Smart Property IoT Solutions

🏠 Chengdu Boost Information Technologies Inc.

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Company Profile

Chengdu Boost Information Technologies Inc. was founded in April 1999 and finished shareholding reform in June 2015, with a registered capital of RMB 60.91 million. It was listed in the National Equities Exchange and Quotations (NEEQ)in October 2015, and owns a wholly-owned subsidiary, Chengdu Boost Electric Engineering Co., Ltd.

We devote ourselves to the development of IoT system and communication devices with own intellectual property rights, and focus to application of IoT industry (including water, electricity and gas management, water quality monitoring, smart agriculture, smart buildings and smart communities, etc.) As the full member of international and domestic LoRa Alliance, we are domestic first batch of companies specialized in LoRa R&D and application.

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PART 01

Problems and Difficulties of Property Management

★ Community living development brings many problems to property management

★ Difficulties and status of current property management

community health

stolen property

low efficiency of meter reading
large pressure of advance payment

Children monitoring

fire protection

Property

Proprietor

Smart household

parking problems

community environment

community safety

energy conservation
&
emission reduction

1.2 Difficulties and status of current property management

Advance payment

Payment after power consumption mode, property has to shoulder high cost in advance

➡️

● Large pressure of capital for property
● Hard to control payment management , long time for capital recovery.

Energy consumption

Large community population , many business modes, large consumption of energy, low devices smart degree.

➡️

● unable to intensively manage and hard to monitor energy consumption, expanse and payment record, user profiles, consumption statistics.
● Time and labor consuming of manual meter reading, low efficiency

Monitoring

Less smart devices and low informatization supervision degree

➡️

●Problems such as public facilities, fire safety, environment health are hard to manage intensively and scientifically.

Therefore , it is urgent to add technical devices, deploy a complete smart property IoT management system. It cuts management cost and improve working efficiency.
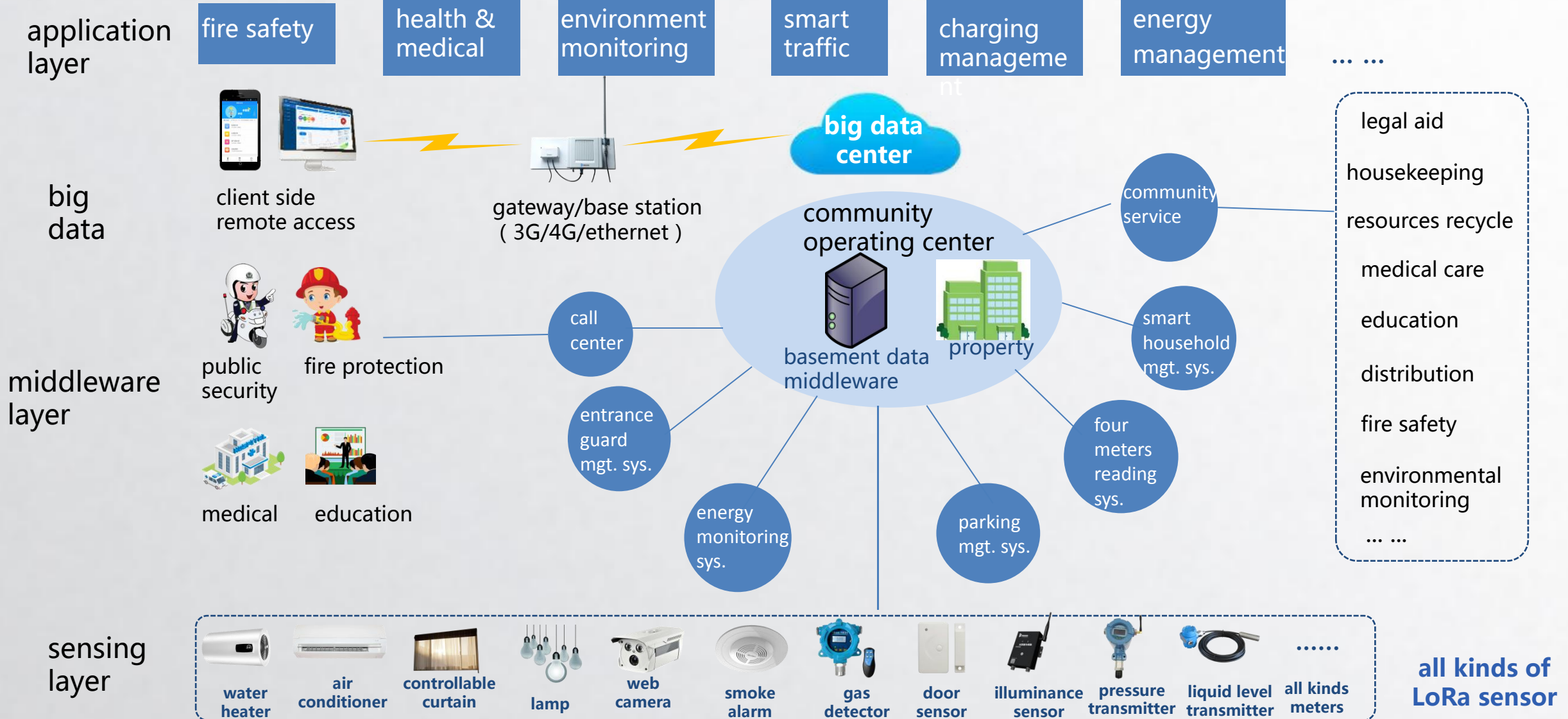
PART 02

Smart Property IoT Solutions

★ Smart property IoT solutions
-working principle topological graph
★ Smart property IoT solutions
- prepayment smart electric meter acquisition system
★ Smart property IoT solutions- supporting hardware
★ Smart property IoT solutions- - supporting software

