Korea IT Strategy and ETRI

June 3, 2016

ybchoi@etri.re.kr

Scene in 1960

Scene in 2015

Statistics of the Korea's ICT Industry

Growth of Korea's ICT Sector

ETRI

1970

2015

Production

1.3Million US$ (0.01% of GDP) → **382 Billion US$ (8 % of GDP)**

- ✓ Hardware……………………….74 %
  (Display Panel, Semiconductors, Mobile Phones, Others)
- ✓ ICT Service…………………..16 %
- ✓ Software……………………...10 %
  Employment 9.8 %

Export

5 Million US$** → **173 Billion US$ (30.3%)

- ✓ ICT Companies
  3,789(1986) ➜ 23,504

ICT Export Portfolio

ETRI

From Labor-intensive to Technology & Capital-intensive

Home Appliances
49.5%(1970) ➔ 8.5%(2015)

Information Devices(PCs)
2.7%(1970) ➔ 22.1%(2015)

Electrical Parts
37.1%(1970) ➔ 54.6%(2015)

Mobile Devices
10.7%(1970) ➔ 30.1%(2015)

TOP 3 ICT Products as of 2015
✓ **Memory Chips**
  64K D-RAM developed in 1983 ➔ **NO.1 Global Market Share (46.1%)**
✓ **Mobile Phones**
  CDMA technology developed in 1988 ➔ **No. 2 Global Market Share (30.1%)**
✓ **LCD Display**
  1G LCD production line launched in 1995 ➔ **No.1 Global Market Share (52.5%)**

ICT Infrastructure

- **Advanced ICT Infrastructure**
  - ✓ **Average Subscription(Mobile, Landline) : 1.4 phones/person**
    - Landline : 24.5/100 Person(1988) ➔ 31/100 person (2015)
    - Mobile : 0.05/100 Person(1988) ➔ 116 /100 person (2015)
  - ✓ **High-speed Internet Service** (per 100 person)
    - Subscriptions : 0.0 (1988) ➔ 33.5 (2015)
    - Internet Service : 6.78(1988) ➔ 77.0 (2015)
- **International Indicators**
  - – **Internet Usage Statistics(OECD, 2015)**
    - Highest number of households with broadband access
    - Highest number of Internet users who created their own websites
  - – **Ranked as No.1 , ICT Development Index (ITU, 2014)**
  - – **Ranked as No 1 , E-Government Readiness Index (UN, 2014)**
  - – **Ranked as No. 22, IMD Competitive Index (2014)**

Success Factors

Driving policies for the future

Global IT leadership – Smart Korea
- **New IT strategy, IT Korea future strategy, green IT strategy**
- Top memory and display manufacturing country, 2nd mobile handset manufacturing country in the world

Companion growth of IT service-infrastructure-device
- **IT-839 strategy, u-Korea master plan**
- Developed portable Internet first in the world in 2004, exported over 100 billion dollars worth of IT products.

Wire/wireless infra construction and advancement
- **Basic IT promotion plan, Cyber-Korea 21, e-Korea Vision 2006**
- Commercialized CDMA first in the world in 1996, secured 10 million high-speed Internet service subscribers in 2002

Independent industrial base establishment
- **Semiconductor industry nurturing plan, basic plan for national infra computing network**
- First domestic PC export in 1984, exports 10 billion dollars worth of electronic products by 1987

Setting up the industrial development foundation
- Legislated "Electronic industry promotion law", 5-year science and technology plan
- Export 1 billion electronic products in 1976

