Advance to the Future Together

Korea's Innovative 5G Strategy
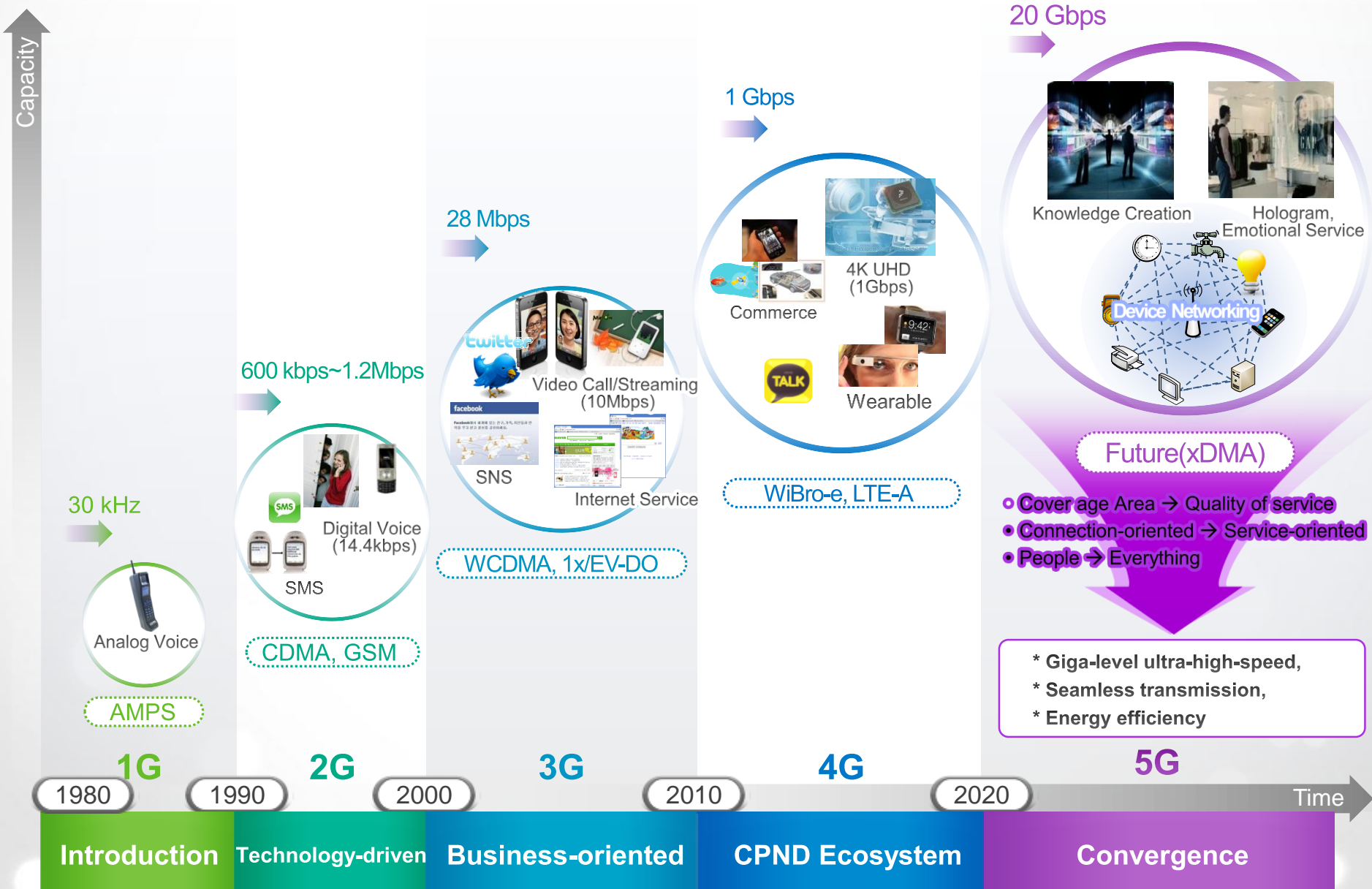
May 24, 2017

