ICT Insight

e-Um 5G Leading Digital Innovation
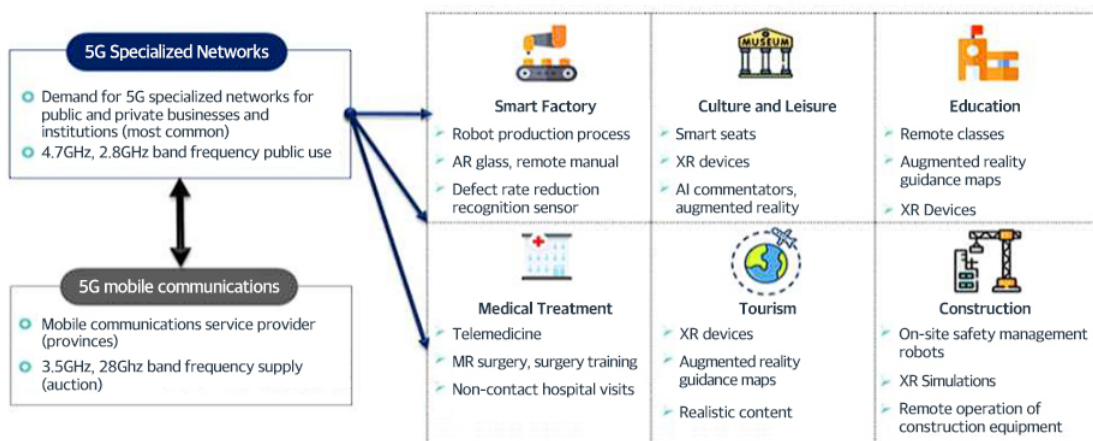
Written by | Dr. Kim Ji-hoon, Expert at Shin & Kim Law Firm

○ It is necessary to focus policy capability on creating a 5G convergence ecosystem by actively discovering and spreading 5G convergence services through the activation of e-Um 5G.

What Is e-Um 5G?

5G is a key infrastructure for personal communication as well as industrial environment and public service innovation through its characteristics of ultra-high-speed, ultra-low latency, and ultra-connectivity. It refers to a customized network that enables the realization of cutting-edge services desired by consumers in specific places (buildings, facilities, etc.)
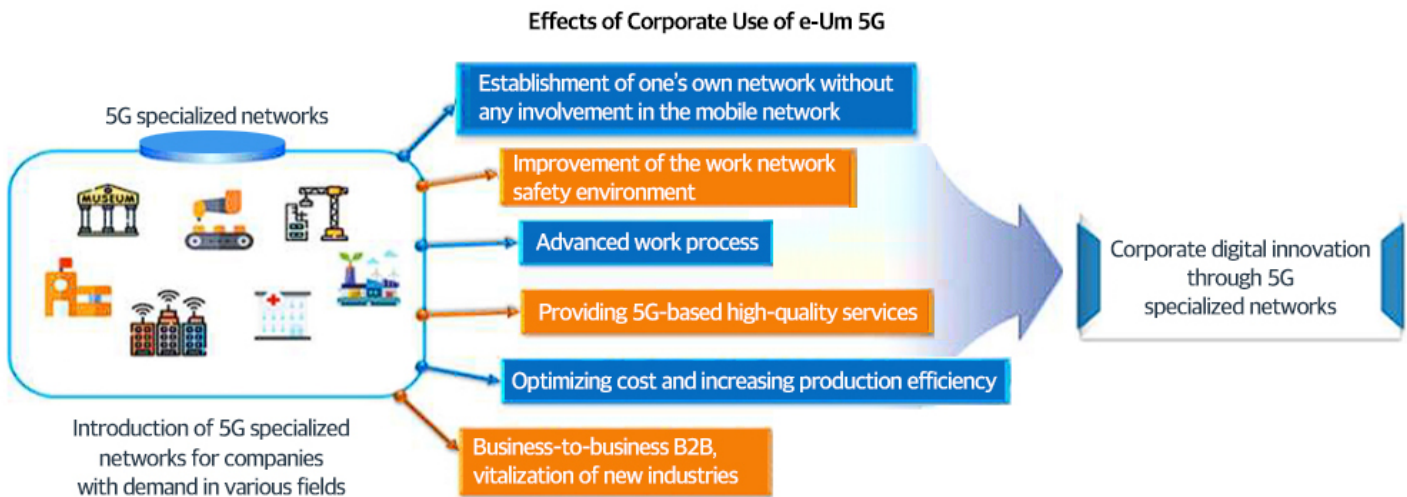

e-Um 5th Generation (5G) Applications

5G Specialized Networks
- Demand for 5G specialized networks for public and private businesses and institutions (most common)
- 4.7GHz, 2.8GHz band frequency public use

5G mobile communications
- Mobile communications service provider (provinces)
- 3.5GHz, 28Ghz band frequency supply (auction)

Smart Factory
- Robot production process
- AR glass, remote manual
- Defect rate reduction recognition sensor

Culture and Leisure
- Smart seats
- XR devices
- AI commentators, augmented reality

Education
- Remote classes
- Augmented reality guidance maps
- XR Devices

Medical Treatment
- Telemedicine
- MR surgery, surgery training
- Non-contact hospital visits

Tourism
- XR devices
- Augmented reality guidance maps
- Realistic content

Construction
- On-site safety management robots
- XR Simulations
- Remote operation of construction equipment

<Source: Ministry of Science and ICT/Korea Communications Agency 5G Specialized Network Guidelines>

Benefits of e-Um 5G

Through fast, high-capacity and high-quality transmission service without delay, work process advancement and digital transformation of the work environment enable a remote work process, an increase in corporate productivity, and promotion of new industry (B2B) opportunities.

Effects of Corporate Use of e-Um 5G

5G specialized networks

Establishment of one's own network without any involvement in the mobile network

Improvement of the work network safety environment

Advanced work process

Providing 5G-based high-quality services

Optimizing cost and increasing production efficiency

Introduction of 5G specialized networks for companies with demand in various fields

Business-to-business B2B, vitalization of new industries

Corporate digital innovation through 5G specialized networks

<Source: Ministry of Science and ICT/Korea Communications Agency 5G Specialized Network Guidelines>

On the other hand, in the case of local governments and public institutions, it is possible to realize digital welfare for the public by establishing e-Um 5G networks in multi-use facilities closely related to people's lives and providing services to the vulnerable.

In addition, social value can be increased by improving public sector services, creating new types of jobs, revitalizing the 5G convergence industry, and creating an ecosystem.

The e-Um 5G Industrial Ecosystem 5G INDUSTRY ECOSYSTEM

Service

| SI Corporation | IT services company |

Infrastucture

| News agencies | Materials and parts companies | Equipment and single-source manufacturing companies |

Sector

| Medical | Logistics | Safety | National Defense | Energy | Water Management | Manufacturing | Culture |

Source: Ministry of Science and ICT press release (June 2022)

Expansion of e-Um 5G Service Following 5G+ Strategy

In addition to 5G+ convergence services through existing mobile carrier 5G networks, it is important to expand convergence services in which various companies build 5G networks directly. To this end, it is necessary to promote empirical services in areas such as medicine, logistics, and education that can utilize the advantages for innovation.

