

Green Telecom and the Applications of IoT – Experiences from CHT



ALWAYS AHEAD

為了你

一直走在最前面

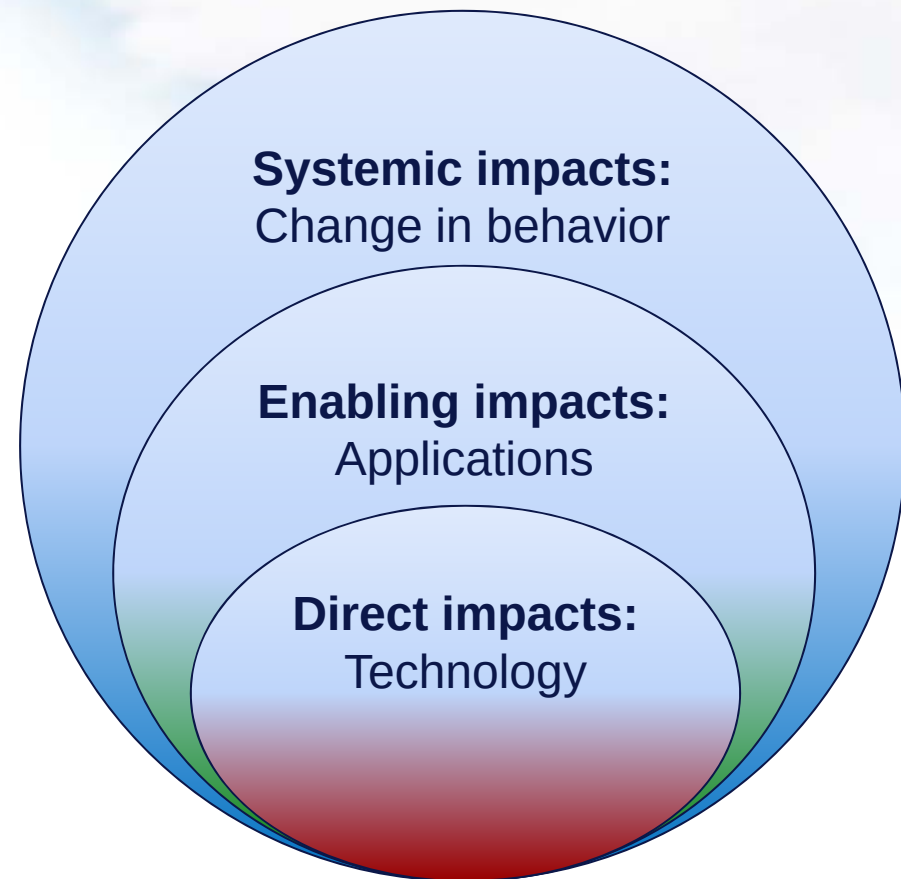
Dr. Yuan-Kuang Tu
President
Telecom Laboratories
Chunghwa Telecom Co., Ltd.

April. 8, 2011
presentation to Green Touch Open Forum



Refresh your life

Framework for Green ICT



Ref: Greener and Smarter: ICTs, the Environment and Climate Change, Sept. 2010, OECD

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Core Business of CHT

2010 Revenue Breakdown (Consolidated)

■ Broadband Access

- ADSL
- WLAN
- FTTx

■ Internet Services

- HiNet

■ Business Intranet

- X.25 \ ATM \ FR
- IPVPN

■ Leased Line

VAS:

- IPTV (MOD)
- Xuite
- hiGame
- hiChannel
- hiStock
- hiB2B
- hiAD
- hiMusic

■ Handsets sale

■ Billing handling

■ 2G GSM

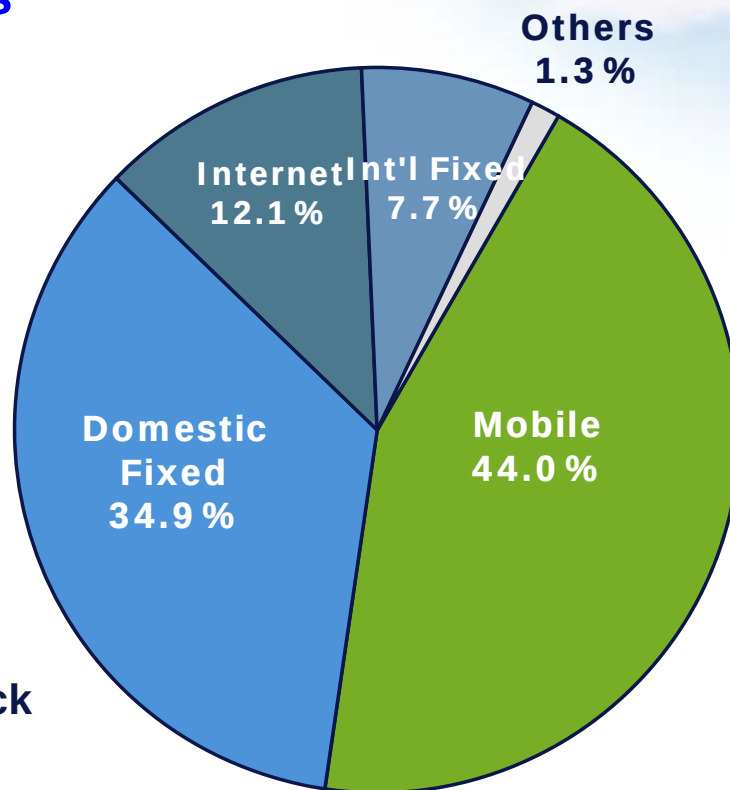
■ 2.5G GPRS

■ 3G WCDMA

■ 3.5G HSDPA

VAS:

