

**Lierda**  
利 尔 达

**Connecting IoT**

**Connecting the World**

**Li**

Lierda Science & Technology Group Co.,Ltd.

# Contents

01

Overview of Lierda

02

Electronic Components Distribution

03

IoT Module

04

IoT Module Success Case

05

System Application

06

EMS Electronics Manufacturing Services

07

Antenna

08

Lierda's Partner Ecosystem

# 01

## Overview of Lierda



# Lierda Science & Technology Group Co.,Ltd.

**Lierda**  
利尔达

## Brand Positioning:

In the Internet of Everything, Lierda serves the world

## What do we do?

We provide one-stop service including IoT product development, technology application and service implementation

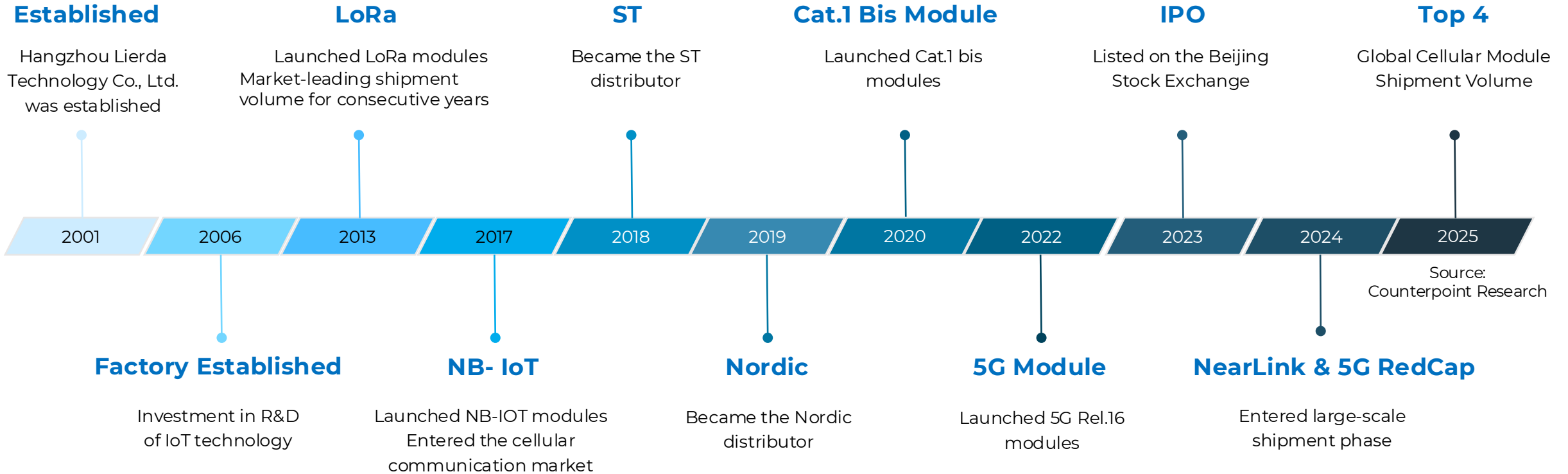
Headquartered in Hangzhou, China, Lierda Technology Group Co., Ltd. (Stock Code: 832149) was officially listed on the Beijing Stock Exchange in 2023.

Established for more than 25 years, Lierda provides products for the whole wireless field, and offer customers complete solutions in online platforms, industrial application and terminals, making the “Internet of Everything” a reality!



Headquarters: Hangzhou  
Lierda Internet of Things Technology Park

# Lierda's 25-Year History



Source: Counterpoint Research

# Achievement

## 25+ Years IoT Experience

Lierda has been deeply engaged in the IoT industry.  
Our solutions cover all fields, continuing to help traditional industries to upgrade intelligently.

**No.1**

LoRa Module  
Global Shipments

**Top4**

Cellular Module  
Global Shipments

**Top3**

NB-IoT Module  
Global Shipments

**400+**  
million

IoT Module  
Cumulative Shipments

**3+**  
billion

MCUs  
Cumulative Shipments

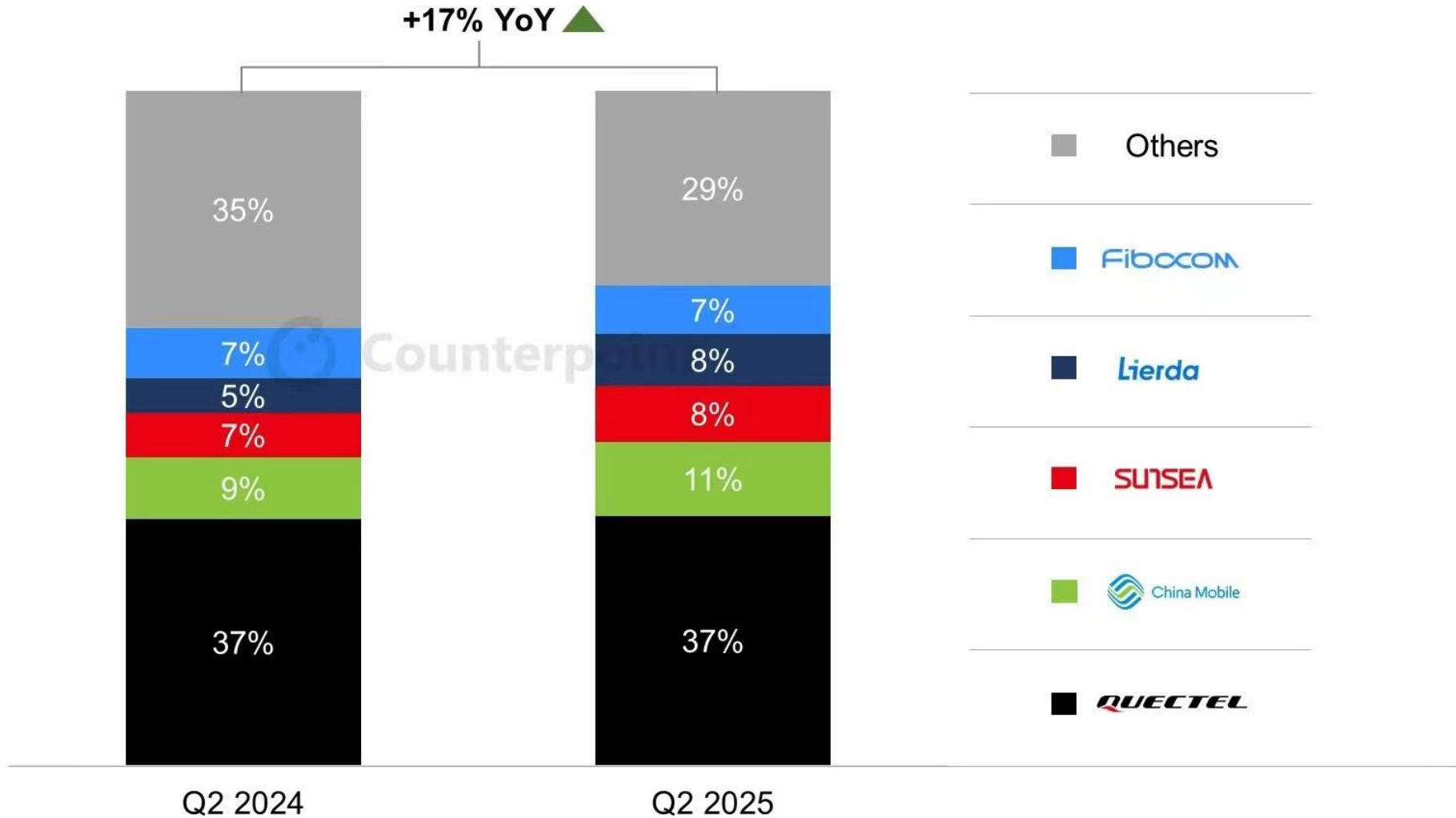
**1,000+**

Employees

**30,000+**

Worldwide  
Customers

# Global Cellular Market Share



# Lierda Product Map

Smart agriculture

Smart industry

Smart transportation

POS

Medical equipment

Internet of Vehicles

Wireless meter reading

Wearable

Photovoltaic/New Energy

Smart home

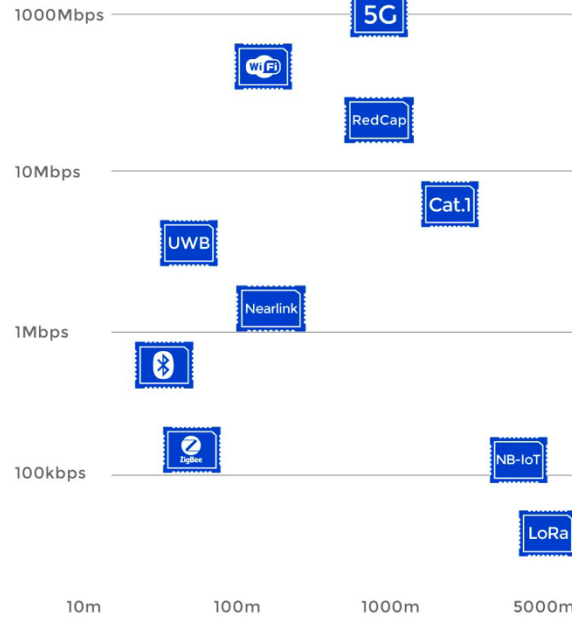
## IC technology value-added distribution