Examples of e-Um 5G Substantiated Service Fields

Service		Details
Medical		· Apply e-Um 5G to realize a connected hospital where various medical devices are flexibly connected and used, providing hyper-connected medical services tailored to the characteristics of the hospital.
Logistics		· Utilizing e-Um 5G to operate indoor specialized logistics services such as autonomous transportation, loading, and integrated management at a lower cost compared to commercial 5G networks.
Education		· Utilizing e-Um 5G, AR-based virtual remote experiment, research, experience, and education tailored to the purpose.

Source: 5G+ Strategy Promotion Plan for 2022

e-Um 5G Frequency Assignments and Designation Status (as of December 2022)

e-Um 5G Frequency Assignments and Designation Status (as of December 2022)	
Assignments	Naver Cloud (Dec. 2021), LG CNS (March, June, Dec. 2022), SK Networks Service (May, Nov. 2022), Nable Communications (Aug. 2022), CJ OliveNetworks (Aug. 2022), KT MOS Bukbu (Oct. 2022), Sejong Telecom (Oct. 2022), Wizcore (Oct. 2022), Newgens (Nov. 2022)
Designation	Navy (Oct. 2022), KEPCO (Oct. 2022), KT (Oct. 2022), Korea Water Resources Corporation (Oct. 2022), Uangel (Nov. 2022), Korea Hydro and Nuclear Power (Nov. 2022), Korea Aerospace Industry (Dec. 2022), Government Buildings Management Office (Dec. 2022), LG Electronics (Dec. 2022)

※ (**Frequency Assignment**) When a telecommunications service provider provides services to others, such as companies and visitors.

(**Frequency Designation**) When an institution promotes its own work and research development, etc. through wireless network utilization.

How to Introduce e-Um 5G

Operators who want to provide e-Um 5G service to customers, partners, and visitors must register as a common carrier and receive a frequency assignment. If a radio station is installed on its own network to use a specialized network for its own business rather than providing services, it must be supplied with a frequency designation. In the case of the frequency assignment method, the cost assignment method in which the government imposes a calculation price based on the area of its land or building space is applied. In this case, the applicant for assignment is the land or building owner, the tenant, or a third party entrusted by the owner. An entrusted third party must obtain the consent of the owner.

The period of use of the assigned frequency can be flexibly selected by the applicant company between two and five years, and an obligation is imposed to establish a radio station within one year after the frequency is assigned to prevent simple possession of the frequency. In the case of a private network operator, a frequency is assigned after an interference analysis according to the current radio station opening permission procedures.

e-Um 5G Introduction Method by Type

Type	Construction Subject	To whom service is provided in the installation area	Introduction Method
Type 1	Demand company	Limited to demand companies	Demand companies report as self-network installers
Type 2	Demand company	Demand companies + partners, visitors, etc.	Establishment of key telecommunications operators by established companies
Type 3	Third parties, etc.	Demand companies + partners, visitors, etc.	Third parties registered as key carriers

Source: 5G Specialized Network Policy Plan (January 2021)

Expected Effects and Prospects

In the early days of the business, there was a lot of demand in the field of robots and intelligent factories, but recently, demand is spreading across industries such as medicine, media, aviation, industrial safety, energy, and R&D. It is expected that it will be possible to rapidly build 5G services tailored to operators by providing comprehensive support such as demonstration projects, administrative and technical consulting, standardization, testing and certification, and shortening the supply period through simplification of frequency supply procedures.

Vitalization of e-Um 5G Through Regulatory Reform and Private Cooperation

ICT STATION

As the existing regulations on e-Um 5G have been drastically eased in the current government's national tasks, "establishment of differentiated 5G networks and diffusion of convergence services such as nationwide spread of e-Um 5G" and "measures for regulatory innovation to enhance the vitality of the digital industry" are attracting attention from related industries. The need for public-private cooperation is increasing as demand for e-Um 5G spreads from the existing robot and smart factory fields to overall industries, including medicine, media, aviation, industrial safety, energy, and R&D.

e-Um 5G is the core infrastructure of digital transformation that can provide specialized services that could not be implemented with existing LTE (4G) and Wi-Fi. There are various advantages such as user customization. e-Um 5G, known as a 5G-specific network, was renamed through a public offering in December 2021.

Features of e-Um 5G

- It is an ultra-high-speed (eMBB: enhanced mobile broadband) ultra-broadband mobile communications service that supports up to 20Gb/s for major applications such as seamless high-definition AR/VR.

- Ultra-reliable low-latency (URLL) supports high-reliability and low-latency communications with a radio section delay of less than 1 ms and a packet error of less than 10-5, and is used for factory automation and self-driving cars.

Massive machine-type communications (mMTC) is large-scale machine-to-machine communication that supports more than one million IoT per 1km², and its main application areas are energy, healthcare, and logistics.

Similar concepts include the self-network, customized 5G service, the private 5G network, and local 5G, which have the characteristics of ultra-high speed, ultra-low latency, and hyper-connectivity.

Deregulation of e-Um 5G

The main contents of deregulation for 5G revitalization announced in the Digital Industry Vitalization and Regulatory Innovation Plan are as follows:

- Simplification of the frequency supply procedure: For commercial IUUM 5G users, the procedure for additional e-Um 5G frequency application is simplified, and for public e-Um 5G users, the supply procedure is eased if there is an existing supply case.

- Application for e-Um 5G-equipped terminal wireless station permission agenda: e-Um 5G terminals installed for robots, intelligent closed circuit television (CCTV), etc. had to obtain wireless station permission for each terminal but in the future will be exempted from wireless station permission as are smartphones at present.

In addition, various deregulation measures have been implemented to promote the industry, such as a method of inspecting changes based on equipment relocation of mobile communication base stations, software changes, etc., using a sampling method instead of 100% inspection in order to induce rapid deployment of e-Um 5G.

e-Um 5G Cases by Industry

- Smart Factory: It can be said that a smart factory is a key application area related to manufacturing innovation. With 5G-based wireless access and computing infrastructure, all items such as people, machines, and products can be flexibly and safely interconnected to realize a cyber-physical manufacturing system.

- Smart City: By applying 5G technology, Smart City can efficiently manage the city and provide various services (road control, electricity/gas/water system control, environmental management, etc.) for a safe and comfortable life. The remote CCTV analysis system analyzes CCTV images and can be used for abnormal behavior analysis, fire detection, face recognition, license plate recognition, etc.

- Smart Agriculture: Data can be collected, analyzed, and applied to automation through 5G networks at all stages of the agricultural value chain. Typical use cases include greenhouse temperature control, crop condition check, and theft prevention.

- Smart Healthcare: With smart healthcare, it is possible to consider improving the efficiency of hospital management. It is possible to treat patients in medical institutions, real-time monitor patient condition in real time, consult medical records, and provide real-time medical treatment to emergency transport patients.

- Smart Building: Facilitates the collection of a variety of information (temperature, air condition, fire status, etc.) in the building to secure the efficiency and comfort of the building by utilizing an environment monitoring system that controls air conditioners and alarms, a fire monitoring system, and automatic control systems.

