



Cloud Computing Center
for Mobile Applications

Disruptive Cloud Services - Trends and Business Models

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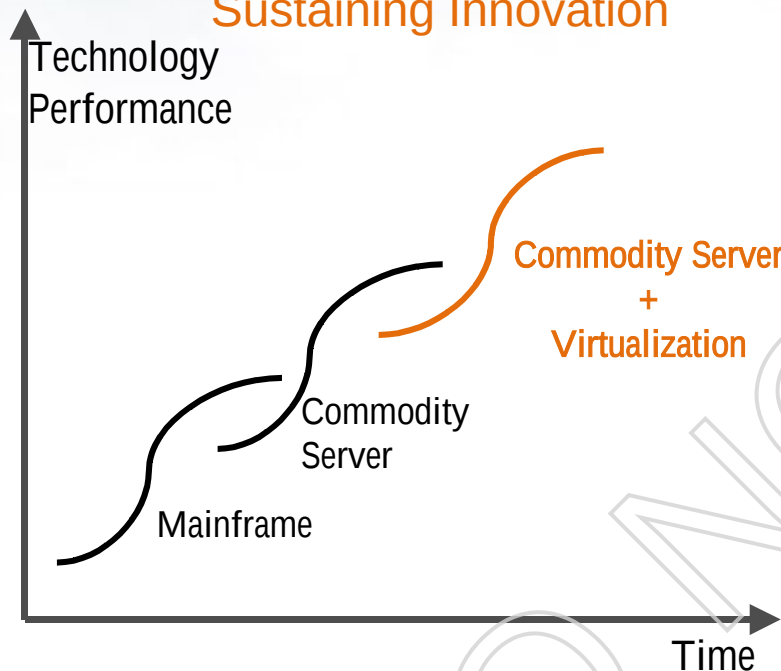
- Sustaining vs. Disruptive Innovation
- Trend of computing equipment
 - Cloud Computing is not the only trend
- Ideas of Cloud Services
 - EMR/HER Cloud
 - MDM in Smart Grid → Cloud Energy Management
 - Virtual Desktop Infrastructure as a Service)
 - Cloud Product/Food Pedigree Service
 - Plant Factory
 - EV Battery Exchange Service
- Cloud Services are disruptive

Sustaining and Disruptive Innovation

By Clayton M. Christensen, a professor at Harvard business school

Cloud Computing Technology

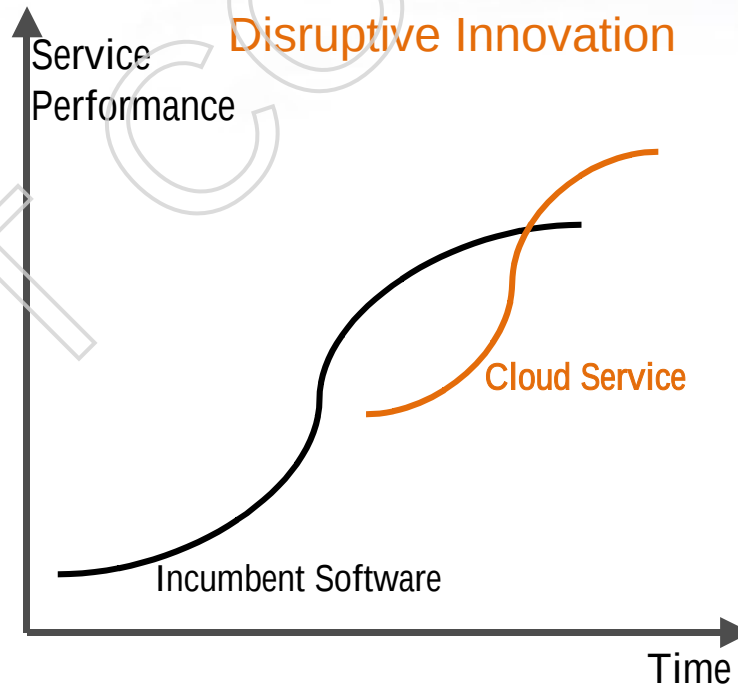
Sustaining Innovation



- Technologies provide better performance or functions
- Cloud Computing technologies extend existing technologies