WonSeok HEO

Ministry of Science, ICT
and Future Planning of Korea
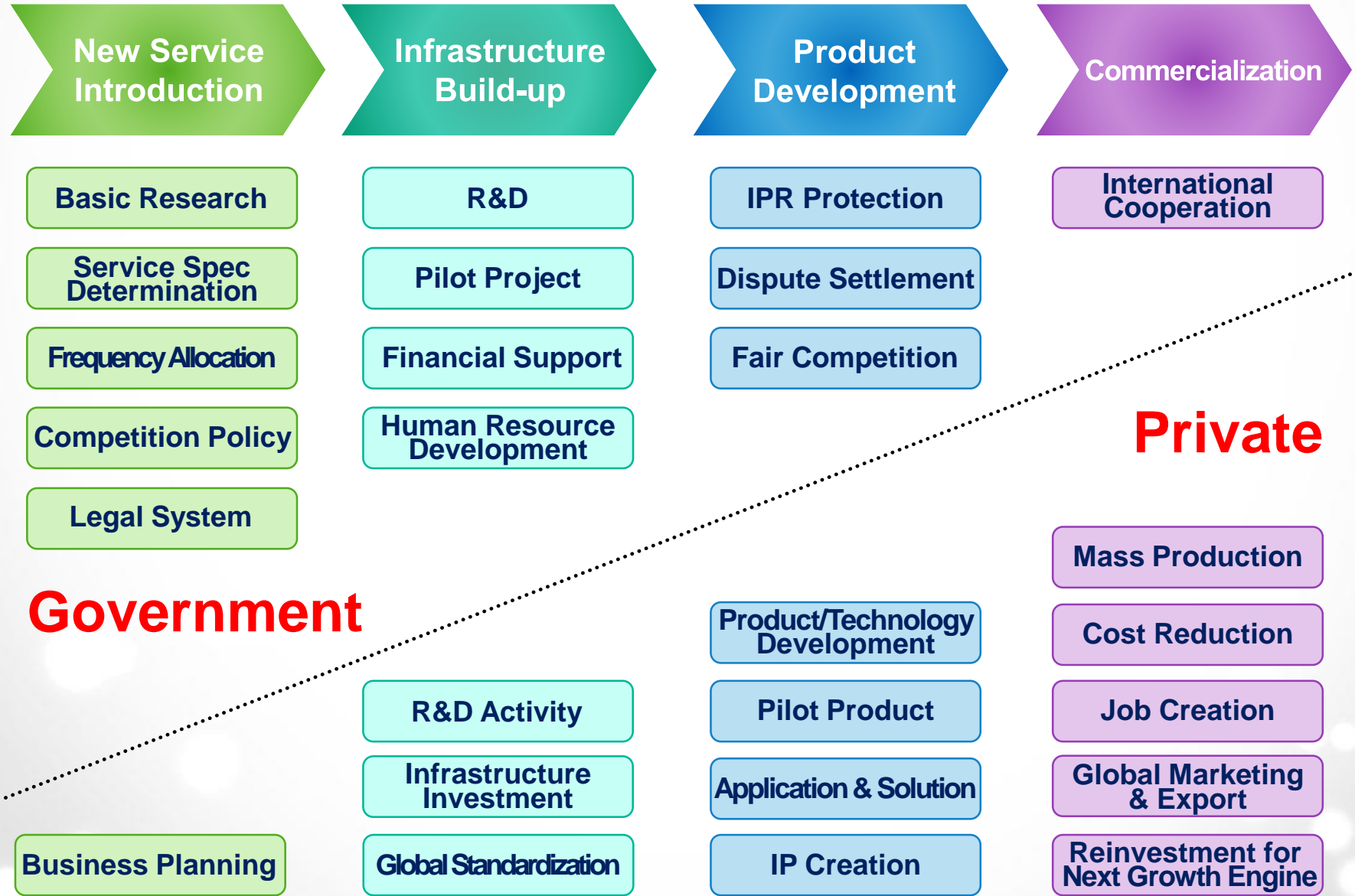
Trajectory of Mobile in Korea

Capacity

20 Gbps

1 Gbps

28 Mbps

600 kbps~1.2Mbps

30 kHz

Knowledge Creation

Hologram, Emotional Service

Device Networking

4K UHD (1Gbps)

Commerce

Wearable

Video Call/Streaming (10Mbps)

SNS

Internet Service

Digital Voice (14.4kbps)

SMS

Analog Voice

Future(xDMA)

WiBro-e, LTE-A

WCDMA, 1x/EV-DO

CDMA, GSM

AMPS

• Cover age Area → Quality of service
• Connection-oriented → Service-oriented
• People → Everything

* Giga-level ultra-high-speed,
* Seamless transmission,
* Energy efficiency

| 1G | 2G | 3G | 4G | 5G |

| 1980 | 1990 | 2000 | 2010 | 2020 | Time |

| Introduction | Technology-driven | Business-oriented | CPND Ecosystem | Convergence |