- Entertainment: One may consider an integrated wireless network for performance equipment. A real-time audio streaming system can be realized by integrating and linking audio equipment (wireless microphones, in-ear monitors, etc.), video equipment (wireless cameras, displays, etc.), audio mixing equipment, etc. that are operated within the venue.

Enabling e-Um 5G Through Private Cooperation with Deregulation

e-Um 5G plans to promote in earnest the expansion of 5G specialized networks in cooperation with the public and private sectors. In December 2022, the Public-Private Conference for Vitalization of e-Um 5G also reflected the opinion of the industry that comprehensive support such as test bed and radio wave certification cost support, joint 5G demonstration projects, administrative and technical consulting, standardization, and test certification are needed. This year, the private sector budget was expanded from 8 billion won to 12 billion won, and 5G specialized network test sites were expanded to five locations (Pangyo, Daejeon, Daegu, Gwangju, Gumi) to support market launches of services and terminals developed by companies.

e-Um 5G Supply of Frequency Assignments and Designation of 18 Institutions

With the addition of nine new institutions, a total of 18 institutions will be assigned and designated as e-Um 5G frequencies at 26 locations. The areas of demonstration projects are as follows: The newly selected Korea Aerospace Industries plans to increase work efficiency with e-Um 5G in a safe environment by digitizing the manufacturing process, which was previously managed with paper documents due to wireless security vulnerabilities. The Government Buildings Management Office and LG Electronics plan to apply e-Um 5G to facility management and intelligent factories, respectively, with robots, sensors, and intelligent cameras.

5G Specialized Network Convergence Service Demonstration Projects (11)

* Public Sector (7): Public health, logistics, energy, safety, defense sector (1 each), and two in the free sector.

* Private Sector (4): (5G business-to-company transactions) manufacturing and private healthcare / (28GHz industry convergence) culture and education

Category		Host Organization	Place of Demand	5G Specialized Network Convergence Service
Public	Public Health Care	KT	Seoul National University Bundang Hospital	Self-driving electric wheelchairs and unmanned medicine/linen transportation service.
	Logistics	SKT	Korea National Food Cluster/ Gyeongnam Robot Land Foundation	AI vision-based automatic logistics loading robots and integrated control.
	Energy	Korea Electric Power Corporation (KEPCO)	Korea Electric Power Corporation (KEPCO)	Unmanned substation inspection using self-driving robots and the Internet of Things (IoT).
	Safety	IT Space	Korea Industrial Complex Corporation (Banwol,	Electrical/facility/environmental/harmful gas monitoring system using massive IoT.
	National Defense	KT	Republic of Korea Navy	Runway safety management and bird detection using self-driving vehicles and AI image analysis.
	Free	ESE	Korea Water Resource	Intelligent water purification plant operation and management systems using virtual convergence and virtual models.
		Korea Hydro & Nuclear Power	Korea Hydro & Nuclear Power	Real-time command and control of disaster situations using 360 camera, virtual reality, and artificial intelligence.
Private	Private Health Care	Nable Communications	Ewha Womans University Mokdong Hospital	Augmented reality guide for surgery using tomography 3D data (chest area).
	Manufacturing	KT	Korea Aerospace Industries	Establishment of KF-21 manufacturing /design/test data paperless environment.
	Education	KT	Samsung Seoul Hospital	Medical education and training using 28GHz-based 3D HoloLens.
	Smart Media Industry Promotion Association	Industry Promotion Association	Lotte Hotel, Lotte World	28GHz-based immersive and realistic virtual experience performance.

Main Contents of e-Um 5G Frequency Assignments and Designations

Field	Organization	Region	Main Contents
R&D and Education	LG CNS	Yongin	International joint research of open LAN, etc. in factory equipment condition test site
Radiation	Korea Aerospace Industries	Sacheon	Digitalization of next-generation fighter (KF-21) manufacturing process, etc.
Facility Management	Government Buildings Management Office	Sejong	Building management through robots, detectors, and intelligent cameras
Intelligent Factory	LG Electronics	Pyeongtaek	Implementing an intelligent factory with robots, detectors, and intelligent cameras

Reference

- Full-Fledged Expansion of e-Um 5G to Universities and Defense Industries

- Expansion of the 5th Generation Specialized Network (e-Um 5G) based on Public–Private Cooperation

- Public–Private Meeting to be held to Promote e-Um 5G

We will do our best to ensure that everyone in the world can use medicine safely.

Interview | Park Jong-hyun of Chain Expressbill

Pharmaceutical spending is increasing worldwide. Expenditures on biopharmaceuticals (herbal medicines) and specialty drugs are also increasing significantly, and the importance of distributing products in a fresh manner is on the rise.

Let's listen to the story of Park Jong-hyun, who is full of passion and wants to work hard so that everyone in the world can use medicines safely.

Q

Hello, please introduce yourself to our readers.

Hello, my name is Park Jong-hyun, and I work at Chain Expressbill. As a member of the Chain Expressbill team, from the very beginning to the present, we have been working hard to prepare solutions through a variety of information in the field of cold chain and blockchain.

What kind of work are you in charge of at Chain Expressbill?

Focusing on the variety of information in the rapidly changing cold chain market, we are working on securing advanced cold chain technology, creating and revising documents according to government regulations, confirming overseas expansion, and currently focusing on domestic and overseas business expansion.

What is Chain Expressbill's main service?

We provide IoT drug logistics platform service using blockchain. We are a cold chain system development and transportation company that connects related tasks from shipment of products with storage conditions, such as low-temperature refrigeration and freezing, to customer product receipt to ensure product temperature, real-time monitoring, and quality assurance using blockchain technology.

