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Smart City IoT,
Omnipresent City Sensing Network

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Challenges to Smart City IoT

Existing wireless IoT networks may not suitable for complex scenarios in urban areas

Complex Scenarios

Huge Quantity
High Density

Deep Coverage

Wide Coverage

Interference

Limitations of Current Technologies (Example Only)

- GSM
- GPRS
- 3G
- LTE

Poor coverage, poor reliability, high cost, low efficiency

Water metering status quo:
20% water meter fails to report
70% failure due to poor coverage

Battery life:
24 months if report once/month
9 months if report once / day
3 months if report once/hour

- WiFi
- ZigBee
- ---

Limited coverage, limited connectivity

Big Trees

Wireless Signal

High Buildings

Bad Weather

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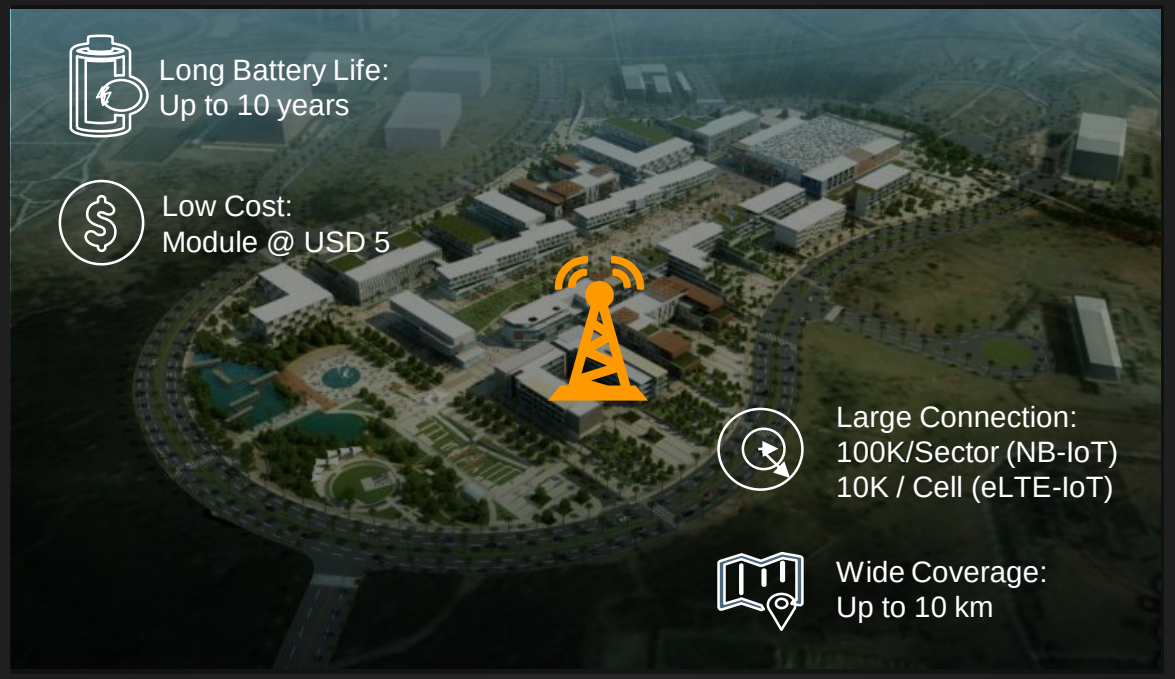
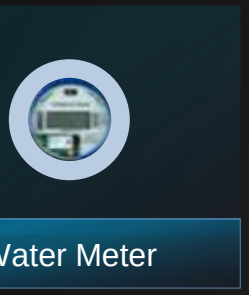
NB-IoT versus eLTE-IoT: LPWA Technology Fit for Smart City




Water Meter


Asset Tracking


Gas Meter


Smoke and Fire Alarms


Waste Bin


Lighting Control


Parking


Smart Bike


Smart Vendor

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Agile Gateway: Diverse Access Scenarios

Agile Gateway

Industry & Design

Shock-proof Dust-proof

Water-proof ESD

Numerous Interfaces

ZigBee, RF, Bluetooth, RS248, RS232, DI/DO…

Complex Protocol Adaptation

PLC, RFID, CAN, MODBUS, Wi-Fi, 6LOWPAN…

IoT, Edge Computing

Edge Computing and Storage

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Huawei Smart Elevator Solution - Predicts Faults and Improves Safety