After 2008

2003 ~ 2007

WiBro 지상파 DMB

1995

CDMA

2002

1981 ~ 1995

1960 ~ 1980

TDX

DRAM

Success factors
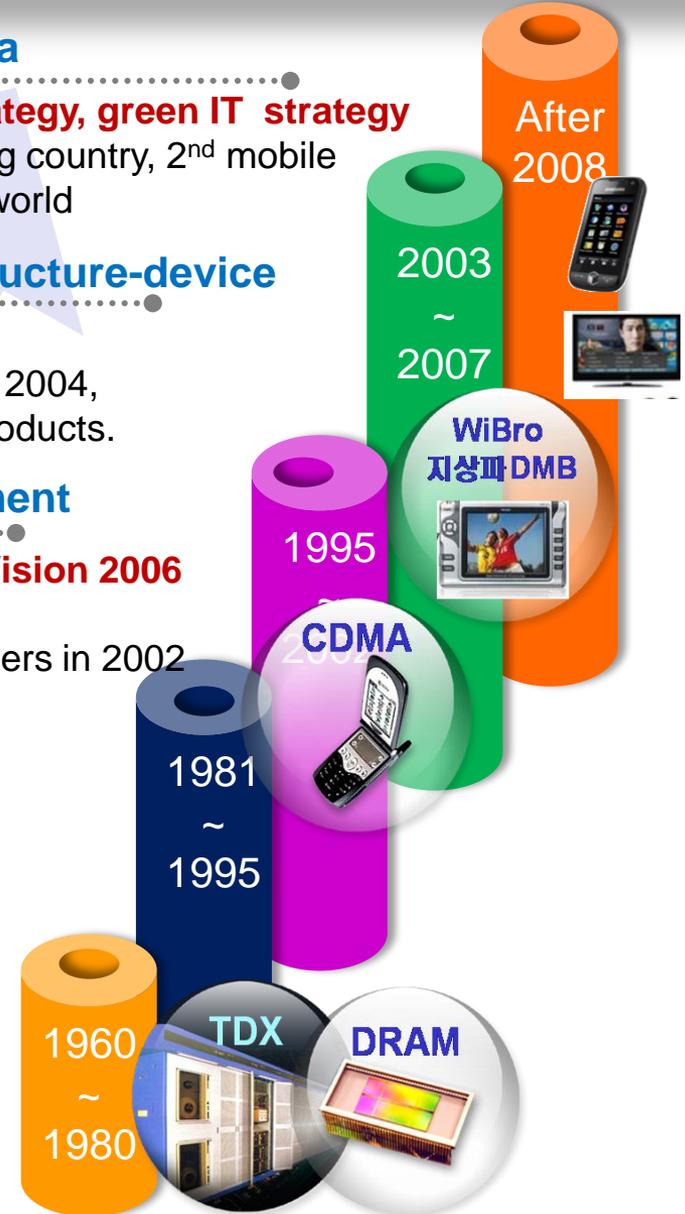
Policy

Strategy focused on Technology, Export & Informatization
☞ Export-oriented Growth Strategies & Support for Technology
☞ Informatization efforts to establish powerful Information & Communication Infra

Business

Strong Entrepreneurship, Excellent Human Resources
☞ Active Investment, Excellent Human Resources
☞ Semiconductors, Display Panels, Mobile Phones

External Factor

Wider, more flexible for International Trade
☞ The emergence of the GATT, the IMF, the WTO's shift to a multilateral regime
☞ Better opportunity to Korea for the expansion of ICT market

Future Direction for ICT industry

Fall and rise in ICT sector

ETRI

Ranking	1989			1999			2015		
	Company	Market Cap.	Nationality	Company	Market Cap.	Nationality	Company	Market Cap.	Nationality
1	IBM	541	USA	Microsoft	6,044	USA	Apple	724,773	USA
2	Hitachi	344	Japan	Cisco	3,511	USA	Exxon Mobile	356,548	USA
3	Panasonic	341	Japan	Intel	2,745	USA	Bershire Hathaway	356,510	USA
4	Toshiba	284	Japan	Nokia	2,222	Finland	Google	345,849	USA
5	NEC	194	Japan	IBM	1,925	USA	Microsoft	333,524	USA
6	Fujitsu	191	Japan	Oracle	1,581	USA	Petro China	329,715	China
7	Sony	171	Japan	Dell	1,301	USA	Wells Fargo	279,919	USA
8	Sharp	146	Japan	Ericsson	1,286	Sweden	Johnson & Johnson	279,723	USA
9	Lucent	139	USA	Qualcomm	1,247	USA	Industrial & Commercial bank of China	275,389	China
10	Sanyo	135	Japan	Sony	1,223	Japan	Nobartis	267,897	Swiss

