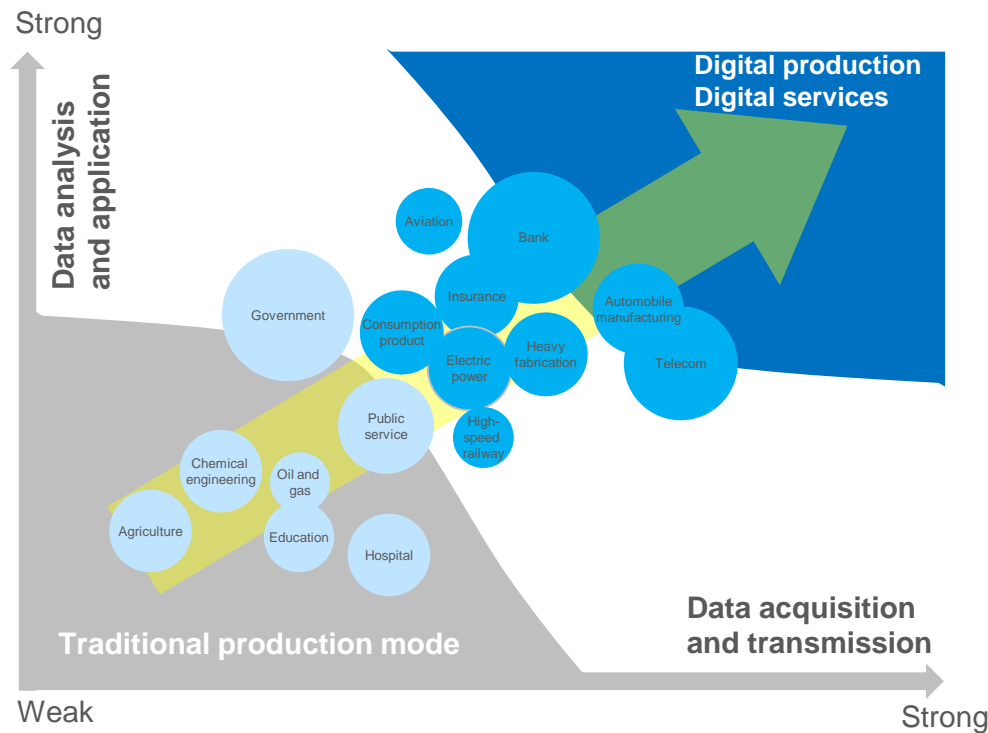# Huawei IoT Platform Helps Build Fully Connected Smart Cities

Industry Digitalization Is an Inevitable Trend, Full Connection Is the Foundation for a Smart Society

Strong

Data analysis and application

Digital production
Digital services

Aviation

Bank

Government

Insurance

Consumption product

Automobile manufacturing

Electric power

Heavy fabrication

Telecom

Public service

High-speed railway

Chemical engineering

Oil and gas

Agriculture

Education

Hospital

Traditional production mode

Data acquisition and transmission

Weak

Strong

The next decade:

- All industries are being **digitalized**.
- Traditional services will be **reshaped by digitization**.
- The ICT shifts its role from a support system to a production system. **Digital production** becomes mainstream.
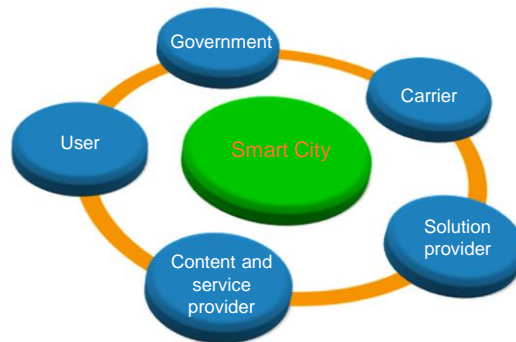
2

