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Leading New ICT, Creating a Smart City Nervous System

LEADING NEW ICT

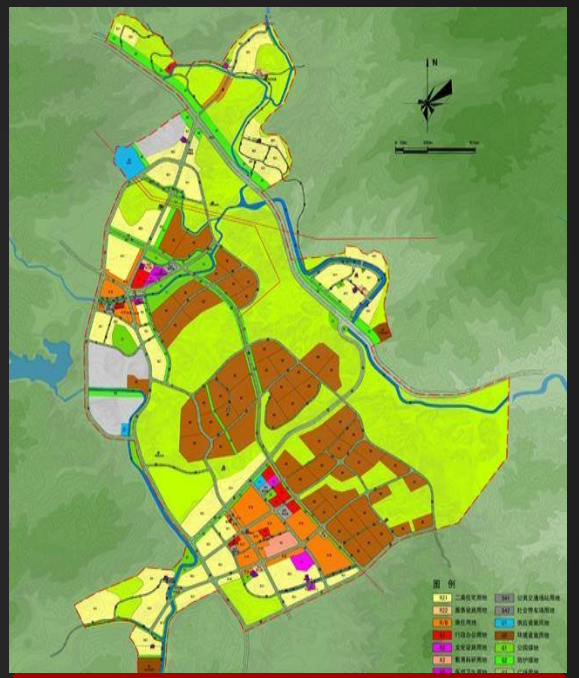
Severe Challenges Facing Fast-Growing Cities

City governance

Terrorist attacks, natural disasters, passive emergency command, and difficult cross-agency collaboration

People's livelihood

Regional education unbalance and poor healthcare conditions



Industry development

Insufficient decision-making support and difficulties in enterprise innovation, upgrading, and transformation

Environmental ecology

Insufficient pollution monitoring and poor green energy development

Smart City Brings All-Round Changes to Cities

Efficient Municipal Governance

- Social security
- Emergency response
- Utilities management
- Urban planning
- …