- SMS
- MMS
- JAVA Game
- Ring Back Tone
- Mobile internet
- Mobile TV



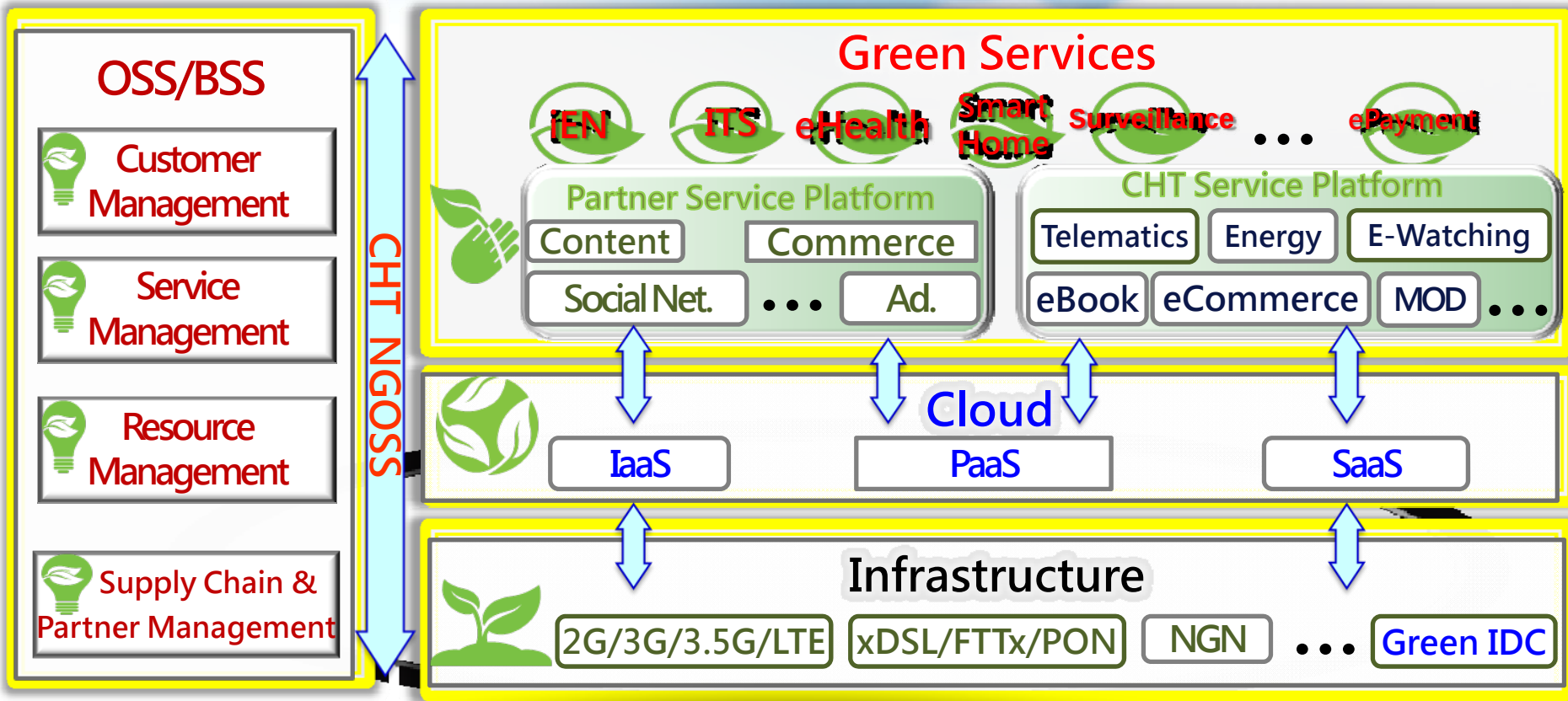
Note: The figure of 2010 was un-audited.

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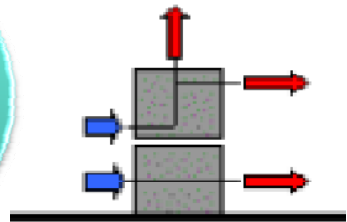
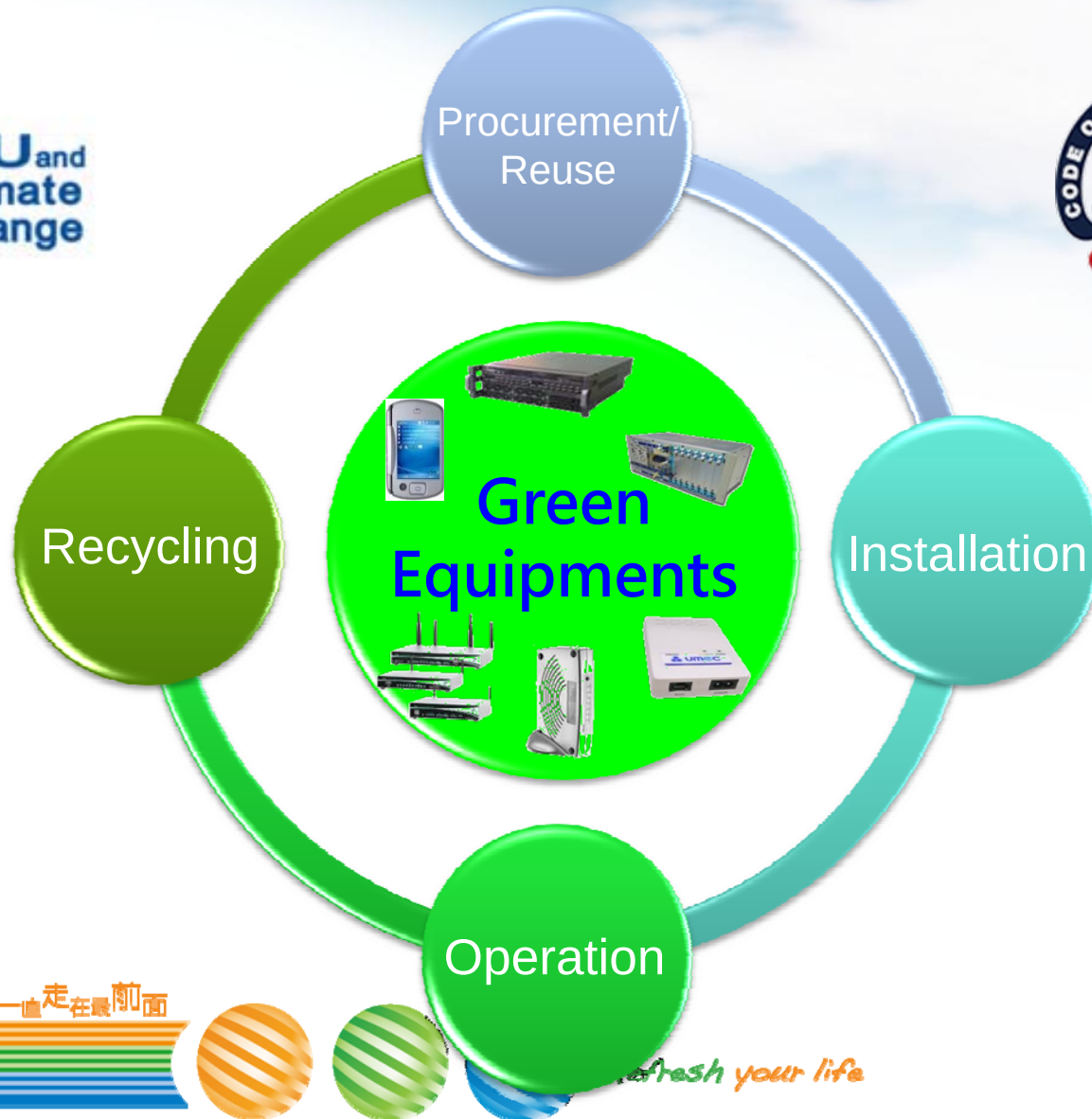
Toward a Green Telco



Green Equipment (Green of ICT)