<Chain ExpressBill business process flow>
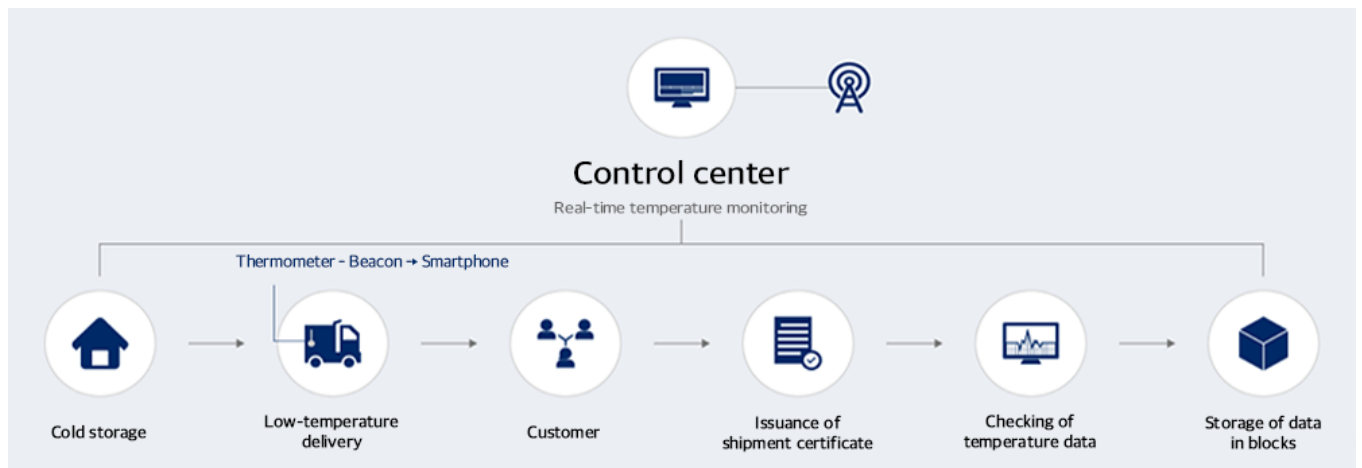
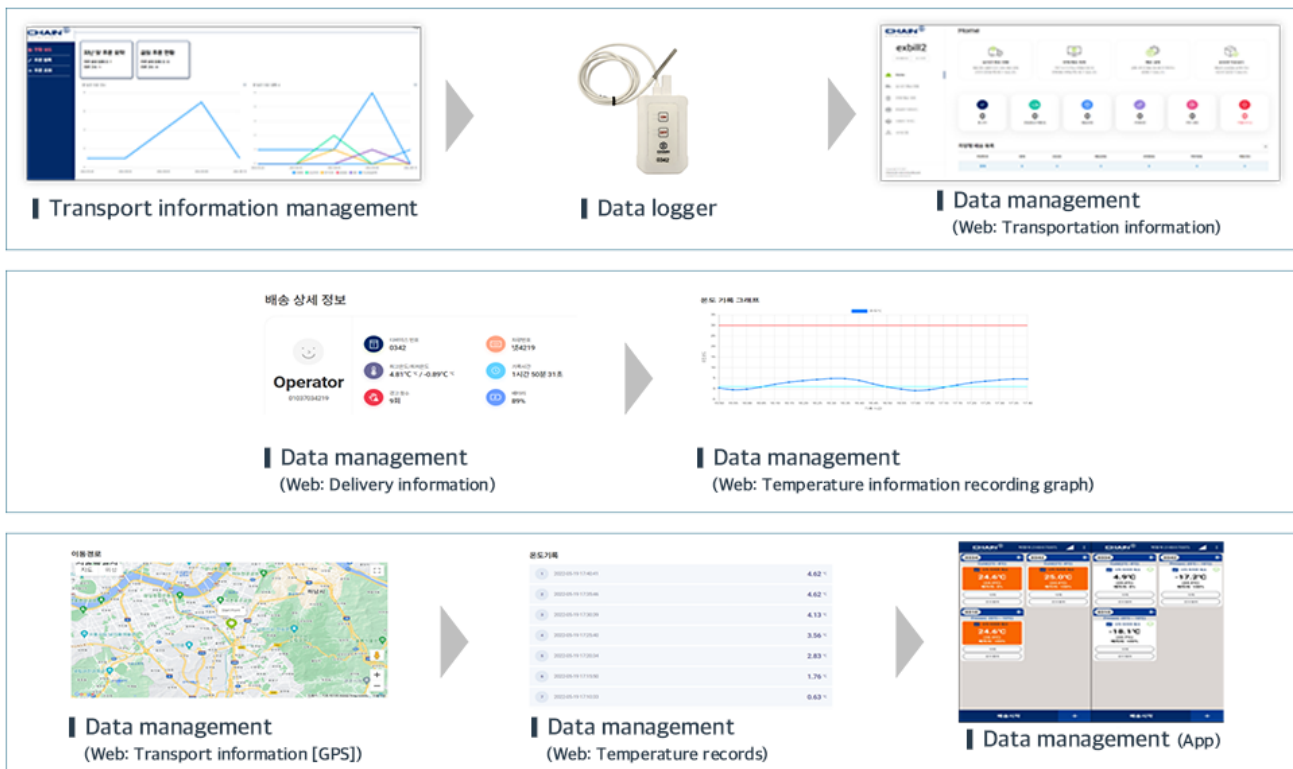### What is the need for a blockchain/cold chain system?

The cold chain system minimizes product deterioration to prevent damage to consumers' items. The essential element of the cold chain (food, vaccines, medicines, etc.) is temperature. There have been cases of reckless manipulation of temperature data collected during transportation for personal gain. In order to block the possibility of manipulation, we believe that blockchain/cold chain technology is essential.

Q

How is the blockchain/cold chain system being used today?

By introducing IoT technology, we ensure product quality by monitoring and managing variables that affect product deterioration, such as temperature deviation, through real-time monitoring.

Chain ExpressBill Service (IoT system)

| Transport information management | Data logger | Data management (Web: Transportation information) |

| Data management (Web: Delivery information) | Data management (Web: Temperature information recording graph) |

| Data management (Web: Transport information [GPS]) | Data management (Web: Temperature records) | Data management (App) |

For data protection, Chain Expressbil's own blockchain smart contract was created, and transportation data is stored in and protected by the smart contract.

Chain ExpressBill Service (Blockchain System)

Smart Contractor

1) Based on ERC-20, when the contract conditions written in the code are met, the contract is concluded immediately.

2) Transparency, complementarity, stability, and integrity of the smart contract are guaranteed.

3) A system that runs according to the schematized algorithm without third party interference such as downtime, censorship, or fraud.
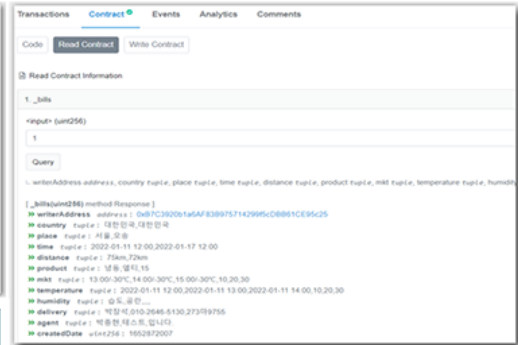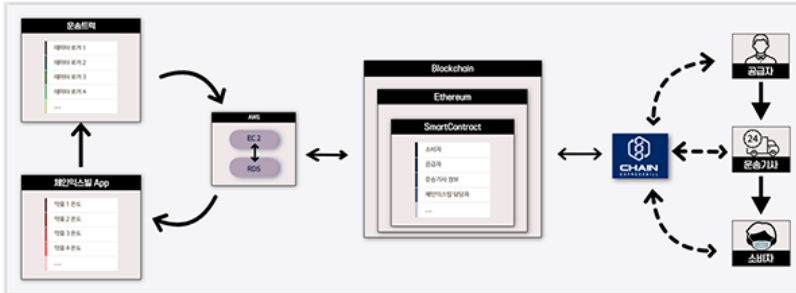
Chain Expressbill Data Delivery Method
(Record of transport temperature for 2 years due to stricter transport regulations)

Stores the contents of the biological product release certificate, such as product supplier, consumer, and transport driver information, through a smart contractor.

<Blockchain – Smart Contract>

Q

What got you interested in working with the blockchain/cold chain system?

I have worked in the pharmaceutical industry for many years. As I worked in that related field, I realized that there are various problems in the domestic cold chain system, and as I pondered over ways to solve those problems, I naturally became interested.

Q

Could you tell us three of your company's strong points?

