Smarter management above and below the ground

Ultimate technologies, platforms, integrated solutions, artificial intelligence and deep analytics to improve cities' management: the Huawei vision about modern and integrated Smart Cities

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Modern I&CT urban challenges

- **Unplanned and uncoordinated Urban Growth**
  - Unplanned Urban growth can make the city struggle into providing basic infrastructure, causing social and environmental problems.
  - Difficult cross-department coordination and resource mismanagement leads to a lack of support for innovation, startups, and industrial upgrade.

- **Data Silos and Isolated departments operations**
  - Traditional City Management Modes Focus on Department-Level ICT Development, Causing a Number of Information Silos.
  - Government departments with Isolated Operations and without data sharing policies, find a difficult time realizing cross-department collaboration.

- **Large, unstructured, rapidly Changing Data**
  - Volume, Incoming data from all networks is Increasing the data volume for traditional data analysis.
  - Velocity, Data streaming is a Rapidly changing data which is driving the data process and analysis to near-real time.
  - Variety, data comes in different formats, is a Heterogeneous content.
Being Smarter requires **connectivity**…

- Connecting devices
- Connecting data
- Connecting people
- Connecting events
- Connecting processes
- Connecting everything, as needed
...and being Smart requires **sensing**...

...but....

being smarter is **NOT** just about understanding what is happening now
Being Smarter requires Intelligence

What **could** happen

What **should** happen

What **will** happen
Being Smarter requires **Equilibrium**

to establish a balance between the environment, the economy and the society... and the technology

What **could** happen

What **should** happen

What **will** happen
Building Smart Cities Strategy

Levels
- Foundation (what) – Reality is unique based on real objects (digital city)
- Operations (how) – Reality is different based on different actors activities (dynamic city)
- Strategies (why) – Reality is orchestrated based on values & priorities (smart city)

Actors Perspectives
- Citizen & Civil Society
- Government
- Private Business

Interactions
- Dependency (data exchange / sharing principles)
- Independency (transactions / economic principles)
- Interdependency (synergies / ecosystem principles)
Connection
Sensing
Intelligence
Connectivity supports Smart City Life, Office, and Business

Smart city application platform

Cloud switch

4G/Wi-Fi

Mobile service

Service gateway

SDN

Optical fiber transmission

MAN backbone network

Backbone router

Service router

Wi-Fi

4G/Wi-Fi

Access router and microwave

Access router

WIFI

4G

4G

Wi-Fi

4G/Wi-Fi

4G

Wi-Fi

4G

BANK

HOTEL

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Connection

Sensing

Intelligence
Smart Streetlight solutions use sensors and LiteOS to enable energy-saving City Construction

- Natural light sensing control
- IoT policy control

40,000+ streetlights in Weifang, the O&M efficiency 45% ↑, the lighting rate 25% ↑, the annual electricity consumption 6.8 million kWh ↓.
Sensors also enable Smart Parking, delivering brand-new parking services in urban centres

Yanbu, Saudi Arabia: By using the eLTE, the city has improved parking space utilization by 25%, and reduced labor costs by 30%.
But connecting, sensing and integrating everything has a consequence: the explosion of Big Data

**Volume**
- Data at rest
  - Ever increasing existing data to process

**Variety**
- Data in many forms
  - Structured, un-structured, text, multimedia...

**Velocity**
- Data in motion
  - Streaming with secs or m-secs to respond

**Veracity**
- Data in doubt
  - Ability to work with uncertainty

**Value**
- Data worth
  - Usefulness via information and insights

**Voracity**
- Data consumption
  - Hunger for more data and speed of digestion
From BIG DATA to SMART DATA

It doesn’t really matter how “big” data is but rather how smartly we utilise it.
Fast Scientific Decision-Making based on Big Data

1. What could happen?
2. What should happen?
3. What will happen?
Sensing Connection Intelligence
Sensing, connecting and bringing intelligence underground
IOC: Improves city management and decision-making efficiency using Big Data

| Situation presentation | Operation monitoring | Decision-making support | United command | Comprehensive governance |

*IOC: Improves city management and decision-making efficiency using Big Data*
Connecting, Sensing and provide Intelligence for the whole critical infrastructures lifecycle

1. DESIGN & BUILD
2. OPERATIONAL Safety, Efficient
3. SECURITY People, Property
4. CRISIS Management
Critical Infrastructures Management complexity

- Safety & Security
- Efficiency
- Capacity
- Quality of Service
- Costs
- Environment

Connecting, Sensing and provide Intelligence is key
Huawei is building the urban nervous system for Smarter Cities

Central nervous system

Peripheral nervous system

Intelligent Operation Center

Cloud data center

City IoT System

City communication network
The Huawei Smart City reference architecture serves as the starting point for the delivery of business services.
Building A Digital Ecosystem & Sharing Success

Our Vision

An Enabler for the World Digital Transformation

Huawei: Digital Platform + Enabling Platform
Cooperative, Win-Win and Open Ecosystem for Smart City

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Standard organizations / Industry Associations:
- EIP-SCC
- Catapult Future Cities
- Eurocities
- red.es
- European Network of Living Labs
- ITU
- tmforum
- 3GPP
- Smart Cities Council
- Smart City Expo World Congress
- Smart City
- Smart Nation
- European Network of Living Labs
Huawei Smart City Global Presence

40+ countries
160+ cities
Overview of current Smart City activity in WEU

Amsterdam
Utrecht
Rotterdam
Villareal
Duisburg
Gelsenkirchen
Roma
Cagliari
Joint Innovation Center: a National Smart City Competence Center

- Joint Innovation Center (JIC) - Sardinia Region Strategic Project
- Lenders & Partners: Huawei, Regione Sardegna, CRS4, 4 SMEs
- Project duration: 15/9/16 - 14/9/20
Summary: Characteristics of leading Smart Cities

1. Clear City long-term strategy and fully politically sustained («If you don’t know the destination harbour, no wind is favourable.” - Seneca)
2. Strong leadership from the top plays a key role
3. A strong dedicated team is mandatory
4. View platform as infrastructure, not investment
5. Behind the success there is a strong digital and skilled partner

- City-wide strategy implemented through small, localized projects
- Focus on citizens, businesses, tourists AND government
- Cultivation of physical environment
- Broad approach with benefits for everyone
- Sharing, integration and security are designed into the solutions
- Iterative, rapidly maturing projects
Summary:

**IC&T** Key principles and messages

1. Focus on “customers” first, processes then -> technology can and will support
2. End-to-end, integrated planning, processes and solutions
   - From devices to apps
3. Common and consistent data model and management across the whole set of solutions
4. Modular set of solutions – The Sensors and Solutions Partners Ecosystem
5. Common operational picture for an integrated management of the city (Safe & Smart)
6. Exploiting Cloud, IoT and the other I&CT infrastructures AS A PLATFORM
7. Integration with external sensors and feeds for real-time management
8. Integration with existing applications to reduce architectural impact on customers installations and investments
9. External and internal data integration and exploitation
Le Huawei eco-Connect Europe vous propose plus de 100 ateliers, démonstrations et rencontres. Dans cet immense showroom de 30000 m², vous pourrez :
• Échanger avec des experts du secteur, des influenceurs et des dirigeants
• Discuter avec nos clients et partenaires pour déceler de nouvelles opportunités
• Apprendre auprès de nos développeurs et experts techniques
• Découvrir les dernières tendances et innovations technologiques
• Expérimenter de nouvelles applications et plates-formes numériques

Cette année, découvrez nos dernières solutions 5G, Cloud et AI et retrouvez toutes nos actions pour aider la transformation numérique de nos clients et partenaires.

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