High-quality Public Services

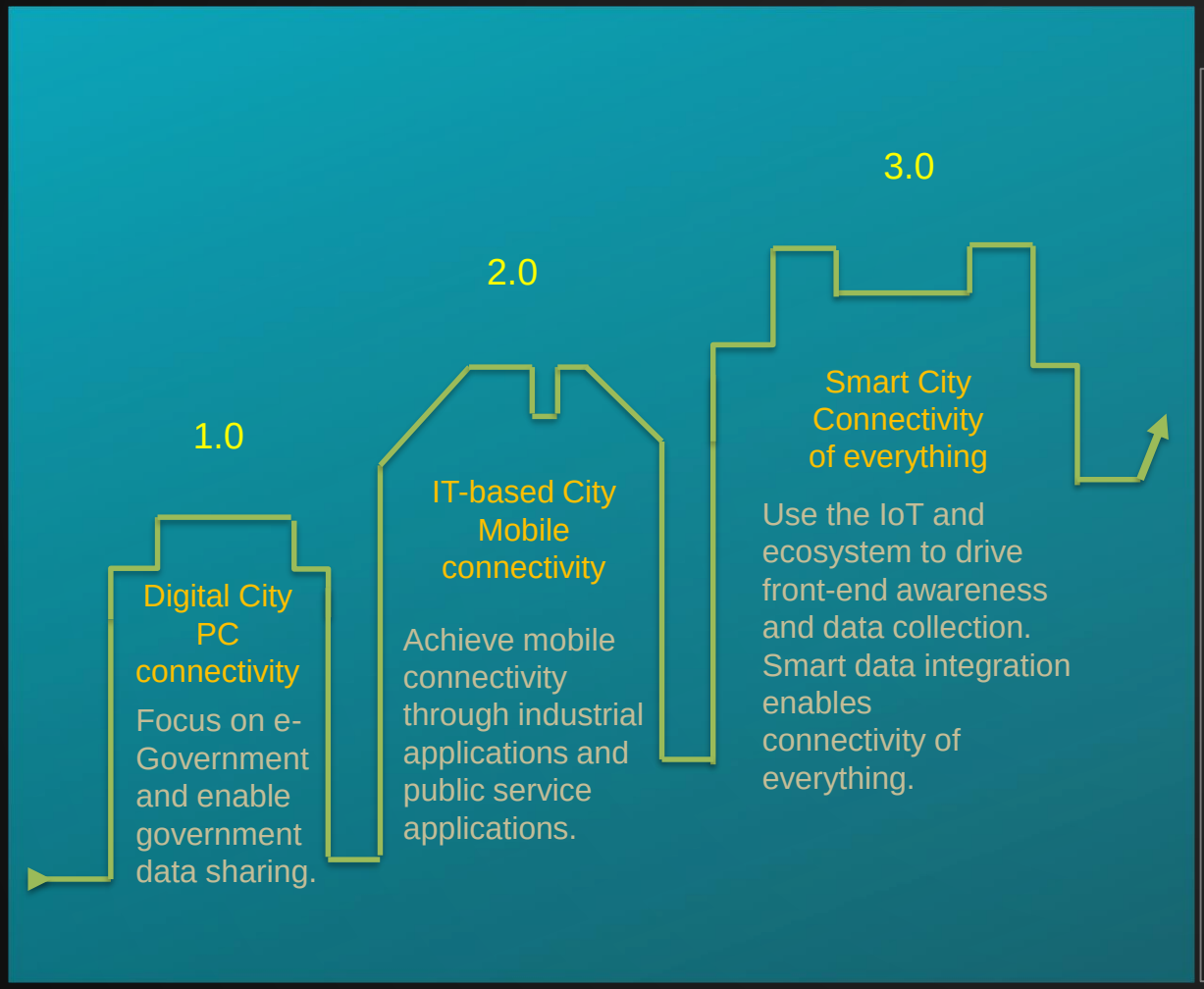
- Public transportation
- Education
- Healthcare
- Government services
- …

Sustainable Economic Development

- Environmental ecology
- Industrial parks
- Tourism
- Intelligent manufacturing
- …

Smart City Enters 3.0 with Leading New ICT

Three Stages of Smart City



Changes in policies, technologies, and business models

Clear industry policies

- In 2011, EU launched *Smart Cities and Communities Initiative* to promote the development of green technologies and local green technology companies by building Smart Cities.
- In 2012, China's Ministry of Housing and Urban-Rural Development released *Notice on Implementing National Smart City Pilot Projects*.
- In May 2014, the India government proposed a plan to build 100 Smart Cities to address challenges brought by large-scale urbanization in the future.
- In December 2016, China published *Evaluation Indicators for New Smart Cities*.

