

Ecofriendly, Energy Saving, Healthy Life

Opportunity for the industry -smart grid opportunities and challenges

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Smart grid industry categories

Storage system/ fuel battery
Integration of battery, fuel battery and network

PV system
Integration of PV system and network (Inverter, CB...etc)

Wind power
Integration of wind power system and network (Inverter, CB...etc)

Energy-storage industry

Renewable energy industry

grid management/distributed energy generation system control

- Generating end operation control
 - › Automatic electricity control system

Distribution Automation

- DTU
- RTU
- FTU
- SCADA
- Automatic management

AMI

- Smart grid
- Communication module
- Concentrator
- Meter data management system

Residence, business, industrial energy management

- Energy monitoring system
 - › Sensor unit
 - › Load control
 - › Independent plant
 - › Interface

Electricity industry

EV industry
Recharging facilities, recharging management system, V2G

ESCO industry

Transportation industry

Energy-saving industry

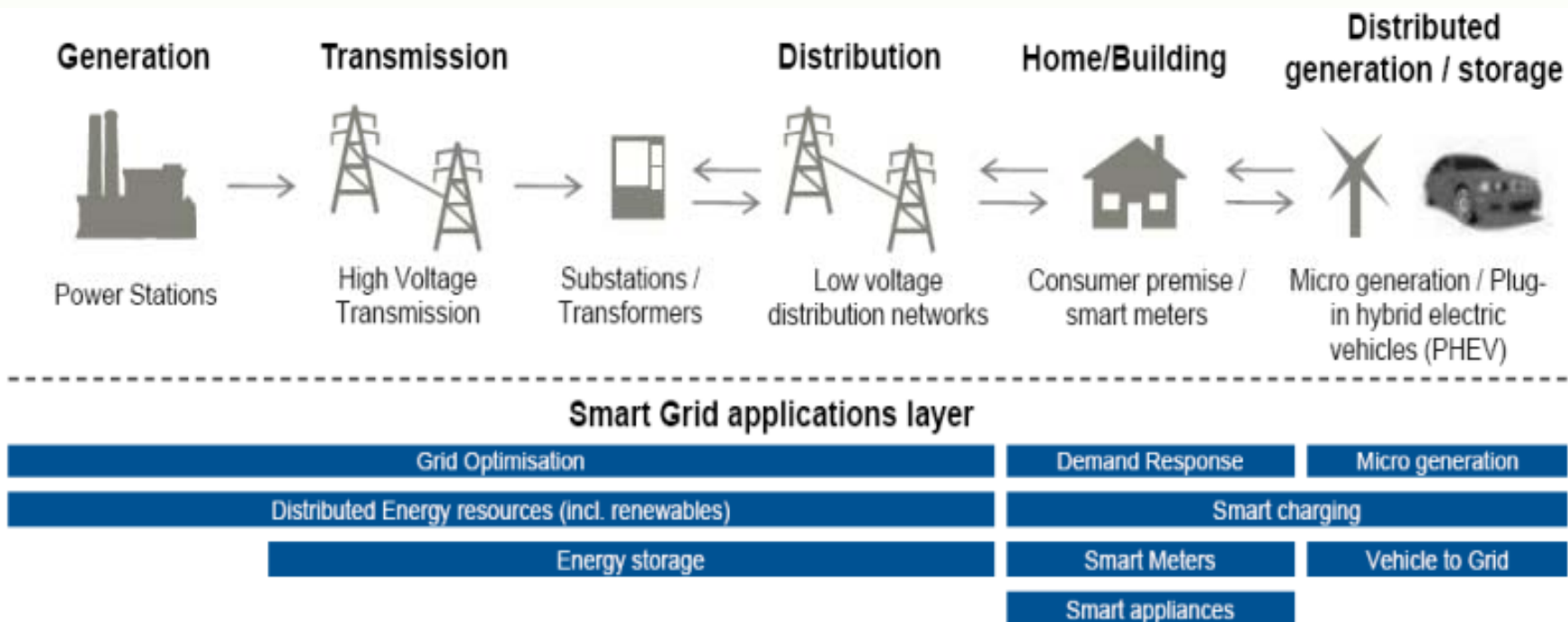
smart grid and other related services

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Structure of smart grid



Source: British Telecom



Development focus of smart grid in other countries

Country	Development focus	Purpose
U.S.A.	<ul style="list-style-type: none">◆ Enhance system reliability◆ Enhance EE◆ Promote DR◆ Develop EV	<ul style="list-style-type: none">◆ Replace old facilities◆ Prevent cascading outage◆ Stimulate the economy◆ Face the pressure to reduce CO2
Europe	<ul style="list-style-type: none">◆ Integrate DER◆ DSM◆ International grid	<ul style="list-style-type: none">◆ Introduce a large amount of renewable energy◆ Face the pressure to reduce CO2
Japan	<ul style="list-style-type: none">◆ Integrate DER◆ DSM◆ Develop storage techniques◆ Develop EV	<ul style="list-style-type: none">◆ Respond to solar power policies◆ Realize the vision of low carbon society
China	<ul style="list-style-type: none">◆ Smart distribution grid◆ Integrate DER	<ul style="list-style-type: none">◆ Responding to the increase of demand◆ Solve problems of energy distribution◆ Development of ultra-high voltage power transmission



Current situation of global smart grid market(1/2)

• Canada

Alberta and BC are promoting AMI, Ontario will complete installation of 0.8 million two-way AMI

• UK

Expect to complete installation of AMI of the nation's 26 million households by 2020

• Sweden

Installation of smart meter for the nation's 52 million households was completed in 2009, 100% coverage

• Denmark

Starting with the liberation of electricity industry in 2004, 0.4 million households have been installed AMI.

• Germany

Only 1.2 million of the nation's 43 million households are on trial.

• China

Smart grid plans initiated in 2009, expected to complete in 2020

• South Korea

Starting with Jeju demonstration project, national smart grid expected to complete in 2030

• USA

11 billion USD budget for smart grid. Obama proposed another project for which the government will invest 3.4 billion USD, private sectors will invest 4.7 billion USD.

• The Netherlands

0.1 million out of the nation's 7.6 million households are on trial.

• France

Expect to complete 100% of AMI installation in 2013

• Italy

31.5 million out of the nation's 36 million households have been installed AMI, it is expected to complete in 2011

• Japan

national smart grid expected to complete in 2030, a budget of 15 trillion yen will be used to build smart grid and smart communities

• Australia

Victoria has stated replacement of traditional meters, 2.5 million households would be completed in 2013.