The global elevator ownership in 2015

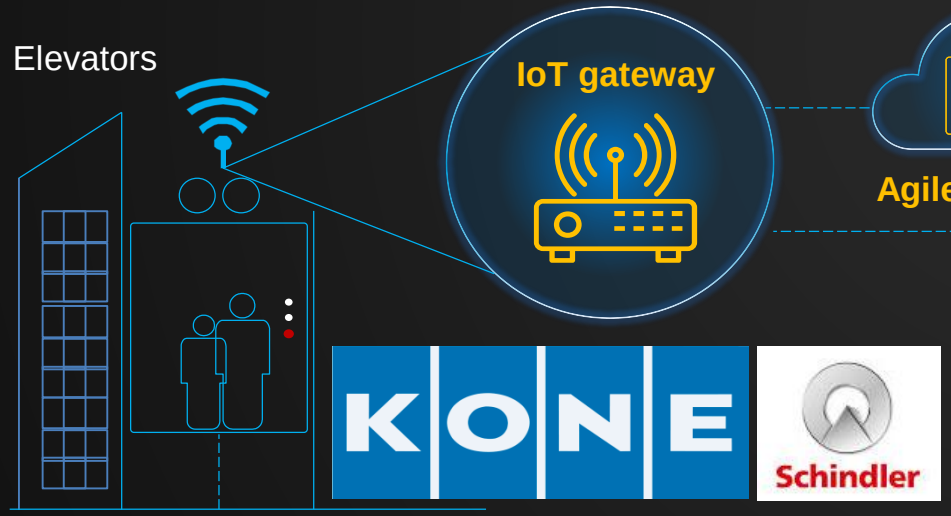
15,000,000

Long time of fault Interruption

manual alarms， Average troubleshooting time is over 4 hours

Routine **manual inspections**

At least 2 times a month



- *Predicting faults lowers service interruptions by* **90%**
- *Automatic O&M improves management efficiency* **50%**
- Improved integration efficiency **60%**

Edge Computing | **4-level Security** | **SDN Architecture** | **Management of Millions of Terminals**

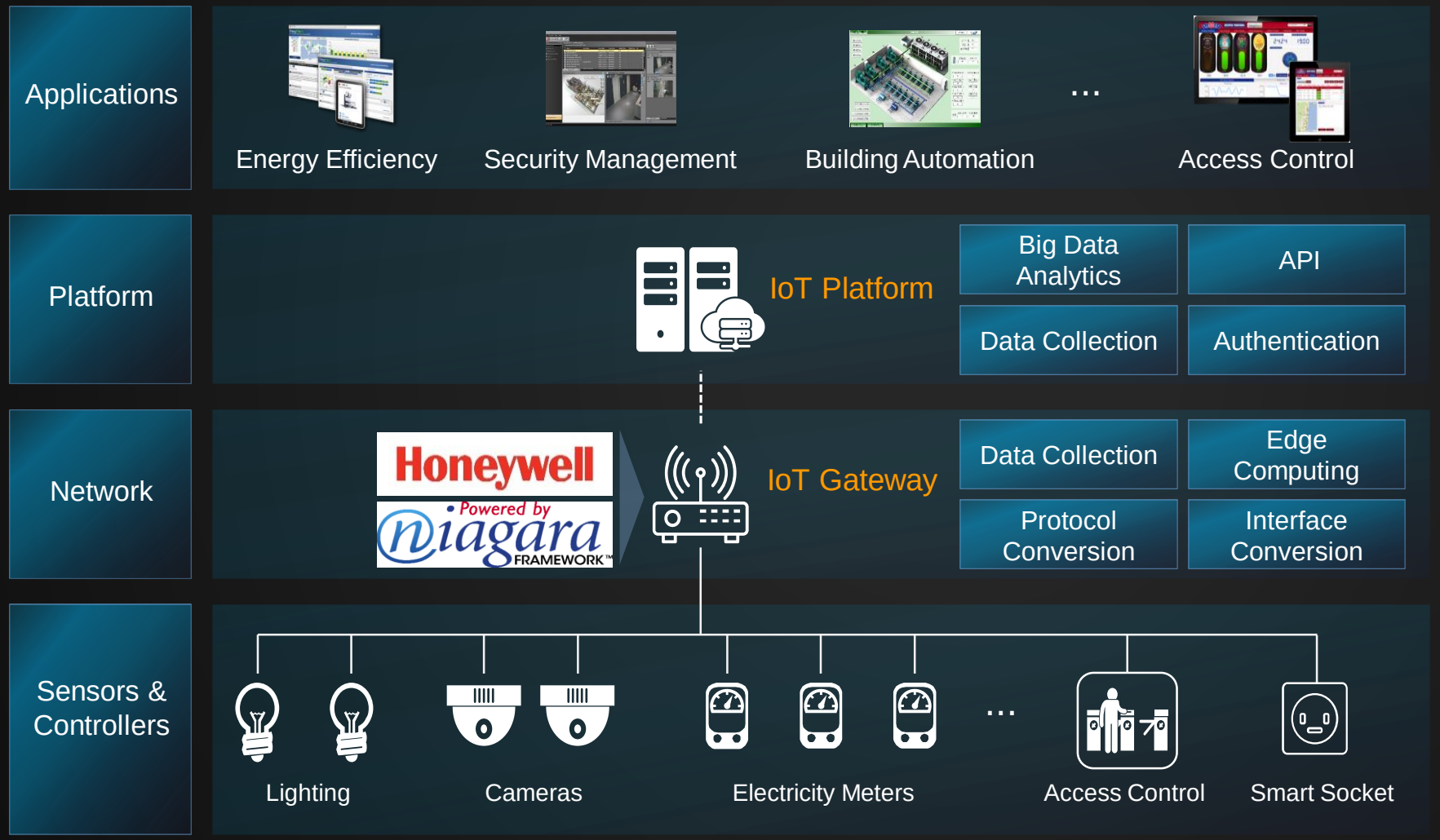
Huawei Smart Streetlight Solution - Multi-level Control