Cloud Service

Disruptive Innovation



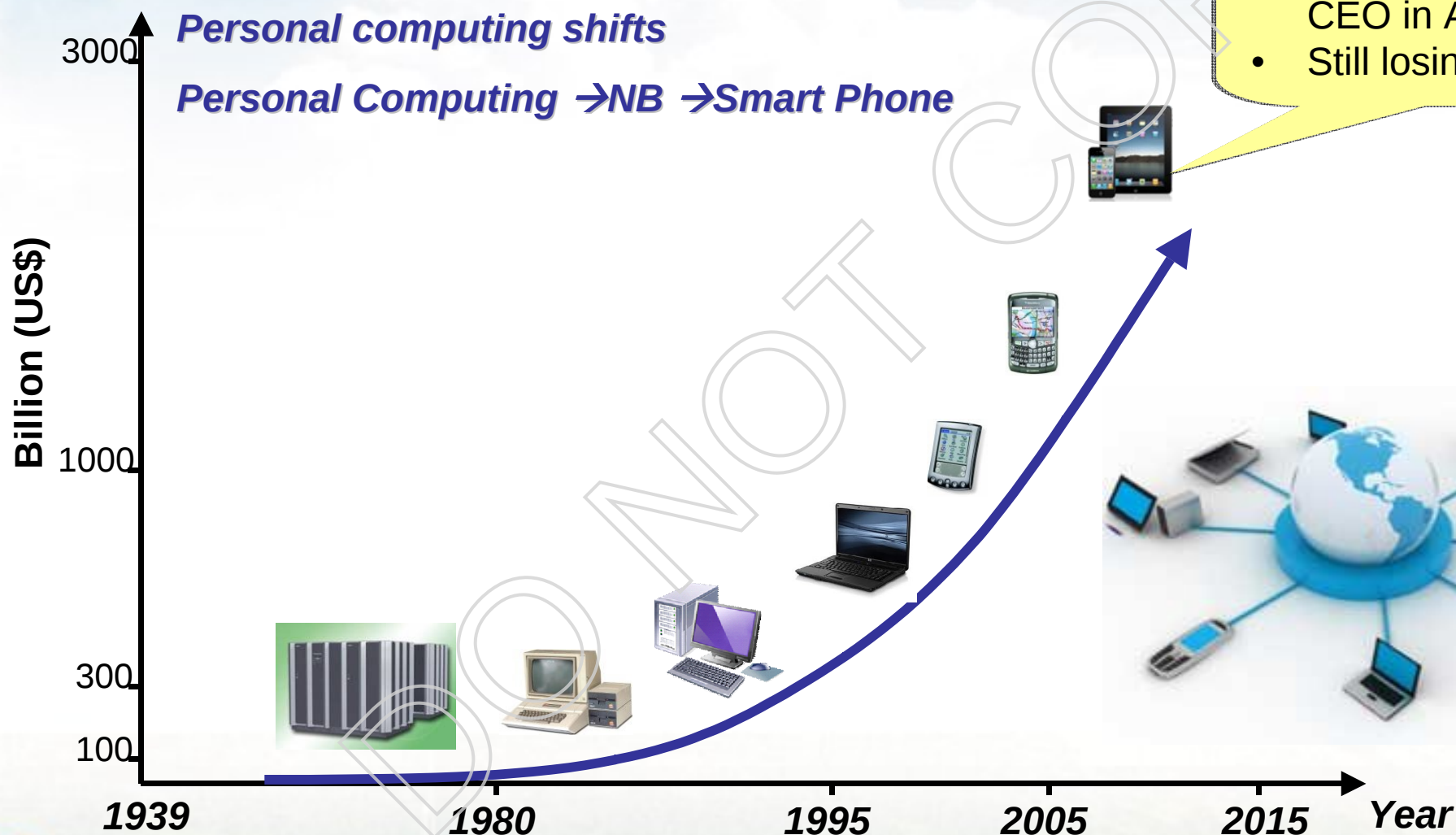
- Pay per use vs. License
- SME vs. Fortune 500
- Professional IT knowledge not required

資料來源：工研院IEK (2010/07)

Disclaimer

- Focus on business models and trends
 - Taiwan is already leading in IT manufacturing
 - Software is closely related to business model
- No discussion about the world leading vendors
 - google、facebook、Apple or Amazon etc.
 - You could find abundant info online.
- An ITRI biased perspective
- Comments and critics welcomed

Trend of Computing Devices



- Acer replaced Its CEO in April
- Still losing NT\$4BIL

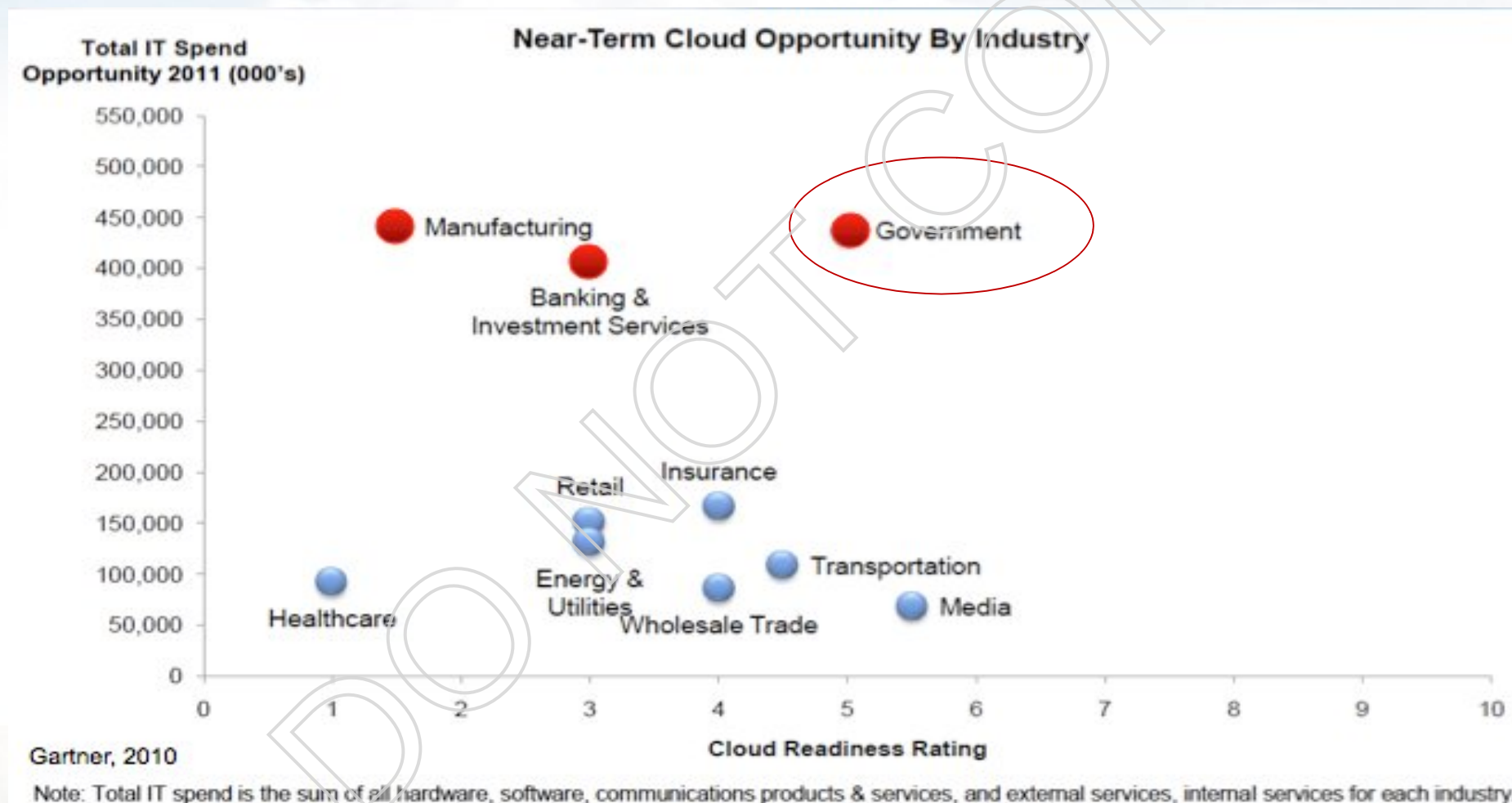
Other trends

- Global Warming
 - Japan to review nuclear energy policies
 - Massive Nationwide Protests Immediate End to Nuclear Energy in Germany
 - Cap & trade costs Faxconn US\$6MIL in Kaoshuang and read the story [here](#).
 - Electric vehicle trend and more...
- Global Financial Tsunami
 - Scarce natural resource with BRIC emerging
- Is it a paradigm shift? Or just another bubble? Are these trends related in any way ?