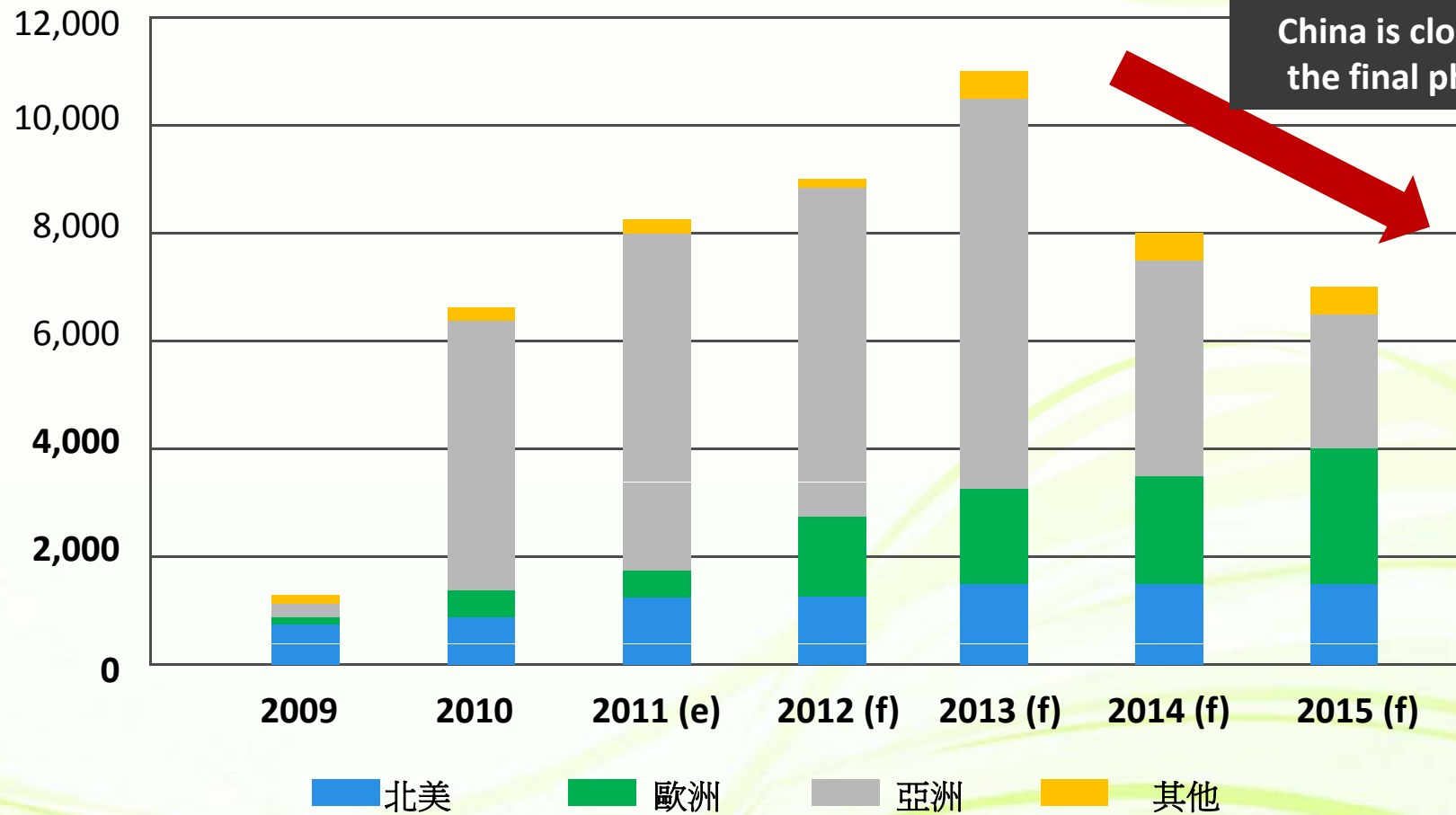
• New Zealand

1.3 million households expected to be installed AMI smart meter by 2013



