

# KT Value Creation

KT is leading the future technologies of the world telecommunication industry beyond Korea while creating a new history.

KT is launching the world's first 5G service successfully to realize the global 5G era and is promoting 'intelligent network-based platform business' thereby pioneering new future for human growth and prosperity.



A first-grade student, Daesung-dong Elementary School,  
Daesung-dong 5G Village at DMZ, Korea

KT transformed Daesung-dong, the world's only DMZ village, into a '5G Village' based on 5G network and ICT solutions.  
A student of Daesung-dong Elementary School is dreaming of the future that the fourth industrial revolution will bring through KT Super VR.



# Lead 5G Global Leadership

## KT's View

The 5G network refers to a next-generation mobile communication technology with high speed, seamless connection, and large capacity.

After presenting "5G Global Leadership" at the keynote address of MWC 2015 in March 2015, KT finalized the 5G common specification for the first time in the world in 2016 and is leading the next-generation communications market through the world's first 5G commercialization in April 2019.

KT will continue to pioneer a new era by providing intelligent network-based platform services based on its 5G global leadership.

## 5G Global Leadership

KT showed the world's first 5G network pilot service at the PyeongChang Winter Olympic Games in February 2018 and achieved its success in commercializing 5G B2B for the first time in the world beginning with 5G frequency transmission on December 1, 2018. As the commercialization of B2C began in April 2019, KT plans to enable everyone to conveniently enjoy the 5G network and differentiated services through 5G dedicated terminals. KT is leaping to become a network platform provider that fuses and connects everything based on 5G.

2015



5G Vision Announcement

· 5G Test Bed Opening  
· 5G-SIG Activities

February 2018



PyeongChang Olympic Games

· Sync View  
· Hologram Live  
· 360°VR  
· 5G Safety

April 2019

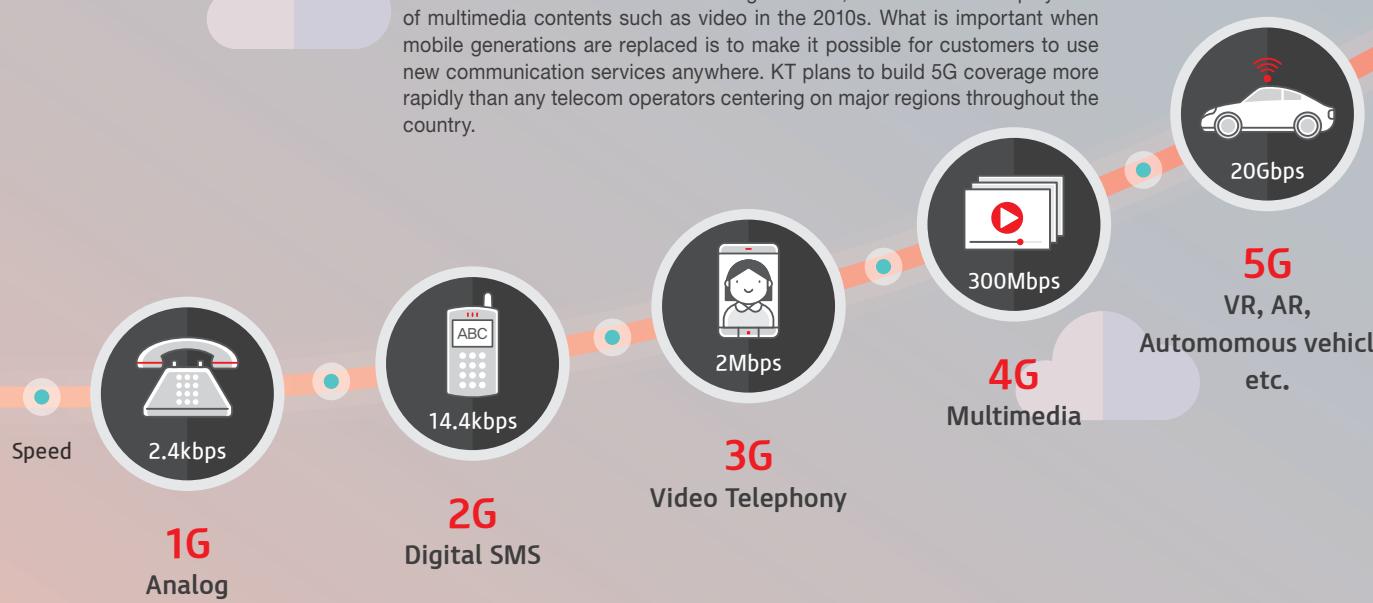


Commercialization of 5G

· In December 2018, Began 5G frequency transmission  
· In April 2019, Successful commercialization of 5G for the first time in the world