Telling the differences

- Which one Is Disruptive Innovation?
 - iPod → iPhone → iPad
 - iTunes → App Store → iBook
- Is better hardware spec a winning strategy?
 - Cheaper is no longer a winning strategy
 - Challenges Acer/Asus face
 - [Windows 8](#) was announced 2011/06/02. See video on [YouTube](#). To [release](#) in 2012 with [ARM support the key](#)

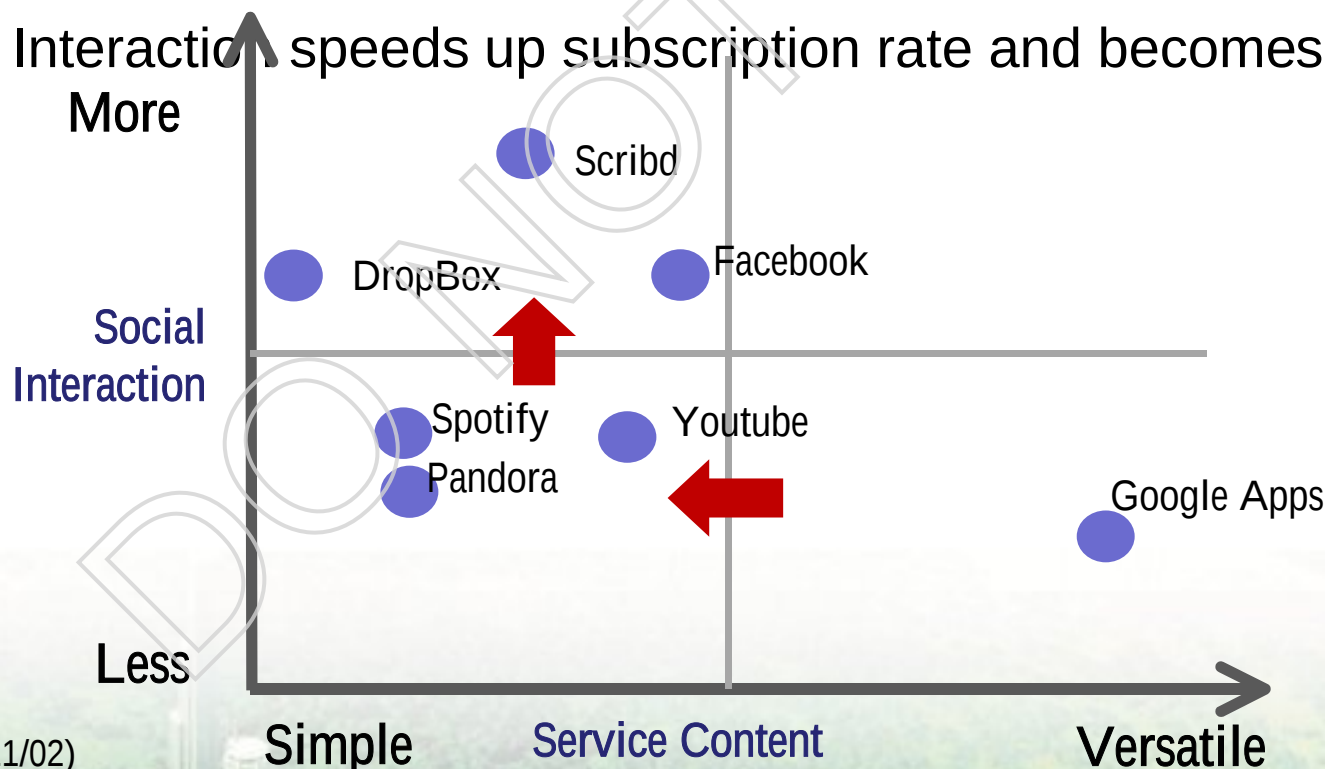
Government Drives Cloud Computing



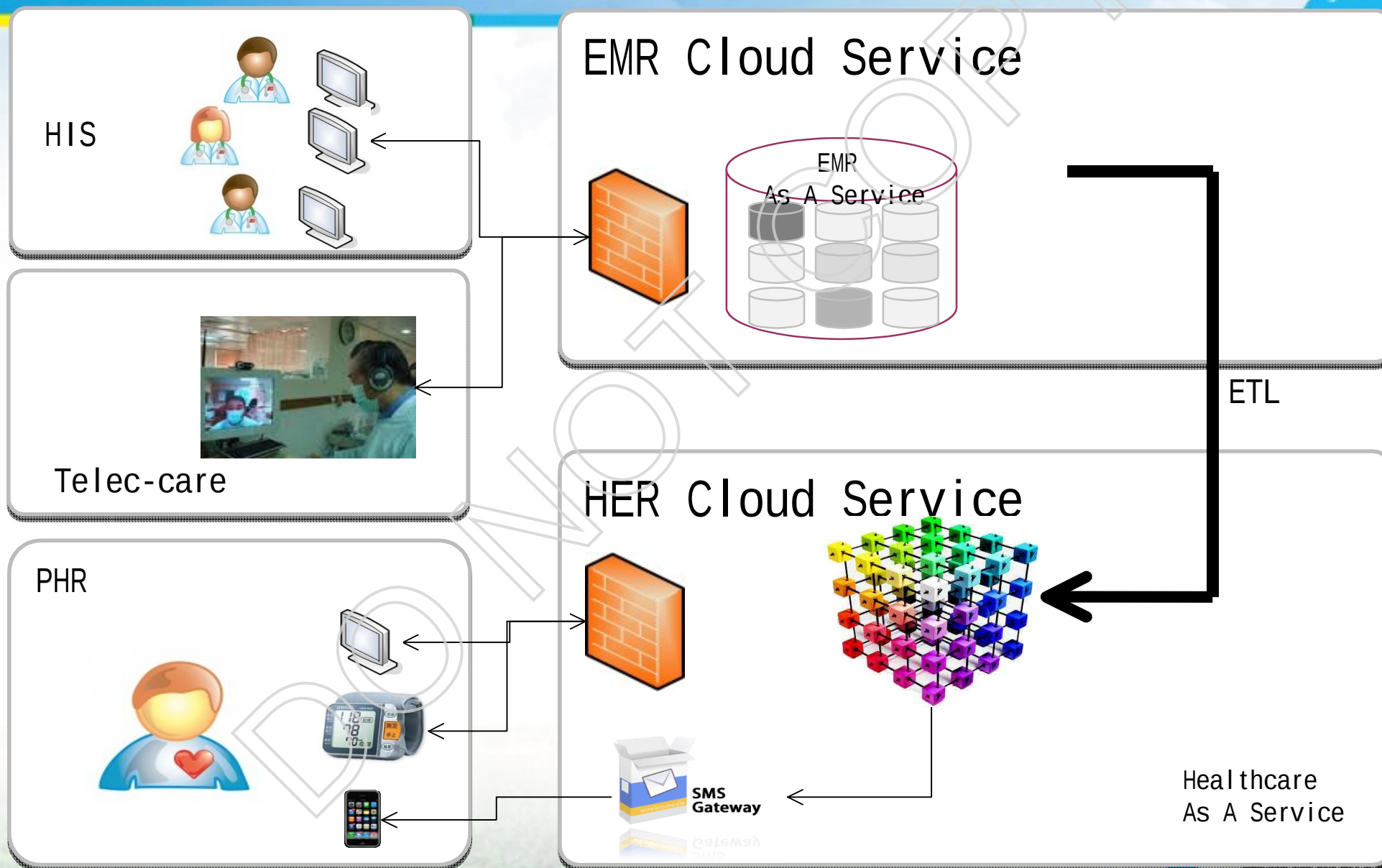
資料來源：Gartner；工研院IEK(2011/02)

Free Internet Service

- Simplified Service Model and Social Interaction are the new trends
 - Explosive information reduces consumer desire to adopt. Service simplification that could satisfy customer needs become the key to adoption success.