Current situation of global smart grid market (2/2)

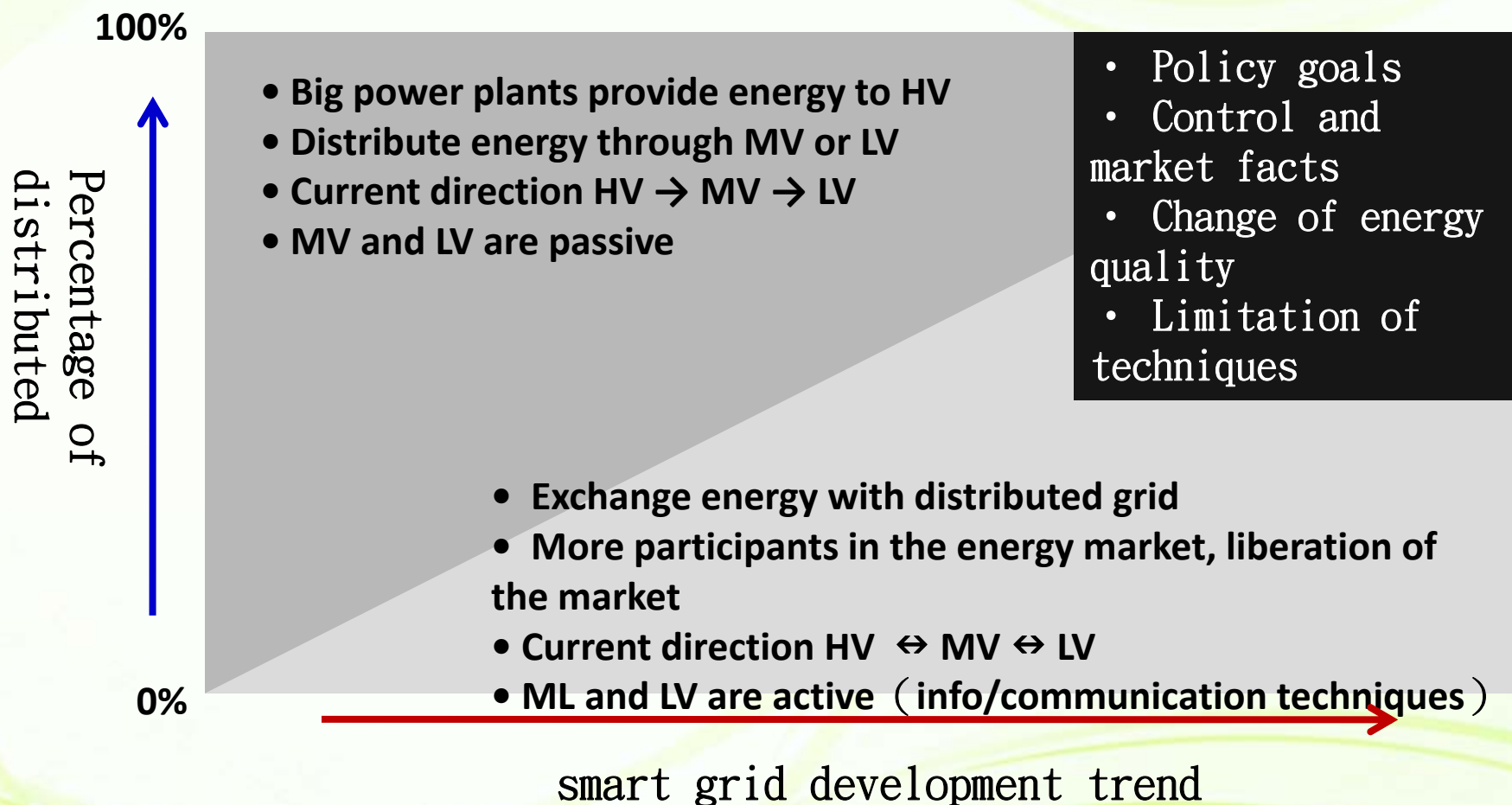
Prediction of global smart meter shipment



