering complementary long and short distance communication
- Pin-to-pin and AT command compatible with the previous Cat4 series modules, making it easy to switch between modules
- Ten kinds of general interface resources to enrich IoT applications
- Complete integrated application, both standard and Open CPU version to meet various requirements of customers
- The upstream and downstream resources of the host computer/cloud service are fully integrated, making customer worry-free



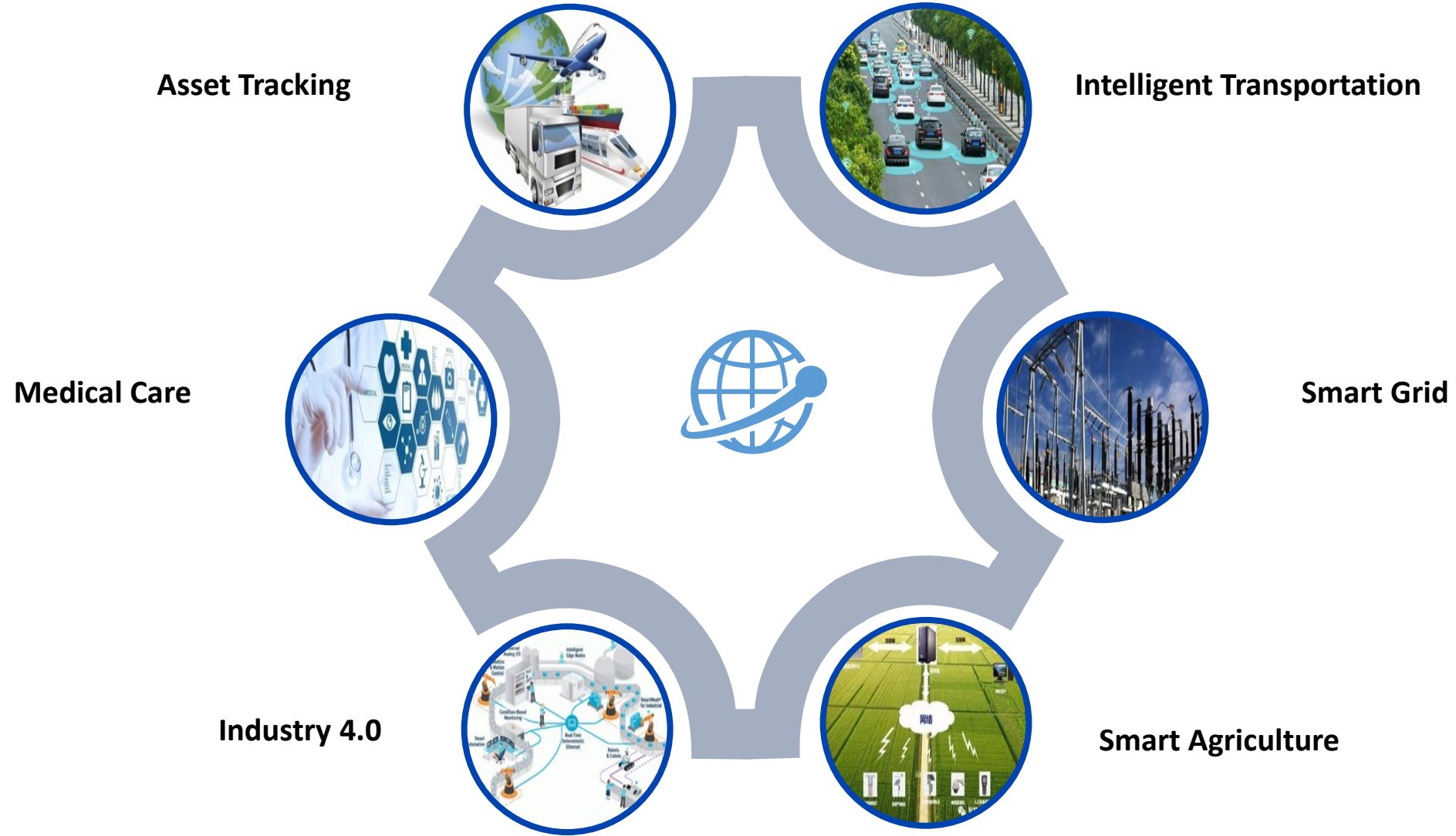
L610 MiniPCle is a LTE Cat1bis wireless communication module, MiniPCle package. The product supports FDD band and GSM 900 / 1800MHz, with the size of 50.8 × 29.85 × 3.4 mm.

L610 MiniPCle is oriented to the frequency bands of major operators in Europe, and L610-CN MiniPCle and L610-LA MiniPCle of the same series are aimed at the frequency bands of major operators in Asia and Latin America. The product positioning covers the Internet of things market with medium and low rates, such as pan payment, sharing, industrial interconnection, tracking, vehicle afterloading and other application scenarios. Provide perfect high-speed experience for customers in the above fields.