## Communication modules

## Application solution

Communication

Security



**Instrumentation and Meters**  
Water Meter, Gas Meter, Gas Alarm, Electricity Meter

**Smart Industry**  
Industrial Controller, AI vision, 5G Gateway, Electric Tools

**Smart Building**  
Gateway, Sensor, Controller, Switch, Lamps, Panel, Platform

**Positioning application**  
GNSS & LBS outdoor positioning, UWB indoor personnel positioning

**Smart Travel**  
VCU, Tracker, EV Intelligence

# Manufacturing Capability

Lierda



## Manufacturing Capacity

956 million

The maximum monthly capacity of components > 956 million

0.35mm

Minimum pin pitch of Chips Reaching 0.35mm

30.67 million

30.67 million products can be mounted every day

10 production lines Automatic testing

10 SMT production lines

5 fully automatic testing and packaging production lines



# 02

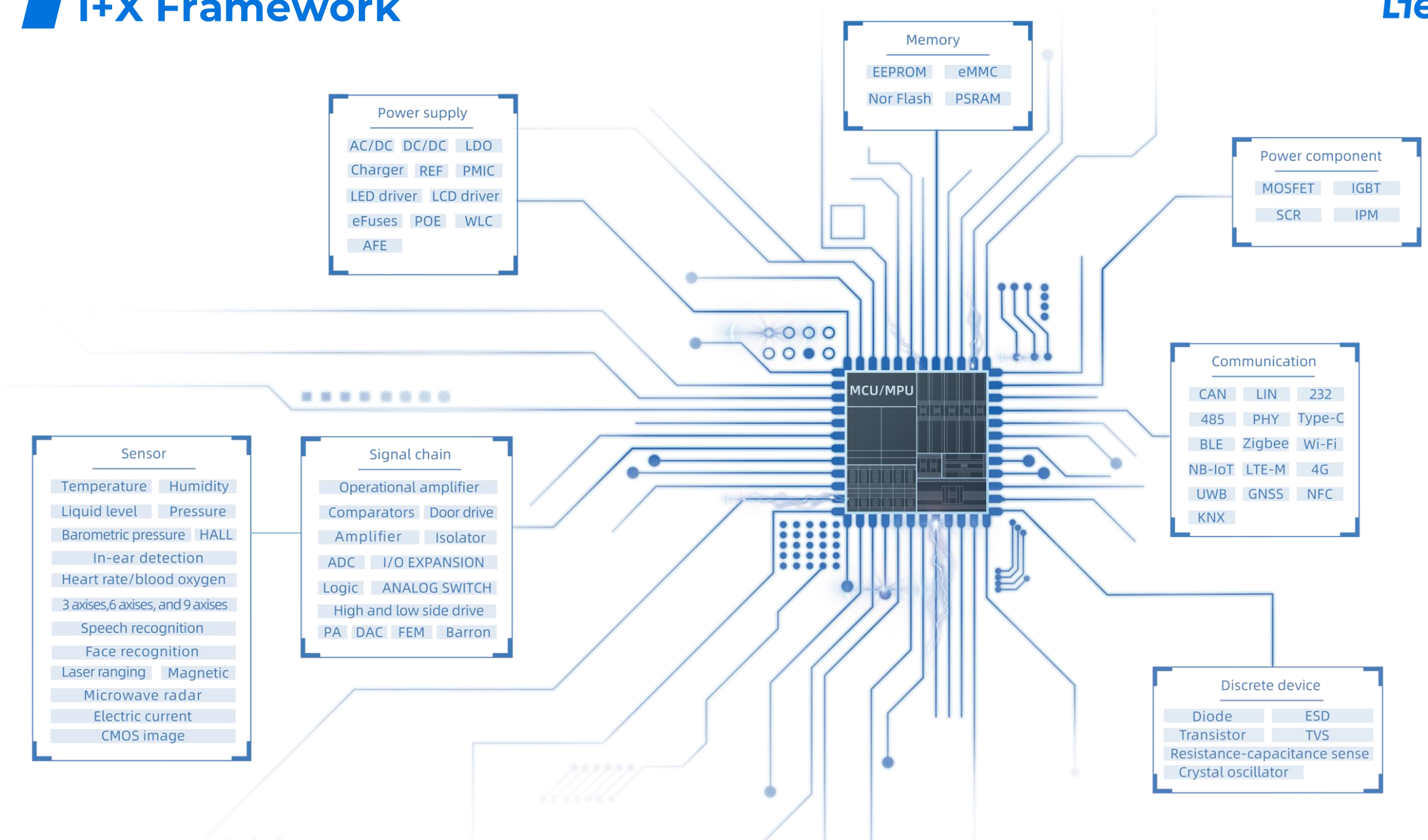
Electronic Components  
Distribution



# Authorized Distributor Brands



In the Internet of Everything  
Lierda serves the world



# 03

## IoT Module



### 5G eMBB Module



M.2



LGA



**High Speed**  
UL 1Gbps  
DL 2Gbps



**OpenWRT**  
Flexible  
Development



**Rich Interface**  
USB, PCM, I2S, I2C,  
UART, B\_CODE...



**3GPP Rel.16**  
Compliant With All  
Rel.16 Features

### 5G Redcap Module



M.2



Mini PCIe



LGA+LCC



**High Speed**  
UL 120Mbps  
DL 226Mbps



**OpenWRT**  
Flexible  
Development



**3GPP Rel.17**  
Compliant With All  
Rel.17 Features



**Low Cost**  
Low power consumption  
and low cost

### 5G eMBB Module

NE16U and NE26U series are 5G eMBB module, supporting 5G SA/NSA and compatible with LTE/WCDMA. NE16U features 3GPP Rel.16 capabilities like 5G LAN, network slicing, 99.99% reliability, ms-level latency, and 1µs-precise timing.

### 5G Redcap Module

NR90 series is a 5G RedCap module. Leveraging 3GPP Rel.17, it supports 5G SA mode and is 4G-compatible. With peak speeds of 226Mbps (DL) and 120Mbps (UL), it exceeds Cat.4 modules for mid-high speed needs. It enables 5G LAN, precision timing, network slicing, low-power high-accuracy positioning, uRLLC SUL, and other 5G features.

### Application Scenarios



CPE



Mi-Fi



Powerbank With Mi-fi



UFI



Gateway



Power Communication Cabint



**4G LTE Cat.1 bis**  
UL 5Mbps  
DL 10Mbps



**Protocol**  
Build-in Multiple  
Network Protocols



**Fast Attach**  
2~3 Seconds  
Access To The NWK



**Low Power**  
Low Power Consumption  
Sleeping Current 3.5 uA



**WiFi Scan**  
Wifi Scan For  
Location Aiding



**FOTA**  
Firmware Upgrade  
Over The Air



**AT**  
AT Command via  
UART and USB



**Open CPU**  
Open CPU SDK  
for Developers



**Codec**  
Integrated Audio Codec  
NT35F Only

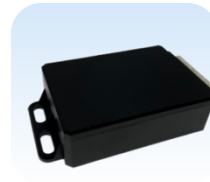
## ■ Cat.1

NT26 and NT35 Cat.1 bis Series module supports 3GPP Rel.14 and FDD/TDD-LTE standards. Featuring compact size, fast network access, and ultra-low power consumption, it integrates rich network protocols and multiple industry-standard interfaces, with support for diverse drivers and software functions to expand M2M applications.

## ■ Application Scenarios



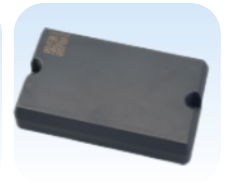
IPC



E-bike VCU



SOS



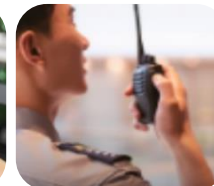
Tracker



E-Meter



POS



POC




Sharing Economy




Charging




  
**Low Power**  
 3uA@PSM, 3.6V

  
**Wide Voltage**  
 2.2-4.2V

  
**FOTA**  
 Firmware Upgrade

  
**BLE 5.0**  
 Support BLE 5.0



  
**Low Power**  
 1.5uA@PSM, 3.6V

  
**Wide Voltage**  
 2.2-4.5V

  
**FOTA**  
 Firmware Upgrade

  
**Low Cost**  
 Extreme Low Cost

## NB-IoT

The Lierda NB-IoT module supports 3GPP standards and bands 2, 3, 5, 8, 20, 28. With a compact design, low power consumption, long-range transmission, and strong anti-interference, it enables easy, flexible product development for applications.