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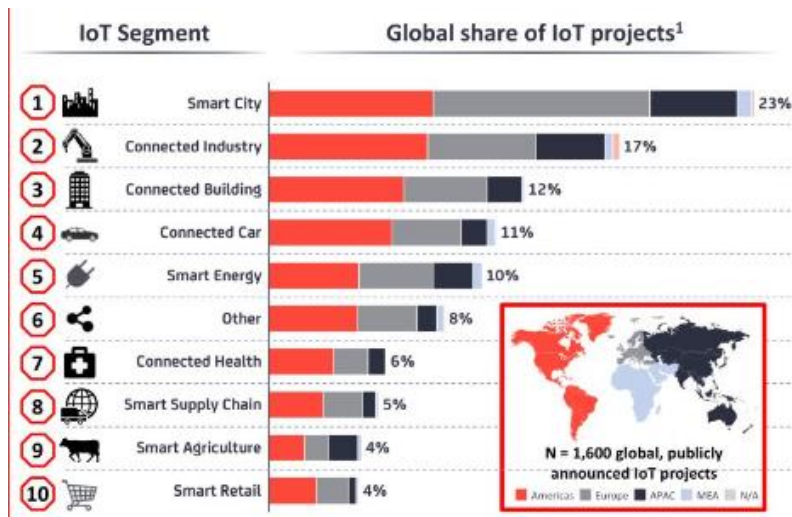# Two Trends of Smart Cities Against the New ICT Background

Trend 1: technology

GSM/UMTS/LTE/5G NB-IoT

Big data and AI

IoT

Cloud

Rapid emergence and wide application of basic platform technologies

Trend 2: industry

Government

Carrier

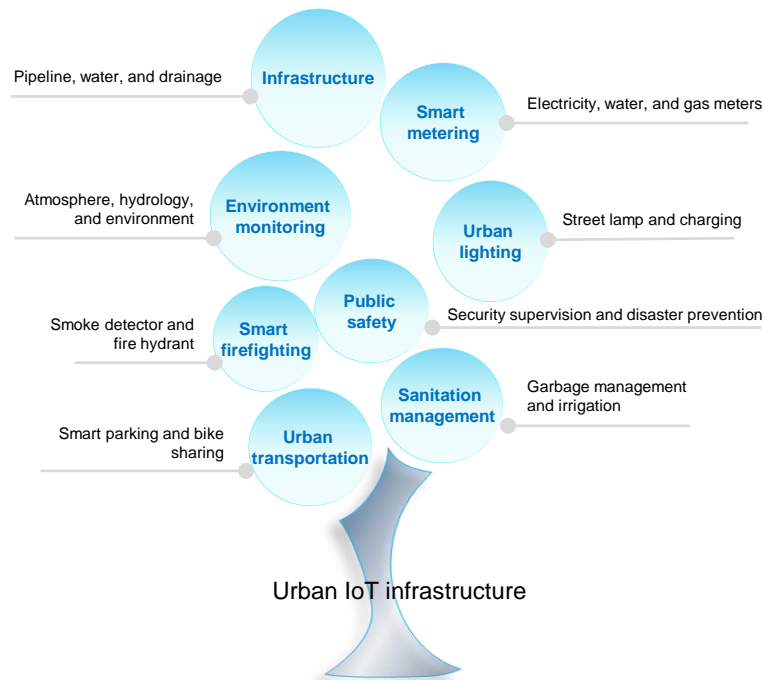User

Smart City

Solution provider

Content and service provider

Evolution from a simple industry ecosystem to a complex one

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IoT Is Rapidly Changing the Development of Smart Cities

IoT Segment	Global share of IoT projects[1]	
1. Smart City		23%
2. Connected Industry		17%
3. Connected Building		12%
4. Connected Car		11%
5. Smart Energy		10%
6. Other		8%
7. Connected Health		6%
8. Smart Supply Chain		5%
9. Smart Agriculture		4%
10. Smart Retail		4%