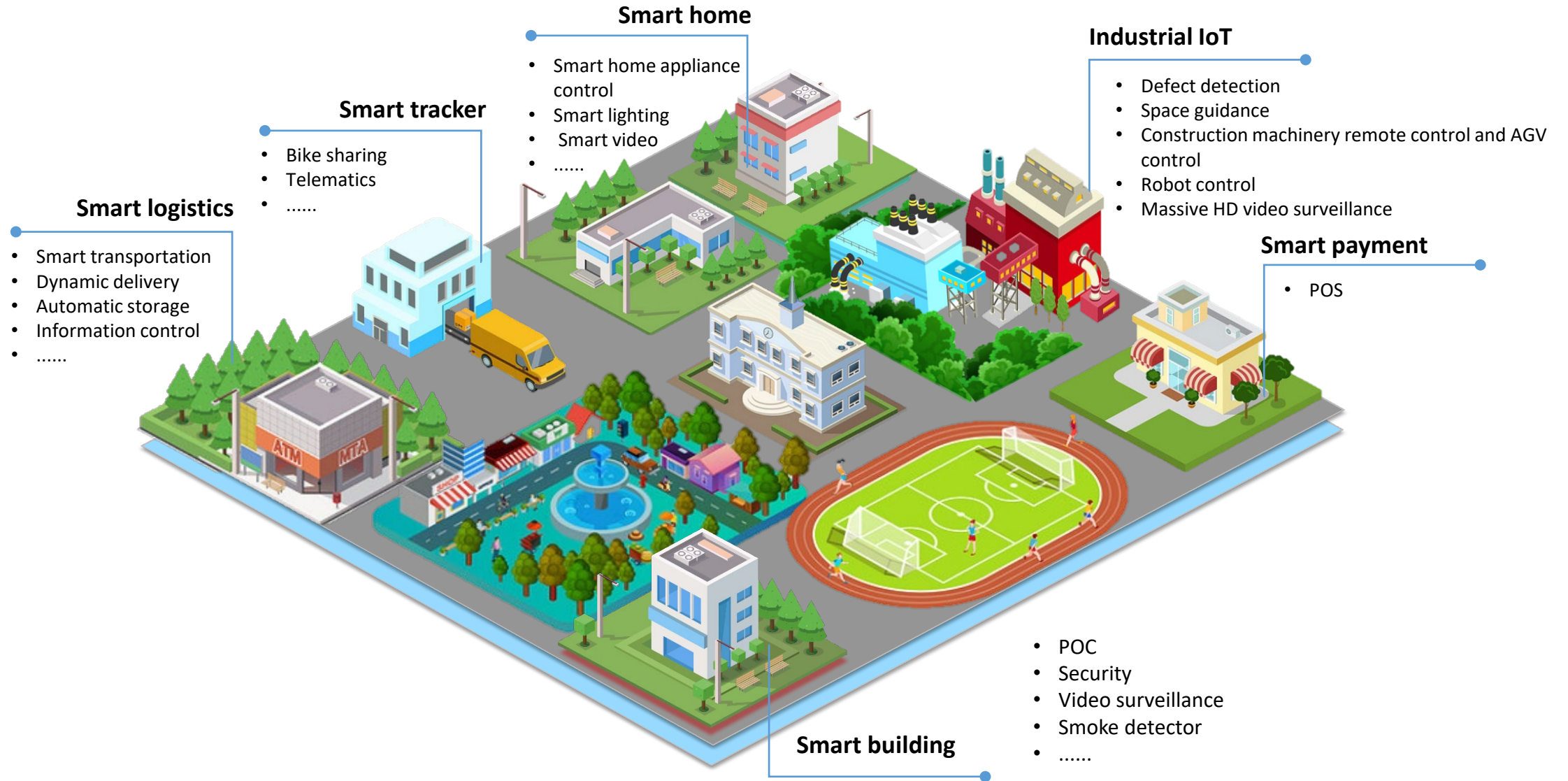
# Technical Support



# Typical LTE Cat 1 Application Scenarios

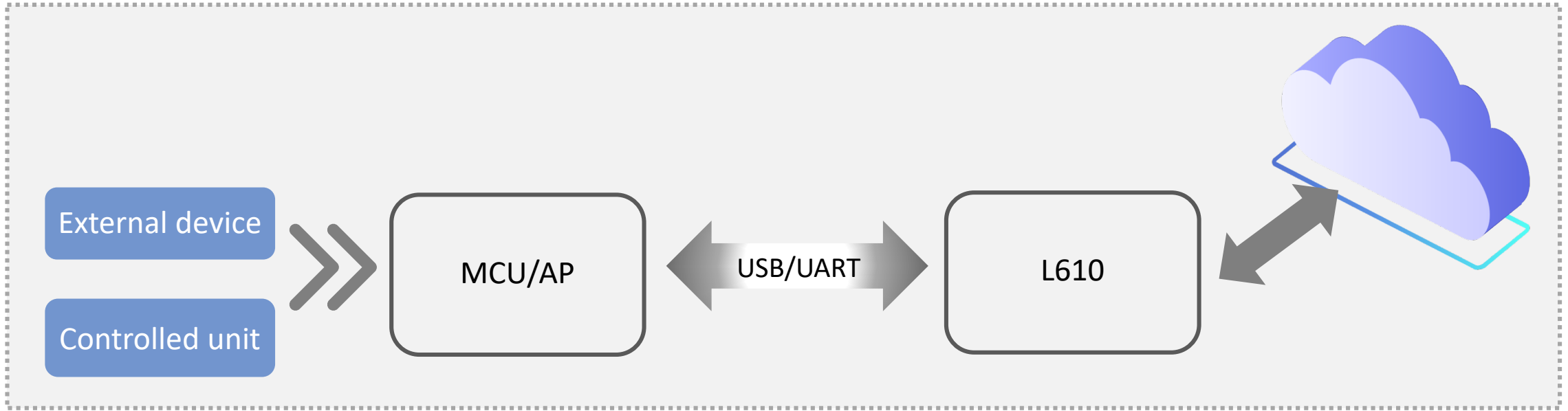


# Typical LTE Cat 1 Application Scenarios





# Standard Modem Application



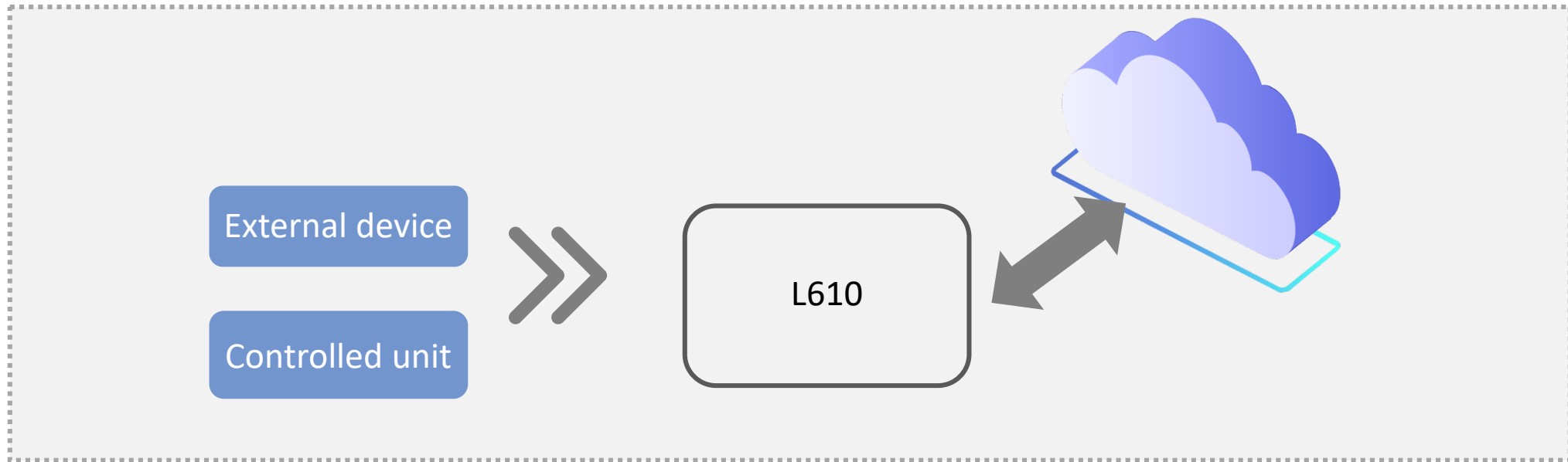
## Market applications

- POS
- Industrial RTU
- Sharing industry
- Tracker
- Security

## Merits

- For most of the IoT terminal framework, the application runs on the MCU/AP, and the customers can introduce quickly.