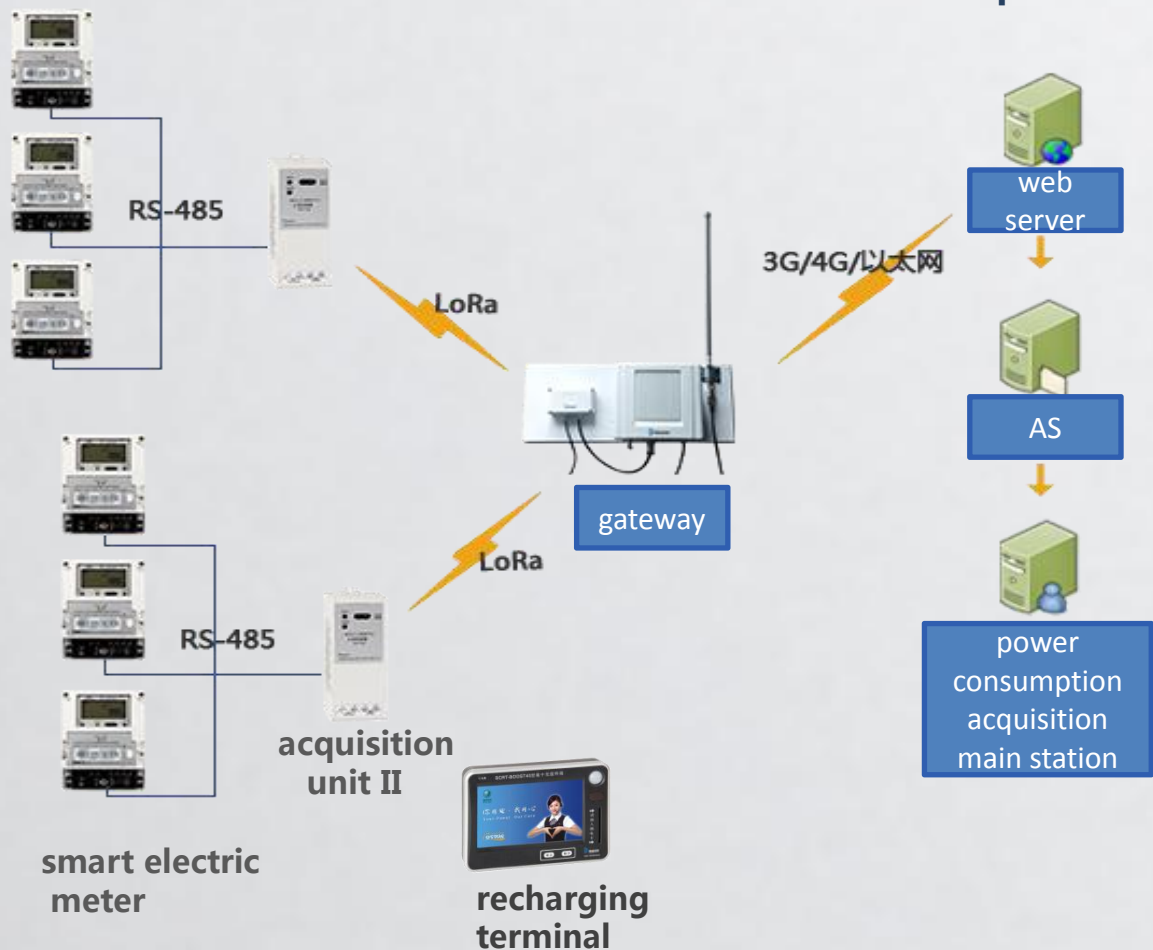# 2.1 Smart property IoT solutions-working principle topological graph

application layer

| fire safety | health & medical | environment monitoring | smart traffic | charging management | energy management | ... ... |

big data

client side remote access

gateway/base station (3G/4G/ethernet)

big data center

middleware layer

public security

fire protection

medical

education

community operating center

basement data middleware

property

call center

entrance guard mgt. sys.

energy monitoring sys.

parking mgt. sys.

four meters reading sys.

community service

smart household mgt. sys.

legal aid

housekeeping

resources recycle

medical care

education

distribution

fire safety

environmental monitoring

... ...

sensing layer

water heater | air conditioner | controllable curtain | lamp | web camera | smoke alarm | gas detector | door sensor | illuminance sensor | pressure transmitter | liquid level transmitter | all kinds meters | ......

all kinds of LoRa sensor

data acquisition

information conversion

application operation

RS-485

LoRa

3G/4G/以太网

web server

gateway

AS

acquisition unit II

RS-485

LoRa

power consumption acquisition main station

smart electric meter

recharging terminal

- **LoRa terminal (acquisition unit II)**
  data acquisition, connect with smart meter through RS485
- **LoRa gateway**
  transverter between LoRa data and server
  coverage all terminal information and submit to server
- **web server**
  route management, load balancing, rate self-adaption
  system maintenance
- **AS (Application server)**
  adjustable to specific application
  when extend service, only related terminal and application
  server should be added
  no need to reset up gateway and web server.

working structure of prepayment electric meter remote centralized reading

electric meter module
(LoRa wireless)

acquisition unit II
(LoRa wireless)

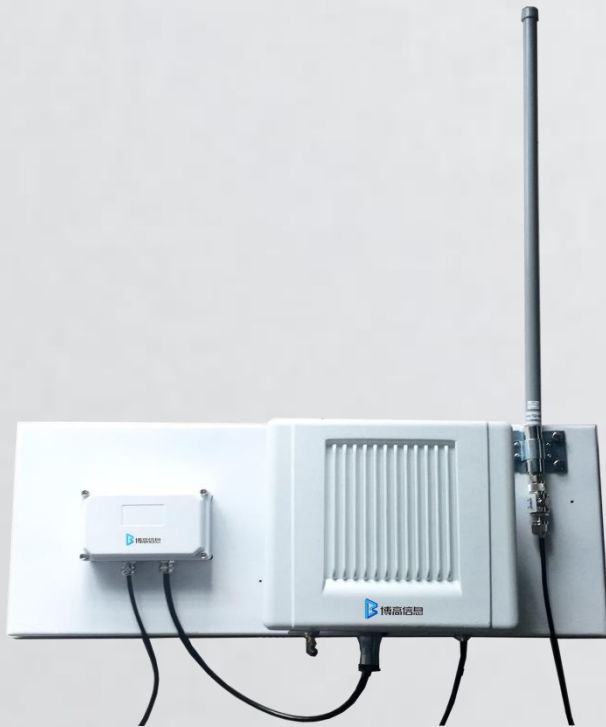multimedia centralized
recharging terminal