N = 1,600 global, publicly announced IoT projects

Americas Europe APAC MEA N/A

Source: IoT analytics 2018

Pipeline, water, and drainage — **Infrastructure**

Smart metering — Electricity, water, and gas meters

Atmosphere, hydrology, and environment — **Environment monitoring**

Urban lighting — Street lamp and charging

Smoke detector and fire hydrant — **Smart firefighting**

Public safety — Security supervision and disaster prevention

Sanitation management — Garbage management and irrigation

Smart parking and bike sharing — **Urban transportation**

Urban IoT infrastructure
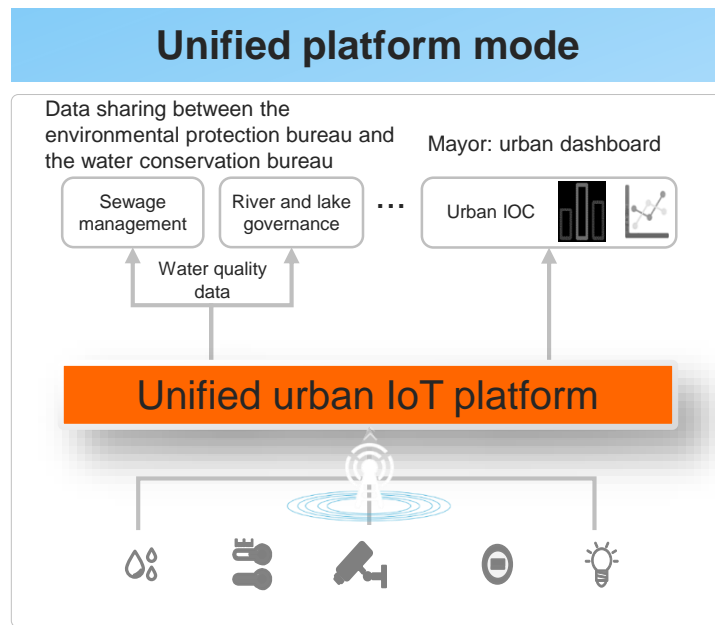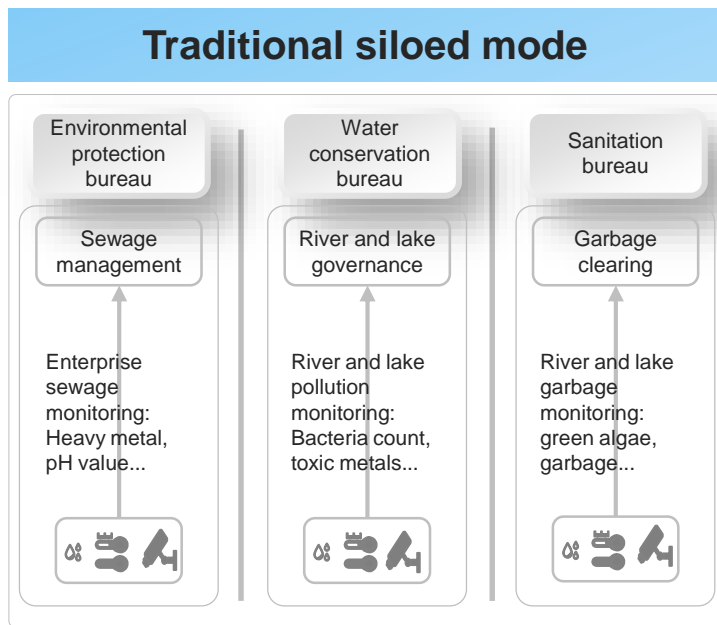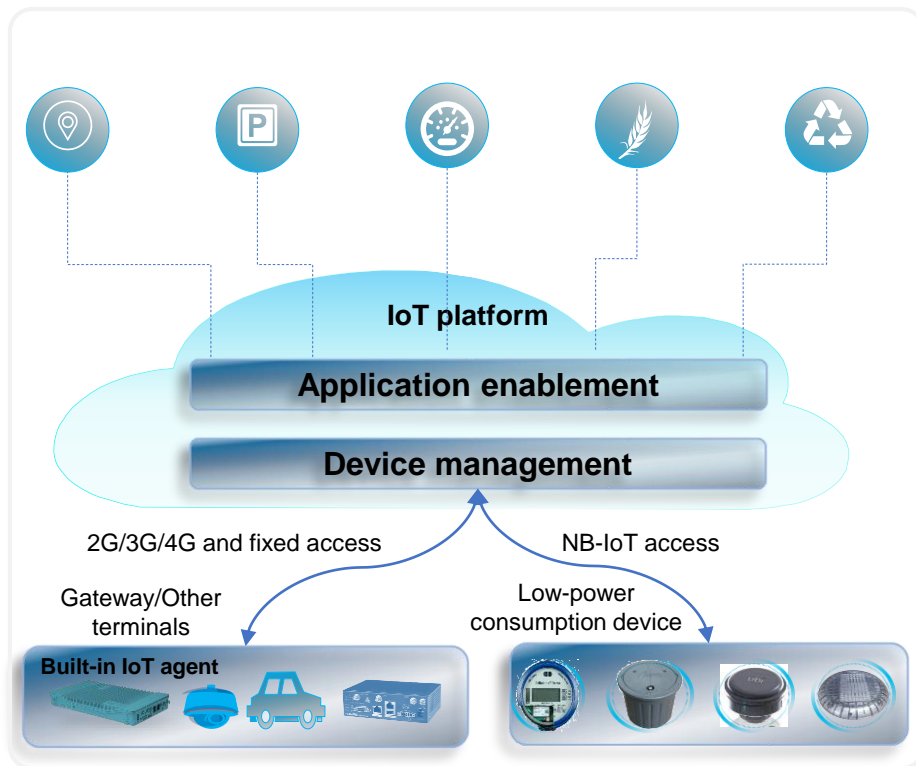
The new wireless network access technology has become a new feature of Smart Cities. The LPWA technology has been used in more than **70%** projects.