## Application Scenarios



Water Meter



Gas Meter



Smoke Detector



Smart Parking



Industrial Equipment

## Gateway OG45



## Node WB26



**High-Performance**  
Adopts NXP A53  
Quad-core CPU And  
Semtech SX1302 Chip



**Built-in Network Server**  
Pure Intranet Transmission  
Supports MQTT/HTTP  
Data Forwarding And API Call



**Industrial-grade Design**  
IP67 Waterproof And Dustproof  
Wide Temperature And Voltage  
High Protection Level



**Alliance Public Standard**  
Complies With LoRaWAN  
Specification 1.0.4  
Class A/C Standard



**Low Power Consumption**  
Standby Current < 2uA



**Seamless Network Roaming**  
Real-time Switching  
Between Multiple Gateways



**Multiple Access**  
Supports Ethernet,  
4G, Wi-Fi, etc.  
Multiple Communication Methods



**Power Failure Alarm**  
Abnormal Alarm  
Through Email or SMS



**Quick Installation and Deployment**  
Support Wall-mounted  
Installation And  
Pole-mounted Installation



**Dynamic Path Optimization**  
Centralized Management  
In The Cloud Real-time Path  
Optimization



**Star Topology**  
Reduce Latency And  
Improve Network  
Stability



**Long Range**  
Coverage Radius Up To  
3 km to 7 km

## LoRaWAN

Lierda is one of the earliest members of the LoRa Alliance and participated in drafting relevant standards such as CLAA and ICA. Upholding the principle of high-quality products, after a decade of dedicated investment in LoRa and seven years of technological accumulation in LoRaWAN, we have developed a full range of LoRaWAN-related products covering CN470, CLAA, ICA EU868, US915, AS923, KR920 and other frequency bands. We can provide customers with mature system solutions.

## Application Scenarios



Water Meter



Gas Meter



Robot Lawn Mower



Solar



Smart Building



Street Light



Agriculture



Indoor Personnel Positioning



Low Cost  
1 connections



Multi-Connections  
8 Connections



Wide Temp.  
-40-105°C



Long Range  
8 Connections



Nordic  
Based On The Nordic Platform



Applications  
Support Various Applications



Rich packaging  
Rich Packaging Dimensions



Low Power  
Low Power Consumption



Long Range  
Long Communication Range



FOTA  
Firmware Upgrade



Wide Temp.  
Wide Temperature Range

## BLE

Lierda provides Bluetooth modules and solutions that meet Bluetooth LE and SIG Mesh standards. The products fall into four main series: E, S, T, and K. In each series, both hardware and software are highly compatible, which helps customers' products quickly achieve Bluetooth functions.

## Application Scenarios



E-Bike



E-Motor Bike



Toilet



Industrial Equipment



Meter

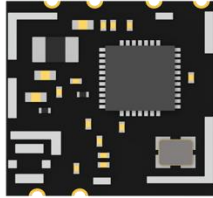


Matter Applications

## UB6L



USB



USB



USB  
with NearLink



SDIO  
with NearLink



SDIO



UART



UART  
with NearLink



High Speed Wi-Fi 6



Support BLE



Fully Certified



Mainstream Packaging



Rich Interfaces



2.4G/5.8G  
UB64 Only

## Wi-Fi

The Wi-Fi product line includes stand Wi-Fi Module, IoT Wi-Fi module and Wi-Fi solution. With excellent RF and complete certifications, the standard suits mainstream OS like Linux, Android, Windows, and is widely applied in IPC and TV. The IoT version, featuring flexible dev via transparent transmission and OPEN MCU, provides cost-effective solutions.

## Application Scenarios



IPC



Video Doorbell



Robotic-Cleaner



PC Components



Appliance



Car DVR



Multiparameter Monitor



Drone

# Embedded Core Module



High Performance  
A35+M33

Maximum Frequency  
1.5 GHz + 400MHz

Rich Resources

1.35 TOPS NPU

High Performance  
STM32MP135

Maximum Frequency  
Up to 1 GHz

Rich Resources

Advanced Security



Integrated GPU  
900MHz

3-Channel CAN FD

3 Gigabit Ethernet

Dual Screen Display

High Resolution  
1920x1080

2-Channel CAN FD

Dual Gigabit Ethernet

Industrial Design

## Core Module

Lierda embedded core module is designed based on high-performance processor. It has rich peripheral resources, integrated LCD, LVDS, MIPI DSI controllers, supports USB3.0/2.0, 10/100/1000M Ethernet, supports DCSPi, CAN, UART, ADC, MMC/SDIO, timer/PWM, SPI, I2C, I2S/SAI, SPDIF and other peripheral interfaces. It is widely used in various industrial human-machine interfaces, charging piles, IoT gateways, portable medical devices, smart control systems and other application scenarios.

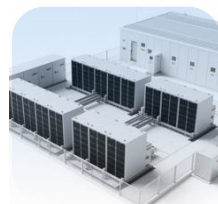
## Application Scenarios



EV Charger



Photovoltaic Inverter



Energy Storage System (ESS)