中華電信
Chunghwa Telecom



Cooling Equipment

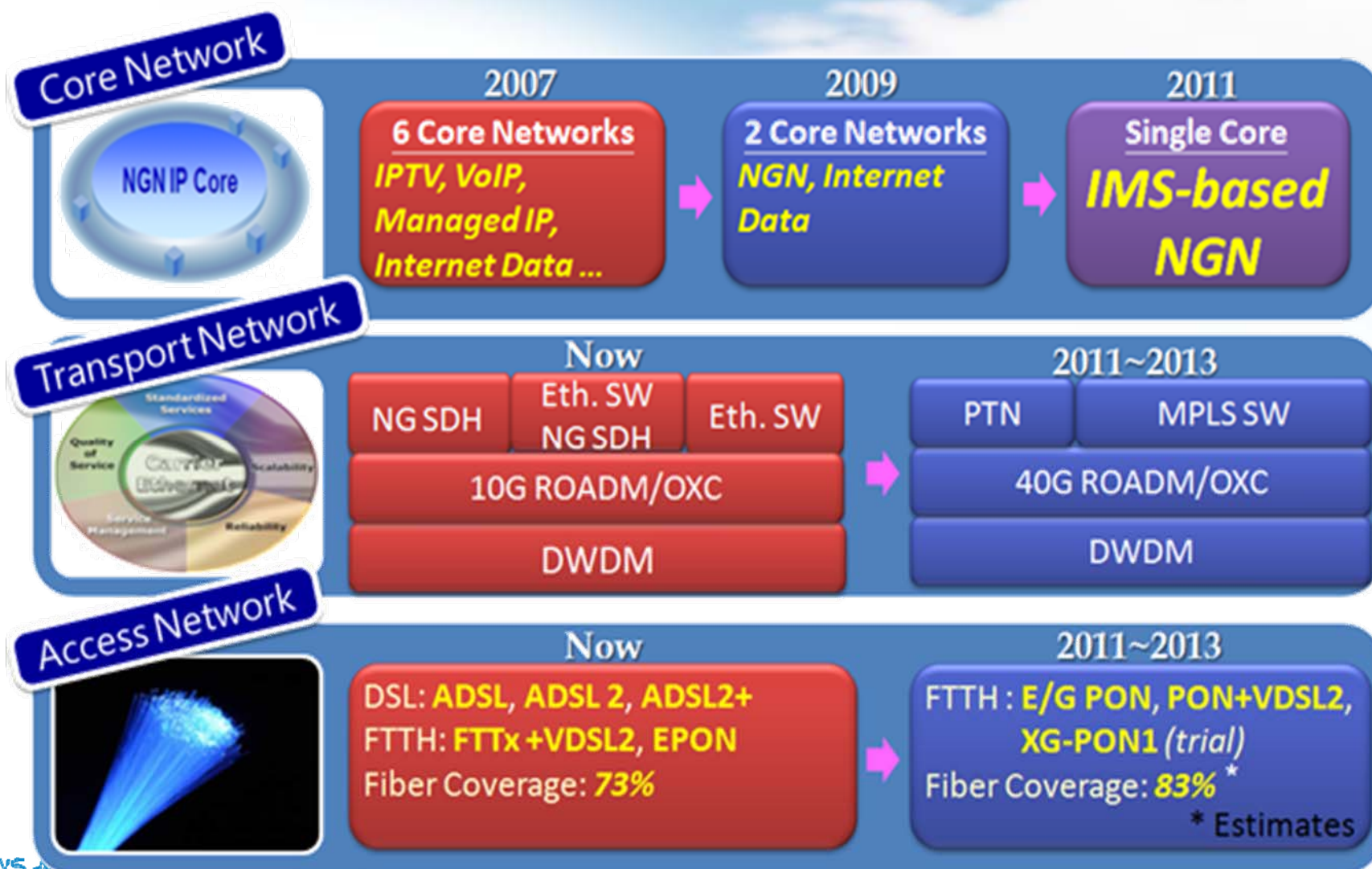


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Green in Fixed-line Networks