4

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The IoT Platform Has Become a Necessary ICT Infrastructure for Smart Cities

Traditional siloed mode

Environmental protection bureau

Water conservation bureau

Sanitation bureau

Sewage management

River and lake governance

Garbage clearing

Enterprise sewage monitoring: Heavy metal, pH value...

River and lake pollution monitoring: Bacteria count, toxic metals...

River and lake garbage monitoring: green algae, garbage...

Unified platform mode

Data sharing between the environmental protection bureau and the water conservation bureau

Mayor: urban dashboard

Sewage management

River and lake governance

...

Urban IOC

Water quality data

Unified urban IoT platform

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Positioning and Functions of Huawei IoT Platform in Smart City Construction

IoT platform

Application enablement

Device management

2G/3G/4G and fixed access

NB-IoT access

Gateway/Other terminals

Low-power consumption device

Built-in IoT agent

Simplifies development of IoT applications
Incubates and enables the urban IoT ecosystem

Aggregates real-time urban IoT data
Provides the comprehensive urban management system with decision-making support in real time

Provides unified access standards for IoT applications and devices
Prevents IoT applications from being fragmented

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In-Depth Network Convergence Ensures Large-Scale Commercial Use of NB-IoT Services

Massive device access

Free-of-heartbeat terminal addressing mechanism, reducing the application system overhead and terminal power consumption, and ensuring 100 million reliable connections

Quasi-real-time bidirectional communications

Downlink command caching and interwork with the EPC to determine whether terminals go online and deliver the commands in a timely manner, improving service response timeliness

System stability during high concurrency

Network-wide traffic control across applications and message scheduling based on network conditions, ensuring the stable running of the IoT application system

Transmission encryption featuring power saving

Optimized lightweight DTLS encryption mode, saving the encrypted battery power by 50% in the same security level

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Codeless Device Model Adaptation Shortens Device Integration Duration from Weeks to Minutes

- **Complex device-platform integration**
  - Java project creation
  - Debug and plug-in loading

- **Graphical developer portal**
  - Wizard device profile customization
  - Graphical code stream adaptation and development
  - Automatic plug-in generation and loading