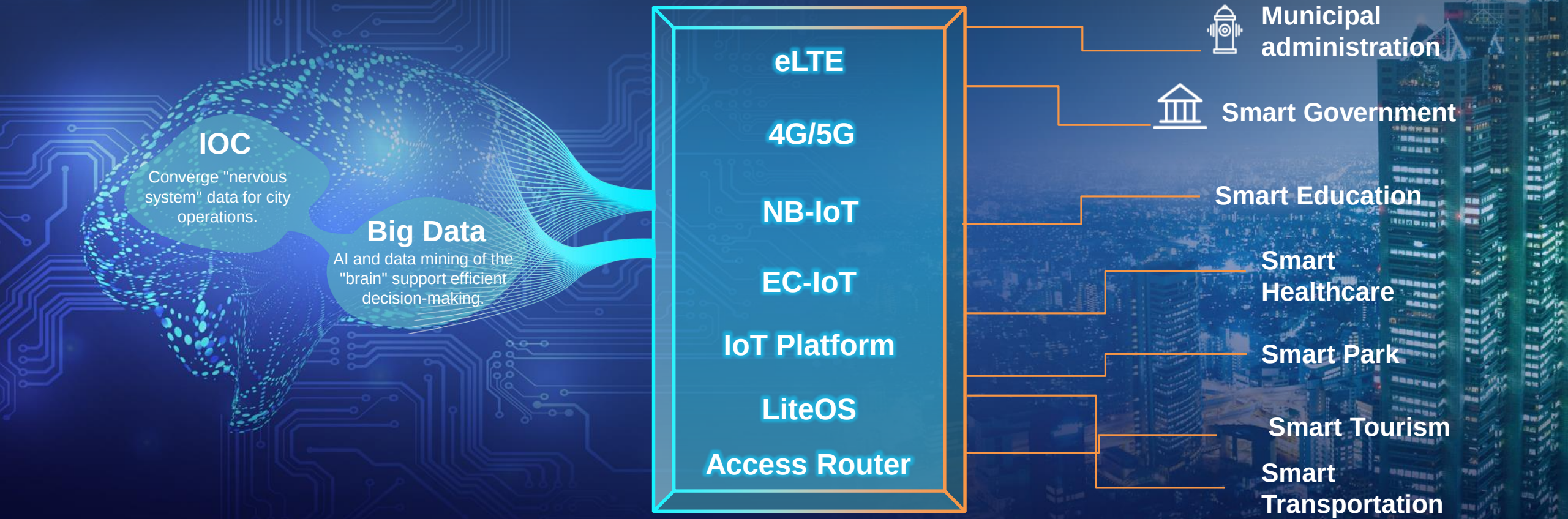
Mature technical conditions

- Cloud and Big Data have developed rapidly.
- Mobile broadband becomes popular and mobile applications are used widely.
- New IoT standards have been passed and IoT is built at the city level.

From attempt to implementation of business models

- Governments have gradually accepted the PPP mode and launched guidelines and pilot projects.