- Social Interaction speeds up subscription rate and becomes emerging trend.



EMR/EHR



Challenges of EMR

FACTS

- 10 servers with 100TB storage could keep life long record for every citizen in Taiwan.
- Based on the universal health care system
 - The NT\$500Bil budget split about evenly among medication, diagnosis and treatment
 - Any analysis regarding double prescriptions or diagnosis posts potential major savings to the system

Challenges

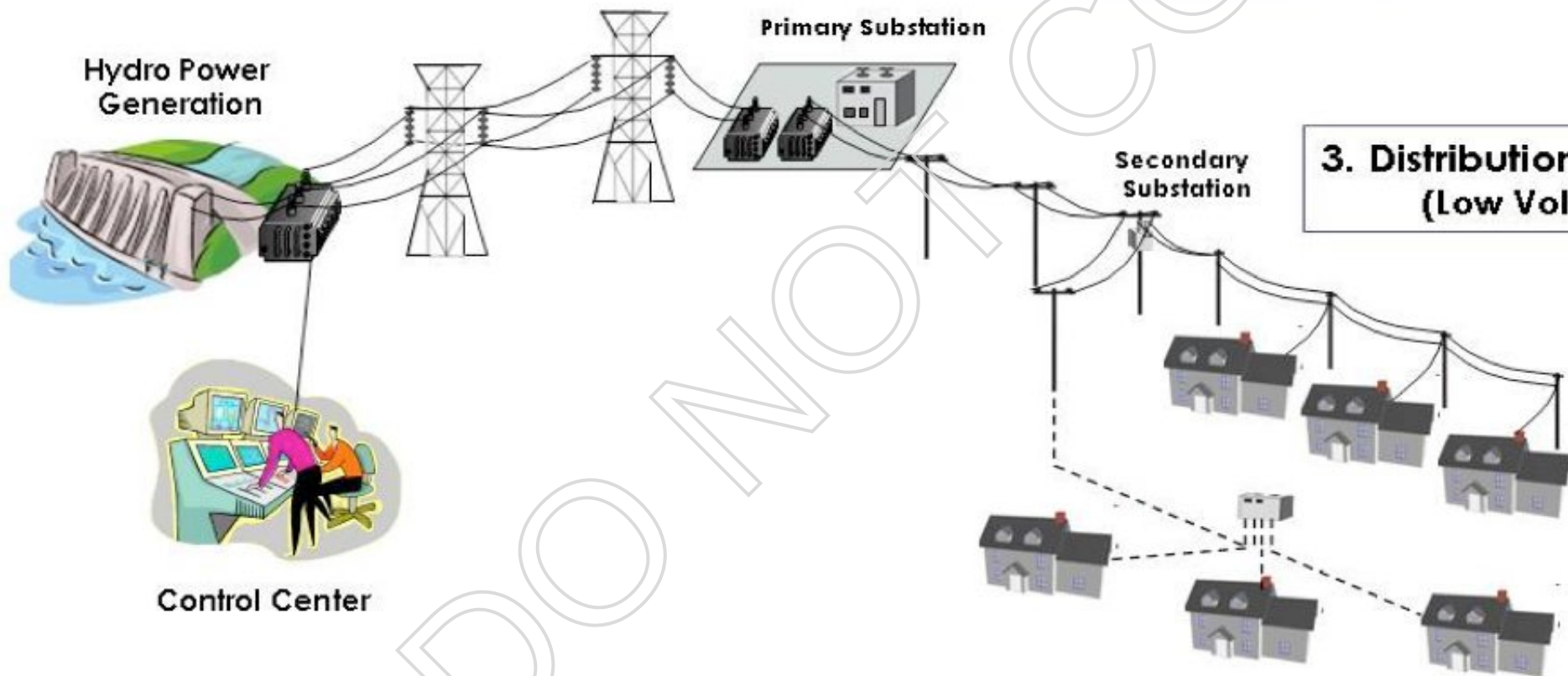
- Ultimate Owner?
 - Clinics? DOE? NIH? HIS
 - Vendors? General Public?
- Soul Searching
 - Not just saving trees
 - Life saving technologies
 - Improve transparency for proper budget allocation
- Medical industry is a close industry