Flexible Dashboard Improves Urban IoT Management Efficiency
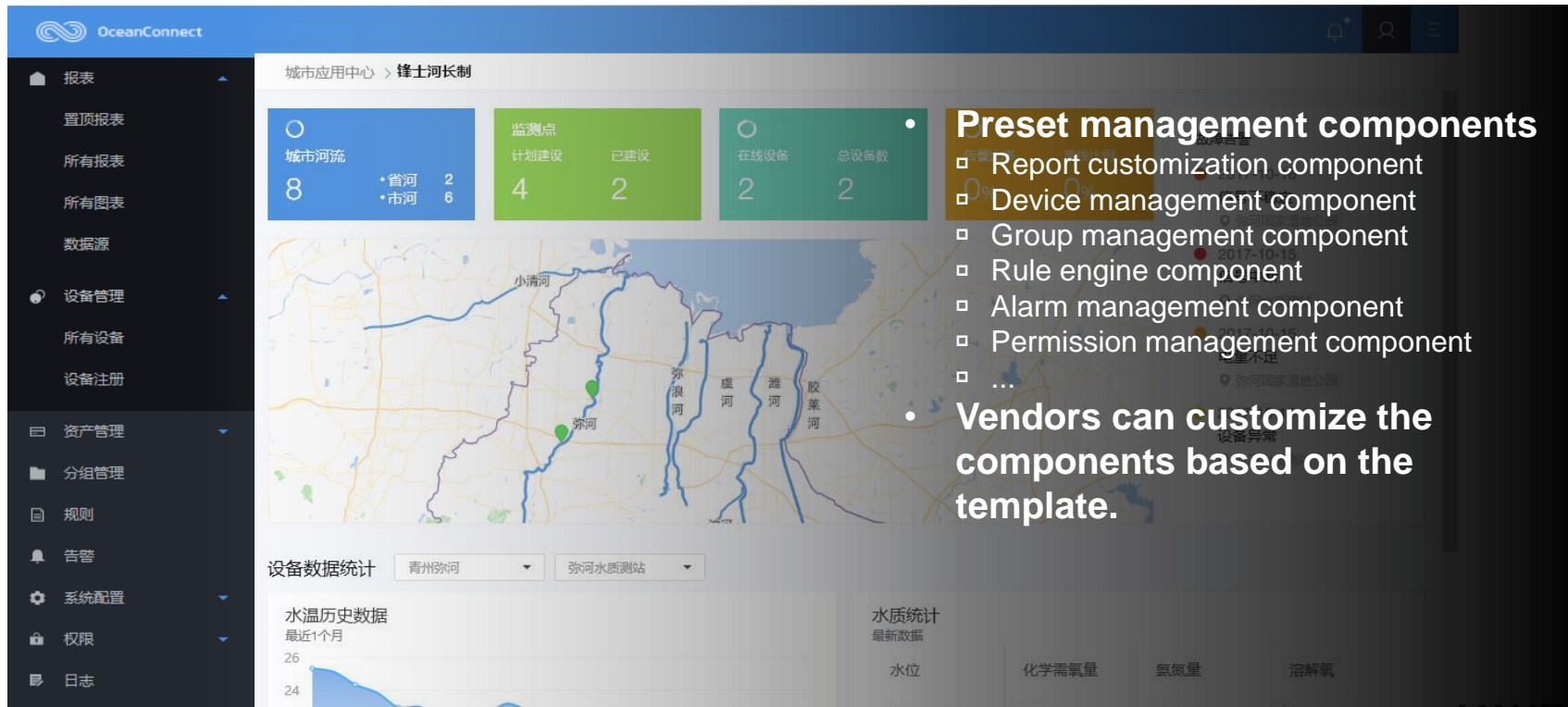

Preset management components
- Report customization component
- Device management component
- Group management component
- Rule engine component
- Alarm management component
- Permission management component
- …

Vendors can customize the components based on the template.

Aggregating Real-Time Urban IoT Data to Provide Decision-Making Support for Comprehensive Urban Management

Huawei Provides Comprehensive Support for Building the Urban IoT Ecosystem

Capability sharing

- Smart Home
- Connected Car
- Smart City
- Industrial Manufacturing
...