First is the steep growth rate. Despite only being founded in May 2022, it has gained many achievements, such as two patent applications for cold chain platform operation methods, venture business and ISO certification, and MOUs for venture companies. Second is the spirit of challenge. We participated in various events both at home and abroad, visited various companies and related experts, consulted with them to acquire necessary information, and began to sort out the company's problems by providing feedback. As a result, I think we has achieved rapid growth as mentioned above. Third, is the ability to analyze active markets. We developed a solution by predicting possible problems and strengthening cold chain regulations due to the emergence of various viruses and diseases, and are currently distributing the service.

Q

Could you share any memorable episode from your work?

A recently contracted company is a company that has a long-standing position in the pharmaceutical industry and is a solid company with a well-established foundation of more than 20 years of business. As an employee of Chain Expressbill, it is most memorable to win a contract with that company by showing the growing need for a cold chain system, the growth potential of Chain Expressbill, and our clear competitiveness compared to other companies.

Q

What kind of employee would you like to be remembered as?

I want to be remembered as a person who is a necessary driving force for the growth of Chain Expressbill and the growth of the people who work for it.

Q

What kind of skills does someone need to work in the cold chain system?

Regarding the management of pharmaceuticals, which is a typical example of the field in which the cold chain system is used, pharmaceuticals basically perform GMP-based tasks and operate in accordance with the regulations of the Ministry of Food and Drug Safety in Korea. Within that, I believe that knowledge of transportation and storage according to product characteristics and storage conditions and the ability to verify contents of the areas of transportation and storage.

Q

What dream or goal do you want to achieve at Chain Expressbill?

Our goal is to become an international company with over 1 trillion won in sales.

Q

Do you have any message to our ICT Industry Hot Clips readers?

First of all, I would like to say thank you so much for giving me the time to introduce Chain Expressbill through ICT Industry Hot Clips. Chain Expressbill is conducting research and development on advanced technologies for human health. We will do our best to ensure that everyone in the world can safely use medicines. We will continue to grow diligently and steadily to make Chain Expressbill a company that can be recognized just by hearing the name. Thank you for your interest, and I wish everyone a happy new year.

Enhancing the Value of Everyday Life with Peerless Blockchain Technology

ICONLOOP CO., LTD CEO Kim Jong-hyeop

ICONLOOP

ICONLOOP CO., LTD

☑ General Status

- **Implementing Agency**

  Korea Internet & Security Agency
- **Business Details**

  Laying the foundation for blockchain utilization

☑ Company Status

- **CEO**

  Kim Jong-hyeop
- **Business Type**

  A blockchain company
- **Year of Establishment**

  2016. 05
- **Homepage**

  https://www.iconloop.com/

☑ Key Accomplishments

Commercialized DID real-name authentication in Korea for the first time.

Designated as a financial regulation sandbox for innovative financial services.

Boasting more than 2.5 million users of MyID-based services and 50,000 businesses.

'MyID', highly touted by companies and institutions alike

ICONLOOP Co., Ltd., founded in May 2016, provides innovative platforms and services as a leading Koreabased block chain company. As the technological value of blockchain enhances, ICONLOOPis fully committed to concerted efforts to make a positive impact on daily life.

Based on our self-developed 'MyID', which is a type of DID (decentralized identifier) identity authentication platform, ICONLOOP is piquing the keen interest from users in line with the development of DID identity authentication service, such as integrated visit management service, and electronic access logbook (KI-Pass). In particular, as one of the pillars of the 'MyID Alliance', in South Korea, where the concept of selfsovereign identity verification was in the nascent stage, we attained a major performance milestone of being the first to commercialize DID in the domestic financial sector. Currently, ICONLOOP has attained the title of pioneerin various industries and stands at the forefront of the domestic DID ecosystem with several cases of commercialization.

Some representative successes include cases where DID was applied to real-name authentication for Shinhan Bank and NH Nonghyup Bank in the financial sector and the COVID-19 vaccination information service. ICONLOOP Co., Ltd. plans to support internal management and control of online personal data in various fields such as identity, access, and credentials authentications through ongoing cooperation with various municipalities such as Seoul Metropolitan, Jejudo, Gangwon-do, and Pohang City governments.

Unrivaled technology highly touted by 85 companies

The services implemented by ICONLOOP Co., Ltd. are garnering rave reviews in the domestic blockchain platform market. Our technological prowess has been highly touted mainly in the financial sector, health care, and local governments by providing stable and reliable operations.

In addition, as a leader in the blockchain platform industry, we maintain partnerships with 85 various institutions and companies, including various banks, securities companies, e-commerce companies, and manufacturers. Starting with the financial sector, we are fully committed to our mission to establish pioneering cases of blockchain utilization by expanding our cooperative partnerships with the sharing economy that embodies social value and healthcare providers increasing people's wellbeing index in the future.

As DID is commercialized in South Korea, MyIDbased 'zzeung' is also garnering rave reviews. Owing to the advantage of being able to authenticate with ease by simply recognizing a fingerprint or QR code, the DID identity authentication wallet service 'zzeung' was accredited for its potential for success by ranking 2nd place in the Apple App Store's financial category popularity chart and 5th place in all fields within a month of service.

Besides the financial sector, ICONLOOP's services has also played a leading role as a platform to prevent the spread of COVID-19. 'Jeju Safety Code', operated in collaboration with Jeju Special SelfGoverning Province and ICONLOOP, was used by 2 million people on Jeju Island at about 50,000 multiuse facilities for social-distancing measures, owing to its advantage of providing vaccination info. issued at the time of QR check-in for convenience when the COVID-19 vaccination info. service was applied.

In addition, we launched 'VisitMe' a visitor credentials authentication service that enables contact-free check-in onsite after verifying the identity of a visitor in advance using DID technology, and our technological prowess and reliability have been touted by customers once again with 'Broop,' our blockchain-based digital certificate issuance system designed to issue public documents without building a separate internal database.

Making the World a Better Place through Blockchain

Blockchain technology has garnered the media spotlight since the advent of Bitcoin. It's true that security (encryption) software technology, including NFT, has been developed and released from a while ago, but as the high-speed internet culture gains fullfledged traction in the 4G era, the public's interest in cutting-edge security (encryption) technology has increased dramatically. In line with this current trend ICONLOOP Co., Ltd. has achieved various milestones and results by realizing our corporate philosophy in practice to benefit the public through blockchain technology.

In 2018, we wonthe Minister of Science and ICT Award for our contribution to the development of blockchain, and the following year, we received 1st Grade in GS Certification, and received the Grand Prize at the 'Korea SW Product Quality Awards'. In addition, through ongoing research and development, we have registered 11 patents (4 applications), and strive in earnest to develop exclusive technology internally.

TIME LINE

2016. 05.

Established ICONLOOP Co., Ltd.

2017. 10.

Launched the world's first blockchain-based joint authentication service 'CHAIN ID'

2018. 09.

Selected Loopchain as the standard blockchain platform for Seoul Metropolitan Government

2018. 11.

Won the Minister of Science and Technology Information and Communication Award (contribution to blockchain development)

2019. 06.

MyID designated as a financial regulatory sandbox for innovative financial services by the Financial Services Commission

2019. 11.