Green Strategy in Core Networks

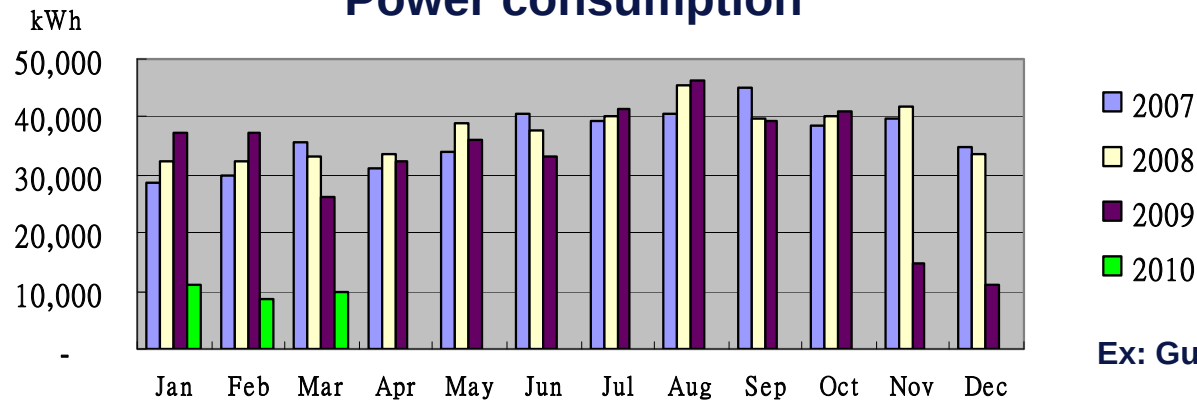
PSTN LS



NGN AG



Power consumption

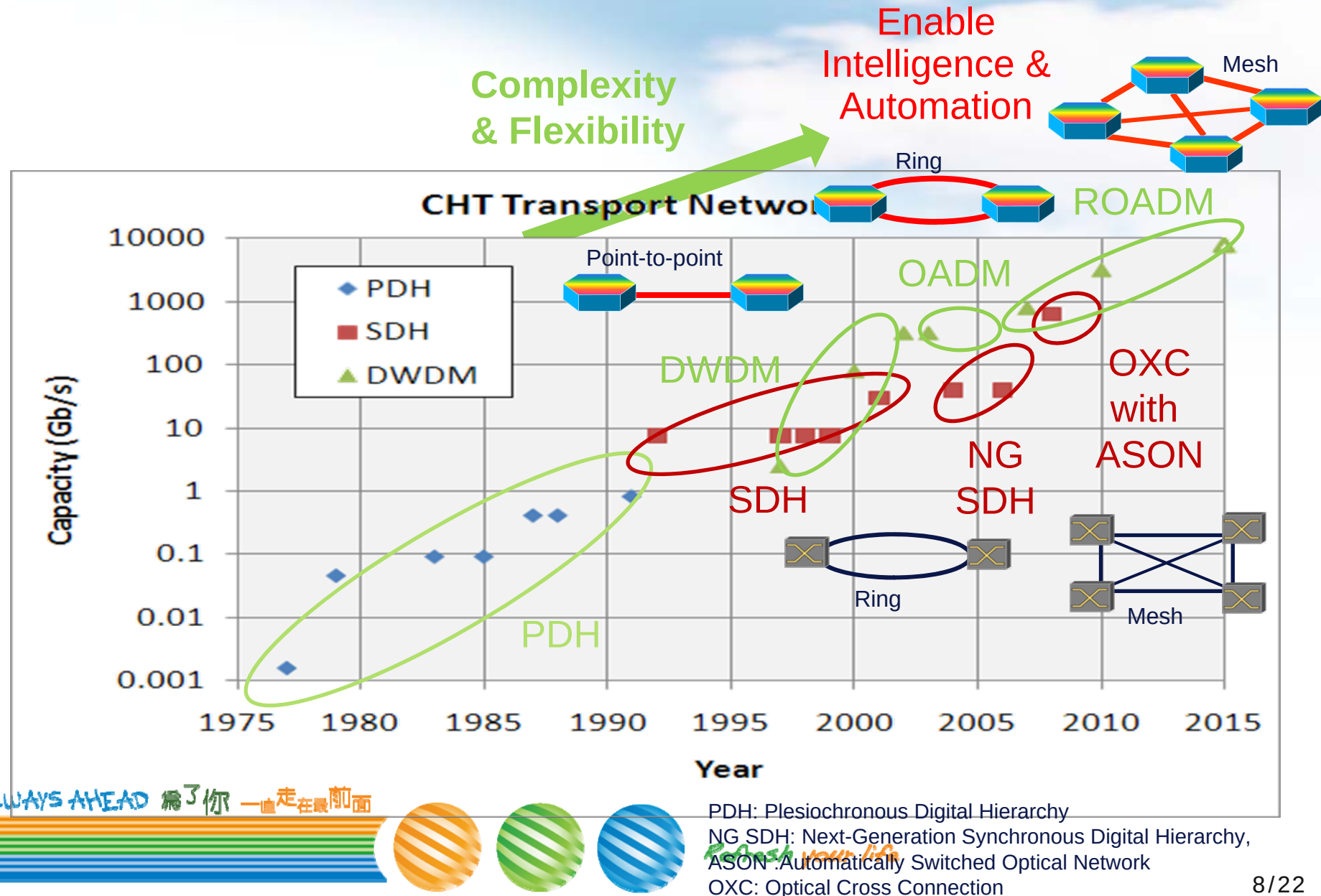


Ex: Guandu Central Office

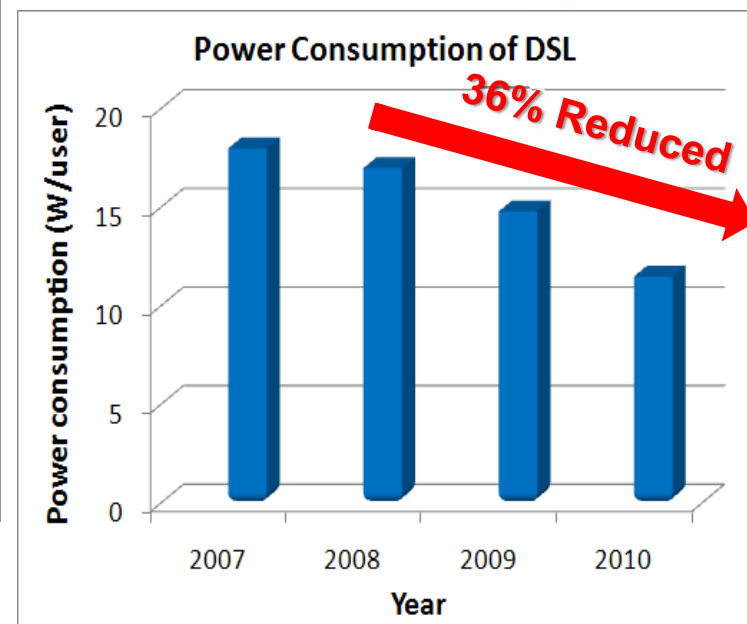
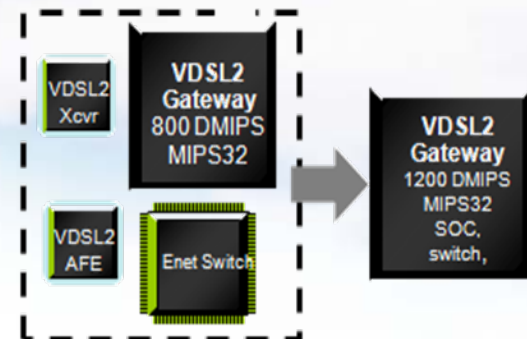
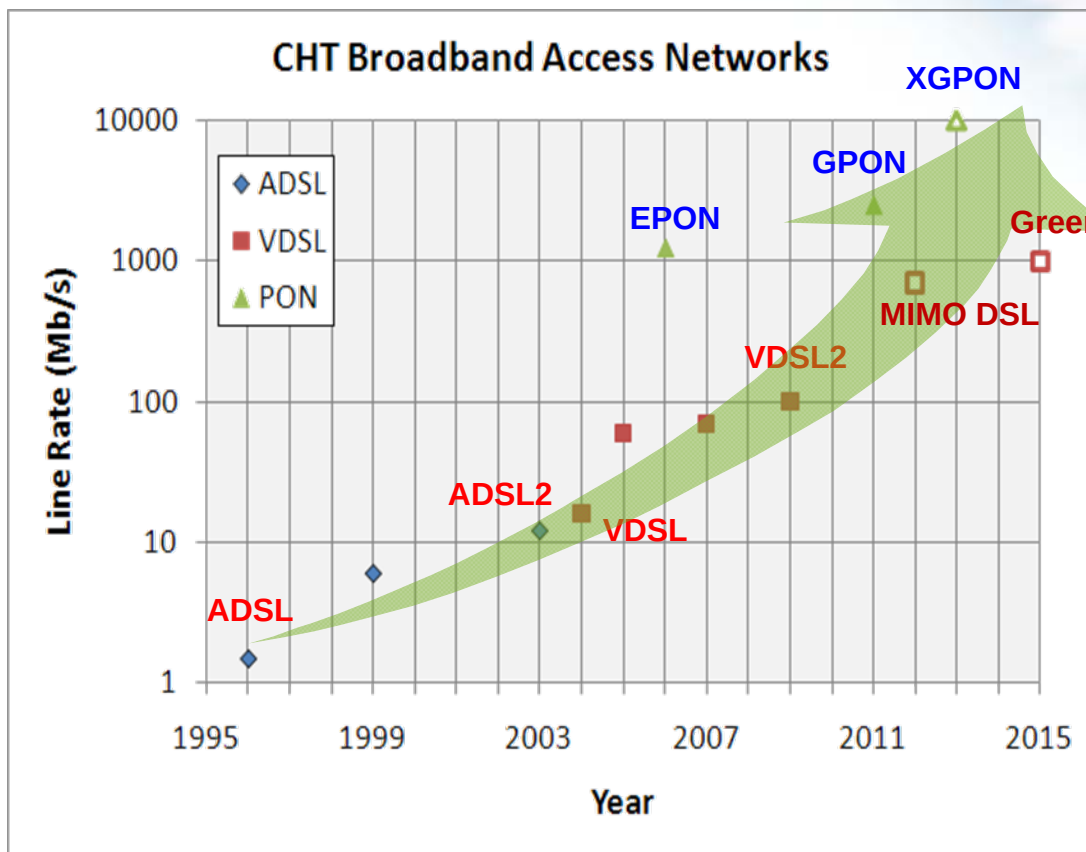
Benefits

- 75 % less floor space required
- 82 % power saving (racks, air conditioning...)
- Fewer core elements

Green Strategy in Transport Networks



Green Strategy in Access Networks



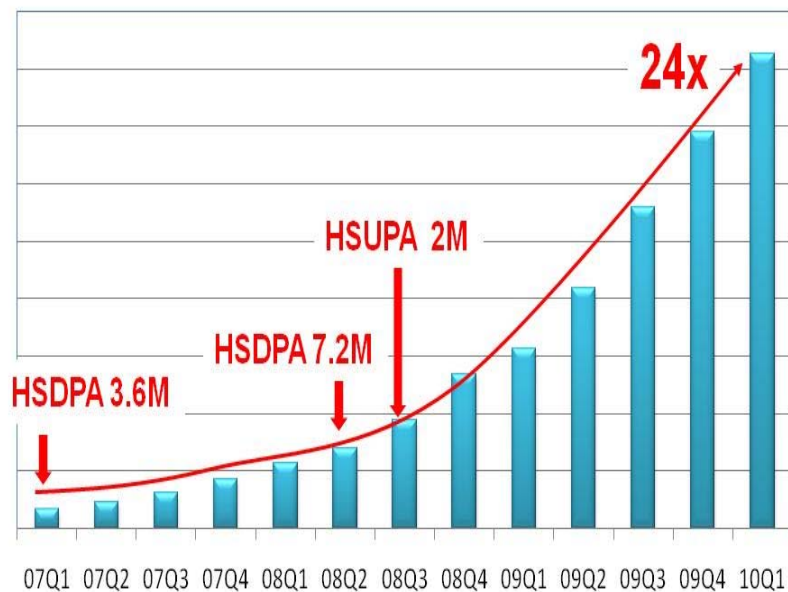
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Green in Mobile Networks