Robust Nervous System Supports Connectivity of Everything in Smart Cities

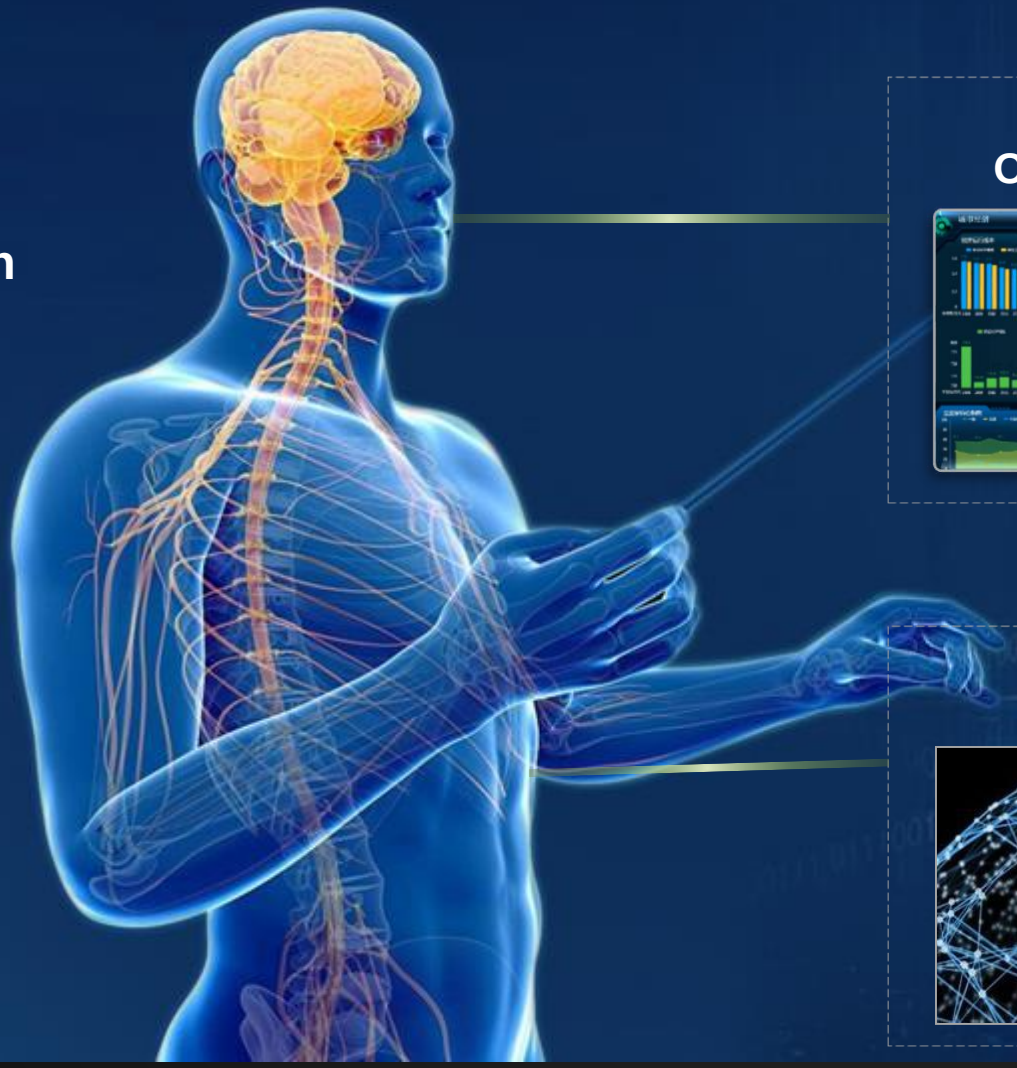


Cloud computing, Big Data, the IoT, mobile Internet, artificial intelligence, and other technologies are deeply integrated with urban scenarios.
The nervous system enables ubiquitous awareness, connection, computing, and intelligence.

Creates an Urban Nervous System to Build Better Smart Cities

Central nervous system – brain

Peripheral nervous system



Intelligent Operation Center

+

Cloud data center

City IoT

+

City communication network

Challenges Facing a Large Quantity of IoT Applications in the Broadband Interconnection Era

Platform

- Far from compatible and open
- Insufficient support capabilities
- Inflexible rules