Smart Grid

1. Transportation network (High voltage)

2. Distribution network (Medium Voltage)

3. Distribution network (Low Voltage)



Challenges of Smart Grid

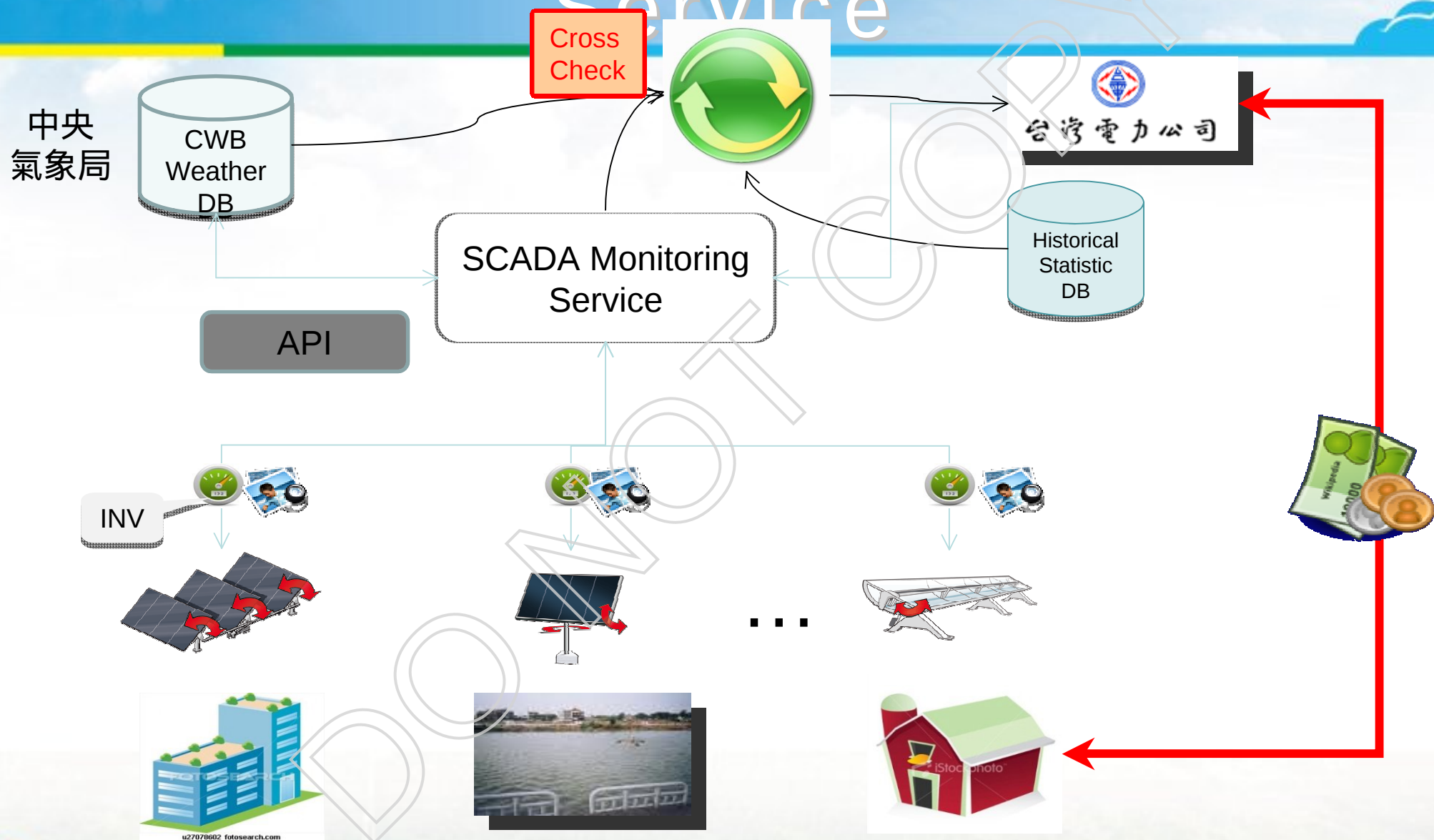
Facts

- 12MIL accounts in Taiwan
 - If data is collected every 15 minutes, it is estimated 1 BIL records a day, or 4 trillion a year. Definitely a good case for cloud computing.
- International standard such as [IEC TC.57](#)、[ANSI 12.18](#) are ready
- Top cloud computing example in Wikipedia

Challenges

- Upgrading the power grid may improve more efficiency than making it smart.
- Only one vendor – Taipower, which means it is not an open market
 - MDM along doesn't promote the related industry.