CHT Mobile Data Traffic



24 times growth in the past 3 years



Renewable Energy



Free Cooling



Energy Saving

Equipment Upgrade

Co-Location



BS Power: 2.56 KW



BS Power: 790W



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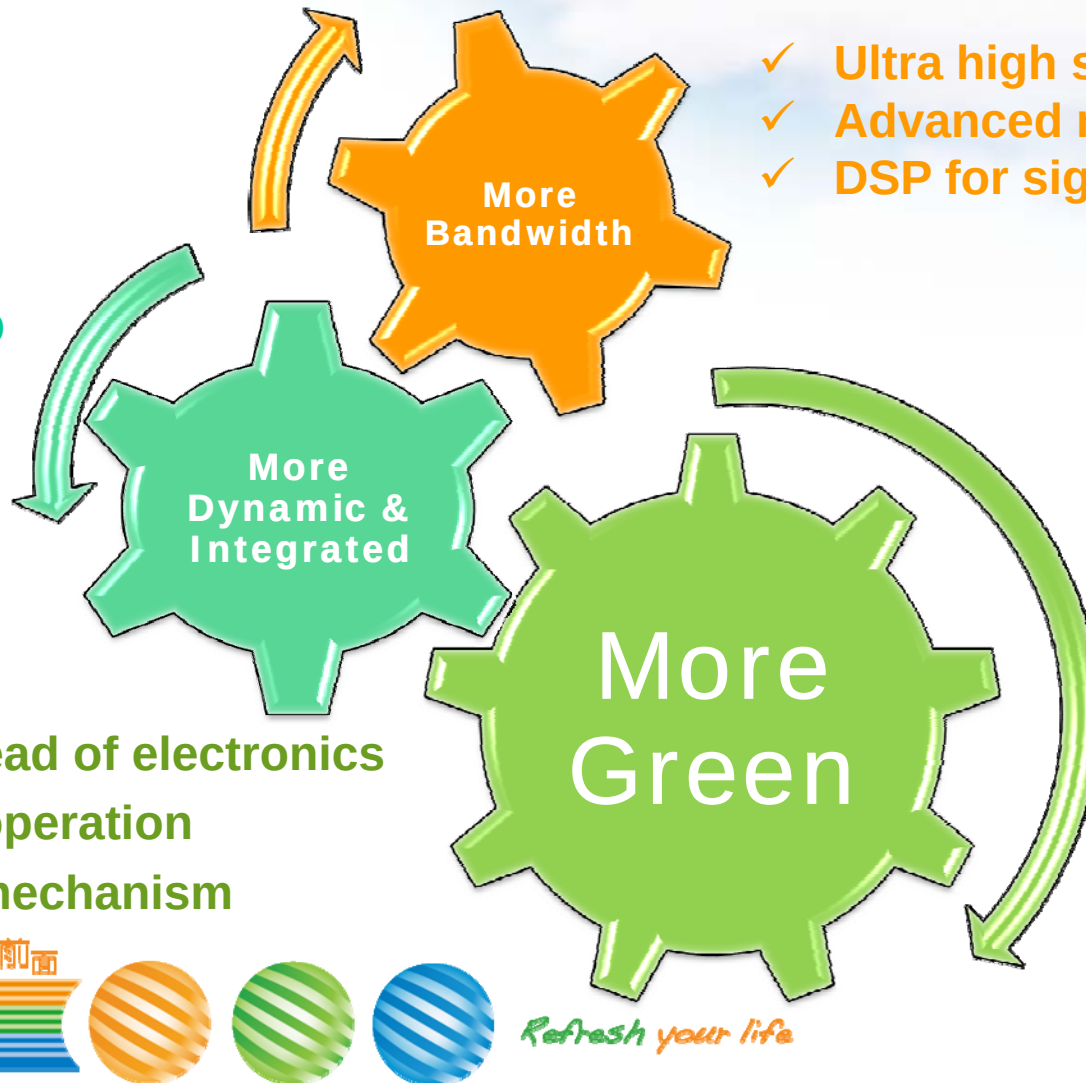
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Evolution Trends in Network Infrastructure

- ✓ Intelligent management & control system
- ✓ System-on-chip

- ✓ Photonics instead of electronics
- ✓ Energy-aware operation
- ✓ Power saving mechanism

- ✓ Ultra high speed
- ✓ Advanced modulation
- ✓ DSP for signal detection



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Green Service (Green by ICT)