Won the Grand Prize at the Korea SW Product Quality Awards

2020. 07.

Commercialized DID real-name authentication for the first time in Korea

2020. 08.

Garnered investments exceeding KRW 16 billion

2021. 06.

Jeju Safety Code exceeds 1 million users

2021. 12.

Jeju Safety Code awarded a commendation by Jeju Special Self-Governing Province

Easier and Faster Mobile Performance Monitoring through AI Technolog

ONYCOM INC.   CPO Son young soo

ONYCOM INC.

☑ General Status

- **Implementing Agency**

  National Information Society Agency
- **Business Details**

  Cloud computing industry nurturing

☑ Company Status

- **CEO**

  Lee Suk-ho, Yang In-jip
- **Business Type**

  Software consultation development and supply
- **Year of Establishment**

  1998. 09
- **Homepage**

  http://onycom.com

☑ Key Accomplishments

Service expansion and obtainment of customers through SaaS development and commercialization.

Easy service operation due to automatic identification of trouble type and abnormal symptoms and AI's own recommendation and definition of threshold value.

Quick problem causes analysis is possible through automatic analysis of codes, quick classification of problem causes, and brief check.

Bigger Need for Performance Management of Mobile Services

The mobile market is rapidly growing due to the COVID-19 pandemic, and digital transformation is making strides. Although only quick service release was focused in the existing mobile market, interest in users' performance satisfaction has become higher on mobile service due mainly to fierce competition in the market.

Onycom Inc. predicted that the need for real-time mobile performance management will increase due to the growth of the mobile market. Because of this, the company developed a real-time mobile performance monitoring solution IMQA based on knowledge on mobile devices and performance verification. Onycom's IMQA can monitor performance in real-time and analyze problems and their causes with source code level in the user environment, allowing the mobile service operator to quickly identify problems and causes.

Onycom's biggest competitiveness and merit is that the company has technological capabilities in the major areas of software such as big data and AI. Since Onycom has the relevant technological capabilities, the company could launch AIOps (Artificial Intelligence for IT Operations) quickly by combining the mobile performance monitoring solution IMQA with big data and AI technology through the ICT Fund project. AIOps is a solution intelligently managing IT infrastructure by applying AI to IT operations. Onycom can operate all things required at once upon mobile service operation, ranging from international standard-based quality verification to app automation test solution, to real-time mobile performance monitoring solution IMQA.

AI-based Mobile Performance Monitoring Solution Created with ICT Fund Project

Onycom has felt the need for AIOps-based SaaS (software as a service) development and commercialization in addition to existing on-premise (A firm operates a server with its own facilities, not n the cloud environment) products in order to secure many customers. The company determined that they could develop products faster than they propelled on their own if Onycom participates in the ICT Fund project. Based on this, an expectation that a foothold to enter overseas markets was established.

Onycom helped the use of IMQA in various methods ranging from basic solution use to data analysis, but a more easily usable method was necessary, because mobile performance monitoring is a technology unfamiliar to users. Consequently, the company developed AIOps adopting AI technology to more easily and quickly use the mobile performance monitoring solution IMQA through the ICT Fund project.

Because AIOps solution automatically identifies trouble type and abnormal symptoms and AI recommends and defines the threshold value on its own, a person in charge can more easily operate the stable mobile service. Developers who suffered from difficulties in code analysis can find out trouble causes faster, thanks to AI technology through which codes are automatically analyzed and problem causes are quickly classified and briefly checked. In addition, SaaS can be more conveniently used, since manager support monitoring and user's use amount monitoring are possible with a metering function added in order to secure SaaS users.

SaaS's adoption period is shorter and easier than onpremise, and it has an advantage that it can be used with very small cost. Billing is made in a meter-rate system through the metering function, so firms with small amount of use can use SaaS without a burden.

Aiming at Entry into the Overseas Market with Upgraded Technology

The biggest strength of Onycom is an agent technology tracking mobile app's performance and optimization for the domestic environment. It is the result that the company has exerted a lot of effort to make the new SaaS type service establish itself in the market. Onycom gained confidence by finishing manual work essential for internationalization and overseas launch with the GSIP cloud project support of the MSIT and NIPA.

A source of Onycom said, "We could obtain plenty of expertise / knowledge through exchanges with good companies and seniors through the ICT Fund project. Lots of improvement of IMQA was made through linkage with apps under the various domestic environments and an encounter with various exceptions through the project." He added, "Onycom plans to entry into the overseas markets in full swing from now on. We're thinking of expanding business scope in Japan by entering famous Japanese broadcasting companies and well-known Korean bank's service for Japan.

TIME LINE

1998.

Established Onycom Inc.

2015.

Science, ICT and Future Planning Minister's Prize at the New Software Product Awards

TMMi Lv2 certified first-ever in Korea (QA)

2016.

Ankus won the Grand Prize at the 2016 Korea IT Brand Awards, Gained TTA GS (Good Software) Grade 1 certification

2018.

IMQA received Grand Prize in the technology innovation category (Mobile Award Korea, 2018)

Opened TestForte MTS, an app test service

2019.

IMQA &TestForte V2.0 TTA GS Grade 1 certified

2021.

IMQA awarded the Science and ICT Minister's Prize

Contributing to Hearing-impaired People's Safety through AI Learning Sign Language Data

EQ4ALL CEO Lee In-gu

EQ4ALL.

☑ **General Status**

- **Implementing Agency**

  National Information Society Agency

- **Business Details**

  Building up intelligent information industry infrastructure

☑ **Company Status**

- **CEO**

  Ko Seung-yong, Lee In-gu

- **Business Type**

  Software development and supply; other engineering R&D

- **Year of Establishment**

  2017. 11

- **Homepage**

 https://www.eq4all.co.kr

☑ **Key Accomplishments**

Improved life convenience accessibility through voice-guided sign language conversion and kiosk sign language guide solution.

Improved culture enjoyment accessibility through sign language interpreter service in museums and art galleries.

Sign language education service for hearing-impaired people and their family through AI set top box.

Sign Language Conversion and Education Service for Hearing-impaired People Containing Oniste Voices
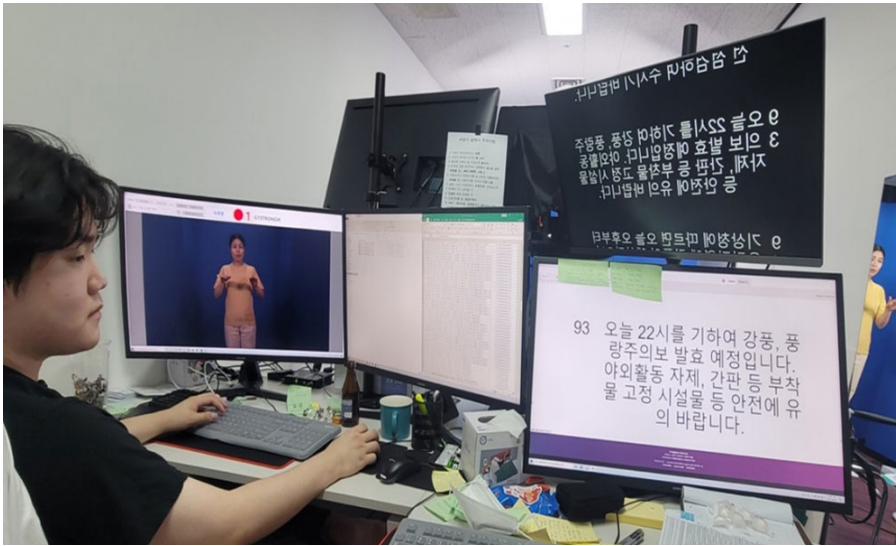
Hearing-impaired people suffer from varieties of inconveniences and inequality over entire life cycle. EQ4ALL has listened to the voices of hearing-impaired people to find and improve difficult tasks, which are everyday tasks to abled people.

