5G+ Strategy of the Republic of Korea

August 26, 2019

Ministry of Science and ICT
5G, Starting point of the Fourth Industrial Revolution

5G is **critical infrastructure of the Fourth Industrial Revolution**

Ultra-fast connections to everything by processing massive amounts of data in real-time

<table>
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<tr>
<th>Super-fast speed</th>
<th>Ultra-low latency</th>
<th>Hyper connectivity</th>
</tr>
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<tbody>
<tr>
<td>20 times faster than 4G</td>
<td>1/10 of 4G</td>
<td>10 times more devices than 4G</td>
</tr>
<tr>
<td>20 Gbps (Peak Data Rate)</td>
<td>1ms (Latency)</td>
<td>1 million/km² (Connection Density)</td>
</tr>
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Data for Everything

B2C / Person

Voice for Everyone

Data for Everyone

Voice for Rich

Data for Rich

B2B / IoT

Data economy

Digitalization of industries

**1st Industrial Revolution**

**2nd Industrial Revolution**

**3rd Industrial Revolution**

**4th Industrial Revolution**
2 5G, Core Infrastructure realizing Innovation-led Growth

Moving the world beyond traditional mobile communication, 5G creates new industries through high-tech devices and innovative services by convergence.
[Note] 4G → 5G, service change

4G (LTE)

Smartphone
- Immersive media device
- 360° virtual reality live broadcasting
- Hologram call

Car
- Connected car
- Platooning
- Full self-driving

Smart factory
- Productivity innovation
- Automatic quality inspection
- Moving logistics robot

Drone
- Fly beyond visible line of sight
- Real-time search
- Precision agriculture
The World’s First Commercial 5G Services

- **Feb 2018**: Trial service at 2018 Pyeongchang Winter Olympics
- **Jun 2018**: Finished 5G spectrum auction
- **Sep 2018**: Certified 5G base station equipment
- **Dec 2018**: Launched 5G service using mobile routers

**Final goal**: Launched commercial 5G smartphones for the 1st time in the world

- **Apr 2019**: Launched commercial 5G smartphones for the 1st time in the world
- **Dec 2019**: Final goal
Trial Service at 2018 PyeongChang Winter Olympics

Provided **the world’s first 5G trial service** including immersive services, 5G autonomous buses, etc. (Feb 2018)

- Time Slice
- Omni View
- Autonomous 5G Bus
- Sync View
- 360° VR Live
- Established the basic plan for **frequency allocation** more than one-year earlier than the initial plan and put 5G spectrum up for auction (Jun 2018).

- Revised **the standard for radio equipment** tech (~Aug 2018), revised the conformity assessment notification (Jul 2018) → Appointed a **5G equipment certification** testing institution (Sep 2018)

### The result of 5G spectrum auction

<table>
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<tr>
<th></th>
<th>3.5GHz</th>
<th>28GHz</th>
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<tbody>
<tr>
<td>SK telecom</td>
<td>100MHz</td>
<td>800MHz</td>
</tr>
<tr>
<td>kt</td>
<td>100MHz</td>
<td>800MHz</td>
</tr>
<tr>
<td>U+</td>
<td>80MHz</td>
<td>800MHz</td>
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First 5G Emission Release

Promoted the spectrum auction (Jun 2018), base station equipment certification (Oct 2018) and launched mobile router-based, commercial 5G B2B services (Dec 1, 2018)

First member of 5G commercial service of each mobile service company

Dec. 2018

Myunghwa
(smart factory)

5G robot, ‘Rota’

LS Mtron
(remote control tractor)
Presidential Ceremony and 5G+ Strategy

- The world’s first commercial 5G deployment
  - Apr 3, 2019

- KOREAN 5G Tech-Concert
  - Apr 8, 2019

- 5G+ Strategy Announcement

Capturing the global market

- Real-time synchronized musical performance

- Real-time hologram video call

- AR music concert
11 countries launched commercial 5G (GSMA Intelligence estimation, Jun 2019)
Korea, US, UK, Spain, Switzerland, Italy, Romania, UAE, Bahrain, Qatar, Australia
2 million 5G smartphones expected to be sold in 2019 (Counterpoint Research, Jul 2019)

More 5G network providers & 5G products in 2H 2019 to drive market growth

- LG Electronics: V 50 ThinQ (May 10, 2019), V 50 S ThinQ (2H 2019)
- OPPO: Reno 5G (Jul 18, 2019)
- ZTE: Axon 10 Pro (Jul 23, 2019)
- Huawei: Mate 20 X (Aug 16, 2019)
- OnePlus: 5T, OnePlus 7 Pro (2H 2019)

- Motorola: Moto Z4 (Apr 2019)
- Apple: iPhone 5G (scheduled for 2020)

5G Availability Around the World
More than 2,000,000 users had subscribed and 84,322 base stations had been built as of August 7.

Scheduled to expand 5G networks to 85 cities (93% of total population), starting with most populous areas, by the end of the year.
Various immersive content services combining 5G smartphones with VR equipment are available.
① (KT) US cloud service provider Salesforce’s CEO Marc Benioff (Apr 11), Rus/East Eur MNO MTS (May 17)
② (SKT) Singaporean telco Singtel (Apr 9), Germany’s Deutsche Telekom CEO delegation (Jun 21)
③ (LGU+) UK’s British Telecom (Mar 27), RSA telco Rain’s executives (Apr 11),
Finnish telco Elisa (Jun 24), Malaysian telco Celcom (Jul 8)

Partnership requests from major countries & telcos around the world to learn from Korea’s successful commercial 5G launch
Foreign media coverage increased
New first-mover-type industries and services created by 5G-based intelligent innovation in economy and society as a whole

1. Concentrated support for the 5G+ strategic industry

2. Reinforcement of public private cooperation

3. Creation of the safe use environment
Realize **Innovation-led growth with 5G+**

**Policy Goal**

Achieve **180 trillion won** in the production of 5G+ Strategic Industries by 2026 (15% of the global market share)
[Task 1] Market expansion led by the public sector

Market demand for early vitalization of 5G+

- **Real-time SOC monitoring**
  Roads, ports, airports, etc.

- **Service robots**
  Education, administration, welfare, medical care, civil complaint

- **Discovering 5G integrated service models**
  360° multi-view Contents
  - Smart Factory Solution
  - Self-driving shuttle bus

- **Medical services**
  Emergency medical care in ambulances and at hospitals, etc.

- **Environmental monitoring**
  Particulate matter monitoring

- **Creation of public demand**

- **Large-scale demonstration of 5G convergence**

- **Public services for people’s convenience**
Support for investment in 5G+

- Tax deduction for investment in the 5G network
  - 1% in 2018
  - 2~3% in 2019-20
  * Revision of the tax reduction and exemption control act (Dec. 2018)

- Promoting investment in 5G+ innovative companies
  - KP Inno Fund (over 1.2 trillion won)
  - Smart Factory Fund (2019-2021 300 billion won)

Creation of 5G test beds

- Supporting SMEs for tests and demonstrations
  - 5G terminal and device
  - 5G V2X
  - Drone
  - Edge computing

- Providing the terminal international official certification service
Continuous adoption of ICT regulation sandboxes and negative regulations to deploy 5G to the masthead

- Wearable ECG monitoring
- Invisible area autonomous flying drone
- 5G-based immersive outdoor advertising
- Movable VR truck
Korea rolls out the world’s first 5G network