## Evolution of Mobile Network

Mobile networks have evolved from the first generation to the fourth generation (LTE, Long Term Evolution) based on the differentiated characteristics by generation. After undergoing the smartphone revolution in the mid-2000s that enabled data communication through 3G, data rapidly increased as data communication evolved into the fourth generation, which enabled the playback of multimedia contents such as video in the 2010s. What is important when mobile generations are replaced is to make it possible for customers to use new communication services anywhere. KT plans to build 5G coverage more rapidly than any telecom operators centering on major regions throughout the country.



## 5G Standardization and Technology Leading



KT 5G-SIG



Success in 'First Call' Based on KT 5G-SIG



Securing 5G Standard Technology



Leading 5G Commercialization

KT formed the KT 5G-SIG with major global manufacturers for the world's first 5G pilot service. In cooperation with the KT 5G-SIG participants, KT completed the world's first full 5G specification (Layer 1, 2, 3), which enabled introducing the 5G service at the PyeongChang Olympic Games for the first time in the world. KT greatly contributed to 5G standardization as indicated by the fact that 85% of the entire specification shown in KT 5G-SIG was reflected on the '3GPP NSA 5G (3rd Generation Partnership Project Non-Standalone 5G)' standard finalized in December 2017, leading the 5G standardization.

On October 25, 2016, KT and Samsung Electronics succeeded in making the world's first 5G 'End-to-End' First Call based on the KT 5G-SIG standard. First call refers to data communication conducted according to the communication standard ranging from 'wireless link synchronization' to 'user authentication' in which each component between the terminal and the network is operated according to a certain signal. This first call is differentiated from existing 5G standard-based technologies because it is based on the common standard for 5G wireless communication developed with major global manufacturers.

KT developed core technologies of 5G wireless physical layer and radio access control layer and secured related intellectual property rights. In 2018, among the secured patented technologies, 17 were reflected on 3GPP RAN1 (radio physical layer) and RAN2 (radio access control layer) Standards. KT's patented technologies reflected on the 3GPP standards are a total of 17 technologies including the technology for handover of network slices used by terminals among 5G base stations to support the mobility of 5G terminals. These technologies are core technologies indispensable for 5G service provision.

In order to prevent compatibility issues between standards from occurring for successful 5G commercialization, KT presented contributions at the 3GPP RAN1 and RAN2 standards conference in February 2019 on behalf of TTA domestic member companies and made efforts to ensure compatibility of initial commercial terminals and base stations. KT has drawn the support of many 3GPP members in the relevant discussion and has contributed to the standardization of 5G such as blocking the approval of Non-backward Compatible Change Requests submitted by manufacturers.

## 5G Services

The 5G world, being opened by KT, is a world where customers can enjoy new and innovative communication services that they have never been experienced before anytime anywhere. KT has launched and provides 5G services in diverse fields such as security, media, finance, transportation, and medical care while applying new technologies through 'GiGAsleuth' that fundamentally blocks hacking utilizing the block chain technology and 'C-DRX', which is a battery saving technology applied to 5G networks for the first time in the world so that customers can enjoy 5G services more safely for longer periods of time.

# 5G and Beyond



### Security

#### Security Solutions Such as 5G-based Real-time Monitoring, Safety and Others

The 5G network is characterized by ultra-high speed, ultra-low latency, and high reliability, and can be used effectively in the fields of security and safety where creating a real-time monitoring environment without blind spots is essential. The '360 Live Security' introduced by KT in MWC in 2019 is a service that helps fast responses on the spot by delivering the images taken by 360 degree wearable cameras to the control room in real time through the 5G network while utilizing the deep learning based image analysis system. This service is differentiated from existing services in that it has no blind spot because it is a wearable type worn by humans and enables comprehensive responses to situations through 360-degree view images.