Gateway



Industrial Control HMI



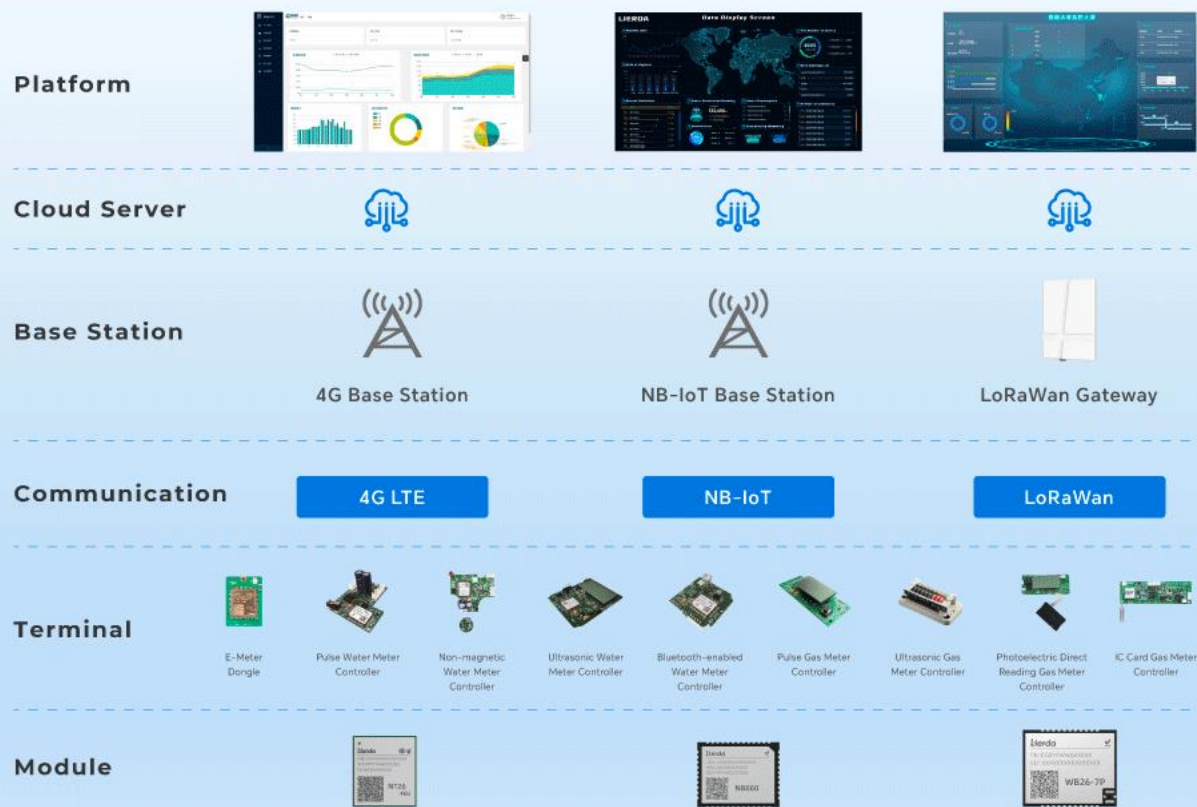
Medical Equipment HMI

# 04

## IoT Module Success Case

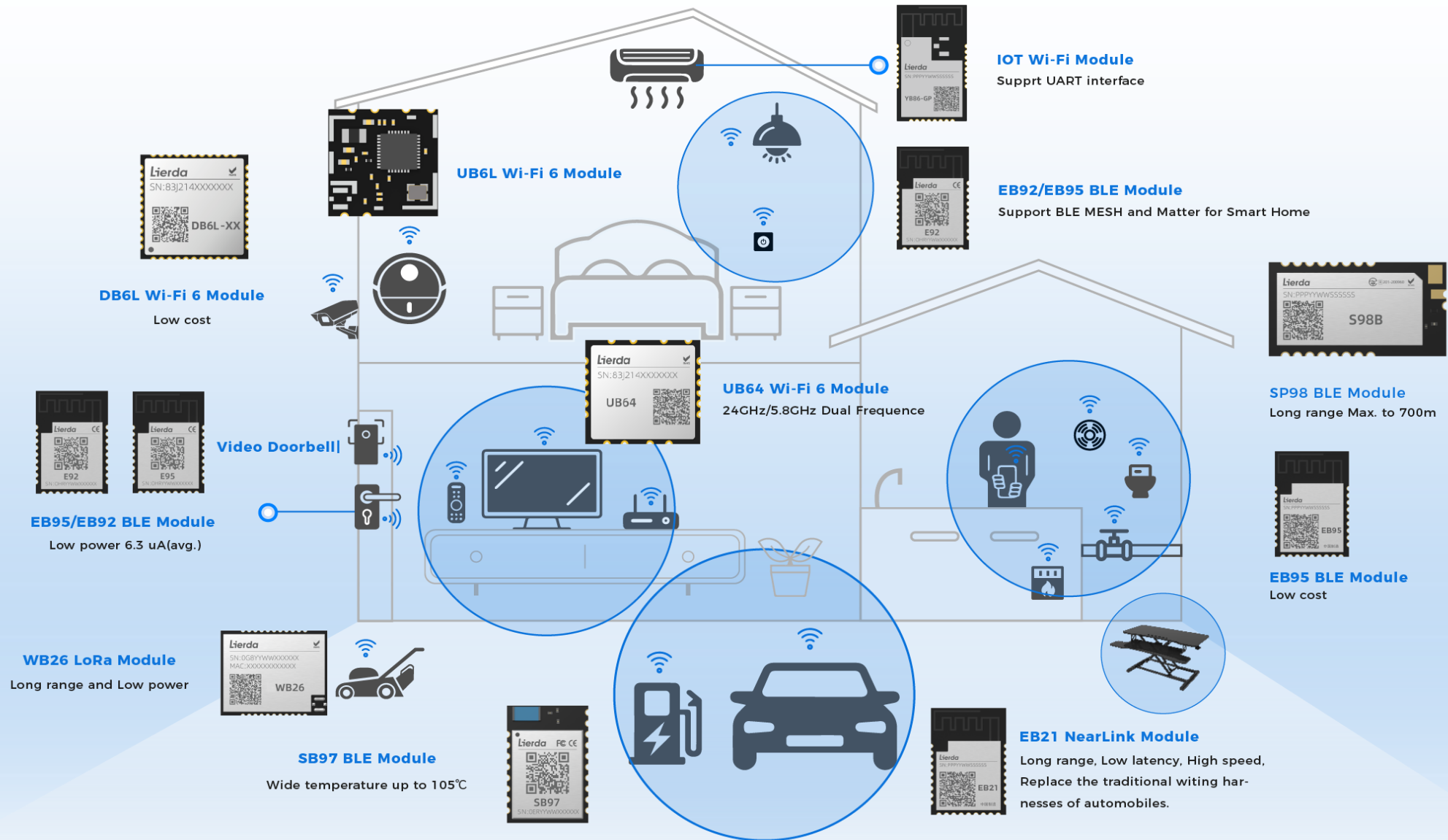


Lierda has extensive experience in the metering industry, supporting various metering methods and communication protocols, and can provide exclusive customization according to customer requirements. Meanwhile, we assist customers in completing component procurement, manufacturing processing, quality management, cloud platform development, etc., offering one-stop integrated solutions.



Water-Meter	Gas-Meter	E-Meter
WB26 NB860 NT26F	WB26 NB86 NT26F	NT26F
China, India, Africa, Southeast Asia, South America	China, Australia	South Korea

Lierda provides a variety of wireless modules for smart home applications, such as Wi-Fi modules suitable for various household appliances, as well as BLE modules and Matter modules designed for smart home systems.



# Sharing Economy

Lierda



Shared Power Banks

## NT26 Series Cat.1 Module

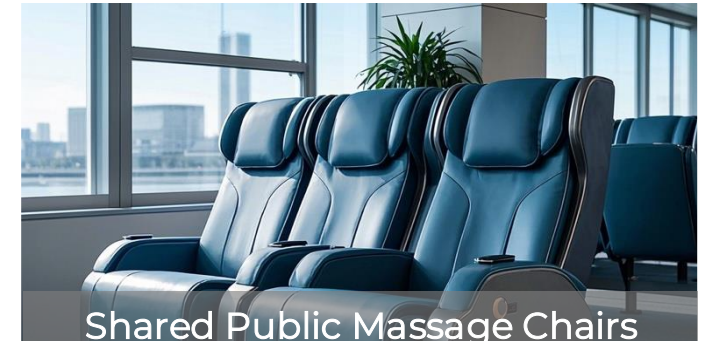
Lierda's Cat.1 modules are highly popular in the sharing economy. For various devices used in this sector, simply integrating a Lierda Cat.1 module can easily enable sharing functionality.



Public EV Charging Stations



Shared Public Washing Machines



Shared Public Massage Chairs



Shared Bicycles

China & Southeast Asia



Vending Machines

# LoRaWAN Street Light

Lierda

Lierda LoRaWAN-based smart street lighting solutions offer energy-efficient dynamic dimming, remote management via IoT integration, multifunctional sensors for data-driven insights, and sustainable solar-powered designs, optimizing cost and efficiency for smart cities.

## NETWORK SERVER



Unicore3.0 NS

## GATEWAY



## TERMINAL EQUIPMENT



SPAIN



GREECE



SAUDI ARABIA



MALAYSIA



THAILAND

Lierda's diverse range of IoT modules, including 5G, Cat.1, NB-IoT, LoRaWAN, BLE and Core Module, are widely adopted in various industrial control applications such as smart manufacturing, smart grids, industrial automation, and intelligent logistics. We empower customers across industries to rapidly implement desired functionalities through our modules' capabilities in data collection, remote monitoring, device interconnection, and real-time communication, while offering flexible customization and rapid deployment services to shorten development cycles and reduce operational costs.

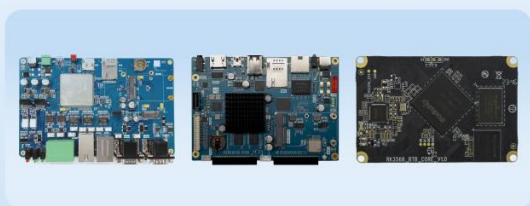
## Industrial Control Mainboard

## Gateway

## Vacuum Pump

## Industrial Lubrication Oil Pump

## BMS



China

China

North America

China & Asia

Europe



**POS**

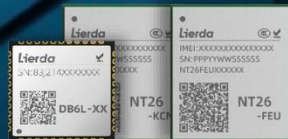


**20 million pcs/year**

China  
Southeast Asia  
Europe



**IPC**



**20 million pcs/year**

China  
Southeast Asia  
Africa



**Tracker**



**5 million pcs/year**

China  
Asia  
Europe



**Robotic-Cleaner**



**5 million pcs/year**

China  
Southeast Asia  
Europe



**Robot Lawn Mower**



**1 million pcs/year**

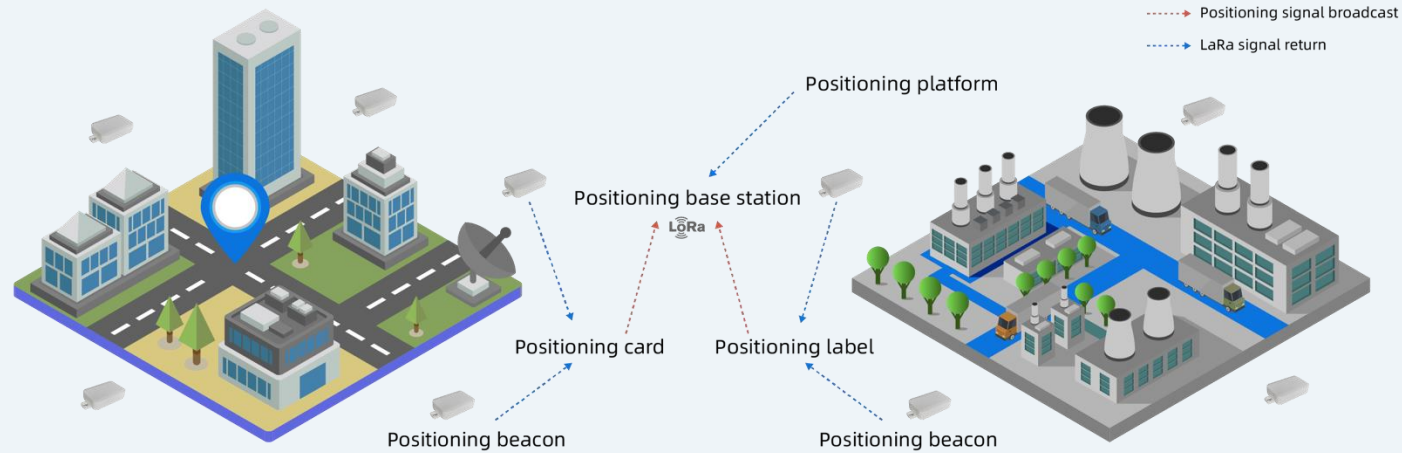
China  
Southeast Asia  
Europe

# 05

System Application Solution



# Indoor Personnel Positioning System



## Electric fence

Special area restricts personnel from entering and exiting to achieve safety management