Partner enablement

- Developer Community
- Global OpenLabs

Integrated development

- Basic/Industry Open APIs
- Developer Portal

Marketing

- Marketplace

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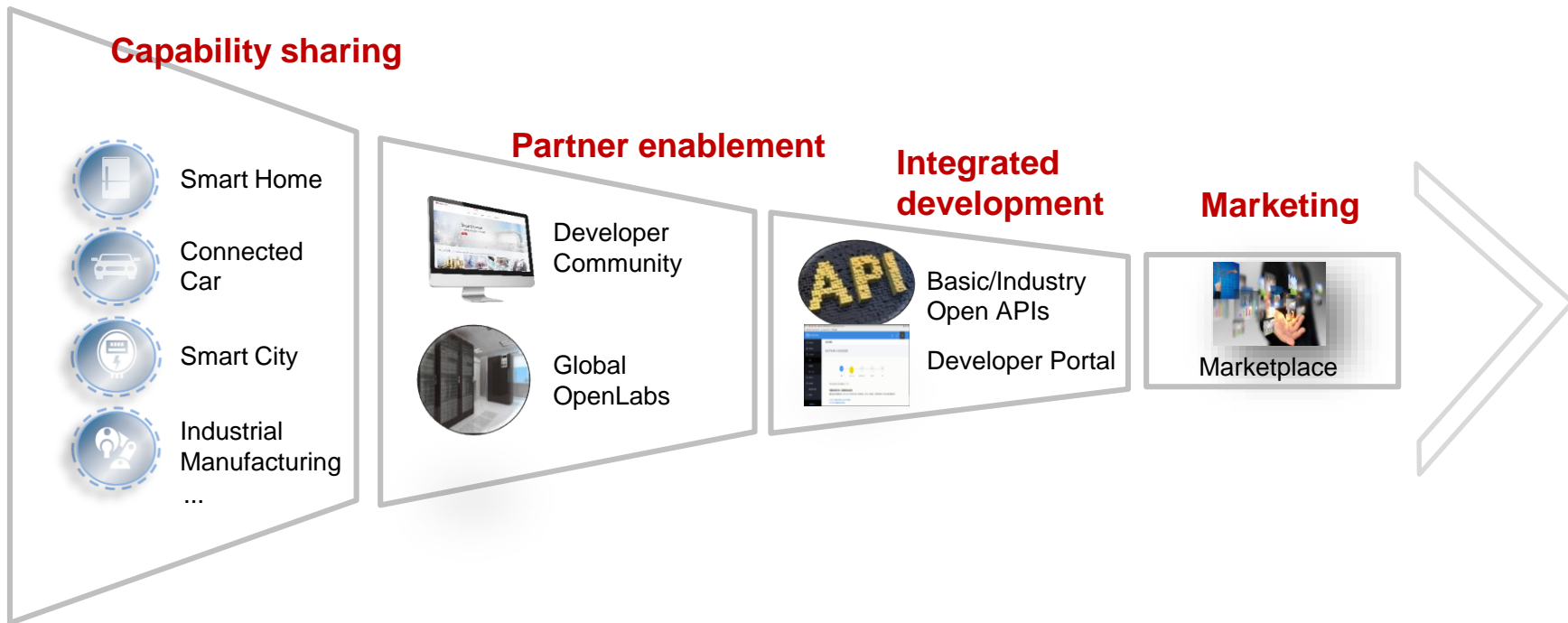
Building an Urban IoT Service Base and Cooperating with Partners to Support Long-Term Operation of Smart Cities

Provides high-quality convenience services and improves urban management efficiency.

Supports the innovation and incubation of the urban IoT industry.

Urban IoT visualization and decision-making support center

Smart parking

Smart street lamp

Smart water

Smart agriculture

Smart firefighting

...

Applications of the urban IoT

IoT industry innovation and incubation

Innovation center

Product center

Operation center

Huawei public cloud

Smart City IoT platform

Urban big data platform

Urban cloud

Urban cloud computing center

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愿景和使命

把数字世界带入每个人、每个家庭、每个组织,

构建万物互联的智能世界

Bring digital to every person, home and organization

for a fully connected, intelligent world