Sensor and Controller	Gateway	Management Controller	Application System

6LoWPAN Mesh Networking | Agile IoT Gateway | Agile Controller | Lighting Management

80% ↓	90% ↓	≈100%
Energy Consumption	Operation & Maintenance	Controllable Lighting Rate

Huawei Smart Building Solution on Open IoT Architecture



Solution Highlights

Multi-level Control

The two-level building control based on cloud + local IoT gateways enables reliable management in real time.

Unified Access

Huawei IoT gateways support more than 17 IoT interfaces to interconnect various facilities in various building scenarios.

Open Architecture

The Tridium-based Niagara open platform supports the quick rollout of various customized industrial applications.

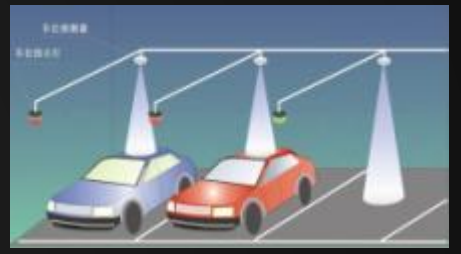
Huawei Smart Parking Solution

License Plate Recognition

Automatically capture the license plate number
Contrast with the parking card

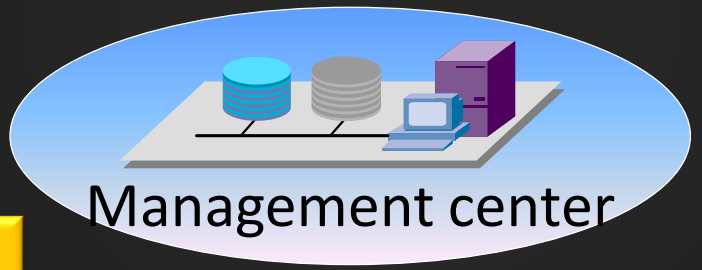
Parking Sensor

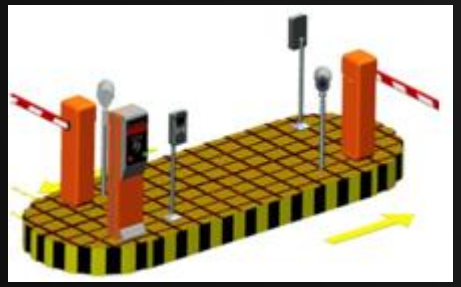
Automatically provide the real-time variability of the parking recourse



Accurate parking guidance

Intelligent sensors, real-time refresh
Accurate to the purpose of parking information





Campus card system card system

Automatic deductions
Remote credit card

Response vehicle tracking system

Quickly find their own vehicles through the finding vehicle terminal

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Huawei Smart Waste Management Solution

Challenges

The schedule and range of waste collection are not well grounded or planned.

Large carts collect small bags, resulting in improper usage of resources.

It is unknown whether the bin is full, leading to collection delays.