◆ inset in smart electric meter, connect with other terminal

◆ support LoRaWAN wireless transmission protocol

◆ Support DLMS protocol

◆ ultra-long distance and large coverage

◆ ultra-high sensitivity，up to-146dBm

◆ data acquisition, connect with smart meter through RS485

◆ use LoRa modulation technique, follow LoRaWAN wireless transmission protocol

◆ Support DLMS protocol

◆ uplink wireless channel amount up to 48, downlink up to 30

◆ local recharging of smart electric meter

◆ consumption query, local infrared debugging, remote package updating

◆ support 10/100Base-T Ethernet CATV network

LoRaWAN gateway also called LoRa base station is the key node device of low power WAN, supporting LoRa terminal location and Ethernet/4G all netcom communication, achieving multi-frequency clock and multi channel receiving at the same time.
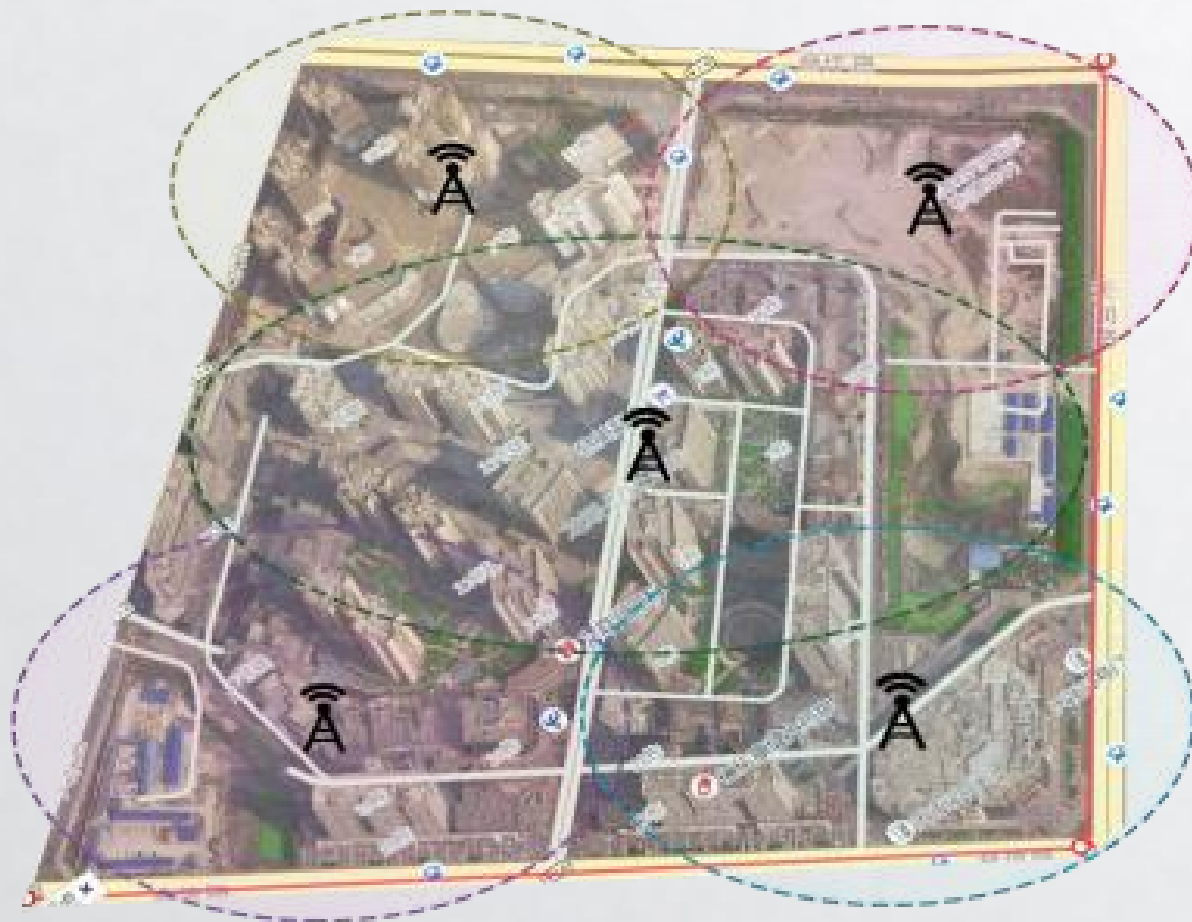
Functional characteristics

◆ support LoRaWAN protocol

◆ support Ethernet/4G all Netcom

◆ self-adaption transmission rate

◆ IP66 waterproof degree

◆ ultra-high sensitivity , up to-146dBm

◆ support LoRa terminal location

◆ multi-gateway network backup

◆ effective lighting protection
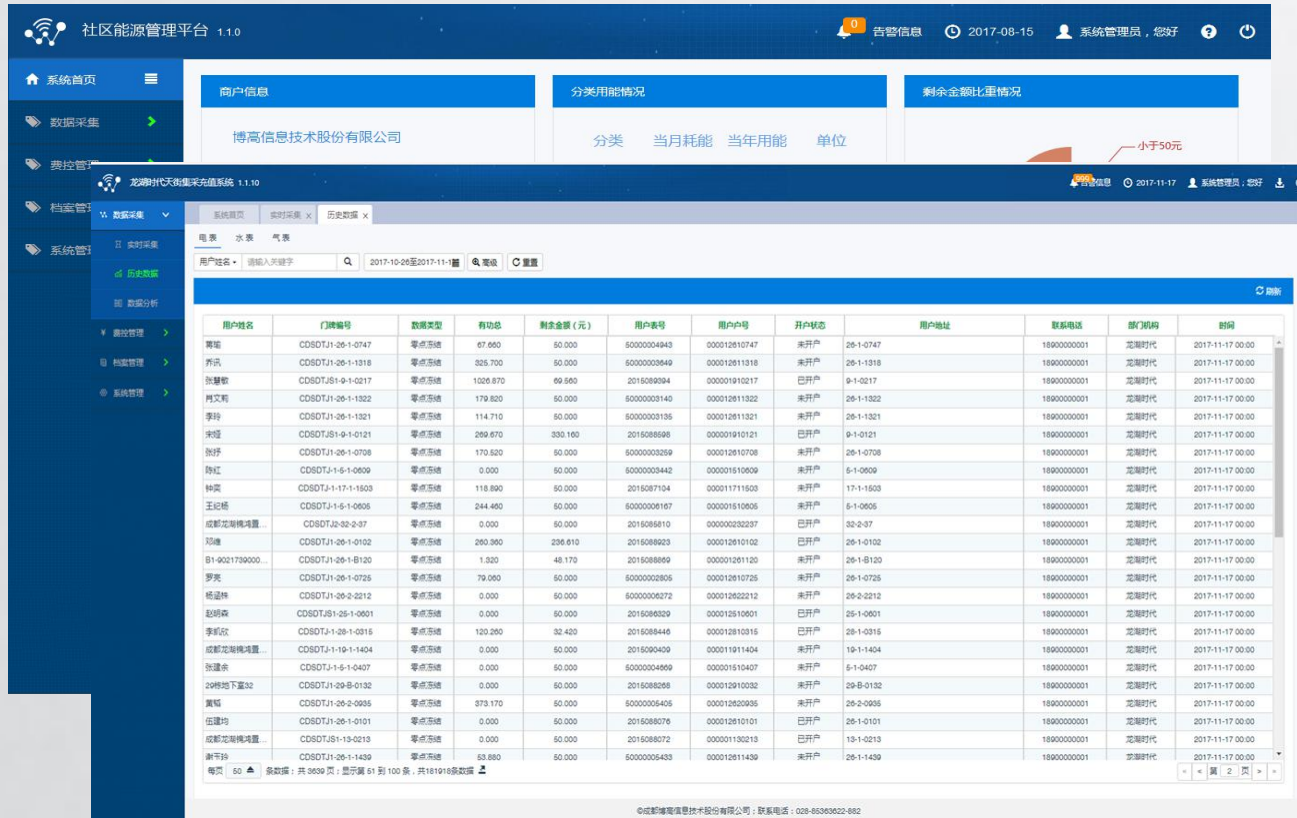
2.5 Supporting Hardware-Gateway Deploy