## High precision positioning

Managers can manage online and remotely monitor personnel dynamic information

## Seeking for help with single operation

Reports can be quickly responded, displayed and notified to managers to ensure employee's safety

## Visitor management

Refined, digital, and intelligent management of visitors to improve customer test experience

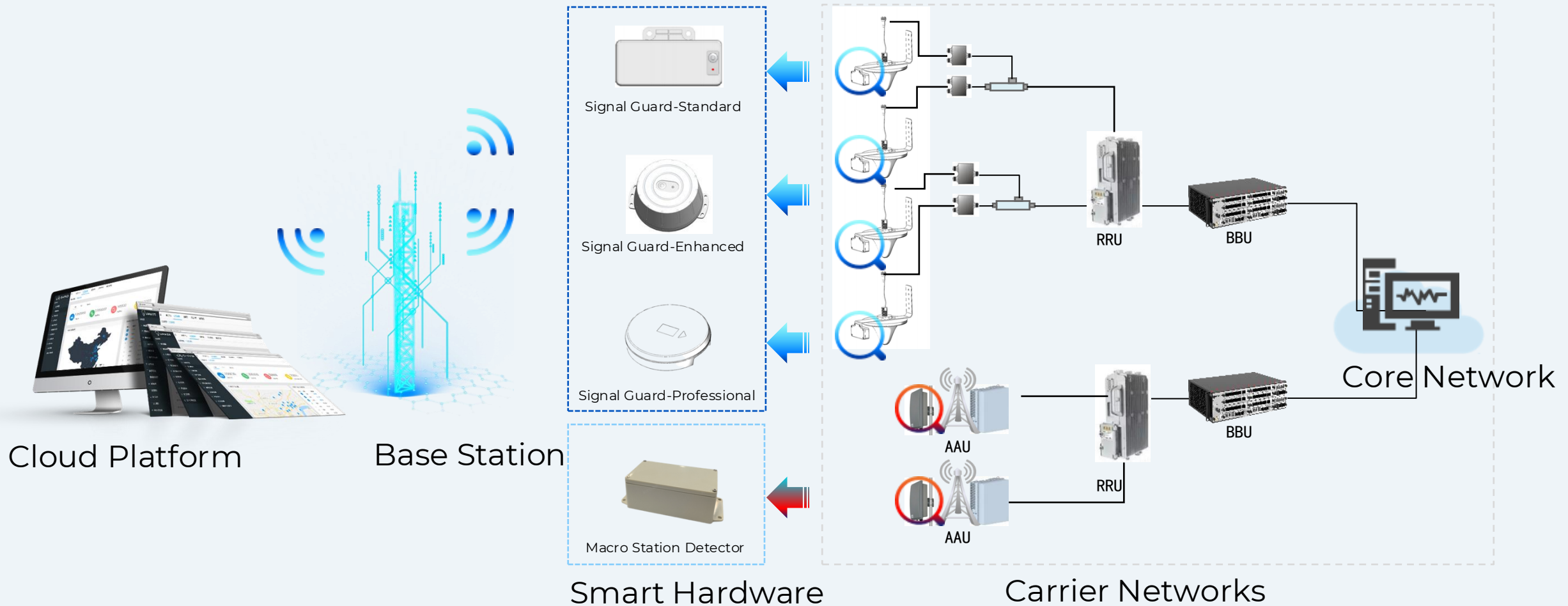
## Double "0" implementation

Construction without pulling wires, positioning without calibration

It is suitable for high-precision, low-to-medium frequency, low-cost, and easy-to-deploy scenarios such as factories, parks, hospitals, personnel and asset positioning, visitor management, electronic patrol, etc.

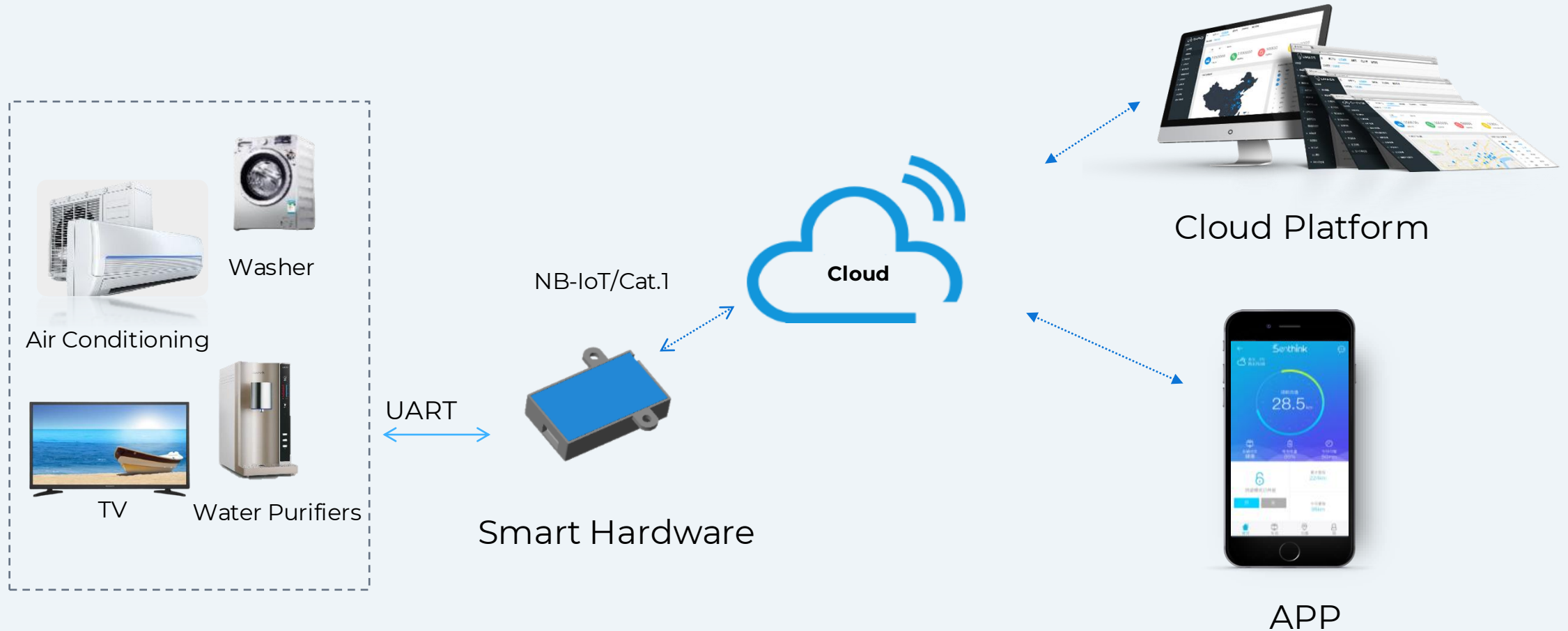
# Indoor Signal Detection System Solution

The system, developed based on cellular communication, micro-control and sensor technologies, consists of signal monitors/macro station detectors and a cloud platform. It enables effective monitoring of antenna working status and signal quality in indoor and outdoor distributed systems, as well as automatic inspection, fault location and intelligent analysis. The platform receives data from signal monitors, and through big data analysis and AI large-model algorithms, realizes the monitorable, controllable and manageable operation of passive indoor subsystems—greatly reducing O&M costs while improving efficiency and timeliness.



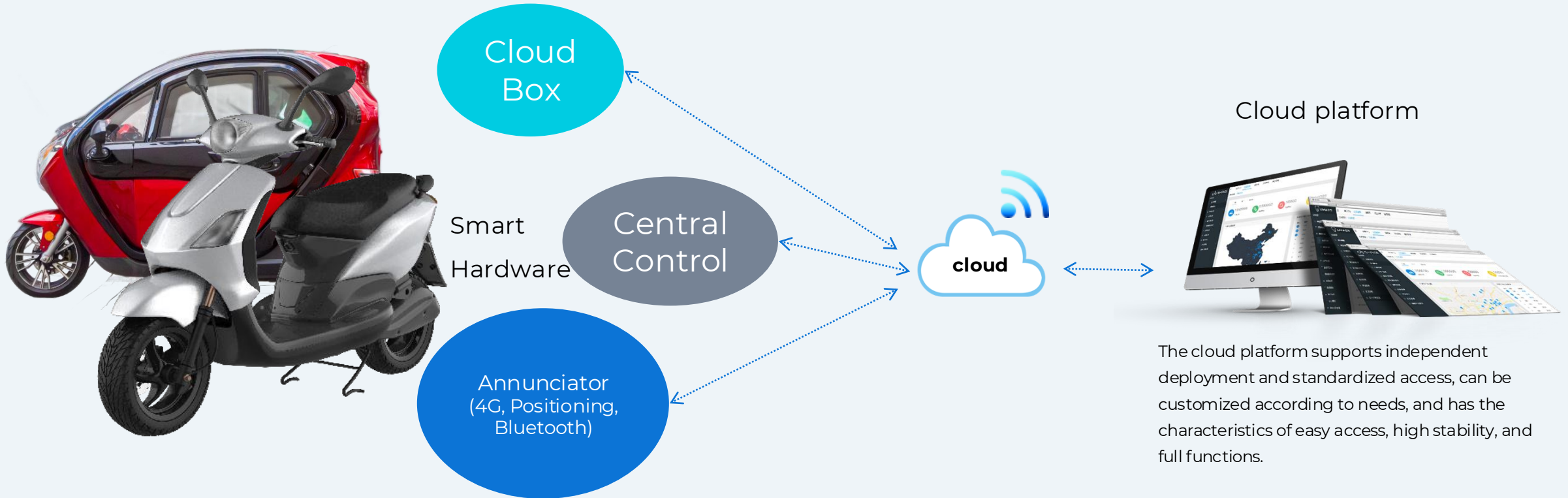
# Home Appliance IoT Solutions

The system consists of a communication board and a cloud platform. The communication board communicates with terminal devices in real time via serial ports, and uploads equipment status information to the cloud platform in real time through cellular networks, thereby enabling real-time monitoring and control management of equipment working conditions.