- The modules offers stable voice/data transmission and cloud connection which are easy to used.

# OpenCPU Application



## Market applications

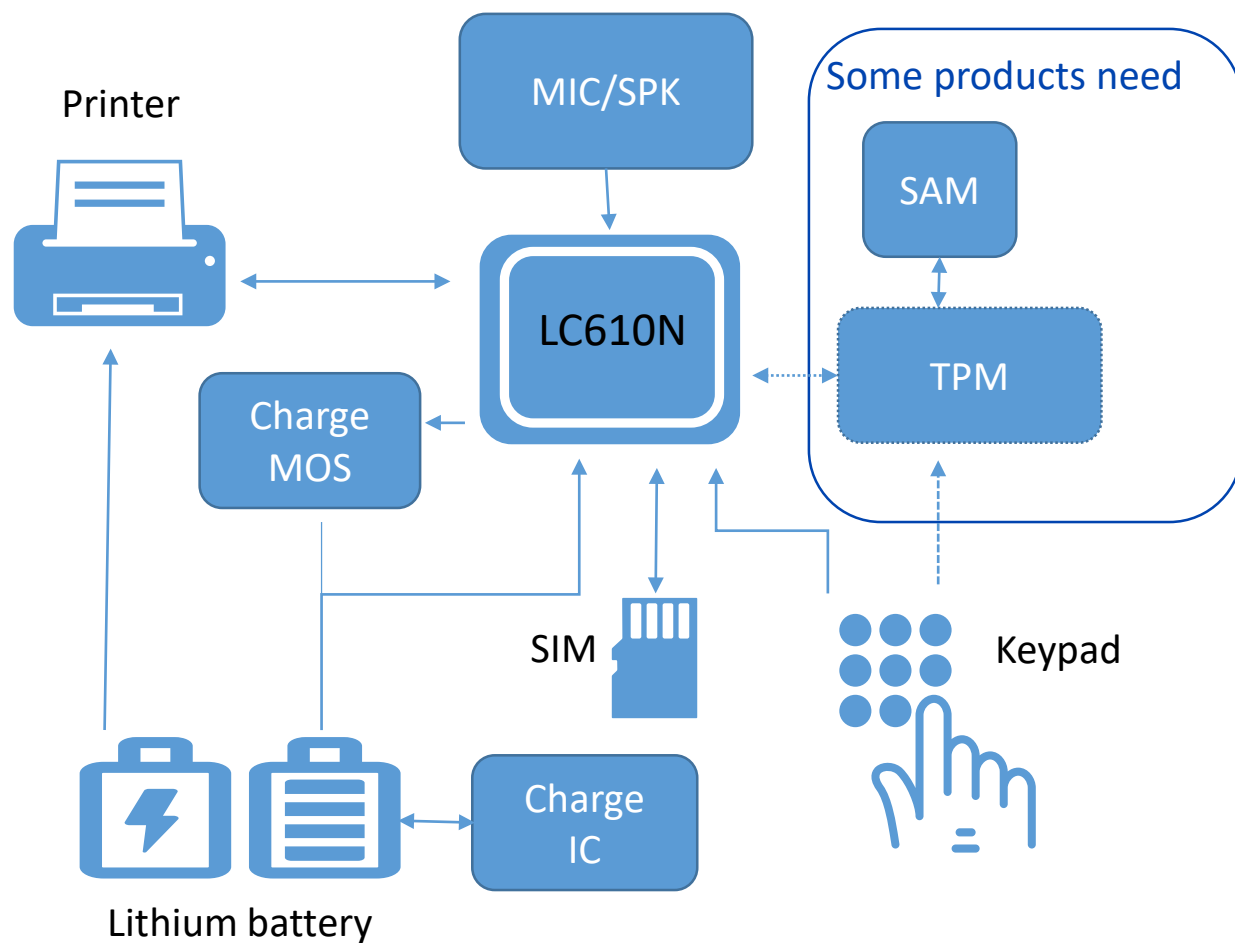
- DTU
- Pan Pay terminal
- POC
- Sharing industry
- Tracker

## Merits

- Optimal cost
- Simple supply chain
- Easy maintenance

# Fibocom LTE Cat 1 Wireless Solution - Mobile Payment

## Solution Architecture



## Requirements

- ★ Safe and reliable
- ★ Smallest size
- ★ Stable connection
- ★ Low cost
- ★ Quick response