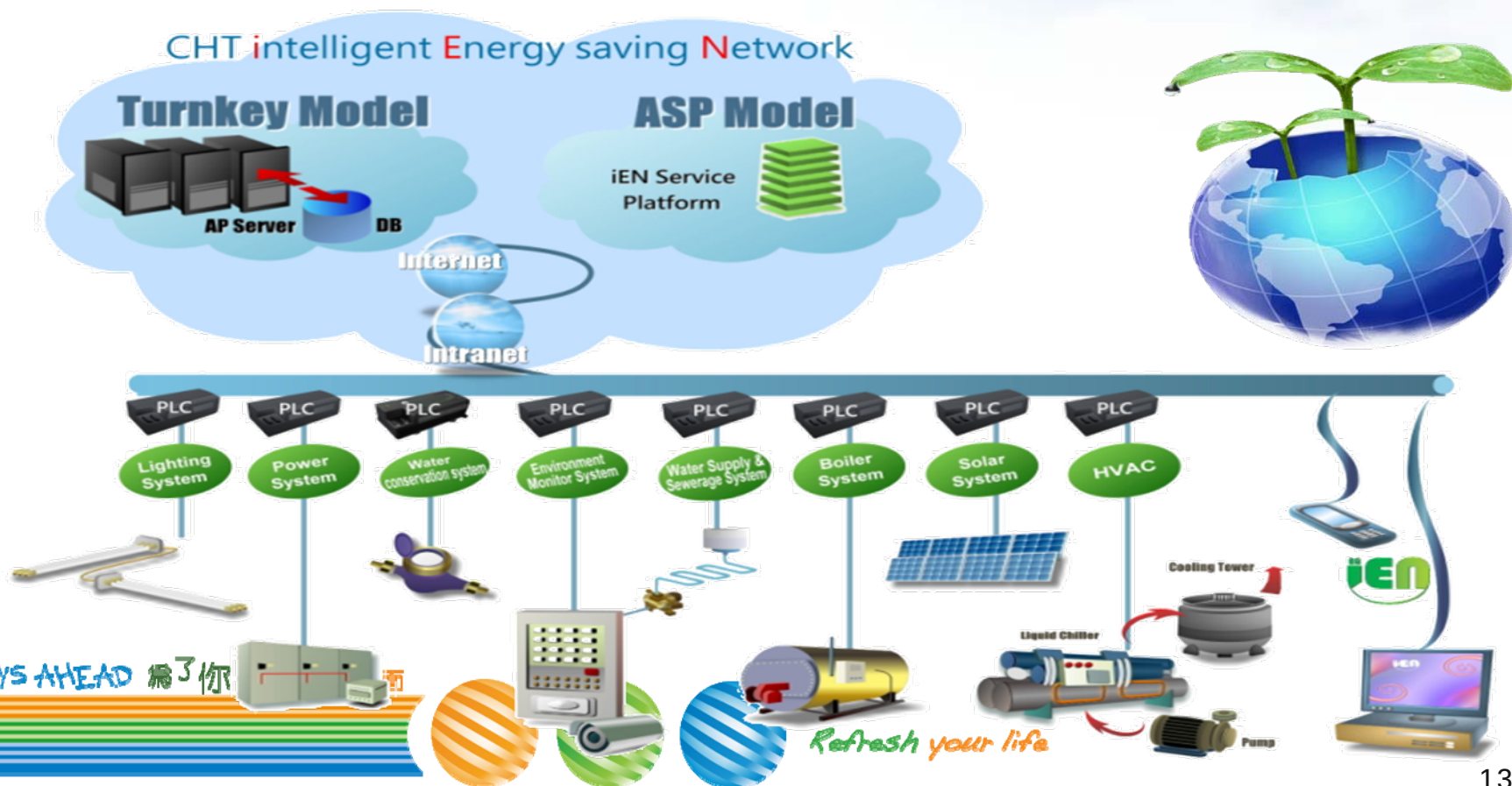
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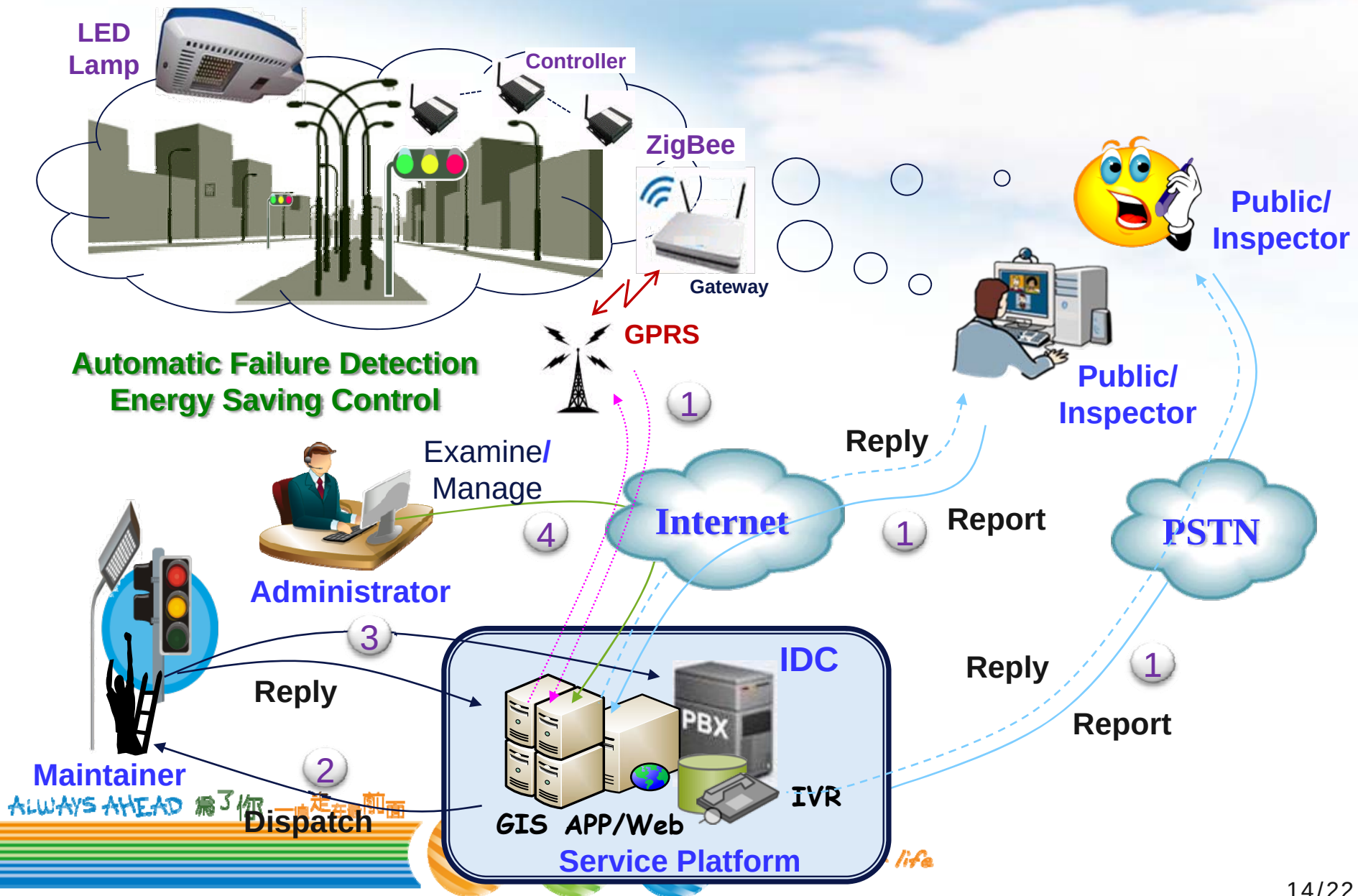
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Smart Energy Saving Services

- Providing centralized monitoring & management for electric power system, air conditioner, lighting and heat pump
- Applying to buildings, factories, hospitals and schools
- Saving more than 23% energy via iEN service in some cases



Street Lighting Administration System



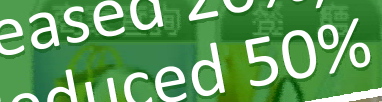
ITS/Telematics Services

For Enterprise:

- ❖ CVOS (Commercial Vehicle Operation Services)
 - Fleet Management System
 - Taxi Dispatching and Management System
- ❖ APTS (Advanced Public Transportation Services)

For Individual:

- ATIS (Advanced Traveler Information Services)
 - Driver Service
 - Pedestrian Service
- Traffic Information Service



In the case of Taxi Dispatching,
Revenue Increased 20%,
Vacant Time Reduced 50%

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Smart Community Services

- A total solution to satisfy residential and community requirements.