AMI installation in China is close to the final phase



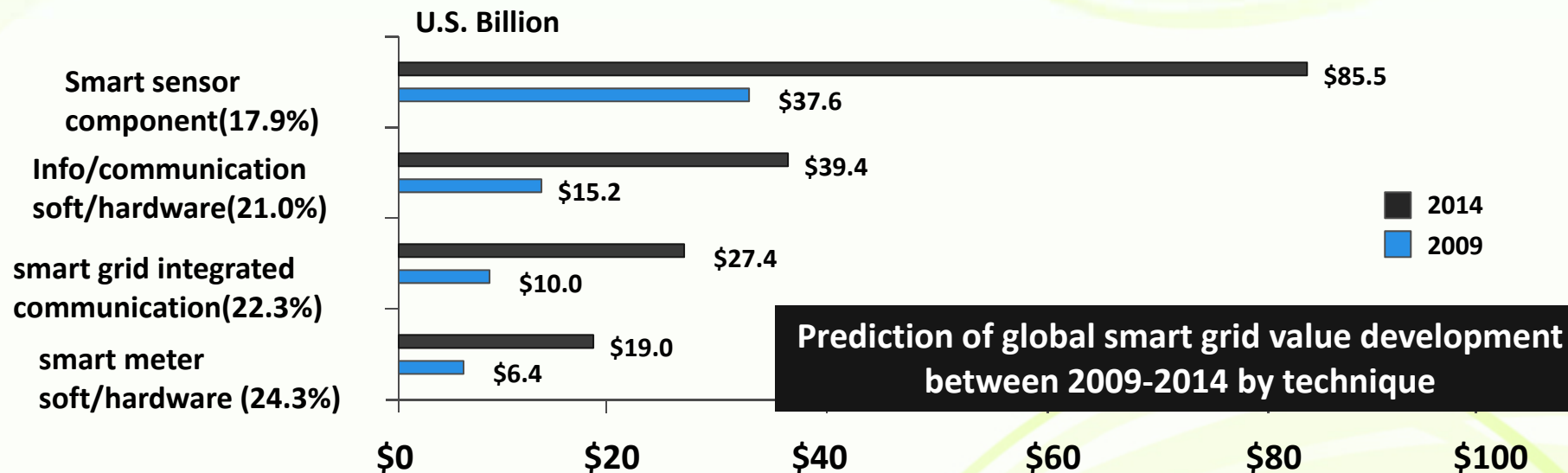
Impact factors of global smart grid market



Source : Distributed Generation with High Penetration of Renewable Energy Sources,
European Commission DG Research.



Prediction of the development of global smart grid market scale



■ Many countries see smart grid as one of the important policies in the future. China is expected to invest more than 7.3 billion USD, the second is 7.1 billion USD by the U.S.