The company launched a Sign Language Container service by immediately converting various disaster text messages and announcements of multiuse facilities into sign language animation, which is the most familiar to hearing-impaired people and guiding via their smartphones. Through this service, announcements in multiuse facilities such as entire stations of SRT and SRT trains, Gwacheon National Science Museum, and Independence Hall are provided with sign language feature coverage. EQ4ALL developed an app for TV set top box by which all family can gather together and learn with the step-by-step sign language course so that hearing-impaired people born in normal homes can communicate with their family. A pilot service is provided through KT Skylife.

Among many examples to be supplemented and improved to resolve inconveniences and inequality of hearing-impaired people, their safety is an important issue that should not be missed. Hearing impaired people's frequency and probability of exposure to risks is much higher than normal people due to limited information accessibility, which stems from language restriction on disasters and accidents situations, weather forecast, etc.

EQ4ALL as an institution participating in the ICT Fund project, has been performing business constructing learning data for AI model learning that enables to deliver disaster information that must be delivered to hearing-impaired people with sign language.

AI Learning Sign Language Data Constructed through Participation of Hearing-impaired People


EQ4ALL designed learning data for AI-based sign language translation through its expertise as a sign language conversion company in the ICT Fund project, and carried out demonstration through AI model using the constructed data. The task was about disaster safety information sign language image / video data in the AI learning data construction project. Because the sign language was the center of the task, and understanding of disabled people and their culture was based on all above. Actually, it was most important to make something that's really useful for them.

EQ4ALL constructed 200,000 pieces AI learning data to translate Korean into sign language through the project. The construction of the sign language learning data to this extent is the largest in size domestically and globally. So there were a lot of trials and errors. Unlike translation data between voice languages, the data structure had to be newly designed for translation of sign language, which is a movement language. Although a data structure was made to transfer / reflect sign language's characteristics by seeking advice from many experts and referring to overseas research cases, it was just a beginning.

To reflect the characteristics of the sign language, sign language movements were shot, and a long time of reflection of all the details one by one into the newly designed data structure, including non-numeric value information and time series information based on the image, was needed. EQ4ALL is a firm developing sign language solutions for hearing-impaired people. The company had a process of collecting hearing-impaired people's opinions not to lose the original purpose. Many hearing-impaired people took part in the project through crowd sourcing.
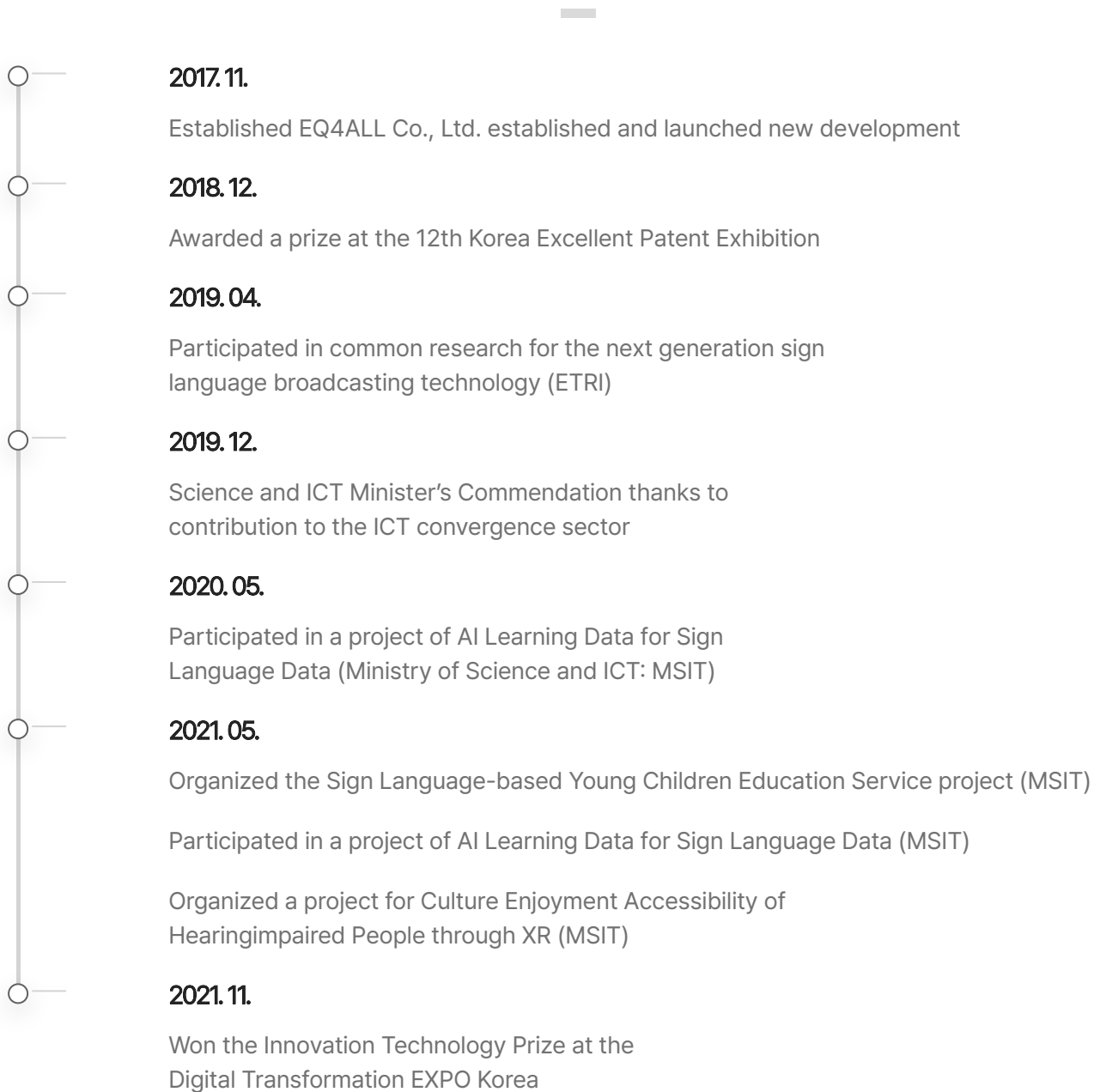
Bigger Social Contribution Using Diverse Uses of Secured Data
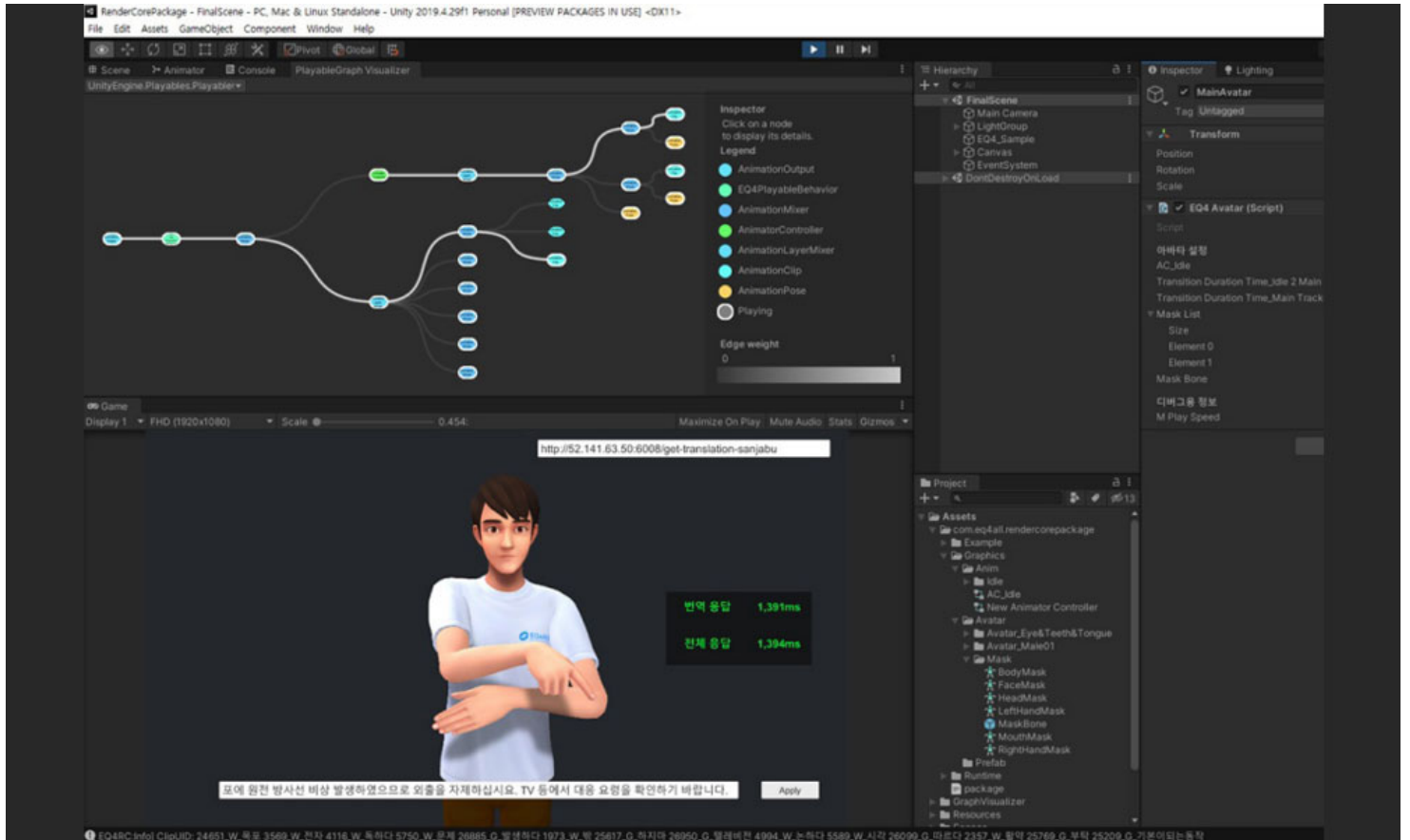
The biggest achievement in the ICT Fund project can be obtainment of AI learning data for translation of valuable sign language. The sign language data for AI learning is more difficult in collecting and processing than the data set construction for general computer model learning, and it means a lot. The constructed sign language learning data can bring about bigger social contribution, as it can be used in various institutions to resolve hearing-impaired people's inconveniences and inequality by being opened to the public through AIHub.