Door Access Control
Parking Lot Management System



Intercom Access

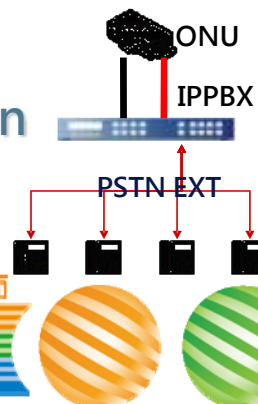


Community
Video
Surveillance



Central
Monitoring

Unified
Communication
Service



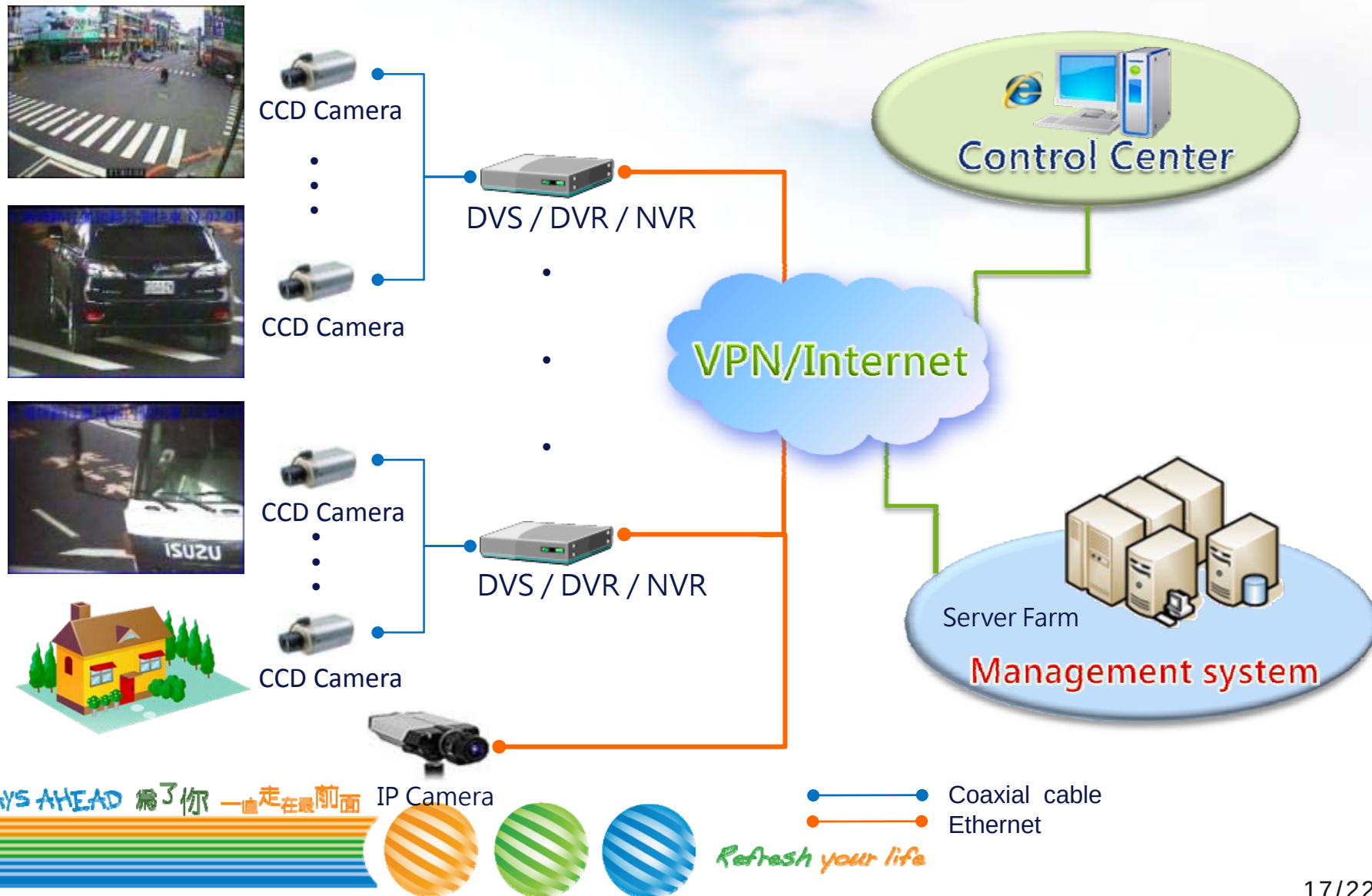
Community
Web Service
Refresh your life



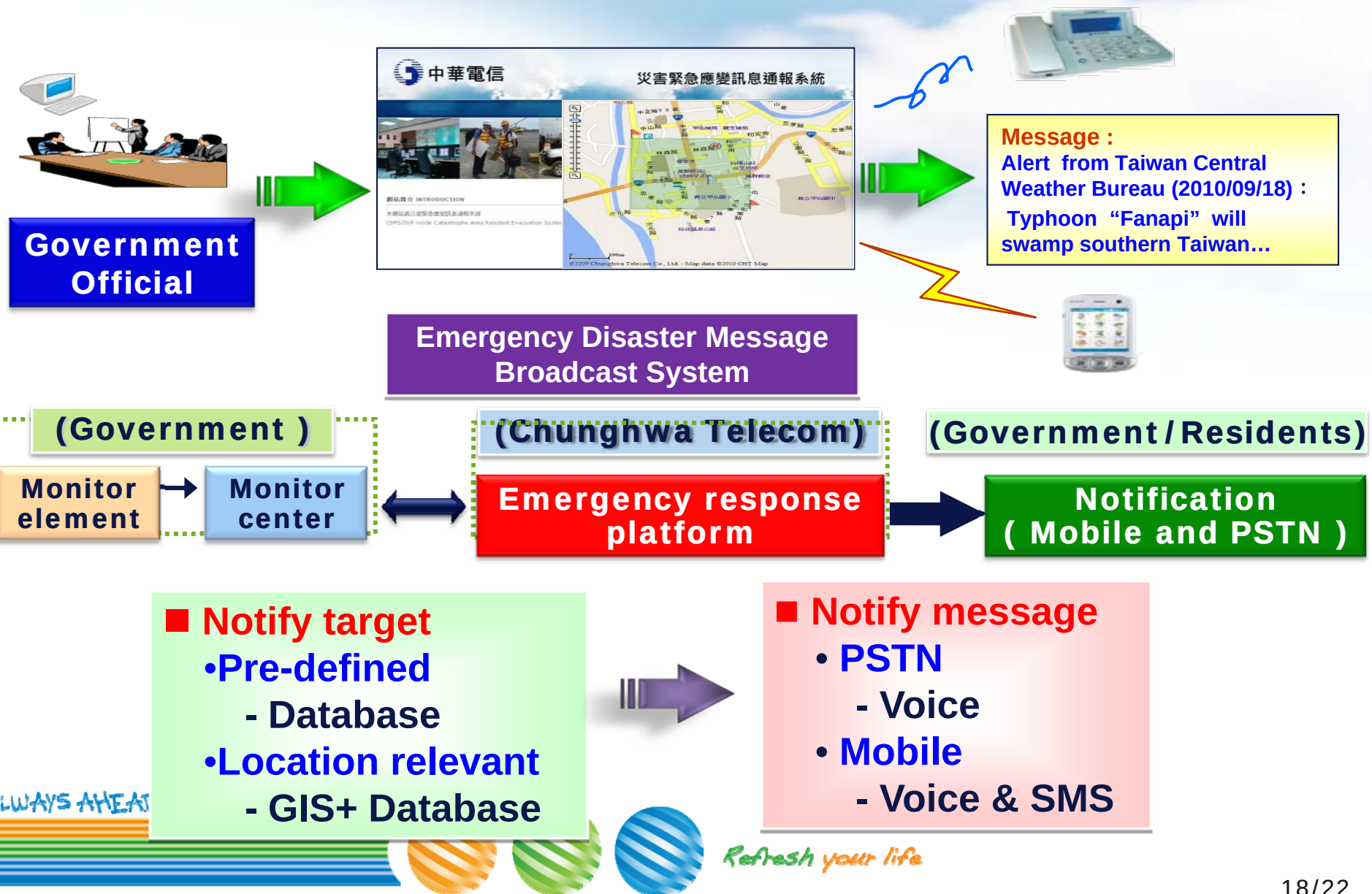
Property
Management



Video Surveillance Services



Emergency Notification Services



2010 TAIPEI INT'L FLORA EXPO

Flower Guide via NFC Handset



NFC Bluetooth
dongle



Interactive Digital Signage

- Real-time EXPO information Broadcast
- Advertise Broadcast
- Coupon Download



Mobile Wallet Shopping



- EXPO Information
- Point of Interests
- Coupon Download
- Electronic Memorial Stamp
- Memorial Cards
- Coupon Area