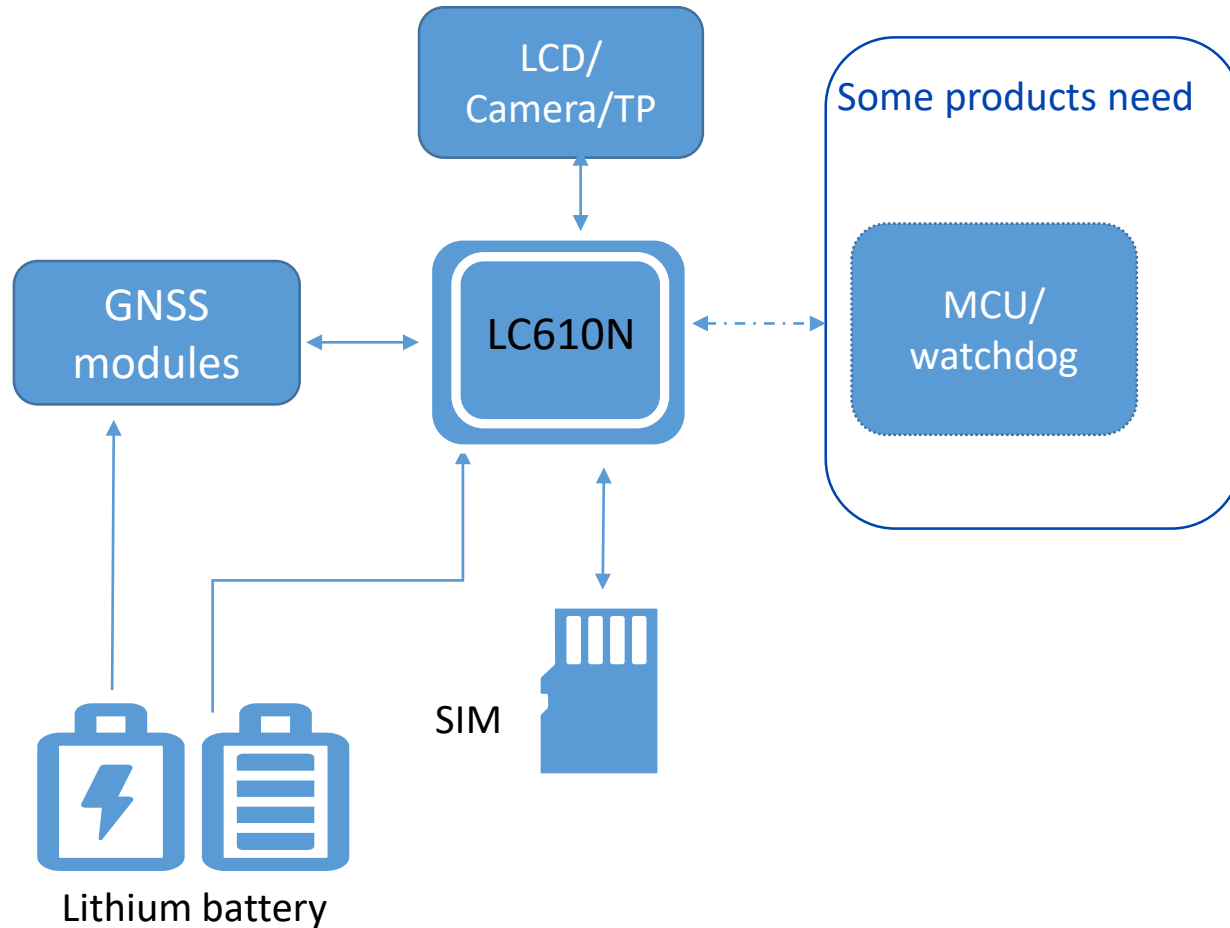
## Merits

- Save or reduce the cost on TPM
- Support LCD/camera/TP/keypad
- Integrate scanning code base/TTS/ OpenCPU
- TEE/Secure Boot
- Charging management/power monitoring



# Fibocom LTE Cat 1 Wireless Solution - Asset Tracking

## Solution Architecture



## Requirements

- ★ Reliable connection
- ★ Low cost
- ★ Flexible positioning solution supporting multiple positioning algorithms
- ★ Smallest size
- ★ Low power consumption

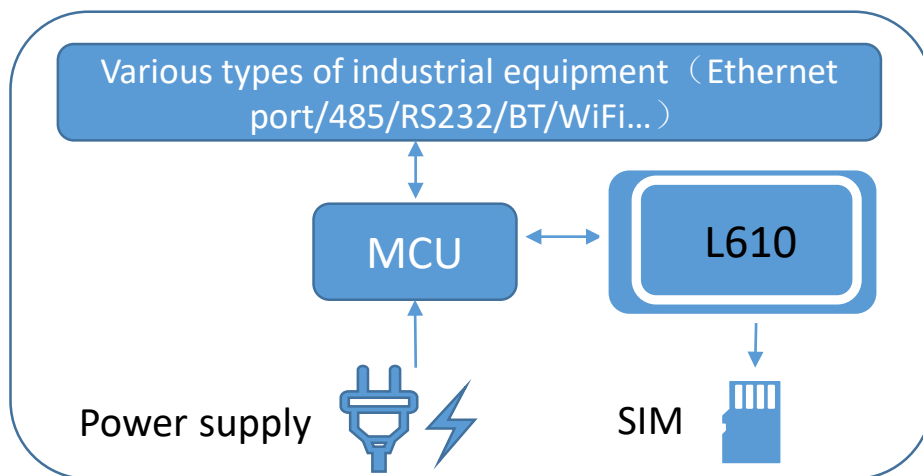
## Merits

- Reduce the cost on TPM
- External GNSS offers flexible choices for customers
- Support high-precision positioning algorithm to meet the requirements of different scenarios
- Data can be pre-stored and support supplementary transmission
- Cloud connection can be preset for easy commercial use