* Market capitalization as of December 31 each year, excluding telecommunicastion service companies

In decline   In rise

Changes in the world ICT Industries

Competitive Edge
Facilities/Price/Quality → Labor/Creativity/Speed
Suppliers' Market → Consumers' Market

Growth Engine
Growth of the ICT Industry → Slower Growth of ICT
Rise of Convergence Market
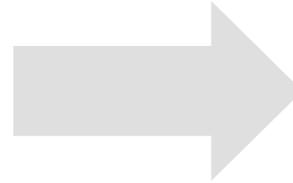
Global Competition
Emerging Economies, → Advanced Countries
China, India and S. America
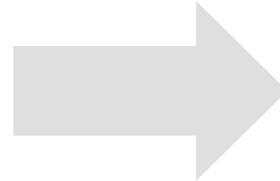
Priority
Growth led by the HW Industry → Software Industry gaining prominence

Korea's ICT Policy Direction

ETRI

Preparation for Changes in the ICT Paradigm

- ✓ Establishment of the ICT Industry Development of Vision 2020

Creation of the New ICT Market

- ✓ Dissemination of Convergence among ICT & other Industries
- ✓ Process Improvement through ICT Usage

Expansion of Growth Potential

- ✓ Incubating ICT Experts
- ✓ Reduce/Eliminate Regulatory Issues

ETRI- The Power House of ICT

ETRI is a world-leading, diverse, R&D organization.

- An independent, non profit research institute
  Founded by Korean law 1976
- 3,000 staff members (2,770 engineer, Admin 230)
- 2015 Consolidated revenues : approx. $ 618 M

Major Numbers

Personnel Status

Doctors
45%(770)

Masters
53%(909)

Bachelors
2%(43)

Operation Status

Government Commissioned
Projects 74%

Government Projects
15%

Contracted Researches
7%

Royalties/Others
4%
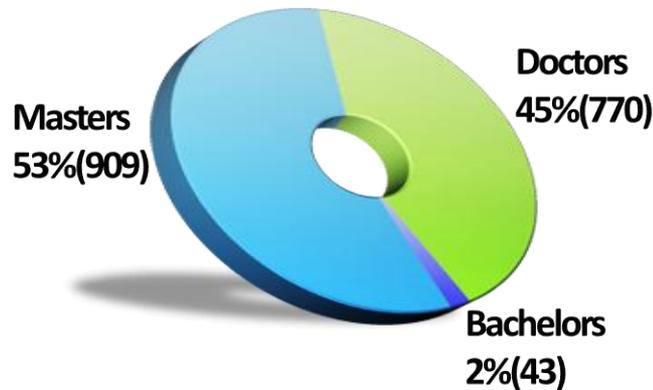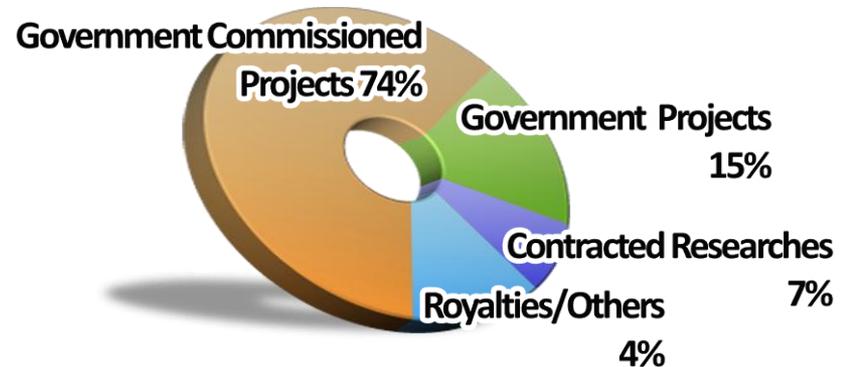
- **Technology Licenses**   (3,328 technology, 6 55.9Millon Dollars)
- **Standardization contribution and patents** (620 expert, 10,717 contributions)
- **Spin off companies**   (180 companies)
- **Alumni professors**   (1,000 professors)
- **Patents**   (43,592; International 14,345, Domestic 29,247)
- **Papers**   (SCI papers ; 3,301)
- **3 years in a row Rank No. 1** evaluated by Innovation Patent Anchor(IPIQ) among 288 organizations