Multimedia Information Kiosk



2010臺北國際花卉博覽會
TAIPEI INT'L FLORA EXPO
2010/10/6 ~ 2011/4/25



Powered by Chunghwa Telecom



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IoT Enrich the ICT Services

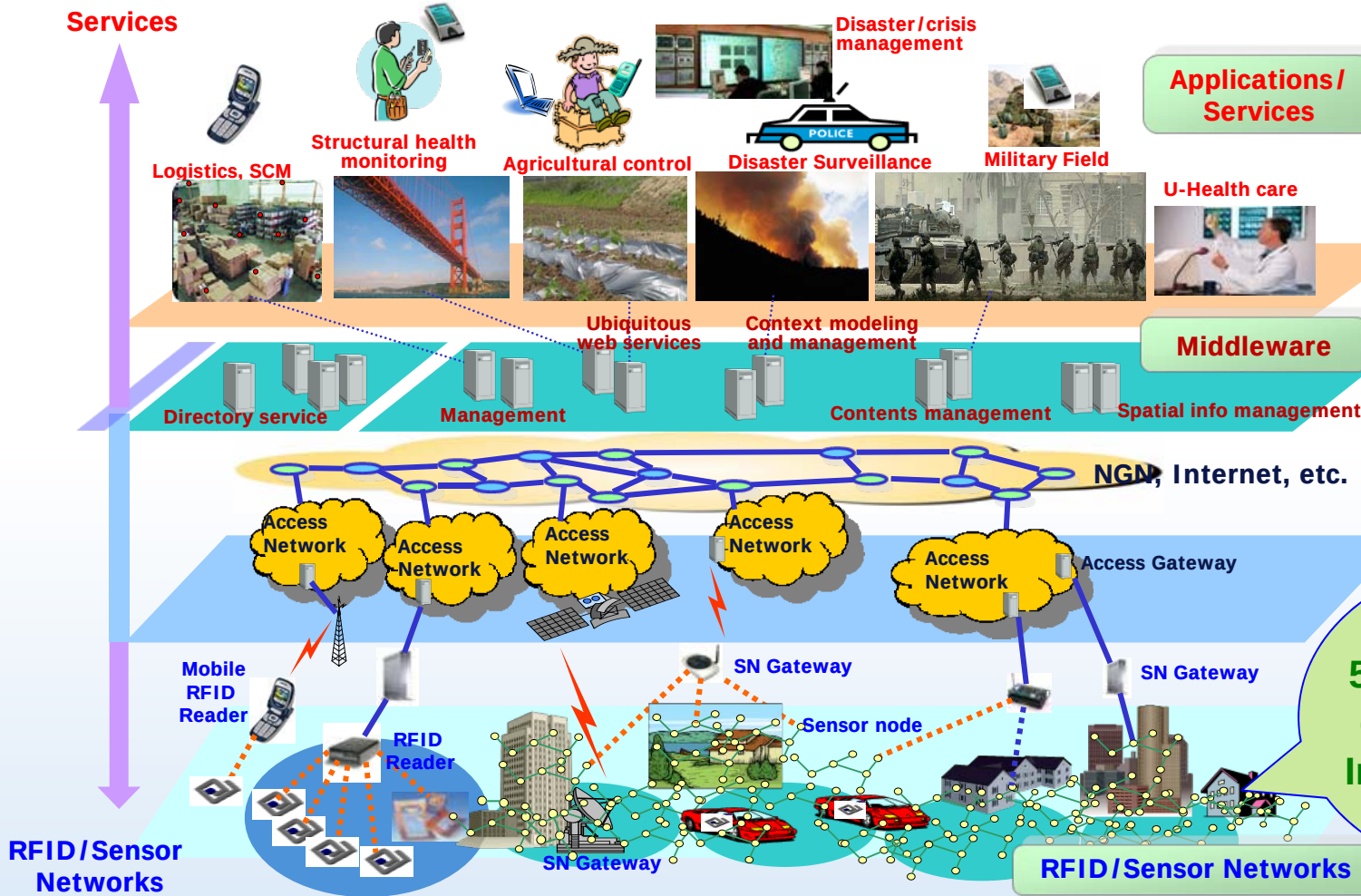
Ubiquitous
Sensing



Reliable
Transmitting



Intelligent
Computing



The global
revenue of IoT
will be 30 times
higher than the
Internet.

- Forrester Research

M2M traffic will
grow 40-fold from
2010 to 2015, at a
CAGR of 109 %.

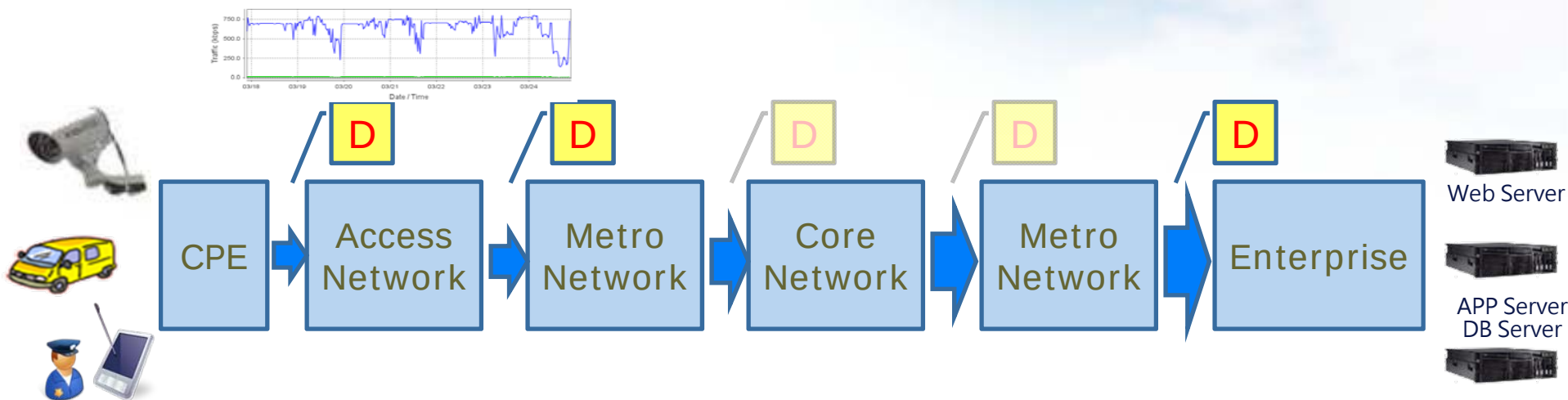
- Cisco VNI 2010-2015

More than
50B devices will
connect to the
Internet by 2020.

- Ericsson

CHT's Interests in Green IoT

❖ Study IoT Path model & Traffic model



❖ Traffic characteristics

- latency, jitter, packet-loss, packet-efficiency, ...





中華電信
Chunghwa Telecom

*Thanks for
your
attention!*



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