### Cloud-based High-definition Content

#### VRT, Streaming Game Service

Now you can enjoy the computer games that have been used from game consoles or high-end PC as streaming games without having to download them. Based on its excellent 5G technological prowess, KT launched RagnarokClick H5 and Love Revolution, which are streaming games, and enables stable networks and real-time operation without delay so that high-definition games can be delivered seamlessly. In addition, last year, KT launched Giga Live TV, which is a personal VR theater service to provide VR content via wireless devices without having to connect to a separate terminal such as a smart phone or a PC, and plans to provide high-definition/large capacity content based on cloud hereafter.



### Immersive Media

#### 5G-based VR, AR, MR Entertainment

As a part of the 5G stadium business, a service to provide the immersive professional baseball game services built at KT Whizpark through Olleh TV mobile was opened along with the 5G stadium opening game in March 2019. It provides position views that enables viewing professional baseball games at diverse points of view and matrix views that enables viewing professional baseball games as real time slice videos, enables pitching analysis with VOD including analysis data, and provides diverse other services such as motion tracking VOD, schedule / ranking/records. In 2019, KT plans to upgrade its services such as providing high-light VODs for all games except 5G stadiums.

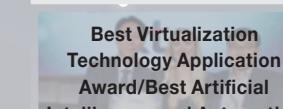
## 2018 Prize Winning



Global Telcoms Awards 2018



World Communication Award 2018



BroadBand Forum Awards 2018



Tech XLR8 Asia Awards 2018



Asia Mobile Awards 2018



Telecom Asia Awards 2018



5G World Awards 2018



### Smart Factory

#### 5G-based Smart Factory Solution

The 5G Innovation Platform is accelerating digital introduction and business model innovation in the industrial fields and creating environments so that the precious achievements of the 4th industrial revolution based on 5G can be spread to all industrial fields. KT demonstrated '5G Connected Robot' and '5G Cooperative Robot in Factory' references at MWC in 2019, and actually constructed smart factories in diverse industries such as the 'world first smart shipyard' of Hyundai Heavy Industries, the '5G live stream' of SBS', the '5G Smart Station' of SRT, and the 'smart factory using robots' of apparel maker apM ECommerce, thereby enhancing the efficiency of companies by utilizing 5G.



### Next Generation Communication

#### Live Communication Service Such as AR Videotelephony

5G, which enables high-speed and ultra-low-latency uploads, enables sharing even spaces vividly in real time through 360-degree images so that communications between humans can be upgraded by one dimension to three dimensions. KT has planned and developed 'Real 360 Service' that can realize the foregoing and launched it in line with the time of launching of 5G smartphones in April 2019. The 'Real 360' is a service that enables conveniently shooting 4K high-definition 360 images through neckband-type 360 cameras with which the two hands are free and sharing the images in real time through one-person media live broadcast or group videotelephony.



### Connected Car

#### Automatic Driving Demonstration Complex, Infrastructure Development and Others

To lead the 5G era, which approached as the reality in front of our eyes, KT has evolved 5G into a new platform that has never been seen thus far termed '5G-as-a-Platform' beyond intelligent networks. To this end, KT announced its plan to leap to become a platform operator based on intelligent networks in 2017 and has been intensively fostering five major platform businesses of 'Media, smart energy, financial transaction, disaster / safety / security, and corporate/public value enhancement' thereby leading the rapidly changing ICT market.

# Foster Platform Business

## KT's View

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Platform	Strategic goal	Main business
<b>Media Platform</b>	Evolve into an intelligent media platform that provides differentiated services to customers	Artificial intelligence TV 'GIGA Genie', immersive media such as VR / AR, etc.
<b>Smart Energy Platform</b>	World's first integrated energy management platform KT-MEG based energy market innovation	Providing intelligent service for all areas of production-consumption-transaction such as renewable energy, energy efficiency, demand management (DR), electric car charging
<b>Financial Transaction Platform</b>	Based on KT Group's telecom infrastructure and FinTech capabilities, leap to become the number one in the finance/telecommunications convergence platform market	On-line and off-line integrated settlement, next generation certification, financial intermediation, financial intelligence (credit rating information, financial big data), etc.
<b>Disaster, Safety &amp; Security Platform</b>	Lead changes in the paradigms of the intelligent video / information security market, and promote public safety network projects such as disaster network and LTE-R	Intelligent video service 'GIGA eyes', information security solution, fire/environmental safety solution, next generation public safety networks, etc.
<b>Corporate &amp; Public Value Enhancement Platform</b>	Enhance customer value through KT's differentiated technology capabilities / know-how and collaboration with partners	Deliver differentiated customer value with systematization and specialized marketing etc.