Deploy 5 to 10 gateway on the building roof to cover all the range of community building, outdoor environment and basement.

Community LoRa Gateway Application
Aerial View

● **Four meters remote centralized reading**
1.High management and service level of meter reading
2.Data monitoring and fault detect of all meters
3.Non-interruption of manual meter reading and charge

● **Remote switch on-out**
   Improve charging management

● Recharging, cost control and alarm
1.Pay before consumption mode (user must open an
 account and prepay cost at first electricity purchase).
 lower management cost
2.Query payment info. report power cut，alarm
 abnormal consumption
3. multi-payment modes: WeChat Pay, Alipay, and cash.

● energy consumption analysis
Statistic analysis of consumption classification, balance
ratio, daily , monthly and yearly energy consumption
conditions, abnormal conditions, etc.

2.7 Supporting Software-Main Station Energy Consumption Acquisition Sys.

real-time data acquisition

remote on-off

open account

recharging/ payment

electric price scheme

data analysis

terminal profile

role mgmt.

recharging record

improve meter reading mgmt. efficiency and service level

Data monitoring and fault detect of all meters

improving working and living environment

remote on-off

settlement & collection

non-interruption of manual meter reading and charge

meters centralized reading

control of login and operation

14

real-time query
user can query balance and consumption condition through mobile.

centralized recharging
recharging terminals are installed outside the meter boxes which brings more convenience and safety.

5

6

2

1

payment and receipt printing
user can pay the fees through mobile terminal: Alipay, WeChat pay, and can also recharge in service hall.

prepayment purchase mode
change common electric meter into prepayment smart meter. User purchase electricity in advance, open an account and recharge.

3

4

insufficient fund reminder
raise the alarm when balance is below the threshold value.

abnormal consumption alarm
power cut initiative reporting, abnormal consumption alarm

prepayment smart
electric meter
（LoRaWAN wireless）

停电

power cut reporting

main station energy
consumption sys.

dispatch list and operation

故障检查

value-added service: power cut initiative reporting

● Use LoRaWAN communication protocol to realize power cut initiative reporting, which is impossible for other communication mode.

● Raise the alarm automatically when abnormal condition happens. Property staff will inform outworkers to detect fault on the site, which improve property service and custom satisfaction.

2.10 Supporting Software–Prepayment Electricity Purchase

1 Firstly, user need to confirm whether it is the smart electric meter supporting prepayment electricity purchase.

2 User need to open an account in the service hall before the first time recharging and payment. User can recharge after creating user profile.

3 Property management staff is responsible for account opening and card writing. (write user profile and payment amount into the electric purchase card)

4 Main station will send user profile and first time prepayment amount to smart electric meter.

5 User swipe card to pay on the recharging terminal after opening an account.

Prepayment Electricity Purchase process

6 When balance alarm appears, user can use proprietor APP or official account to pay. User can also go to service hall to recharge through main station.

用电请先预付费购电

1 **Cash, Alipay, WeChat pay**

2 Secondary development of property mgmt. software

Able to conduct customized secondary development based on current property mgmt. software products.

network road testing terminal, convenient to network planning and road testing

supplement reading APP，fault detection，insure 100% success rate of meter reading

Transmit through Bluetooth to mobile. Road testing APP can check real-time network coverage and signal quality.

PART 03

Smart Property -Profit & Value

★ scheme advantages
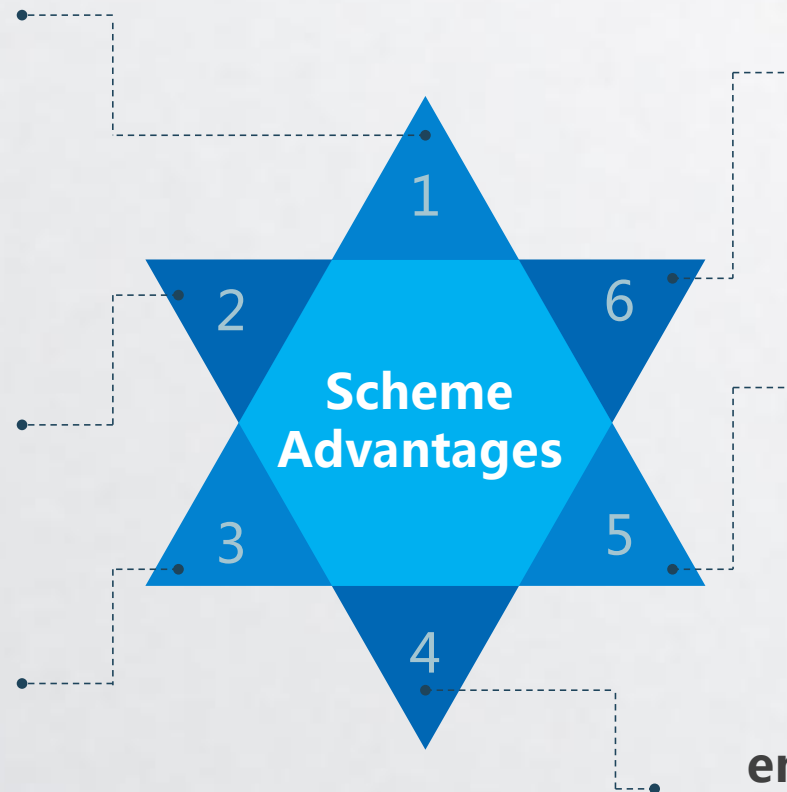★ using data comparison