Renewable Energy Cloud Service



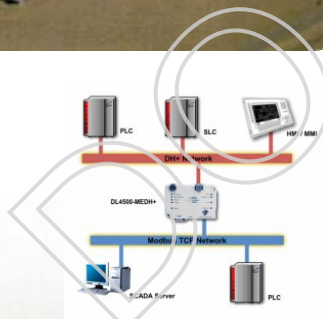
Scales of Renewable Energy

Large scale tends to be centralized

Budget: NT\$1BIL



10's millions



Micro scale tends to be distributed

Budget: Small



- Millions of NT\$10K = NT\$ Billions
- Not justified by power consumption along

Green Energy Trend

- US
- Japan
 - TBD
- German
 - TBD
- British
 - TBD
- China
 - increases renewable energy scale by 900% by 2015, from 3MKW to 25MKW, [8/30/2011](#)
[China Times](#)

Challenges of Renewable Energy

FACTS

- IT management
 - Costs a small portion in large scale deployment
 - Costs eclipse the baseline in micro scale deployment
- Shared IT management reduces cost
- Cloud Computing could be the savior of micro scale renewable energy

Challenges

- Sensor technologies
- Connection between micro scale deployment and cloud data center
 - 3G/4G are too costly
 - PLC allow shared power and data line.
- Also required MDM cloud data processing technology