## Media Platform

Evolve into an intelligent media platform that provides distinguished services to customers



KT's media platform business provides customers with new media experiences by expanding its business to immersive contents such as VR / AR, mobile media, and artificial intelligence services based on South Korea's No.1 IPTV 'Olleh TV' and unrivaled number of subscribers. In order to overcome the limitations of the platform and improve its convenience, KT provides products optimized for customer inclinations using customer analysis algorithms based on Big Data solutions (intelligent curation, intelligent commerce, and targeted advertising).



Artificial intelligence TV  
GIGA Genie



Olleh TV  
Kids Land



VRIGHT

Based on various IoT technologies, KT has developed and is providing artificial intelligence TV GIGA Genie that combines Giga Internet service and AI. KT is expanding its service range to not only convenient services for living convenience such as schedule management, weather information, and traffic information but also easy payment, shopping, and education. In addition, GIGA Genie enables control of home IoT devices such as various electronic devices. As of the end of December 2018, the number of subscribers of KT's GIGA Genie became the number one service in the domestic artificial intelligent speaker market as the number of its subscribers exceeded 1.2 million.

Following its launching of 'TVSsok', which combines IPTV and virtual reality technology in May of 2017, KT launched 'TV for learning while playing, Service Olleh TV', which is a premium kids content implemented by combining differentiated KT's technologies such as the world's first IPTV VR/AR in May 2018. In addition, launching 'GIGA Live TV' version 2.0, which is a personal immersive media service in April 2019, KT is striving to provide immersive contents and various services suitable for VR environments.

Following the official opening of downtown type VR theme park "VRIGHT", in which KT invested jointly with GS Retail, in March 2018, KT additionally opened Sinchon branch and Keondae branch number 2 and newly opened an MR Sports Experience Zone K-live X Jung-dong branch in September 2018. At VRIGHT, you can experience diverse VR contents such as Special Force VR, flight shooting attractions, and robot experience attractions. KT is accelerating the provision of immersive media service such as launching GIGA Live TV, a personal immersive media service based on a stand-alone VR terminals.

## Smart Energy Platform

Energy market innovation based on world's first integrated energy management platform, KT-MEG



KT has been promoting smart energy platform business following the launching of the GiGA energy brand in 2017, and has grown the business to the scale of KRW200 billion by 2018 while creating remarkable business results in all areas of production (new and renewable energy), consumption (energy efficiency), and transaction (energy demand management, electric car charging, etc.) based on KT-MEG(Micro Energy Grid), which is the world's first complex energy integrated management platform. As of the end of 2018, energy big data from approximately 1.7 million sites nationwide, with an increase by 70% compared to the previous year, were collected and analyzed to provide prediction/analysis/management information for optimum integrated operation.



GiGA Energy Manager



GiGA Energy Gen



GiGA Energy DR



GiGA Energy Charge

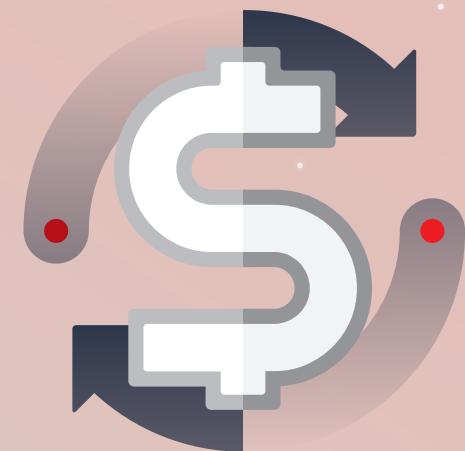
This is a service that analyzes the big data of energy-intensive customers such as factories, buildings, and franchise business places through 'e-Brain', an artificial intelligence analysis engine of KT-MEG platform to find out factors for energy wastes and reduce the costs. In late December 2018, KT carried out pilot projects for three and eight directly managed shops of CJ Foodville and KFC Franchise, respectively, and achieved energy saving at rates exceeding the target reduction rate by 10%. The number of customers is rapidly increasing to reach about 950% compared to the previous year. In 2019, KT will expand customers in earnest targeting 250,000 franchise shops throughout the country.