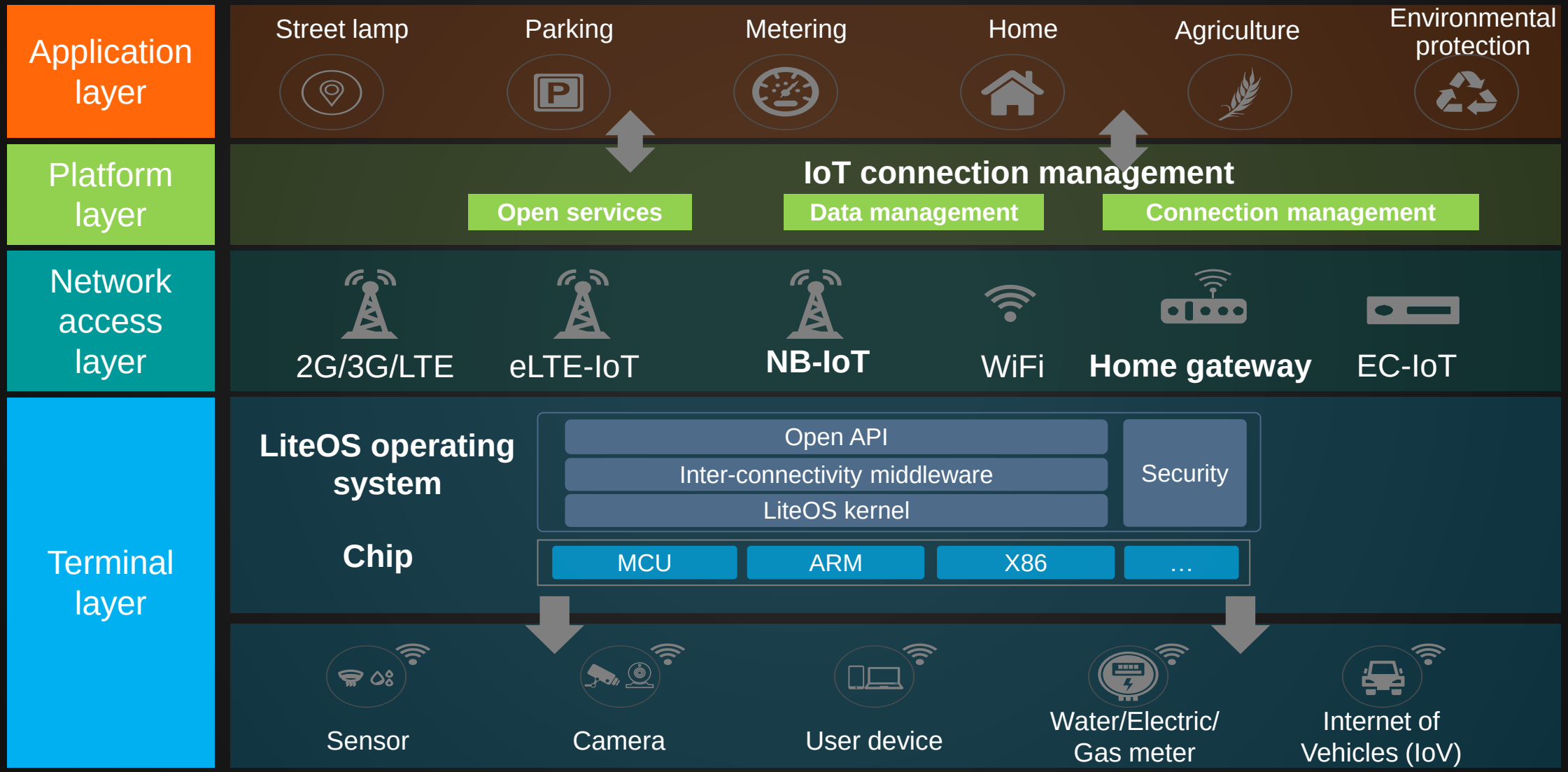
Standard

- Various terminals and standards hinder interoperability
- Lack of a unified IoT operating system

Access

- Mass connections
- High power consumption
- Limited coverage
- High costs

Urban IoT: Leading eLTE-IoT/NB-IoT Standards, Innovative IoT Gateways, Enabling Smart Sensing and Ubiquitous Connections



Open IoT Platform: Enabling Third-Party Applications and Accelerating Service Rollout

Application Pre-Integration

Smart home
IoV
Metering, smart parking…

Open Platform

Open API
Service orchestration
Rule engine

Easy Access

Devices of different brands
Hardware capability abstraction
Rapid device integration

Benefits

Ubiquitous sensing

- Compatible and interoperable
- Ultra-low power consumption
- Real-time response
- NB-IoT device activation in batches
- Plug-and-play, automatic networking

Comprehensive interconnection

- Remote deployment and upgrade, reducing skill requirements and costs
- Inter-connectivity, in-depth coverage
- Remote fault detection

In-depth insight

- Rich pre-integration accelerates service rollouts
- Flexible service orchestration meets diverse customer needs
- IoT Big Data analytics enables service innovation

Weifang: Smart Weifang 3.0, a New Model for City Development

By conducting IoT Weifang construction, build 'eyes' for real-time sensing and the 'brain' for smart scheduling and operations to achieve Smart Weifang 3.0, fully improving real-time, refined, and smart city management and public services.