Technical advantages of LoRa

LoRa network is easy to establish and deploy. It is the most widely applied IoT dedicated network communication technology.

Lower cost

Property can avoid advance payment, and reduce staff management cost.

High expansibility

Easy to expand other business based on current sys. E.g.: water, gas, electric and heat meters reading, smart household service. No need to redeploy server and gateway.

Improve efficiency

Remote acquisition of all meters data with LoRa. Faster speed, higher efficiency, free from manual operation.
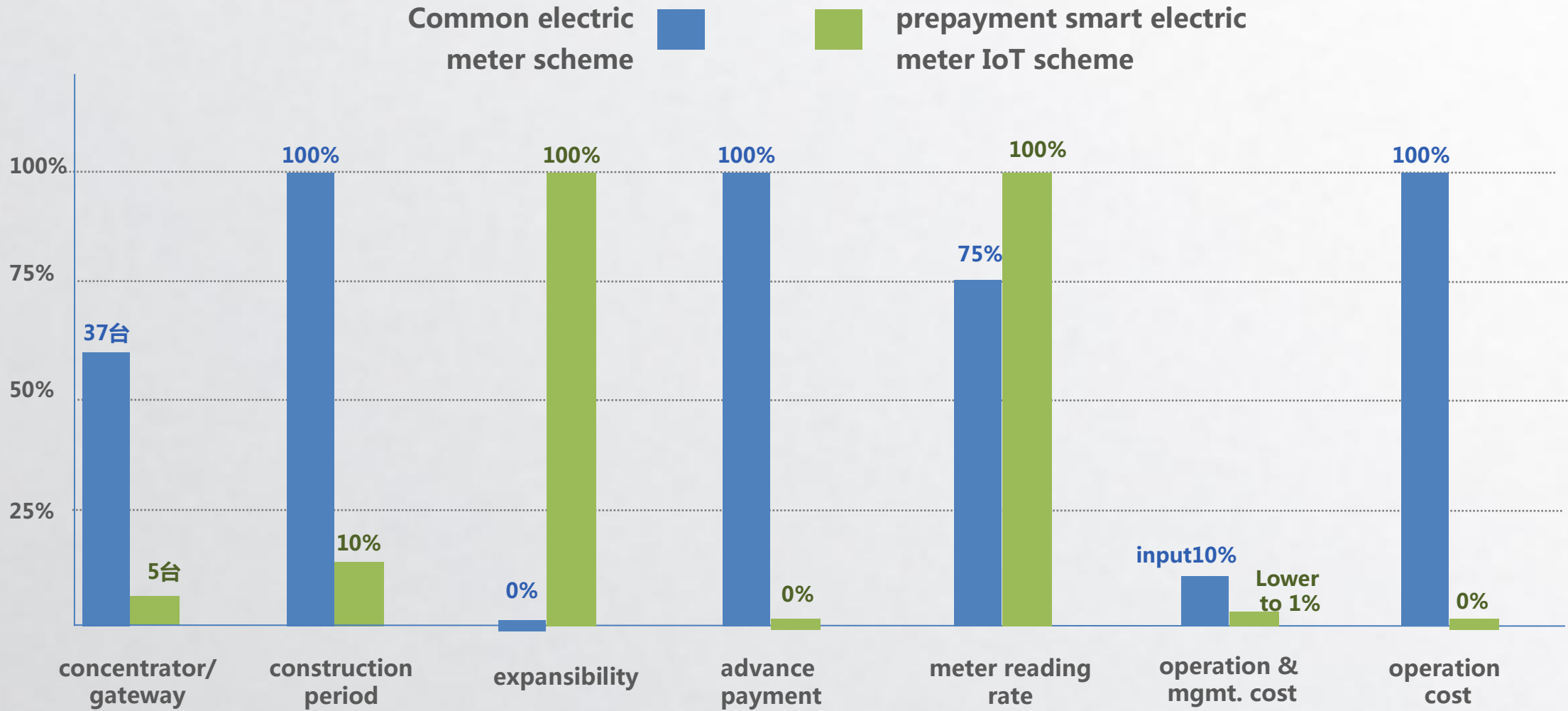
Safety control

Build self network. All sensors need to report data to local storage.

energy consumption management

Community energy management platform can analyze all kinds of energy consumption data, and work out alarm index.