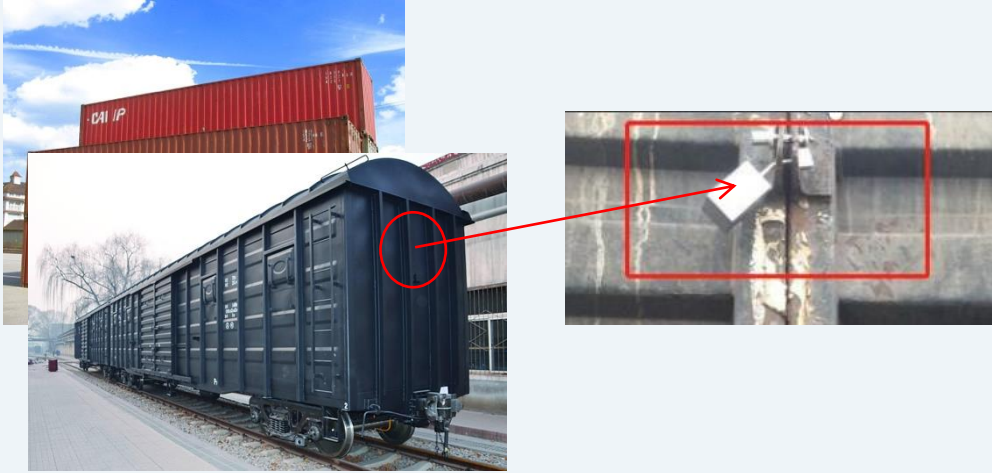
# Intelligent Solutions For Two-wheelers

The intelligent solution for two-wheeled electric vehicles connects the data bridge between the vehicle and the cloud, collects vehicle data in real time, deeply analyzes user behavior, and provides enterprises with accurate product optimization and market decision support. It is an integrated solution for intelligent hardware and cloud platforms for domestic and foreign customers such as vehicle manufacturers, electric motorcycle factories, takeaway platforms, and rental platforms.

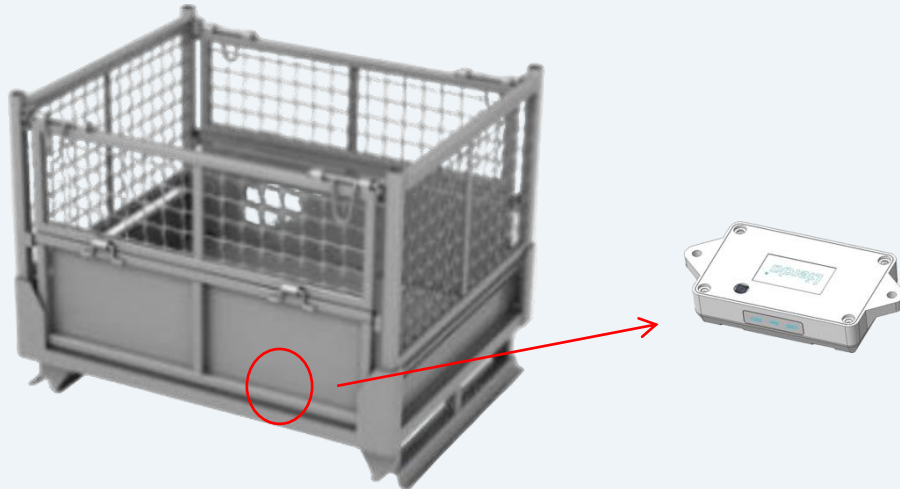


# Positioning Solutions

## Container Active Electronic Lock



## Positioning And Operation Management System Of Logistics Packaging Equipment



## Customer Needs

Electronic Locks

Location Tracking

Tamper Alarm

## Our solution

- Tamper alarm: Utilizing Hall effect induction, an alert is sent to the platform immediately upon lock damage.
- Status monitoring: Real-time display of the truck's geographic location and door lock status, eliminating the need for manual handover inspections during transit.
- Application scenarios: Suitable for the transportation of high-value-added goods and special goods.

## Customer Needs

Asset Inventory

High Loss Rate

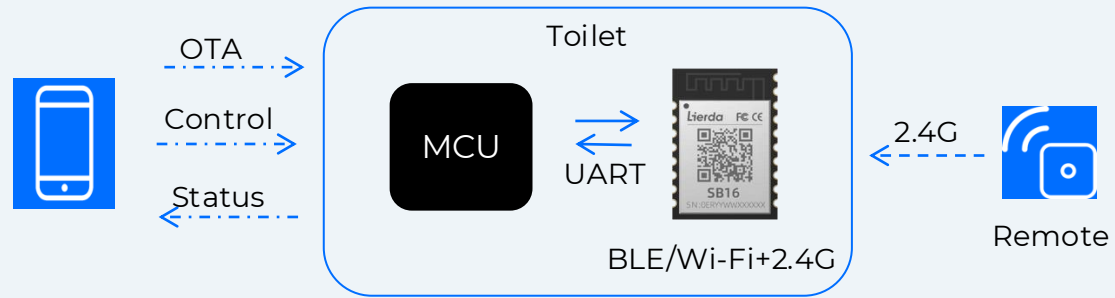
Convenient Scheduling

## Our Solution

- Positioning method: LBS + Wi-Fi positioning
- Ultra-low power consumption: 12-hour reporting frequency supports 5 years, continuous asset operation lifecycle
- Sensor detection: Light-sensing anti-tampering, motion status, and full/no-load status detection
- Electronic fence: Triggers an alarm when entering dangerous areas, And enables AI-based statistics on warehouse entry/exit and circulation.
- Operational services: Route scheduling, on-site inventory, fault dispatching, report generation, etc.