This is a service that provides integrated solutions ranging from the design and construction of new and renewable energy facilities to the operation control service in the field of new and renewable energy. KT is leading the domestic market of this service by establishing about 350 sites throughout the country through photovoltaic power, ESS (energy storage device), and local governments' convergence projects. In addition, KT launched GiGA energy Gen Photovoltaic O & M (Operation & Maintenance) service, a small/medium sized solar photovoltaic power station business, in July 2018 and is providing the service in earnest.

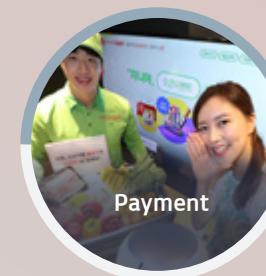
This is a service to analyze the energy consumption patterns of factories and buildings, identify the reduction factors, register the saved electricity with the Korea Power Exchange (KPX), and support the management of the implementation of the reduction, to receives the sales revenue. In 2018, KT specialists provided the best service for the reduction orders issued by KPX through real-time monitoring and leaped to TOP2 status among 25 DR companies in South Korea. In 2019, KT Will continue to expand resource capacity through the discovery of new customers and long-term contracts.

## Financial Transaction Platform

No. 1 in the finance-telecommunications convergence platform market based on KT group's network infrastructure and FinTech capabilities



Based on the KT Group's telecom infrastructures and FinTech capabilities, KT provides customized financial transaction platform services utilizing data analysis, artificial intelligence, block chains, biometric authentication technology, and the Internet of things. Actively utilizing its big data and AI technological prowess constructed thus far, KT provides its customers with payment, authentication, financial intermediation and financial intelligence services. Based on the customer base and platform competitiveness secured through the FinTech 1.0 business, KT plans to leap to become the number one operator in the financial and telecommunications convergence platform market by 2020.



Payment



복잡한 인증  
PASS로 빠르고 솔  
직



CREDIT SCORE  
Financial Intelligence



Financial  
Intermediation

The mobile phone micro payment is a representative payment service that enables customers to make payments for products on on/offline affiliated stores with mobile phones and adds the payment amount to the telecommunication fees when charged. KT is carrying forward this business as a 'telecommunication fee charging business operator' based on its license as a telecommunication company. In addition to the mobile phone micro payment business, KT also provides Google DCB business, a Google Store billing model. In July 2018, KT commercialized the world's first speaker-based AI voice easy payment 'Genie Pay' and won the FinTech & Payment Best Innovation Award in MWC Global Mobile Awards in 2019.

In the case of the 'mobile phone identification' which is a representative financial transaction authentication service, the scale of use increased every year since the launch of the service in 2013 so that the scale of mobile phone identification service of three telecommunication companies grew to reach KRW 50 billion by 2018. KT launched 'PASS', a joint authentication brand of three telecommunication companies in July 2017 and launched 'PASS', an integrated authentication application for three telecommunication companies in August 2018 thereby securing 5 million subscribers with the independent service platform that enables faster and easier identity verification with diverse means of verification.

In partnership with major credit rating agencies (NICE, KCB) in South Korea, KT has developed and is providing the world's first communication information based 'credit score' that combined financial transaction-centered credit rating information and wired/wireless payment receipt/non-payment information. Financial Intelligence is a business that provides the platform to domestic financial institutions and receives platform usage fees and enables financial institutions to additionally secure low-risk customers while enabling customers to receive additional financial benefits. Beyond the alliances with major domestic financial institutions, KT secured a global reference through the Mongolian credit rating information platform contract award.

'CLiP,' an electronic wallet service that collects and provides customers' financial benefits such as points, coupons, memberships, etc., is KT's representative FinTech service. While enhancing customer convenience by providing cash receipts, etc., KT upgraded it to financial intermediation platform based on financial data such as credit cards, car insurance, and asset management to create a financial often platform business environment. In addition, KT strengthened its financial intermediation platform capability further by commercializing an open point platform so that customers' credit card company points can be collected and used for payments at affiliated stores.

## Disaster, Safety & Security Platform

Lead changes in the paradigms of the intelligent video & information security market, and promote public safety network projects



With this intelligent analysis control platform unique to KT, KT is striving to provide intelligent video / information integrated security solutions and play a central role in establishing and operating the national disaster safety communication networks, thereby minimizing damage to people's lives and properties and ensuring daily safety. By providing a prediction and prevention centered integrated platforms, customers can secure everyday safety with minimal cost, and public and safety related agencies can quickly identify and respond to situations in emergencies through secure communication channels.