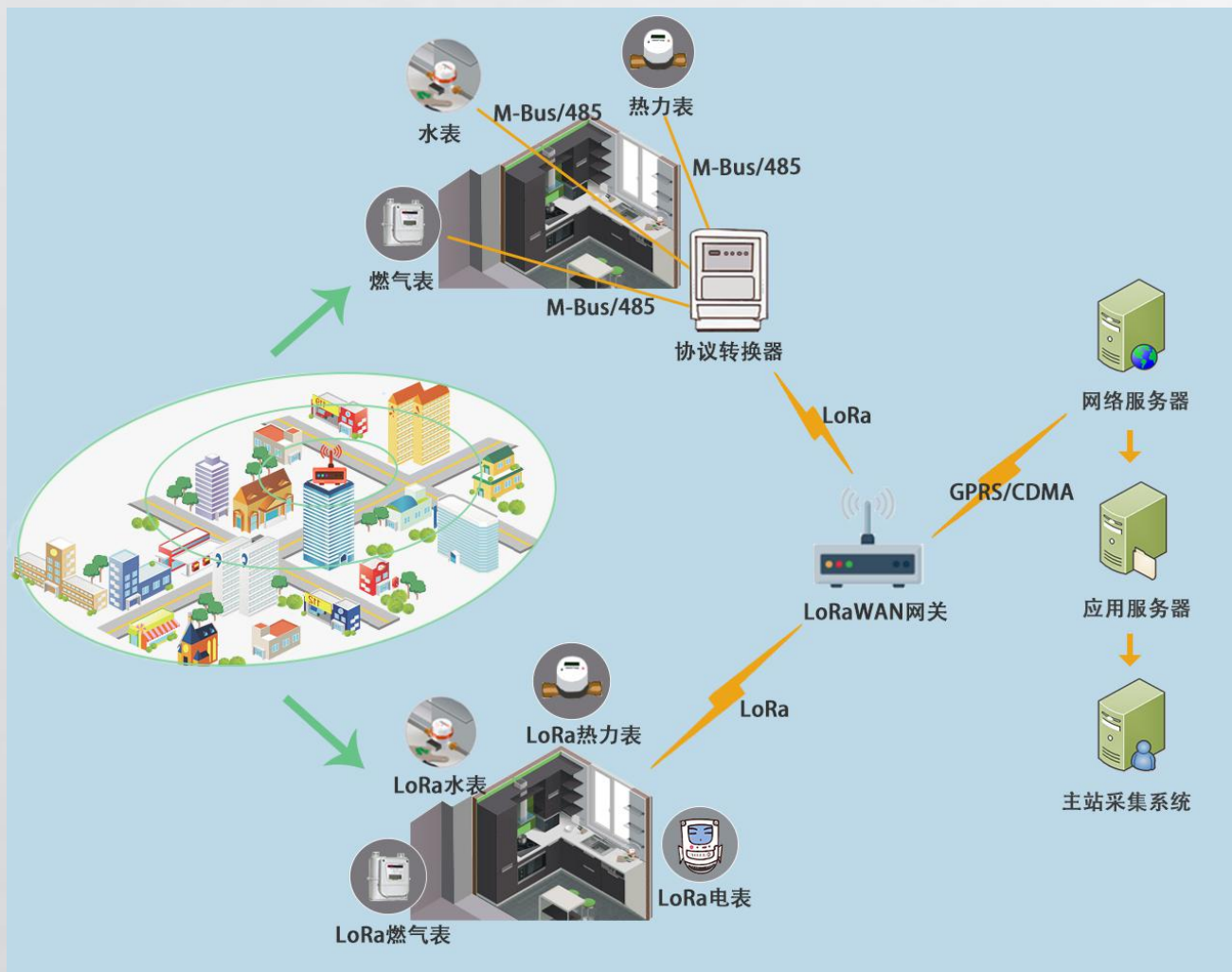**Scheme Advantages**

1
2
3
4
5
6

3.2 Using data Comparison

PART 04

Smart Property-Extend Application Scenarios

★ typical application scenarios of smart property
★ customer group and cooperation modes

- **real-time data**
  real-time reading of water, gas, electric and heat meters data. Daily auto-updating of frozen data.

- **Line loss management**
  Achieve "four divided" line loss calculation, including: divided areas, phases, voltages and lines.

- **energy analysis**
  Analysis of daily energy consumption, abnormal alarm, and link relative condition.

- **meter reading efficiency**
  Achieve remote meter reading through LoRa communication mode with higher speed.

LoRa gateway

500 - 1000 m

数据收集模块

小区温度传感器

收集及传输个人身份信息，紧急呼叫信息

无线定位接收设备

- **Location Tracker**
  LoRa advantages: Able to get location of proprietor, pets, elders and children with cards once the terminal nodes connect with network.
  According to these data, proprietor will know location of family members. E.g.: children playing place, exercising place, heart rate and pulse data of elders.

4.3 Smart Property-Smart Household Service Scenarios

web camera

smoke alarm

gas detector

electric curtain

air conditioner

lamp

electric water heater

sport monitoring

heartbeat monitoring

sleep monitoring

blood pressure monitoring

remote access of client-side
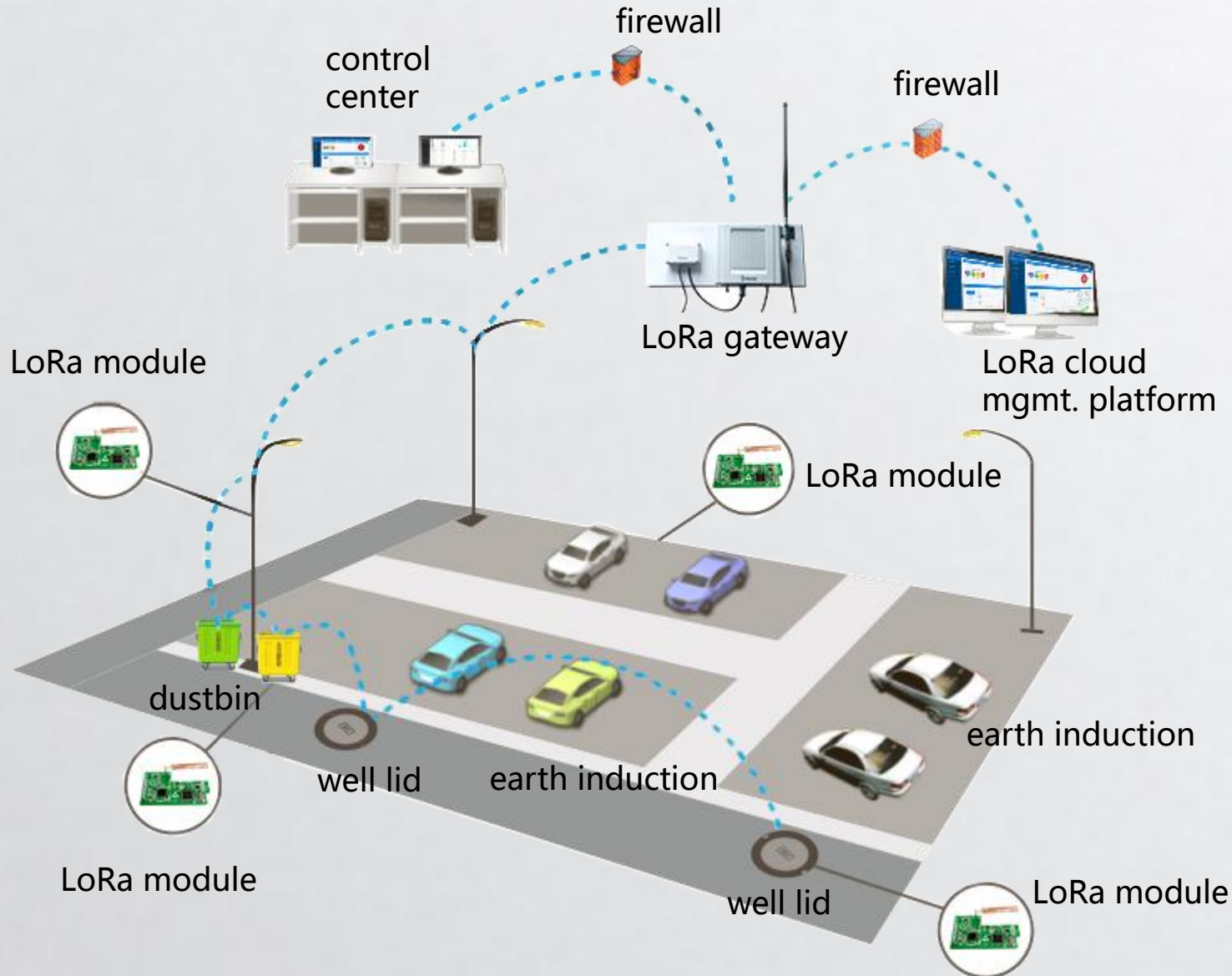
- **smart household**
  Connect all sensors, smart home appliances, wearable devices together and remotely check and control through mobiles and computers. Bring new family life with safety, leisure and enjoyment.