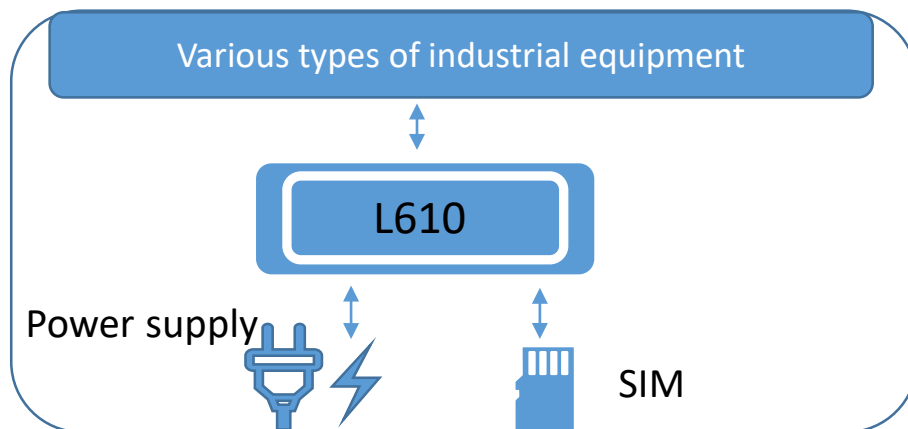
# Fibocom LTE Cat 1 Wireless Solution - Industrial Interconnection

## Solution Architecture

Traditional solution  
(AP+modem)



OpenCPU



## Requirements

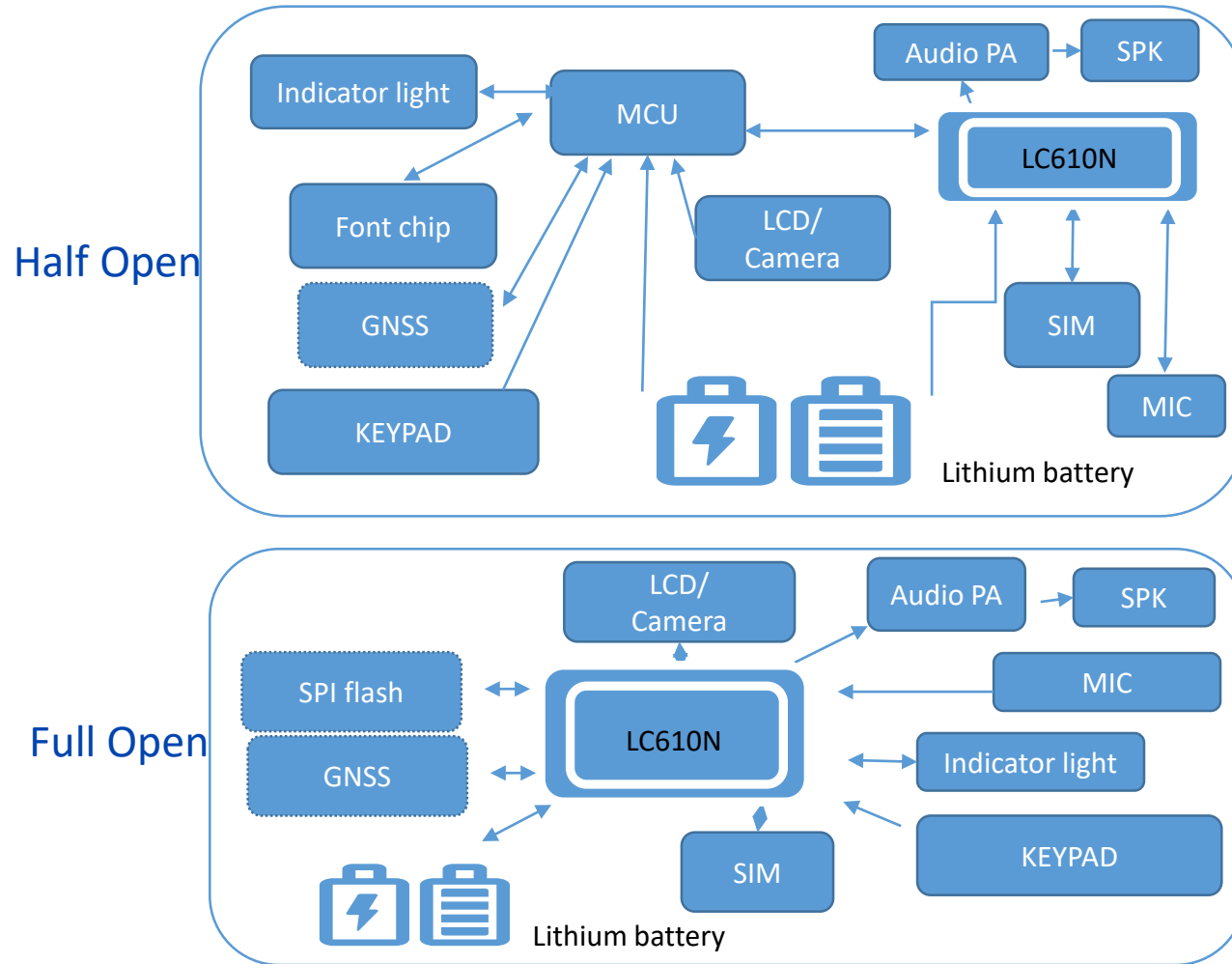
- ★ Reliable connection/stable data transmission
- ★ Abundant interfaces/industrial protocol compatibility
- ★ Cloud connection

## Merits

- Traditional solution: single interface, digital data transmission, introduce quickly
- OpenCPU solution: abundant interfaces, data pass through, low cost
- Built-in BT/WiFi-scan offers complementary long and short distance communication support indoor and positioning
- Cloud connection can be preset for easy commercial use

