Smarter Nations on the way

Joe so
Huawei CTO of Industry Solutions
Agenda

1. Huawei Overview
2. Huawei Smart City Infrastructure
3. References
4. Ecosystem Lead to Win-Win Cooperation
Huawei: A Global Leader of ICT Solutions

- **228**
  - Ranking in Fortune Global 500 (Jul 2015)
- **176,000**
  - Employees
- **79,000**
  - R&D Engineers
- **16**
  - R&D Centers
- **170+**
  - Countries
- **36**
  - Joint Innovation Centers

**Huawei: A Global Leader of ICT Solutions**

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Continuous Effective Growth

Sales Revenue

<table>
<thead>
<tr>
<th>Year</th>
<th>USD Billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>32.4</td>
</tr>
<tr>
<td>2012</td>
<td>35.4</td>
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<tr>
<td>2013</td>
<td>39.5</td>
</tr>
<tr>
<td>2014</td>
<td>46.5</td>
</tr>
<tr>
<td>2015</td>
<td>60.8</td>
</tr>
</tbody>
</table>

- America: 10%
- Asia Pac: 13%
- EMEA: 32%
- China: 42%

Operating Profit

<table>
<thead>
<tr>
<th>Year</th>
<th>USD Billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>3.0</td>
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<tr>
<td>2012</td>
<td>3.3</td>
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<tr>
<td>2013</td>
<td>4.8</td>
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<tr>
<td>2014</td>
<td>5.5</td>
</tr>
<tr>
<td>2015</td>
<td>5.7</td>
</tr>
</tbody>
</table>

CNY is the company’s functional currency. The USD figures are converted based on the exchange rate at the end of the corresponding year.

Exchange rate: US$1 = CNY6.4927
Continuous Innovation Investment

**R&D Investment**
- **USD37 billion** over 10 years (from 2006 to 2015)
- 10%+ percentage of R&D investment to total sales revenue
- 79,000 employees: 45% are R&D engineers

**Standards**
- 300+ international standards organizations, industry alliances, open-source communities
- 280 important positions in standards organizations
- 43,000 accumulated proposals

**Patents**
- 50,377 —— patents authorized
- 52,550 —— patent applications in China
- 30,613 —— patent applications outside China

**Continuous Increase in Percentage of R&D Investment to Total Sales Revenue**
- 9.7% in 2010
- 11.6% in 2011
- 13% in 2012
- 14% in 2013
- 14.2% in 2014
- 15.1% in 2015
- 15.1% in 2015
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Urbanization Brings More City Demands

Quality Of Life
Better Environment Healthcare Public Service Hospitality & Entertainment

Prosperity
Education Social Interaction Career Opportunity Community Welfare

Security

Source: An urban world map, SOWC2012 unicef
Integrated Governance Facilitates Smart City Transformation

Traditional Operating Model

New Integrated Operating Model

Huawei positioned as a Smart City Enabler

**Urban Development, Security & Sustainability**

- **Smart Utilities** (Grid, Water, Gas)
- **Safe City** (Emergency, Disaster, Security, Environment)
- **Smart Traffic & Transportation** (Bus, Train, Traffic Flow)
- **Smart Buildings** (Commercial Environment Mgmt)

**Connected City** (Wireless, Fixed)

**Smart City Intelligence**
- Intelligent Operations Center
- Applications Store
- Contact Center

**Sensor City** (M2M / IoT)

**ICT Infrastructure**

- **Smart Homes** (Security, Environmental, Convenience)
- **Smart Healthcare** (Remote, Hospital)
- **Smart Education** (Remote, School)
- **MICE, Hospitality & Entertainment** (Stadiums, Tourism, Conventions)

**Social Development Communities, Villages, Citizens**

**Huawei positioned as a Smart City Enabler**

**Internet Of Things**

**Information Flows**

**Intelligent Computing**

**Collaborative Response**
4 Smart City Layers

Agency & Enterprise Integration through Data, Application, Business, Process
1. Safe Nation: Manage the uncertain threats