KT  
GiGA Eyes



GiGA Secure  
Security Control



National Disaster Safety  
Communication  
Network



Safe  
Mate

This is a GiGA Internet based distributed image analysis / storage platform service that has been provided since 2017. The images from IP cameras installed at customer's business place are stored and analyzed in the KT Intelligent Video Security Platform to provide high-definition monitoring images in real time. Customers can record/monitor in real-time in full-HD videos on the smartphone or PC anytime, anywhere. In case where an emergency situation such as an intrusion has occurred, alarm images are sent to the customer through intelligent image analysis so that the customer can immediately respond to the situation.

This is a service provided to SMEs that cannot easily secure security, with which KT's information security specialists operate and manage security solutions such as the firewall and IPS (Intrusion Prevention System) of the customer on behalf of the customer for 24 hours per day, and 365 days per year. The customer can be provided with high level safety without constructing any separate security infrastructure at large expenses. In 2019, KT plans to further upgrade its security control system by significantly enhancing its Big Data collection / analysis performance and conducting correlation analysis.

KT was selected as a preferred bidder for the A & B area of the National Disaster Safety Communication Network in October 2018 and KT plans to play the role of a control tower for the entire project by 2020, when the project will be completed. The National Disaster Safety Communication Network was introduced after the 2003 Daegu Subway Fire Disaster and is a network system that integrated wireless communication networks of disaster related organizations such as the police, the fire station, the Ministry of National Defense, and local governments. In 2019, KT plans to build a disaster network to protect the safety of the public, together with small and medium-sized business partners and business operators for other areas.

KT operates 'Safe Mate Anti-Crime', which is a crime prevention service, and 'Safe Mate Anti-Fire', which is a large-scale fire prevention service, applied with state-of-the-art intelligent IoT technologies. Safe Mate is installed in women's restrooms in 10 stations including Seoul subway Gwanghwamun, Wangsimni, and Yeongdeungpo-gu Office Stations so that a scream is detected, the warning light at the entrance to the bathroom sounds, and the emergency situation is communicated to the relevant station employee's smartphone. In addition, through the 'Green Subway' project, KT is expanding the women's bathroom safety system at main stations of subway line 5.

## Corporate & Public Value Enhancement Platform

Enhance customer value through KT's distinguished technology capabilities & know-how in the collaboration with partners



This is a business to not only improve the infrastructures of public institutions and companies, but also provide integrated consulting services for management innovation and new business development, etc. based on KT's differentiated technology capabilities and know-how. In 2018, KT focused on corporate/public customers' needs to uncover new business models thereby developing new business models such as artificial intelligence contact centers and mobile notification services and generated new orders worth KRW2.6 trillion. In 2019, KT is uncovering customized business models that meet customer needs through cooperation with partners who have solutions based on artificial intelligence and block chains.



Artificial Intelligence  
Contact Center



Mobile Notification  
Service



Smart  
Factory

KT's artificial intelligence solutions are applied to the works of contact centers to improve work efficiency and reduce costs. In order to quickly respond to the needs of diverse customers, when counselors receive phone calls, the conversation contents are changed into text and displayed on the monitor as text, so that there is no need to separately memorize or type the voice of the callers thereby reducing counseling time drastically. In addition, artificial intelligence improves counselors' work efficiency by making drafts of analysis of customers' counseling contents and registering the contents with the system.

KT improves the reception ratios and reduces costs by providing a service that replaces bills or notices in the form of paper mails that have been sent by public institutions, local governments, and financial institutions with mobile-based electronic documents or MMS. In June 2018, KT was designated as an authorized electronic document relay company by the Ministry of Science, Technology and Information, and has been implementing mobile notification (public notification text) service for public institutions. KT's services enables receiving bills, notices, etc. from the public institutions by mobile devices without installing any separate app.

5G is becoming increasingly important and promising in the fields of corporate/public projects. KT has built smart factories in diverse industries such as the 'world first smart shipyard' of Hyundai Heavy Industries, the '5G live stream' of SBS', the '5G Smart Station' of SRT, and the 'smart factory using robots' of apparel maker apm ECommerce. In particular, in May 2019, KT signed a joint collaboration agreement with Hyundai Heavy Industries for cooperation in 5G-based robot and smart factory business, and is striving to expand its business fields into smart medical care and live broadcasting.