Impact on Society

Economic Impact
$169.8B
for 40 years

TDX
1986

DRAM
1988

CDMA
1996

WiBro
2004

Terrestrial DMB
2004

Smart Ship (SAN)
2010

4G LTE Advanced Tech
2011

3,800	• ETRI Alumni
479	• Start Ups
24	• Spin Offs
1	• Venture Capital

Partners for Technologies

ETRI

Government

Telcos

Vendors

Service Providers

Technology Portfolio

- **IT Convergence Technology**
- **Information & Communication Technology**
- **Broadcasting & Media Technology**
- **Communication Internet Technology**
- **S/W Contents Technology**

Innovation Chain
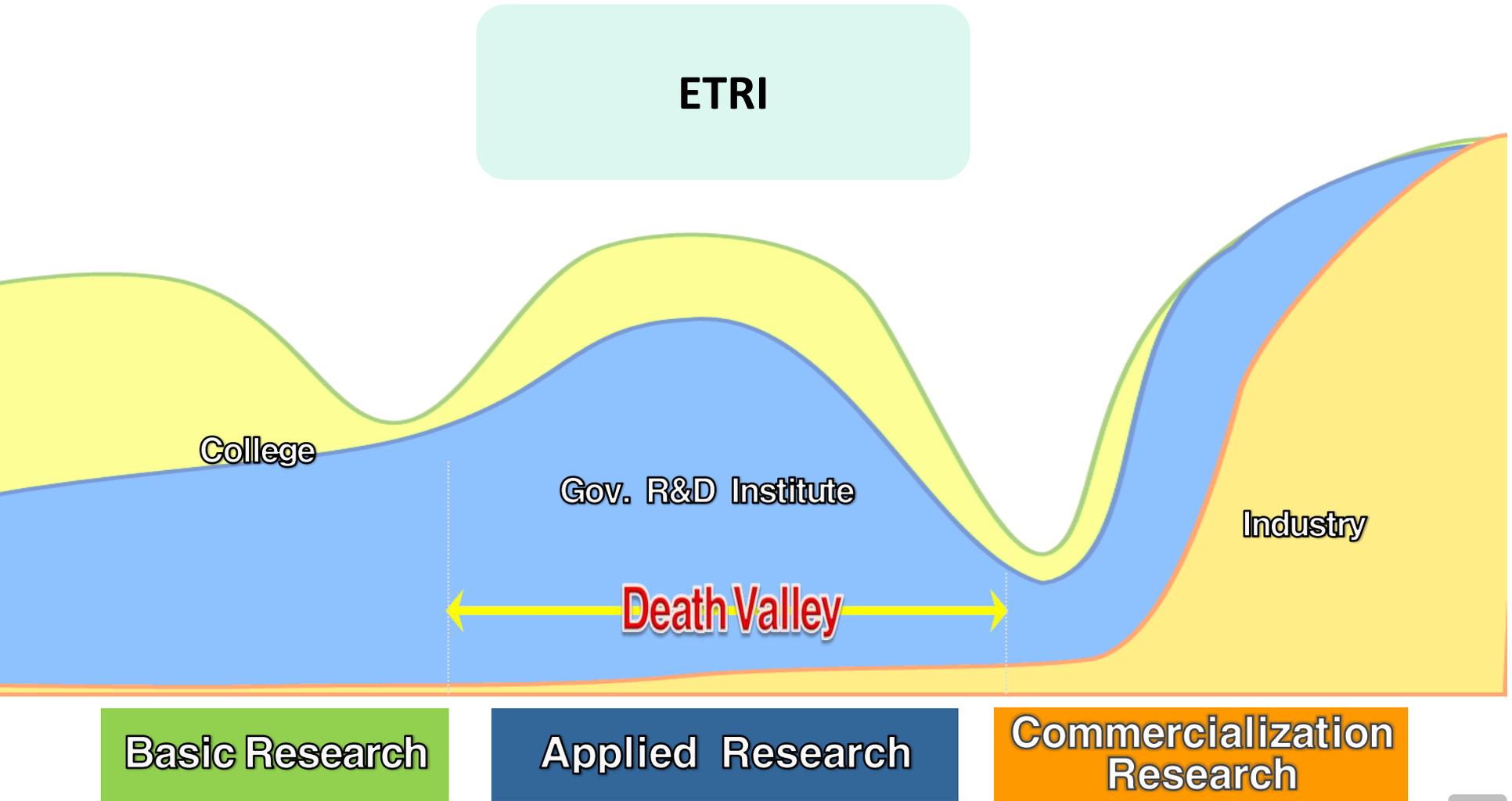
ETRI

R&D Projects	Licenses	Products	Ventures	Innovation

→ Commercialization

E-KSP (Knowledge Sharing Program) ETRI

ETRI as a Knowledge Sharing partner
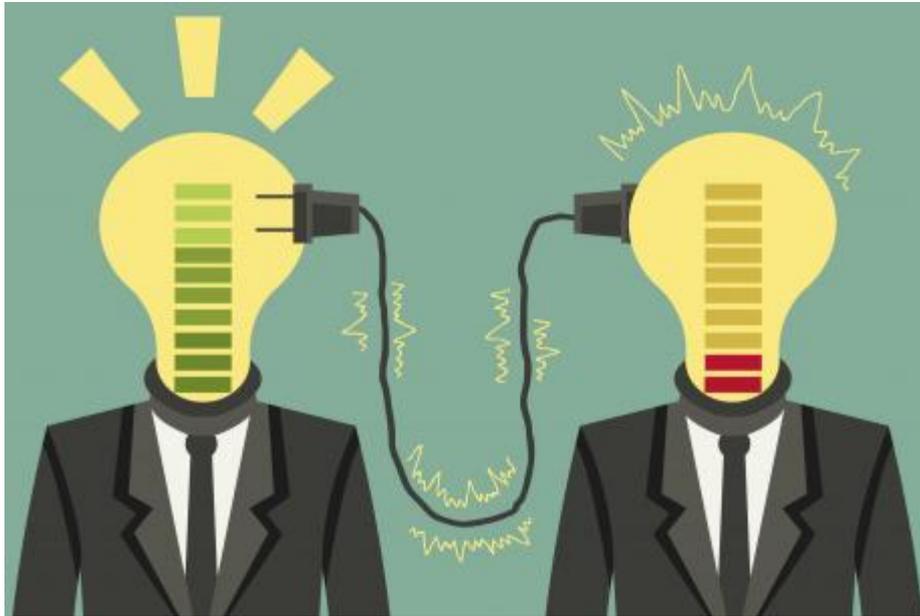
Sharing knowledge based on consulting
- **ICT R&D center setup and its operation**
- **Engineering resource management**
- **R&D Project Master Plan**
- **IPR management**

Why ETRI

- **Strong and reliable R&D resource**
  - ✓ **More than 3,000 engineers, 350 projects yearly**
  - ✓ **Successful developments for commercialization**

- **Experience for commercialization**
  - ✓ **CDMA, IPTV, DMB and Security technology**
  - ✓ **Progressive R&D projects with industry**

- **Wide range of cooperation**
  - ✓ **Governments**
  - ✓ **Industries   (telcos, worldwide)**
  - ✓ **Universities   (10 Open Labs)**

- **Strong Leadership**
  - ✓ **Government-Industry- Academy**

Suggestion

Overseas Partners

- ➢ **ICT service, Solution Deploy**
- ➢ **Collaborative R&D project**
- ➢ **Training human resources**