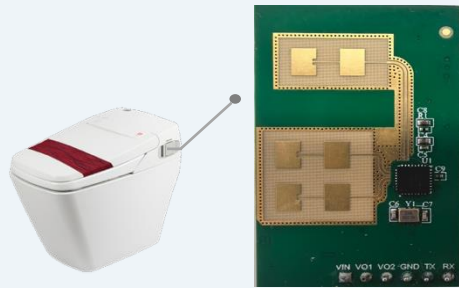
# Smart Toilet

## BLE/Wi-Fi/2.4G Communication Solution

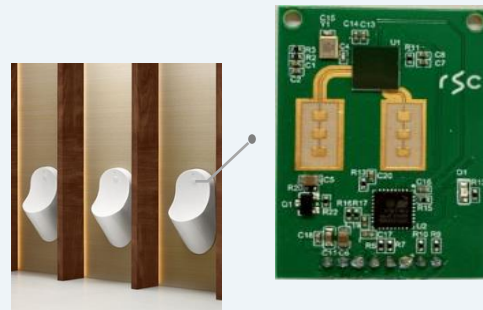


## Radar Solution

24GHz Human Detection



60GHz Human Detection



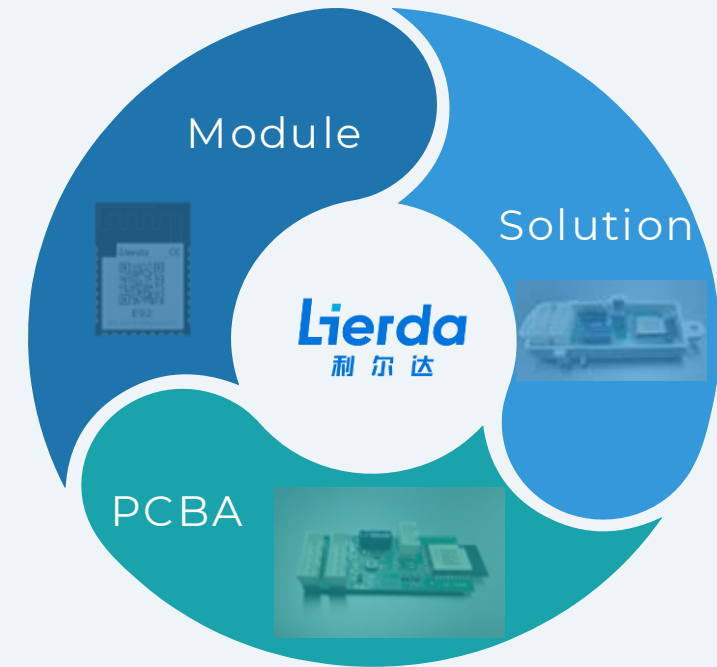
60GHz Gesture Detection



77GHz Trigger Radar



## Flexible Cooperation Model

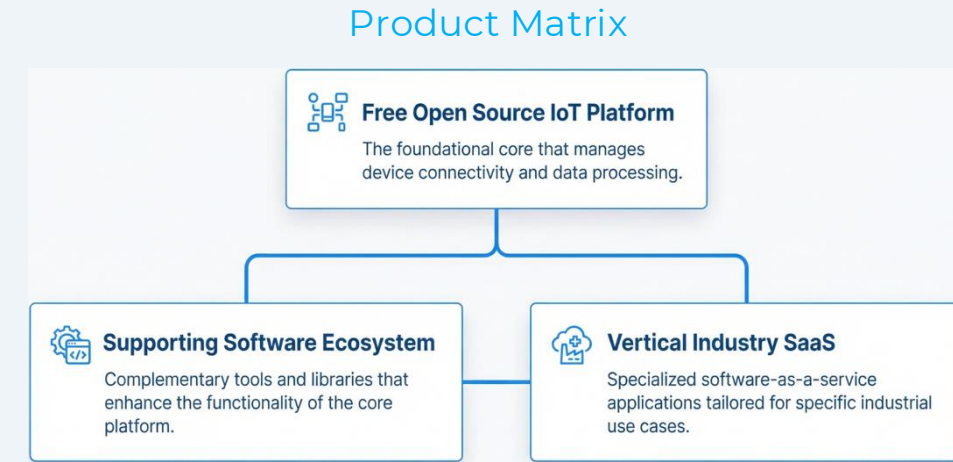
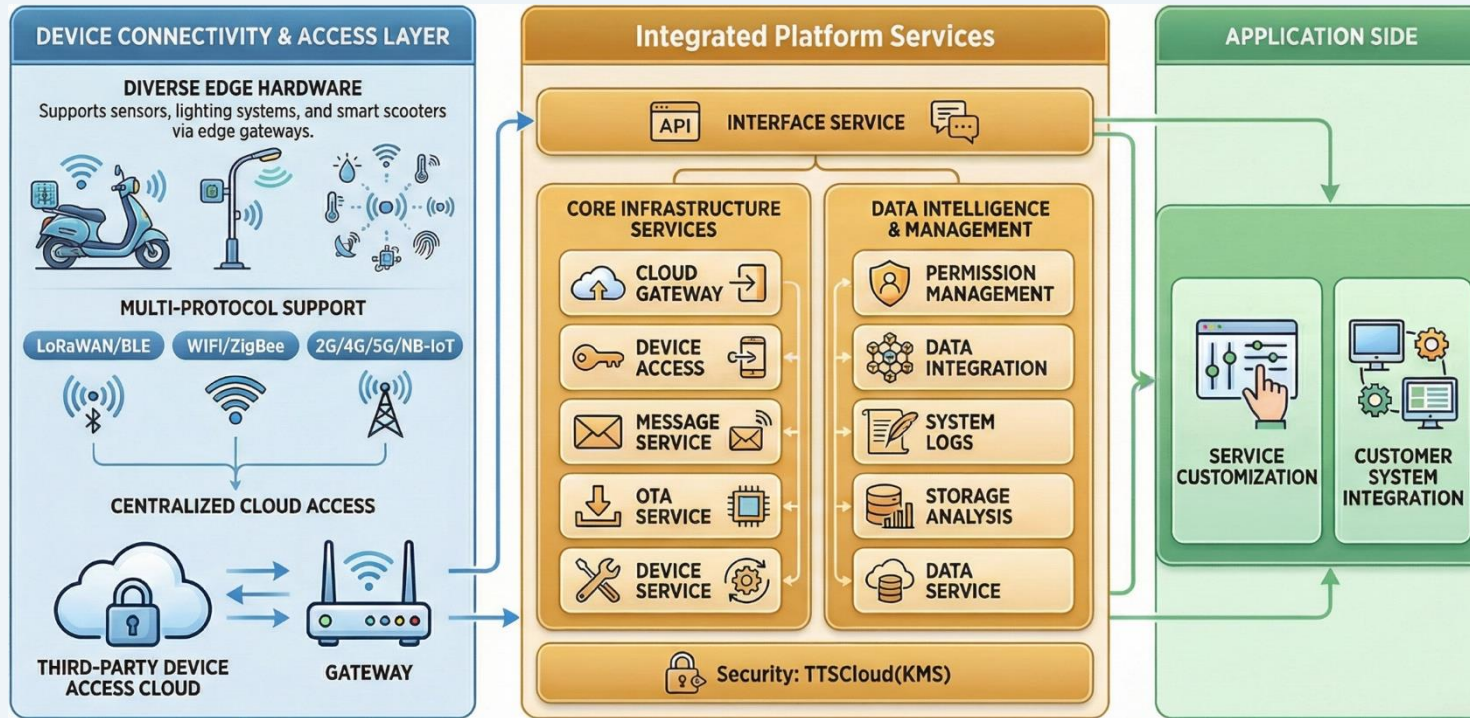


## App + Platform



# Lierda IoT Cloud Platform

## Fully Connected Platform Architecture



### High Reliability

It has massive device connectivity and concurrency capabilities, microservice architecture, cluster deployment, and supports elastic horizontal expansion.

### Stable Access

Provide stable access services and support multiple networks and protocols.

### Security

It has a variety of device authentication and transmission encryption methods to ensure device uniqueness and data transmission security.

### Low Cost

Provide a variety of low-cost remote O&M functions to reduce labor O&M costs after equipment shipment.

### Rules Engine

Provides custom rule engine configurations to support users to set complex scenario linkage, data filtering, and alarm notifications.

### Customizable

The architecture is flexible, supporting flexible deployment of public cloud, private cloud, and enterprise data center, and can also be customized and expanded according to customer needs.