Autonomous vehicles present 4,000GB data daily(Data equivalent to 3,000 LTE users)
Millisecond decision-making required to keep drivers and vehicles safe

THE COMING FLOOD OF DATA IN AUTONOMOUS VEHICLES

RADAR ~10-100 KB PER SECOND

SONAR ~10-100 KB PER SECOND

GPS ~50KB PER SECOND

CAMERAS ~20-40 MB PER SECOND

AUTONOMOUS VEHICLES 4,000 GB PER DAY... EACH DAY

LIDAR ~10-70 MB PER SECOND

< Source : Intel >

Strategy: Collaboration is the Key

New Service Introduction	Infrastructure Build-up	Product Development	Commercialization
Basic Research	R&D	IPR Protection	International Cooperation
Service Spec Determination	Pilot Project	Dispute Settlement	
Frequency Allocation	Financial Support	Fair Competition	
Competition Policy	Human Resource Development		
Legal System			

Private

Government

		Product/Technology Development	Mass Production
	R&D Activity	Pilot Product	Cost Reduction
	Infrastructure Investment	Application & Solution	Job Creation
Business Planning	Global Standardization	IP Creation	Global Marketing & Export
			Reinvestment for Next Growth Engine

✓ **Provide pre-commercial 5G trial service in 2018**

- **Build a trial network in PyeongChang and Seoul(2nd half 2017)**

- **Develop smart phones and equipment that can provide commercial service, beyond prototypes for demonstration(Q3 2017)**

- **Draft 5G service scenarios by 5 categories*(2nd half 2017)**
  * Immersive, intelligent, omni-present, autonomous and public services

✓ **World's 1st commercial service in 2019**

- **Complete build-up of high speed 5G commercial network(2nd half 2019)**

- **Spectrum allocation during 2019**

※ Expected share of 5G subscribers
: 5%(2020) → 30%(2021) → 50%(2022) → 90%(2026) (based on past LTE penetration)

✓ **Entry into 5G era and convergence market in 2022**

- **Promoting 5G pilot businesses applied to strategic industries (Vehicle, healthcare, learning, entertainment, manufacturing, etc.)**

- **Streamlining laws & regulations such as public safety, privacy, civil and criminal law, etc.**

PyeongChang 5G Trial Service

2015	2016	2017	2018	2019

5G Test lab open   **5G test network (Seoul, PyeongChang)**

PyeongChang 2018

< 1st test event >   **< 2nd test event >**   **< 5G trial service >**   **< 5G Commercial >**

• SYNC VIEW

• 360° VR

• Hologram live

• Time slice

• SYNC VIEW

• Omni point view

• Interactive multi view

• Drone show

• 5G autonomous bus

• Multi-site hologram live

Policy Agenda #2 : Technology

✓ **Develop core technologies for 5G**

    - **Wired   : (2013~2016) $116 million(US) → (2017) $43 million(US)**

    - **Wireless : (2013~2016) $91 million(US) → (2017) $40 million(US)**

✓ **Support technological capacity of SMEs**

    - **Human resources development programs**

    - **Research & Development(R&D) Voucher programs**

    ※ (10 technologies) Smallcell, RF chipset, mobile base station, edge computing, in-building solution, autonomous vehicle, smart city module, disaster response service, remote control, smart device

✓ **International collaboration of 5G convergence technologies**

    - **5G cooperation with China(channel modeling), EU(convergence service) and US(wired networking)**

    - **Support for PoC verification and interoperability joint research on 5G based convergence service technologies**

✓ **Contribution to global 5G standardization**

   - **The 5G Standard study group(CPND expert consortium) was newly established(Sep 2016), and the domestic 5G technology will be submitted as ITU 5G candidate technology(Oct 2017)**

   - **Timely standardization of technology in response to high demand from domestic businesses**

✓ **Initiation of 5G convergence standardization**

   - **Standardization of core technologies reflecting user demand in the "5G representative service scenarios"**

   - **Participating in standardization including mission critical service, V2X, IEC industrial automation in 3GPP**

✓ **Collaborative effort to global 5G spectrum**

✓ **Establish open 5G testbeds and certification system**

- 1st Stage : Open testbeds for 5G technology research

- 2nd Stage : Cooperate with operators and vendors in developing test and certification system

✓ **Support start-ups and SMEs**

- Provide information required by industries such as demand forecast, standards and technology trend, government policy, etc.