Fun Innovative Ideas

PlanetSolar.org



Taiwan

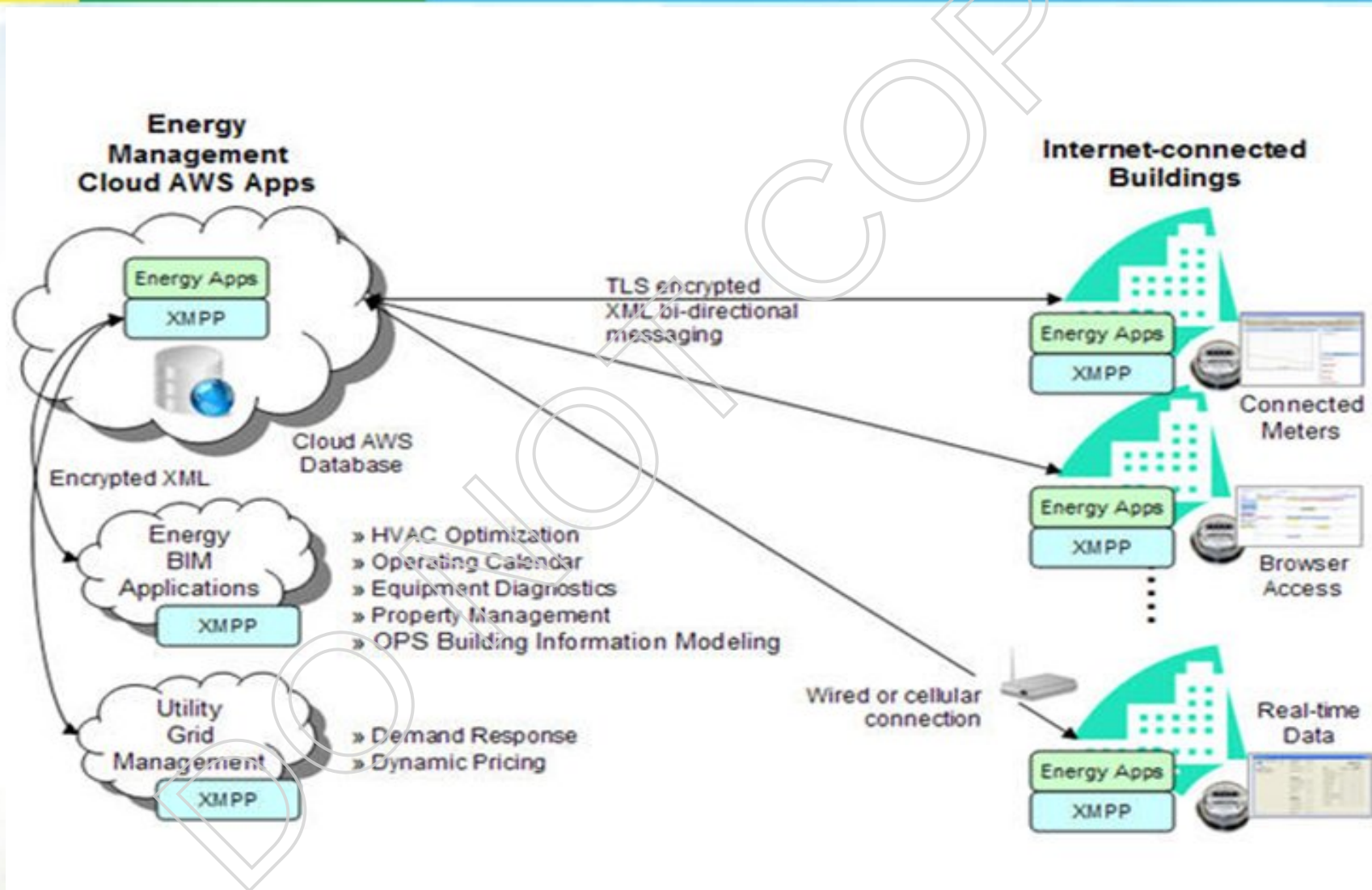


**Energy: NT\$2K vs. NT\$14k
Cost: NT\$5MIL more to make**

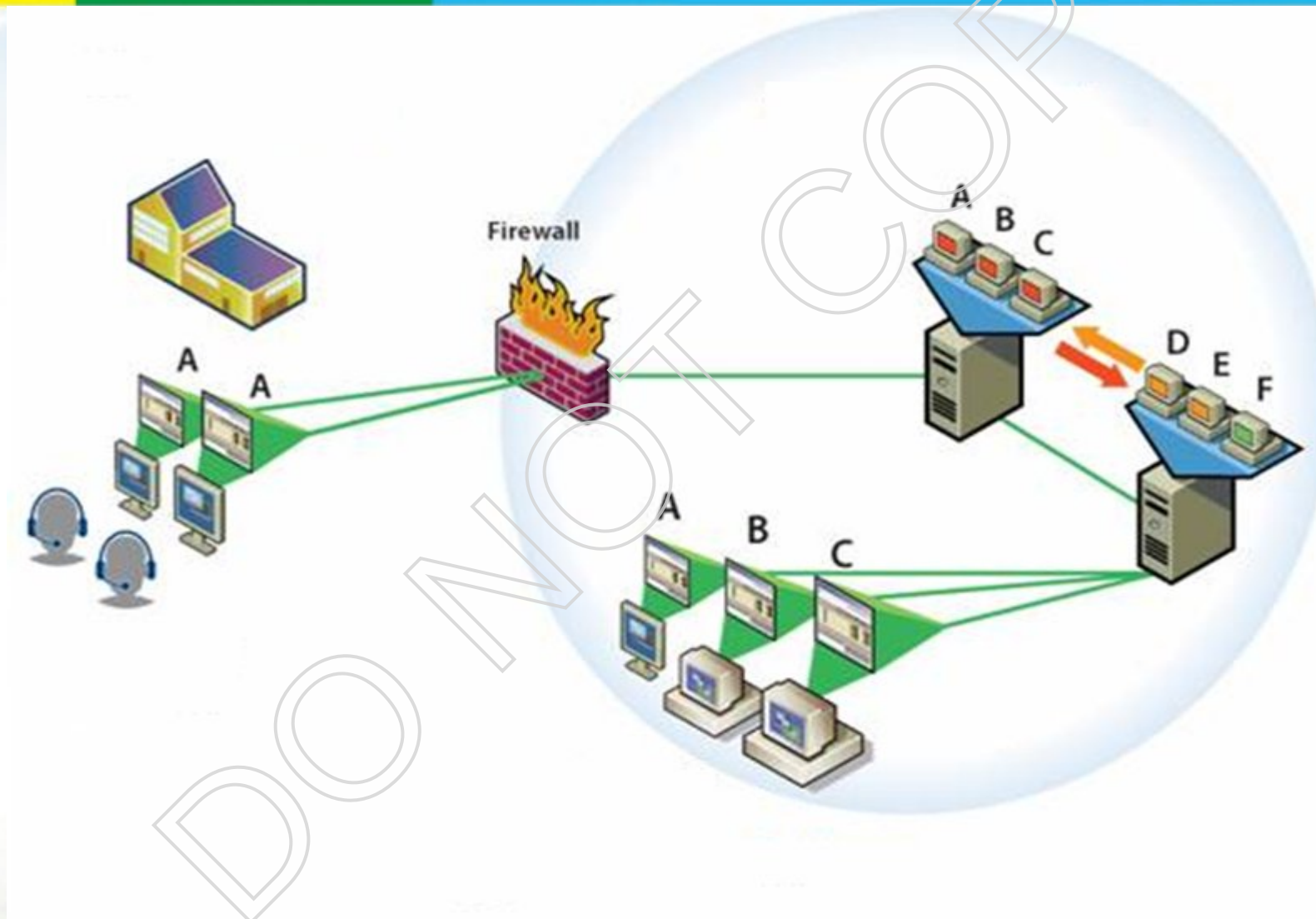
Energy Management Service

- Buy one get one free
- Infrastructure very similar to Renewable Energy Service
 - It applies differently on building, factory or public facilities
- Same argument for cost saving
 - Shared infrastructure reduces IT management cost
 - Shared data and power line through PLC reduce networking complexity and cost
 - Promote development in sensor technology