—IoT Weifang Development Plan

Construction Scope

- Top-level design: 1 + 1 + 12
- Infrastructure: NB-IoT network and IoT connection management platform
- Service application: 11 applications such as Smart Lighting and Smart Agriculture
- IoT industry alliance: 50+ partners

Construction Achievements

- Smart Streetlight solution saves 6.86 million kWh annually and improves the O&M efficiency by 45%.
- The rural water supply system has provided clean, convenient tap water for nearly 7 million rural residents. The construction costs of one rural drinking water safety monitoring station have been reduced by 30%.
- Forms an IoT park with CNY10 billion assets in the next 3-5 years.

Smart Dunhuang: Smart tourism Promotes Smart City Development

We are exploring to build an industrial Smart City led by smart culture and tourism.

—Sun Xiaoqiang, President of Dunhuang Smart Tourism Corporation

Construction Scope

- Top-level design: **1 platform + 1 center + N types of data + N applications**
- Infrastructure: Feitian Cloud Data Center, IoT, and Wi-Fi
- Service applications: 9 applications such as Smart Tourism, Smart Government, and Smart Home

Construction Achievements

Improve service quality at peak season and attract 100% more visitors at slack season.

7.6 billion ↑**20%**
Tourism economy in 2016

8 million ↑**21%**
Visitors in 206

Satisfaction	↑ 60%
Bearing capacity of scenic spots	↑ 40%
Service personnel	↓ 20%

Yanbu in Saudi Arabia: a Smart City on the Red Sea Coast, Facilitating Industry Upgrading and National Transformation

Yanbu industrial city is the first Smart City in the country.

—Dr. Ala'a bin Abdullah Nassif, CEO of the RCY

Solution

KPI monitoring platform and dashboards

Smart Parking	Smart Lighting	Smart Streetlight	Smart Waste Management
Heavy Vehicle Management	Smart Manhole Cover	Measurement and Energy Report	Stadium Crowd Analysis

Interconnection hub of Royal Commission for Yanbu (RCY)

Customer Benefits

Only relying on oil and gas export → Diverse industry upgrading and transformation of the industry and industrial ports

Average Business Investment Growth from 2014 to 2017

↑16%

Waste disposal efficiency	↑ 30%
Public lighting costs	↓ 30%
Road maintenance costs	↓ 20%

A collaborative World.....

Smart Sustainable city definition

"A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects".

UNECE

Smart Sustainable Cities

ITU

ITU-T Groups working on IoT & Smart Sustainable Cities

Development and implementation of standards

ITU-T Study Group 20

Research & pre-standardization work

Focus Group on **Data Processing Management (FG-DPM)**

U4SSC

Open platform for knowledge sharing & Forward looking research

United for Smart Sustainable Cities (U4SSC)

Resolution 98
Enhancing the standardization of IoT and Smart Cities and Communities for global development

IoT4SDGs: *Considers the importance of IoT to contribute to achieving the 2030 Agenda for Sustainable Development.*

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United 4 Smart Sustainable Cities (U4SSC)

U4SSC is a United Nations Initiative coordinated by ITU and UNECE and supported by other 14 UN agencies to respond to the **Sustainable Development Goal 11: "Make cities and human settlements inclusive, safe, resilient and sustainable.**

It advocates for public policy to encourage the use of ICTs to facilitate and ease the transition to smart sustainable cities.

Supported by:

Convention on Biological Diversity

United Nations ECLAC

FAO Fiat Panis

ITU

United Nations Economic Commission for Africa

UNDP Empowered lives. Resilient nations.

UNECE

UNESCO Montevideo Office Regional Bureau for Sciences in Latin America and the Caribbean

UN environment United Nations Environment Programme

UNEP FINANCE INITIATIVE

United Nations Framework Convention on Climate Change

UN HABITAT FOR A BETTER URBAN FUTURE

UNIDO

UNITED NATIONS UNIVERSITY UNU-EGOV Operating Unit on Policy-Driven Electronic Governance

UN WOMEN

World Meteorological Organisation