ETRI
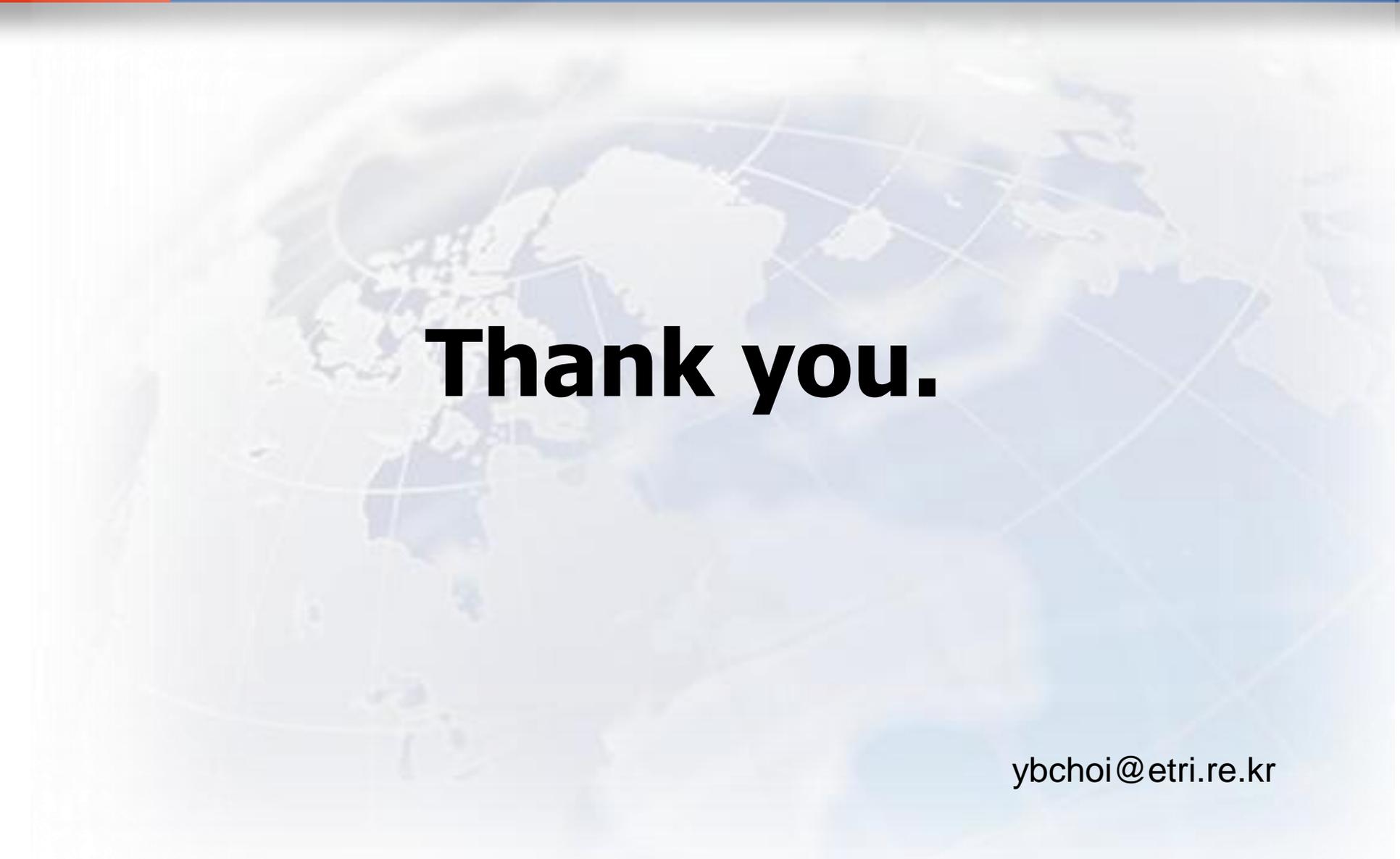
Thank you.

ybchoi@etri.re.kr