# Fibocom LTE Cat 1 Wireless Solution - PoC

## Solution Architecture



## Requirements

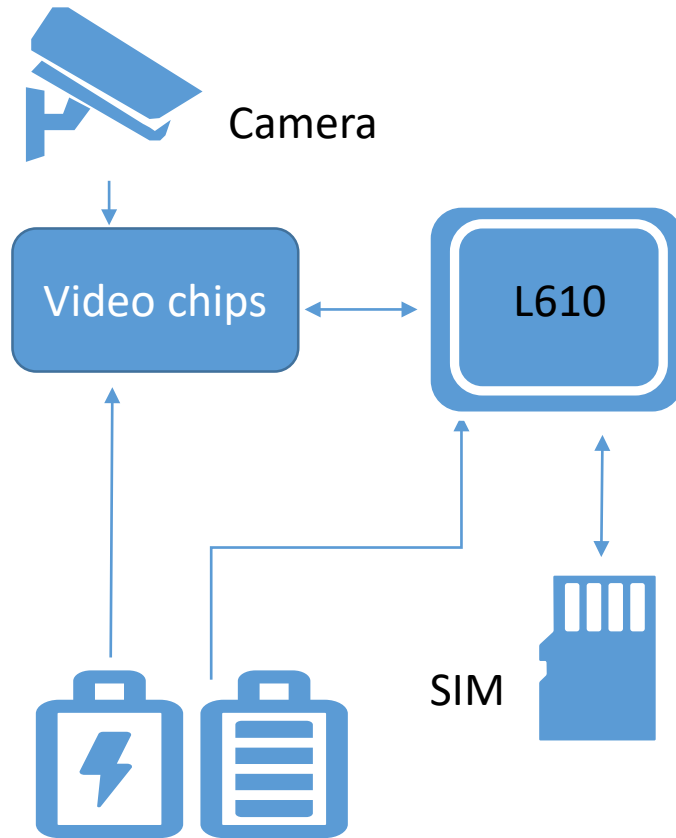
- ★ Low cost
- ★ Quality sound
- ★ Good network compatibility
- ★ Compatible with various intercom protocols

## Merits

- Save costs with built-in audio codec and PA chips
- Half-open solution: easy to use and quickly introduce the products
- Full open solution: support LCD/camera/keypad, save MCU and cost less
- Integrate intercom protocol/TTS and support recording playback
- A variety of network standards are available, not limited by distance

# Fibocom LTE Cat 1 Wireless Solution - IP Camera

## Solution Architecture



Power supply/battery (powered by solar energy)

## Requirements

- ★ Low cost
- ★ Low power consumption
- ★ Excellent network compatibility/stable data transmission

## Merits

- Low cost
- Tariff package
- Cloud storage, massive space
- Quick connection, register on networking upon power on

# Fibocom LTE Cat M Module – MA510



Fibocom MA510-GL-00 is a high-performance IoT module, which is tailor-made for the global IoT market. It is developed based on the Qualcomm platform and is packaged in LCC+LGA. It also supports LTE Cat-M1/Cat-NB2/EGPRS.

Supporting global frequency band, global certification, built-in GNSS, integrated MQTT/CoAP/LWM2M rich network protocol, UART/USB/I2C/I2S multiple standard industrial interfaces, support eDRX and PSM low power mode, PSM as low as 3.2uA. Suitable for IoT applications with low power consumption and ultra-small size, such as Smart meter, Smart parking, Wearable devices, Asset tracking, Smart city, etc.

## Basic Features

- Cat-M1: B1/2/3/4/5/8/12/13/18/19/20/25/26/27/28/66/85
- Cat-NB2: B1/2/3/4/5/8/12/13/18/19/20/25/26/28/66/71/85
- EGPRS: 850/900/1800/1900MHz
- GNSS: GPS/GLONASS/BeiDou/Galileo
- LCC+LGA: 22.2x20.2x2.1mm
- Operating temperature: -40 °C~+85 °C
- Storage temperature: -40 °C~+90 °C
- Operating Voltage: 3.3V~4.5V
- AT Command Set: 3GPP TS 27.007 and 27.005, proprietary FIBOCOM AT commands
- TX Power: (Power Class 5)
- GSM850/900: 32.5dBm±1dB
- DCS1800/PCS1900: 29.5dBm±1dB
- Cat-M1: 21dBm±1.5dB
- Cat-NB2: 21dBm±1.5dB

## Data Transmission

- Cat-M1: Max 375Kbps (DL)/ Max 1119Kbps (UL)
- Cat-NB1: Max 63.4Kbps (DL)/ Max 95.1Kbps (UL)
- Cat-NB2: Max 127Kbps (DL)/ Max 158.5Kbps (UL)
- EGPRS: Max 296Kbps (DL)/ Max 236.8Kbps (UL)
- GPRS: Max 107Kbps (DL)/ Max 85.6Kbps (UL)

## Features

- PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)
- MQTT/CoAP/LWM2M
- VoLTE/NITZ/PING/Jamming Detection
- DFOTA

## Interfaces

- SIM1.8V
- UART x3
- USB2.0 x1
- I2C x1
- SPI x1
- I2S x1
- ADC x2
- GPIO x4
- Antenna x2