- **energy consumption analysis**
  Data analysis of smart air fan, indoor temperature, energy conservation control, smart air conditional, operating record.

control center

firewall

firewall

LoRa gateway

LoRa cloud mgmt. platform

LoRa module

LoRa module

dustbin

well lid

earth induction

earth induction

LoRa module

well lid

LoRa module

- **Smart parking**
LoRa geomagnetism can monitor real-time parking space, effectively solving illegal parking and difficulty of finding parking space with transparent information.

- **Street lamp monitoring**
Remote street lamp monitoring, fault detection, realizing dynamic lighting and energy conservation mgmt.

- **Smart well lid**
Real-time monitoring of community well lid location. Transmit abnormal loss, abnormal open and damage information for analysis and alarm.

- **Dustbin monitoring**
When the sensor in the dustbin monitors that dustbin is full,, alarm will raise and information will be reported to mgmt. platform.

4.5 Smart Property-Charging Pile Monitoring Scenarios

◆ Connect unified charging pile with system to realize real-time data acquisition.

◆ Manage city charging pile distribution based on GIS electronic map.

◆ Remote monitoring of charging pile real-time status, charge level acquisition.
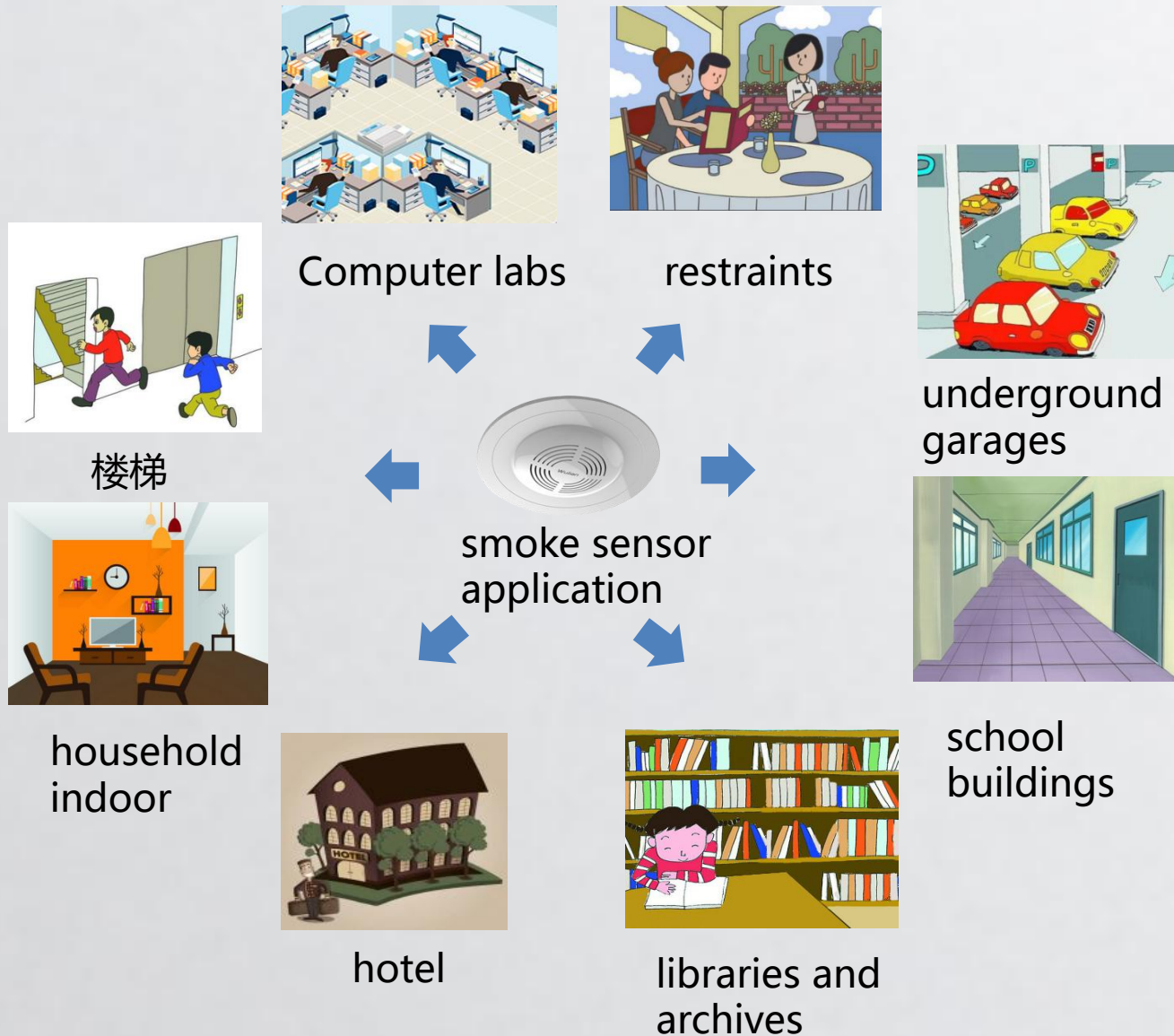
● **Charging Pile Monitoring**

Status monitoring: data acquisition and real-time monitoring of current, voltage, on-off state, protection status.