# 06

EMS

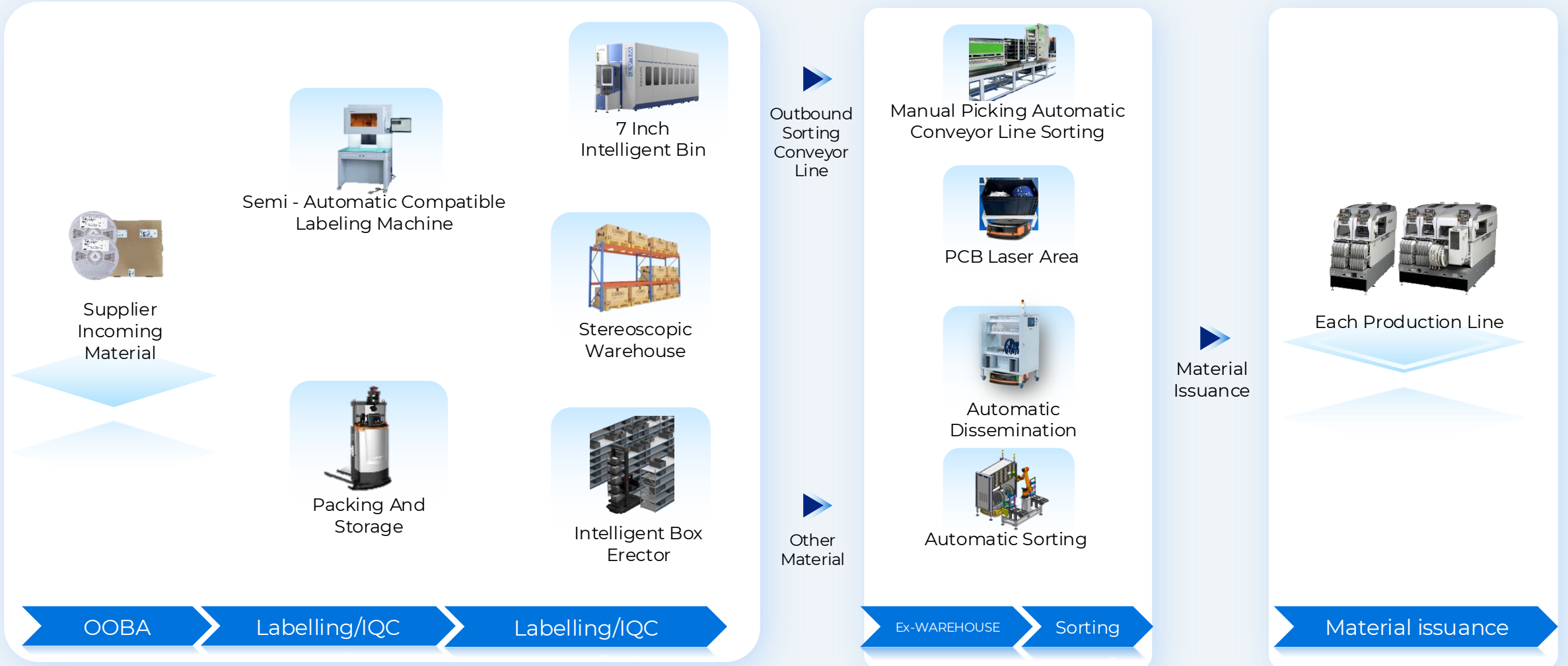
Electronics Manufacturing Services



# Intelligent Warehousing

WMS system

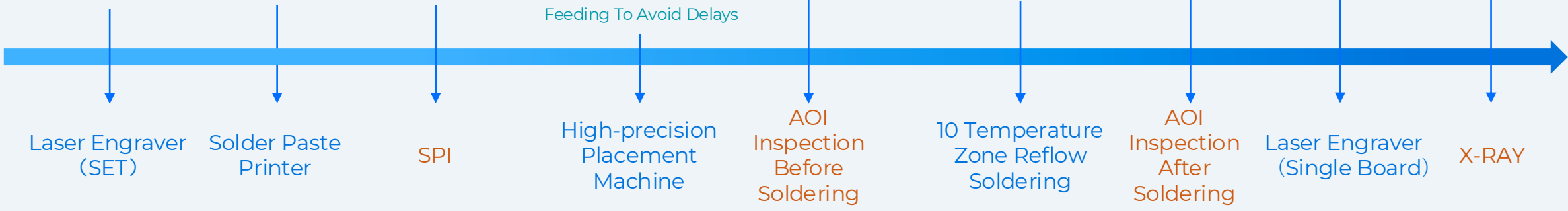
Intelligent Storage, Automatic Ingredients, FIFO, Automatic Distribution



SMT Equipment	SMT lines <b>10</b> Each line is paired with <b>SPI &amp; AOI</b>	SMT mounting capability Minitype : <b>01005</b> High precision : <b>0.35 mm BGA</b> Large size : <b>90-120 mm</b> material	<b>MES</b>  Data acquisition, Process control, Material anti-freeze
SMT patch welding pass rate <b>99.8%</b> Pass rate <b>99.9%</b>		CPK 1.8-2.0	
Mounting Rate—Materials <b>100,000+</b> per line/hour, Total Material <b>4.8 billion</b> pcs/year, IoT Module: <b>60 million</b> pcs/year			



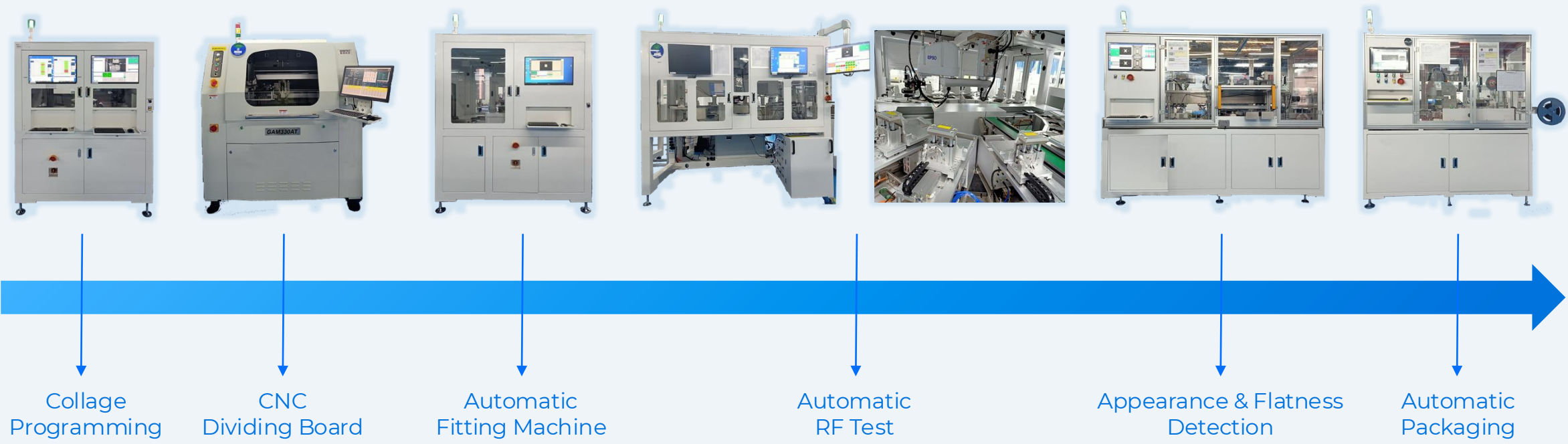
Prevent Incorrect Feeding To Avoid Delays

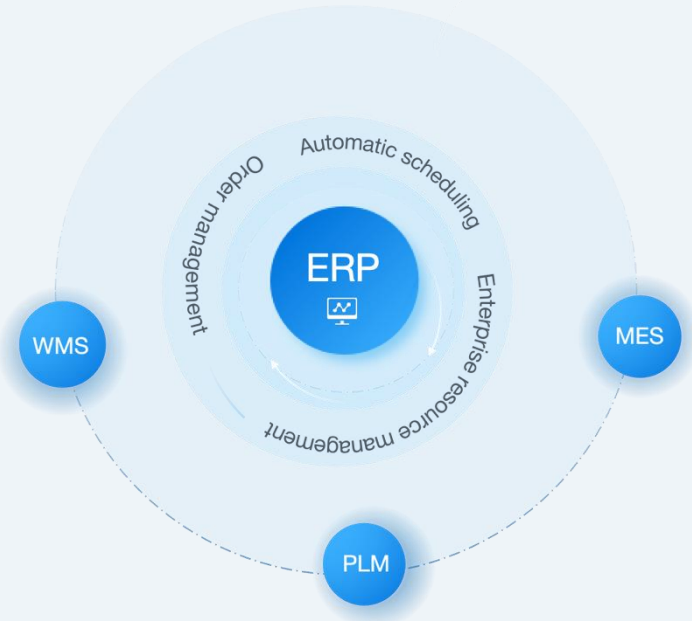


# Automated Production Workshop

Lierda

Automatic	Automatic production lines <b>7</b> Daily output of modules <b>100k+</b>	MES Process control, The test data is saved in real time	The test efficiency is improved by <b>3 times</b> Pass rate enhancement <b>2%</b>	Automation VS Manual
-----------	---	--	--	-------------------------





## Constant Temperature Shielded Room

With **12** completely isolated wireless signal of the constant temperature shielding room, the maximum removal of external interference on the product test, so that the product test value is real and effective.



N9000A  
Spectrum Analyzer



E4438C  
Vector Signal Generator



CBT 32  
Bluetooth Tester



WT-200&WT-160  
Wireless Network Tester



Multi-DUT  
wireless tester

**WMS** Warehouse Management System

**MES** Manufacturing Execution System

**PLM** Product Lifecycle Management

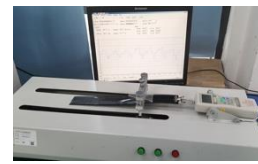
## QC Test Equipment



High precision  
LCR tester



Solderability test  
tin furnace



Strip stripping  
tension tester



RoHS test  
instrument



First article  
inspection



Secondary  
image projector



Nano spraying  
equipment

07

Antenna



# Various Application Scenarios of Antennas

Smart Metering



Cabinet Products



Microinverter



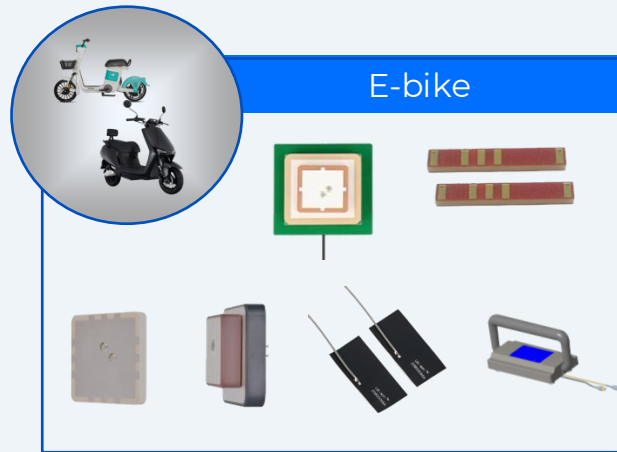
IP Camera



Small Patch Antenna



E-bike



Vehicle



Others



08

Lierda's Partner Ecosystem



# Lierda's Partner Ecosystem



MAJOR PARTNER

AUX



ACON



CONTEC



Deye 德業



GOODIX

Goertek

GOODWE



Hisense

HIKVISION



inmotion

iHORN

KOHLER



NOVOSENSE

oppo



SUNGROW



Tanda



VALUE

WILFAR

yuwell

ZENNER

ZWEELEC

Lierda

Lierda Science &  
Technology Group  
Co.,Ltd.

THANK  
YOU