## OS Drivers

- Linux/Windows/Android

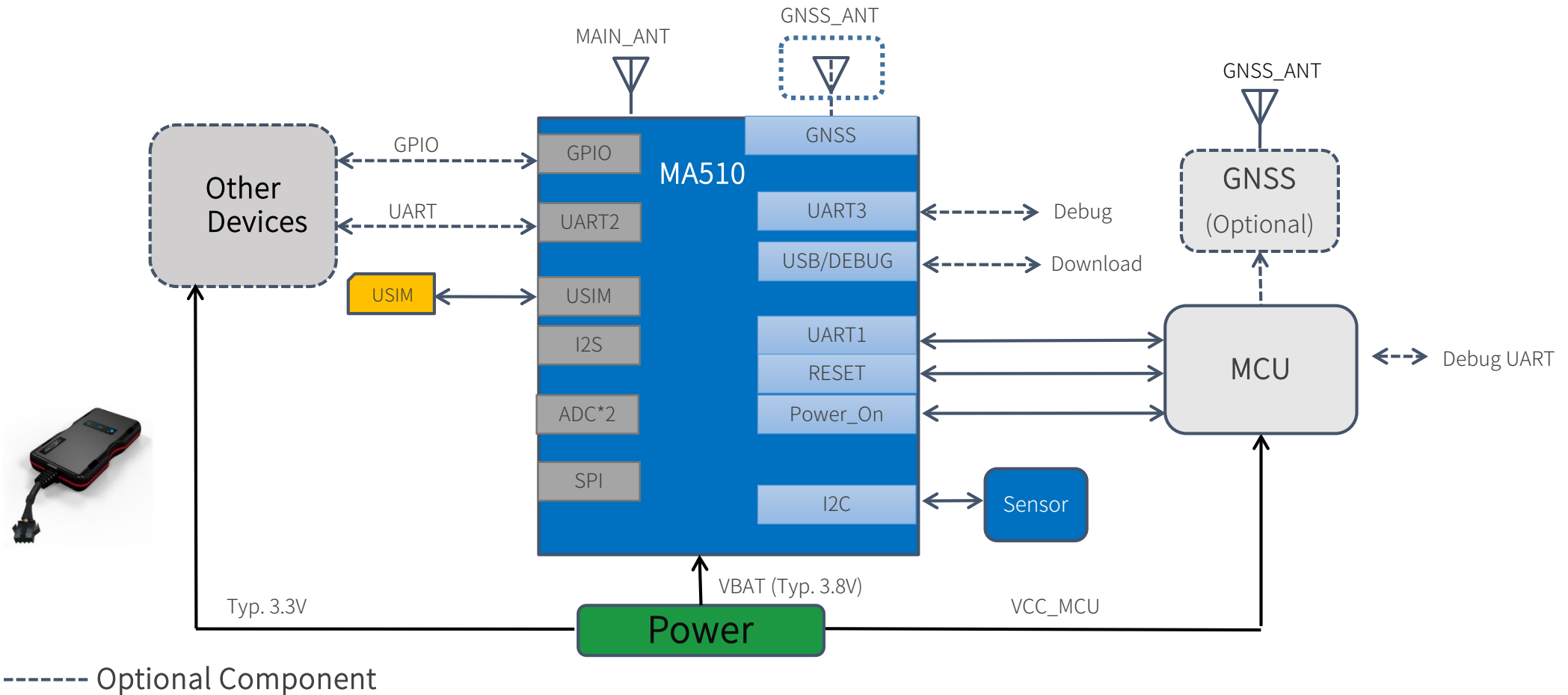
## Certifications

- RoHS/HF/GCF/RCM/Telstra\*/NCC/Reach
- FCC/IC/PTCRB/Sprint/AT&T/Verizon/ANATEL
- JATE/TELEC/Softbank\*/DoCoMo\*/KDDI
- CE/DT/VDF/Telefonica\*

Note: \* = Planning /Developing

# Fibocom LTE Cat M Wireless Solution - Smart Metering

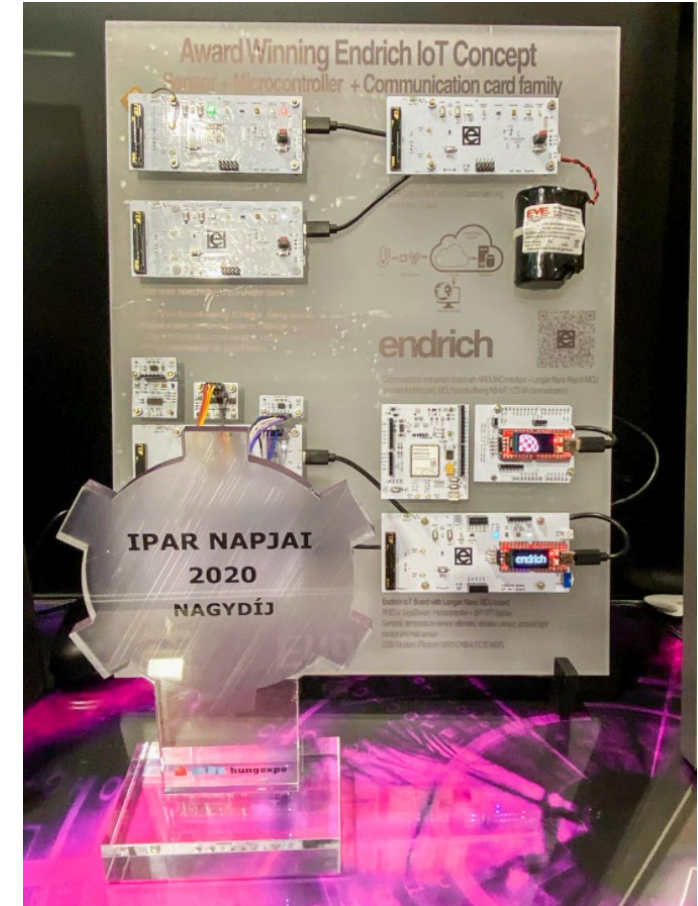
1. For some trackers, no GNSS module is required (depend on the frequency of reporting location information) and the cost of the customer's terminal is reduced.
2. Support low-power standby mode to extend battery life.
3. Support 3 modes (EGPRS, Cat NB2, Cat M) and global frequency band. Only need to design a set of hardware to support global shipment.





# Fibocom LTE Cat M Wireless Solution – Award Winning IoT Ecosystem

The concept illustrates the process of sensor readings being collected from diverse microcontroller-based electronics, forwarded to the cloud for Endrich Cloud Database Services via LPWA communication channels, and finally visualized on connected devices like smartphones and tablets. The concept application can be adopted in various IoT scenarios including smart home, smart manufacturing, smart city, smart energy, and smart security to achieve intelligent remote monitoring. By digitalizing sensor readings and aggregating scattered data into a central database, it allows real “Big Data” to permeate every part of our life. The IoT Ecosystem concept, after a period of developing and testing, now has reached the ready-to-market status.