Energy Management Service



Virtual Desktop Infrastructure



Challenges of VDI

FACTS

全國1600所小學、800所中學、700高中班班有電腦，校校有電腦教室。約30萬部電腦，每五年淘汰一次

TANET連結25x1Gbps縣網中心，並以ADSL連線所有中小學

僅需3萬部主機即可提供等同原有30萬部電腦之服務，使用不受限於教室。

Challenges

- VDI 服務可取代原電腦教室之電腦嗎？

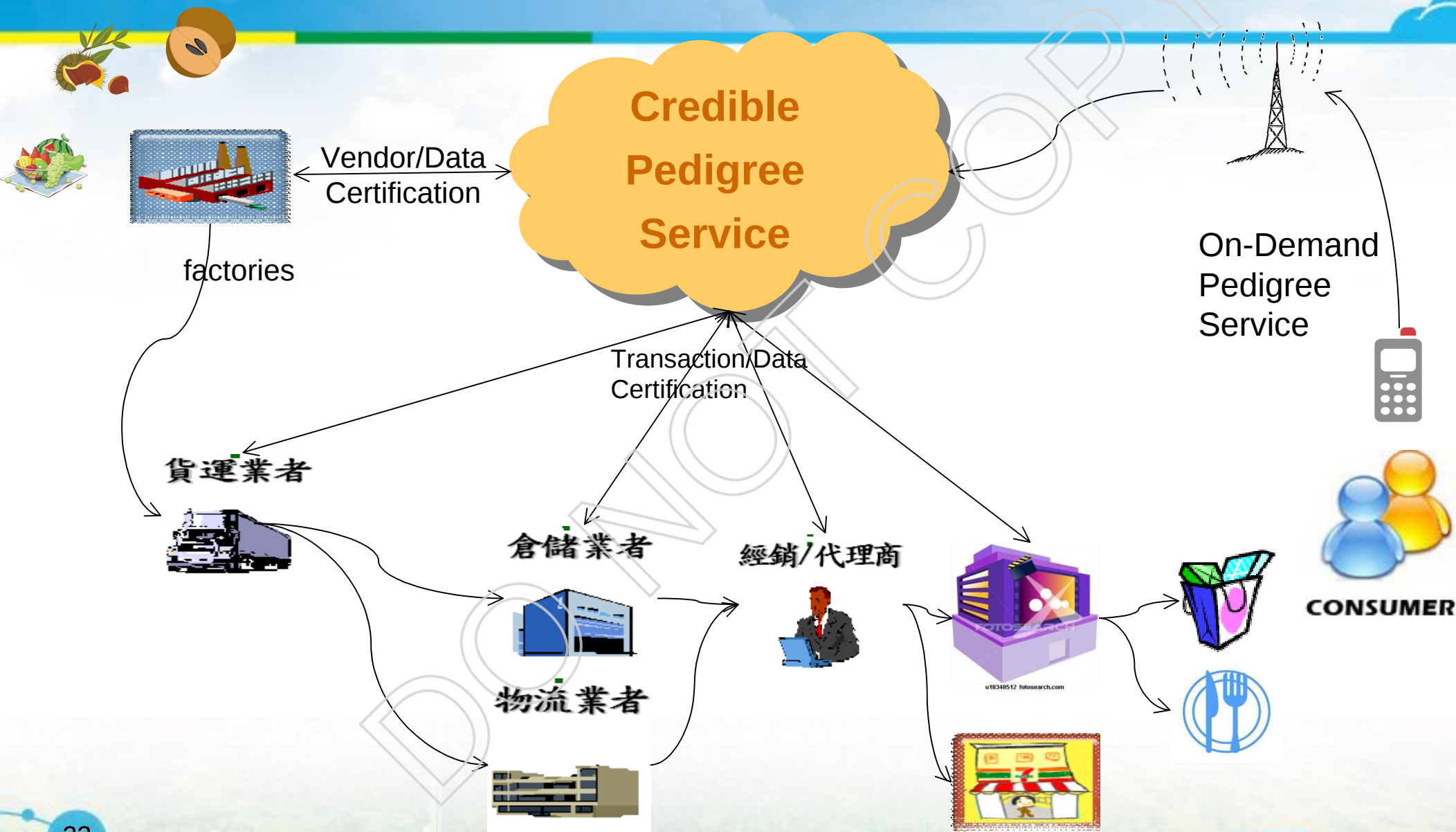
- 如何提供有如本地主機之多媒體使用經驗

如何架構？

- 於教育部各縣網中心架構約一千部主機之資料中心

如何配合平板電腦整體規劃
節省90%硬體及電力經費

Product/Food Pedigree Service



Challenges of Pedigree Services

FACTS

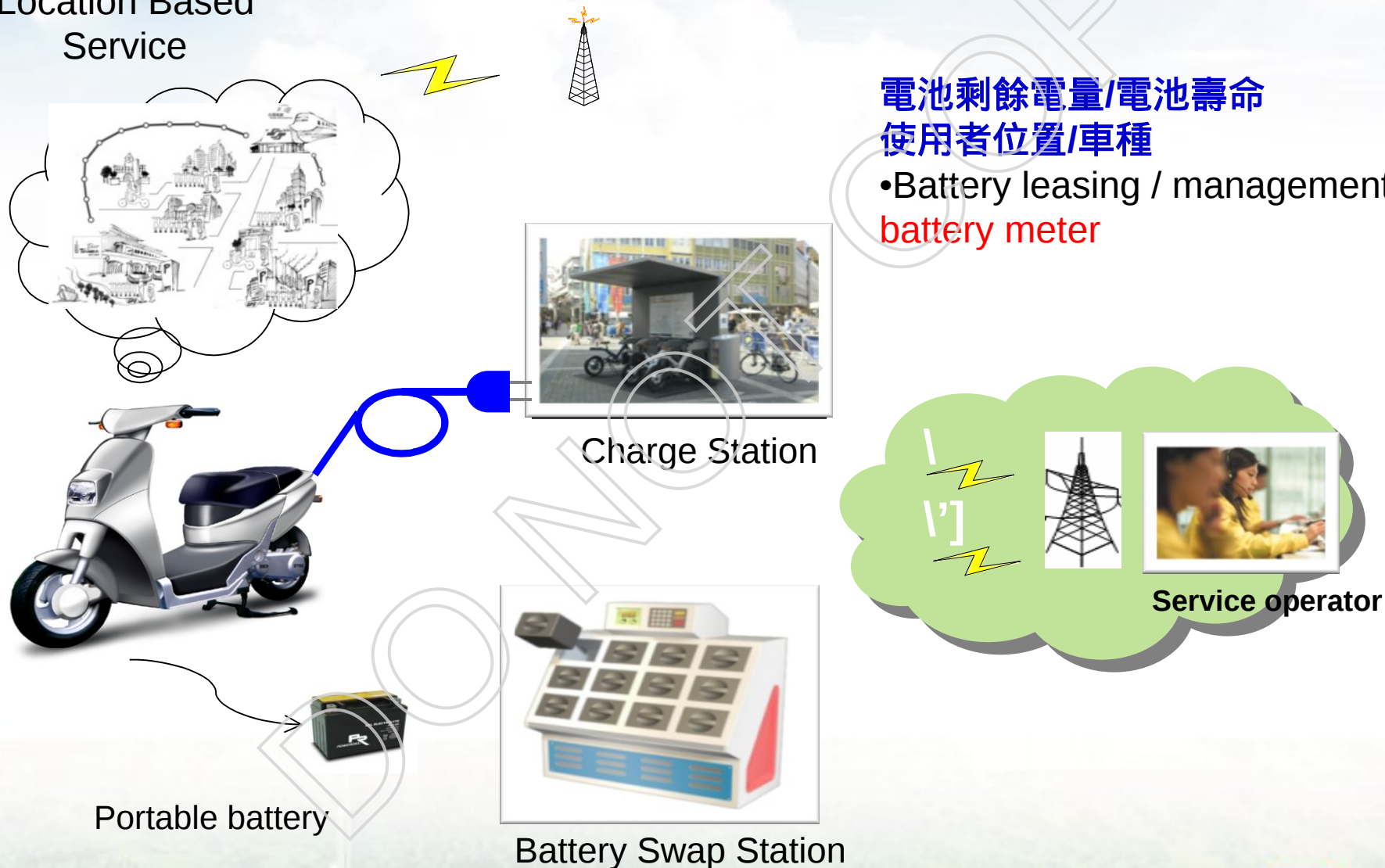
- US Congress asked FDA mandates a recall mechanism for both food and drug , both domestic and import. [FSMA, signed by Obama 1/4/2011](#)
- Japan Nuclear Disaster discharges mega tons of radioactive water to the ocean , [自由時報4/4/2011](#)
- [毒奶粉事件](#)
 - China 04/2003, China/US 03/2007, China/Taiwan 09/2007

Challenges

- RFID、Laser Engraving or QR barcode has their limits
- Broken links in the supply chain
- How to integrate with enterprise IT system
- How to integrate with smartphone and make pedigree a must-have service

EV Battery Exchange Service

Location Based Service



Virtualized SME IT Infrastructure



Snake Eyes Show Case

DEMO

In a nut shell , Disruptive Service is...

- Lower gross margins
- Smaller and fragmented target markets
- Simpler products and services
- However
- Asia specific or strategic
- Not a me-too of western models

Q & A

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