- Provide technical and specialized human resource development programs for convergence between 5G and other industries

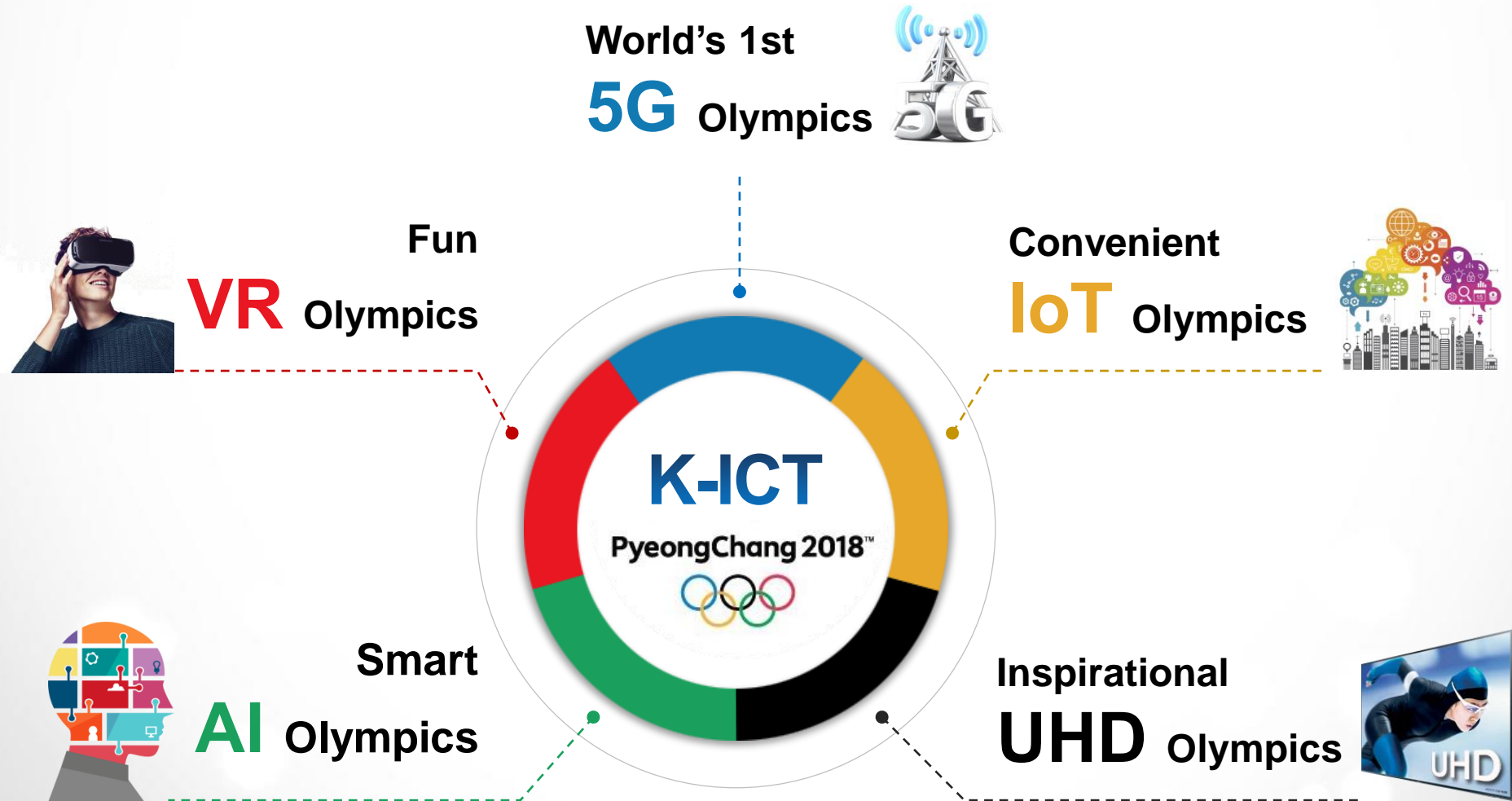✓ **Foster cooperation through public - private partnership**

- Support for convergence service development from operators, SMEs, academia, vendors and non-profit organizations

- Expansion of '5G Strategy Committee' including health, vehicle, entertainment, etc.

The 4th Global 5G Event

✓ **The 4th Global 5G Event will be held on 22~24 Nov. 2017, Seoul, Korea**

✓ **Day 1 & 2 : Global Conference, Day 3 : 5G Tour(TBD)**

Thank You

WonSeok HEO

Ministry of Science, ICT
and Future Planning of Korea