■ Global smart grid market is expected to include component, facility, hardware, software, communication facility; these products will build, connect, monitor, manage and ensure smart grid to become the key infrastructure and communication system. ◦

Source: Zpryme Research & Consulting / Taiwan smart grid industry association



AMI related business opportunities

Energy industry

- Diverse value-adding service
- DR

IC industry

- EPM IC
- Wire communication IC
- Wireless communication IC

Home appliance

- Home appliance products which could have mutual support with smart meter

Communication

- Energy management service
- Remote control appliance mode
- Application of energy consumption info





Opportunities and challenges (1/2)

In terms of techniques

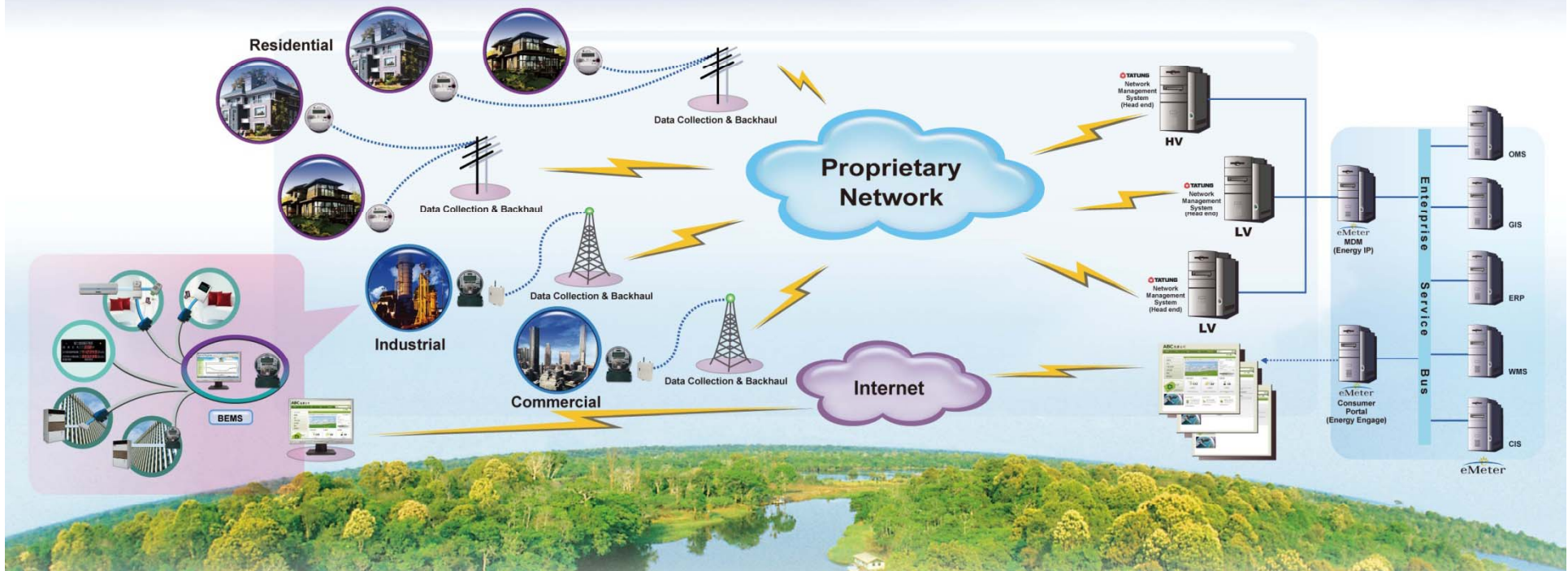
- **Key to success: ensure mutual support of different products**
- **Integration of interdisciplinary interface**
- **User acceptance: due to concerns for privacy, safety and encryption techniques will be the focus of future development.**
- **Develop consumer application market**
- **Develop products of industrial standard, instead of consumer electronic products.**



Opportunities and challenges(2/2)

In terms of the industry

- **Globalization: AMI market growth is switching from Europe/USA to Asia, the market in China is growing especially rapidly.**
- **Complicated installation of big scale is expected to attract more participants in the industry.**
- **cross-industrial cooperation is helpful for enhancing competence.**
- **Support from governmental policy is an important impact factor.**
- **Construction of energy projects is a long-term business; those with long time achievements are more advantaged.** ◦



Thank you for listening