Solutions

Application

- ✓ Plan the optimal collection route
- ✓ Heat map analysis

IoT Platform

- ✓ Asset and data management on the IoT platform

NB-IoT Network

- ✓ Status report via the NB-IoT network

Bins with Sensors

- ✓ Real-time bin status monitoring
- ✓ Bin status prediction and report

-50%
Labor costs

+35%
Operational efficiency

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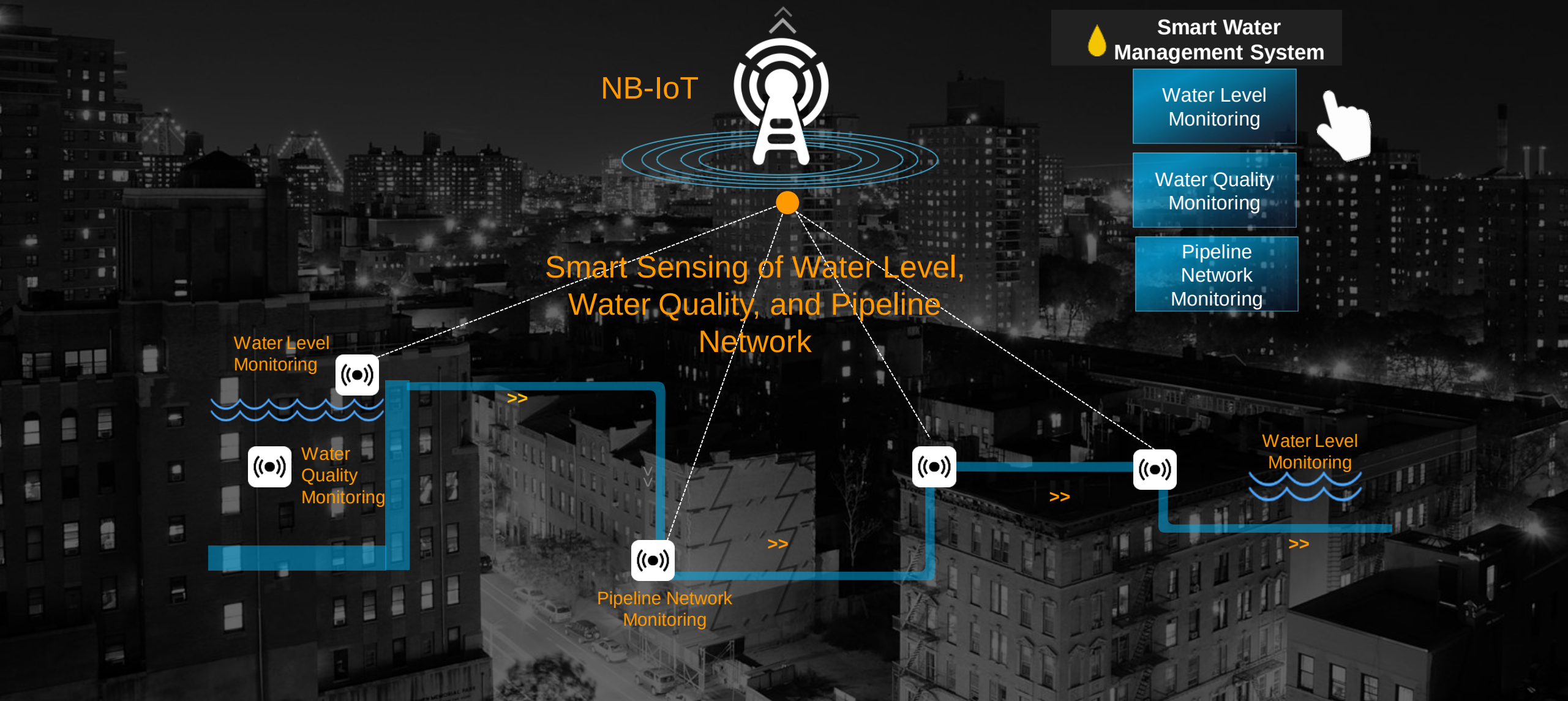
Huawei Smart Water Management Solution



Huawei Smart Fire Protection Solution

Sensors & eLTE-IoT Module

Smoke sensor

Light sensor

Alarm button

5 years battery life

NOHMI

Network

AirNode

Service Engine

Light weight
for easy deployment

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Application

Real-time detection
Smoke/temperature/flame and other dangerous

Real-time information
Device status

NOHMI

Typical Scenarios

Dormitory

Historic building

Prone to fire

Small meeting place

Wide Coverage:
Urban: 3~5KM Rural: 5~8KM

Low Power Consumption:
3~5 years battery life

Massive Connection:
One station for 10k connections

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Case Study: Smart City IoT Solution Framework for Weifang, China

- IoT ecosystem: multiple application developers involved
- One access network: NB-IoT
- One platform: unified IoT connectivity management platform
- Big data opening: IoT Big Data mining

Smart City IoT - Improves Quality of Life

Attracts Tourism

Enhances Business Opportunities

Easy to rent, return IoT via NB-IoT

Leisure, happy riding

Improves Quality of Life

THANK YOU

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THE ROAD TO

DIGITAL TRANSFORMATION