Charging monitoring : data acquisition and real-time monitoring of voltage input and output, current, power factor, charging time, charging mode and so on.

Car battery status: car battery status monitoring, e.g.: battery voltage, temperature fault and other information.

Computer labs

restraints

underground garages

楼梯

smoke sensor application

household indoor

school buildings

hotel

libraries and archives

- **Operating principle**

  Smoke sensor will give an alarm to the mobile and main station side of monitoring platform when smoke scope exceed threshold value.

- **Smoke monitoring**

  Applied newest IoT technology. Use WeChat and APP to monitor alarm platform, and realize management of all sensors.

4.7 Products Planning of Boost IoT

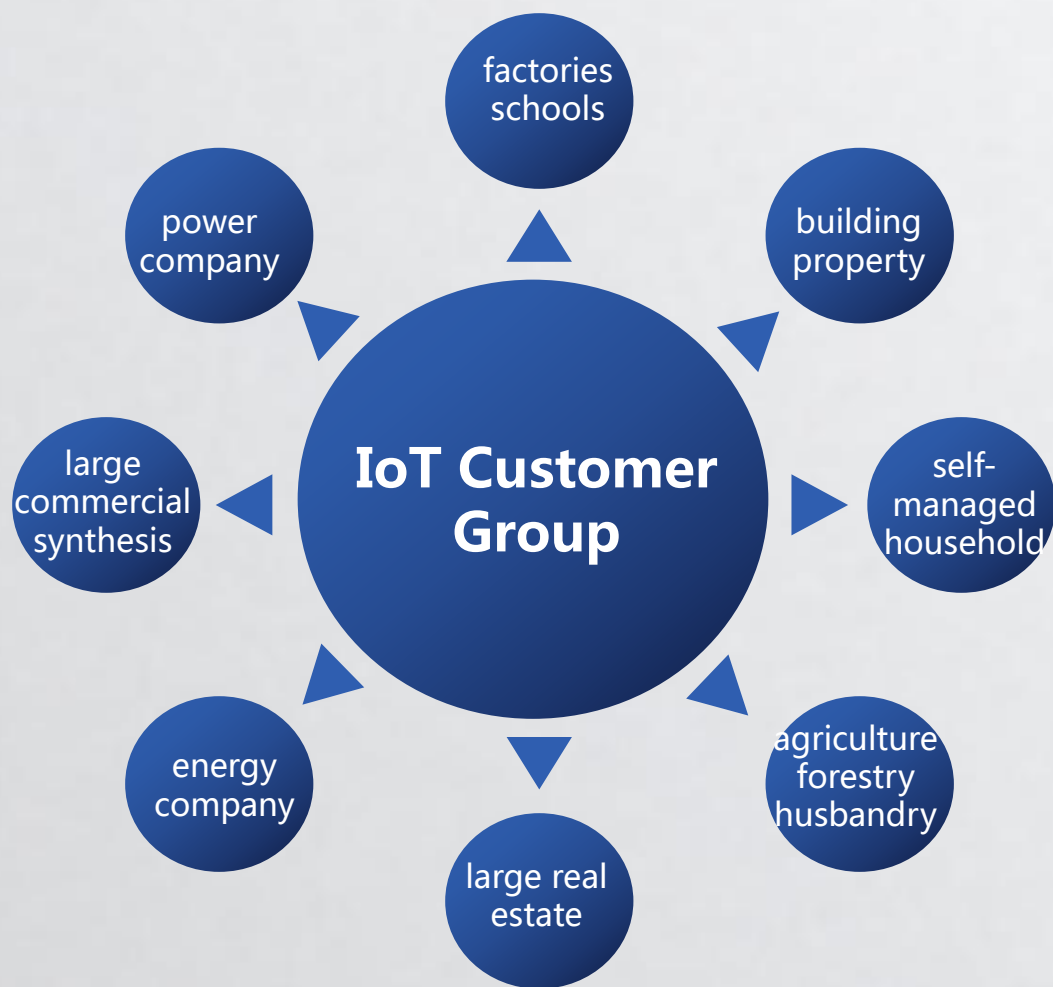| No.	Product Name	Notes		No.	Product Name	Notes
1	LORAWAN gateway	For sale		11	LORAWAN temp.&humi. sensor	In R&D
2	LORAWAN electric meter module	For sale		12	LORAWAN plate No. identification sys.	Realized
3	LORAWAN electric meter concentrator	For sale		13	LORAWAN liquid transducer	Realized
4	LORAWAN smart water meter	Small-lot production		14	Centralized recharging terminal	For sale
5	LORAWAN smart gas meter	Small-lot production		15	LORAWAN location product	In R&D
6	LORAWAN tarnsverter	For sale		16	LORAWAN street lamp controller	In R&D
7	LORAWAN standalone smoke sensor	Small-lot production		17	LORAWAN air quality monitoring	In R&D
8	LORAWAN illuminance sensor	Small-lot production		18	LORAWAN soil monitoring	In R&D
9	LORAWAN noise sensor	In R&D		19	LORAWAN pressure transmitter	Realized
10	LORAWAN well lid monitoring	In R&D		20	LORAWAN water and gas quality monitoring	In R&D

factories schools

power company

building property

large commercial synthesis

IoT Customer Group

self-managed household

energy company

agriculture forestry husbandry

large real estate

1 **Joint development**---Instrument company purchase our communication module.

2 **OEM**---。 Purchase terminal and gateway. We provide integrated solutions of products, technology and service

3 **Multi-mode cooperation** ---diversified cooperation modes and build IoT basis together.

electric meter company

water meter company

gas meter company

devices manufacturer

Contact Us

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THANK YOU

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