- Crime case/Riot
- Traffic Incident
- Fire incident
- Natural Disaster

**Before the incident**
- Smart Sensing
  - Omni Protection
    - Video Prevention
    - Intelligent Early-Warning

**During the incident**
- Smart Decision-Making
  - Rapid Response
    - Multi-Agency Collaboration
    - Empower the Field

**After the incident**
- Smart Clue Analysing
  - Efficient Case-Solving
    - Multi-dimensional intelligence
    - Intelligent Analysis

- Safe city
- Safe Traffic
- Disaster warning

- Prime Office
- Police
- Transport
- Fire
- Health
- Disaster Prevent

- Cloud Data Center
- Command Center
- 4G Lte Fiber
- wifi
- Cable
- Multi-Terminal

- Better Network
2. E-ID: One Card for Everything

- Information Query
- Population Manager
- Others
- Strategic Analysis
- Identity Check
- Web service for Data Sharing

- Self-clearance & Self check-in
- Identity verification
- Real-name registration
- Social welfare

- Citizen
- e-School
- e-Hospital
- e-Bank
- e-Hotel
- e-Business
- e-Government

- e-ID
- E-ID
- CPU
- Apps
- Data Sharing

- e-ID for
- Self-clearance & Self check-in
- Identity verification
- Real-name registration
- Social welfare

- HUAWEI
3. Smart Transportation, Advanced, Efficient and Safe

- Command Control Center
- Network
- Traffic Video Surveillance
- Checkpoint
- Mobile on-vehicle ALPR
- Traffic Guidance
- Traffic Signal Control
- Traffic Volume Collection
- VDMS
- Penalty system
- Traffic Surveillance
- Surveillance
- Checkpoint
- Traffic Signal Control
- Traffic Volume Collection
- VDMS
- Penalty system
4. e-Government: Build Service-oriented Government

**Benefit**

**Government**
- Improve government efficiency
- Enhance the image of the government
- Reduce the Government IT Cost
- Reduce the office handling time
- Standardize government management

**Enterprise**
- Make communication more convenient
- Fast response for administrative approval
- Make business inquiries more convenient

**Public**
- Real-time access to government information
- Enjoy quality public services

**Office Collaboration**

**One Stop Service Hall**

**Mobile Office**

**OA & Document**

**Government Portal**

**Email System**
5. Smart Education: High Quality, Available for Everyone

Sharing
Sharing all advanced resources all over the country

Innovation
Transform from traditional teaching processes to interactive teaching

Collaboration
Improve learning efficiency

1 Basic Infrastructure
- Agile Campus Network Solution
- School Interconnection Network Solution
- Safe Campus Solution

2 Cloud Platform
- Resource Sharing Platform
  - Digital Library
  - Online Learning
- Education Management Platform
  - e-Management

3 Smart Classroom
- Interactive Teaching Solution
- Telepresence Live Classroom
- Solar Integrated Classroom
6. Ubiquitous Broadband is the Foundation

**Extension**
Metro and access network is the extension of broadband.

**Convergence**
Focus on ubiquitous broadband by both wired and wireless network.

**Security**
VPN should be used by government and multi-industries, achieving investment efficiency and security.
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Global Best Practice
Create Smart Future for Cities

Over 30 smart cities is building by Huawei in China, and we are supporting China government to formulate national standard

Global smart city living lab is building in Amsterdam

Huawei smart city solution has served 400M People in 60+ cities, 20+ countries in the world
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Huawei Has Set Up Matured System to Support Partners

- **eSDK**
  - Open software /hardware capability
  - Easily integrated
  - Support for forums /hotlines /emails

- **Open Lab**
  - Interconnection /interoperability test: **150**
  - Joint solution integration verification: **52**

- **Joint Innovation**
  - Joint innovation center: **31**

- **Co-Marketing**
  - Joint Exhibition Hall
  - Joint Collateral
  - Joint Event
  - Joint Digital Marketing

- **ISV certification**
  - ISV certification: **200+**
  - Trained technical engineers: **1000+**
Open System + Best Partners, Bring Best Solutions

An open system for the tailored solution

Partners

eSDK Open Platform

Wireless
Network and security
Cloud data center
Surveillance, collaboration & command
Equipment room and power supply

One-Stop ICT
Join us in building a better connected world