# Fibocom NB-IoT Module – N510



N510-GL is a high-performance IoT module product, tailor-made for the global IoT market, and is packaged in LCC+LGA. Compatible with Fibocom 510 series module, easy for future upgrading

Support global frequency band, global certification, integrate multiple network protocols, support eDRX, PSM low power consumption mode, especially suitable for IoT industry applications with low power consumption and ultra-small size as core requirements, such as smart meter, smart home, smart Parking, wearable devices, asset tracking, smart cities, etc.

## Basic Features

- Cat NB2: B1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/71/85
- LCC+LGA 22.2x20.2x2.1mm
- Operating temperature: -40 °C~+85 °C
- Storage temperature: -40 °C~+90 °C
- Operating Voltage: 3.3V~5.0V
- AT Command Set: 3GPP TS 27.007 and 27.005, proprietary FIBOCOM AT commands
- TX Power: 23dBm ± 1dB

## Data Transmission

- NB1
  - Multi-tone: 62.5Kbps (UL)/ 26.15Kbps (DL)
  - Single-tone: 15.6Kbps (UL)
- NB2
  - Multi-tone: 158.5Kbps (UL)/ 126.8Kbps (DL)
  - Single-tone: 18.1Kbps (UL)

## Features

- TCP/UDP/HTTP(S)/LwM2M/MQTT/SSL/TLS/IPV4/IPV6/NTP/NITZ/Cell ID/LBS\*
- DFOTA
- 2.7uA @PSM
- 180uA @eDRX
- 2.1mA @DRX

## Interfaces

- UART
- USIM 1.8V/3V
- System Indicator
- Antenna
- ADC
- GPIO
- I2C
- SPI

## OS Drivers

- Linux/Windows

## Certifications

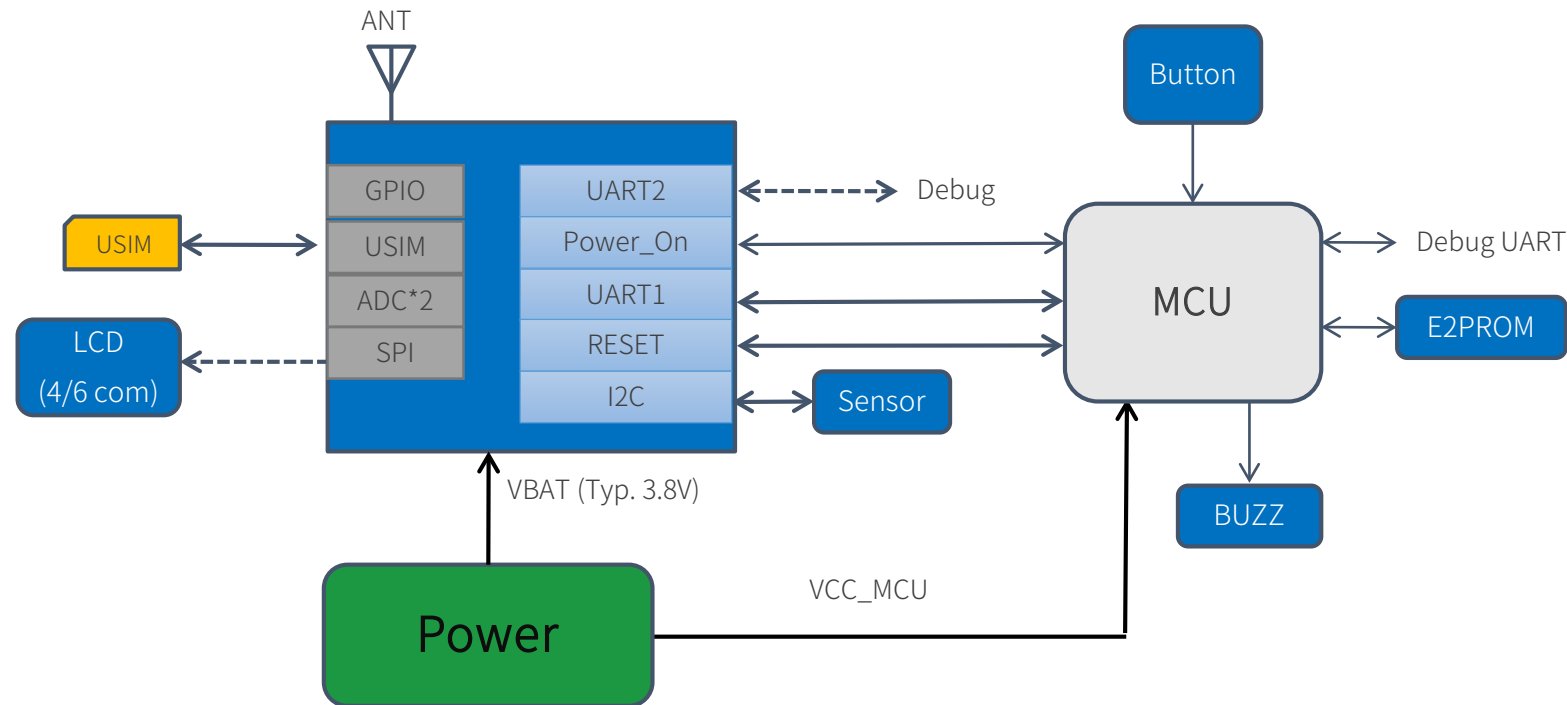
- CE/ NCC/ FCC/ RoHS/HF/
- PTCRB/GCF/VDF\*/DT/Verizon\*/TMO

Note: \* = Planning \*\* = Developing

# Fibocom NB-IoT Wireless Solution -- Smart Metering

Merits:

1. Power consumption in standby mode is extremely low and its battery life is 8-10 years
2. Support global frequency band and only need to design a set of hardware to support global shipment
3. Support R14 protocol and adapt to network upgrade well



----- Optional Component


# Thank you.

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