The sign language learning data needs much more time and resources to construct unlike translation data of other languages. The fact that the valuable data is constructed means an important milestone for sign language translation technology development. EQ4ALL plans to use the learning data for AI translation model performance improvement and various services development for hearing-impaired people. The data can be used to offer information related to disasters / accidents and safety of hearing-impaired people in real time, who are an information-vulnerable people, and so the data will be helpful for their safety.

TIME LINE

2017. 11.

Established EQ4ALL Co., Ltd. established and launched new development

2018. 12.

Awarded a prize at the 12th Korea Excellent Patent Exhibition

2019. 04.

Participated in common research for the next generation sign language broadcasting technology (ETRI)

2019. 12.

Science and ICT Minister's Commendation thanks to contribution to the ICT convergence sector

2020. 05.

Participated in a project of AI Learning Data for Sign Language Data (Ministry of Science and ICT: MSIT)

2021. 05.

Organized the Sign Language-based Young Children Education Service project (MSIT)

Participated in a project of AI Learning Data for Sign Language Data (MSIT)

Organized a project for Culture Enjoyment Accessibility of Hearingimpaired People through XR (MSIT)

2021. 11.

Won the Innovation Technology Prize at the Digital Transformation EXPO Korea

Development of Customized AI Solution that Upgrades the Competitiveness of Agricultural Villages

HM TECH CO., LTD. CEO Kwon Sun-ju

HM TECHNOLOGY
Human Tailored Technology

HM TECH CO., LTD.

☑ General Status

- **Implementing Agency**

  National Information Society Agency

- **Business Details**

  Smart village diffusion and spread

☑ Company Status

- **CEO**

  Kwon Sun-ju

- **Business Type**

  Service and manufacturing

- **Year of Establishment**

  2016. 12

☑ Key Accomplishments

Actualized agricultural products sorting technology fused with AI technology.

Secured AI technology optimized for the embedded environment.

Laid the foundation for new growth agricultural industry using AI.

Intelligent Discrimination Technology Reducing Labor Cost

HM Tech Co., Ltd. develops and supplies ICTconvergence solutions, accomplishing remarkable achievements in extensive industrial areas based on core technological capabilities including AI, image processing, and analysis of embedded software.

The driving force behind HM Tech's launch is outdated agricultural villages. The company has been operating corporate activities aiming at improving practical earnings by giving agricultural villages' local economy a much needed boost.

Currently, HM Tech enhances discrimination and classification of agricultural products with an intelligent discrimination technology, resolving agricultural villages' problems such as aging and difficulties in securing manpower. The company operates business with a corporate goal of improving the quality of life of farmers through AI and automation. Based on expertise including technological capabilities built up for years and specialized HR, HM Tech is responding to rapidly changing technical environment and placing itself in the ICT convergence solution development markets.

Improving the Reality of Agricultural Villages in the Fourth Industrial Era

Deep learning among technologies on which HM Tech focuses is rapidly growing. As AI develops, demand for AI solutions that can reduce the burden of aging and labor cost is continuously on the rise. If an AI technology is adopted in agricultural product sorting, the Korean agricultural competitiveness can be enhanced, and also it can be a good opportunity to upgrade agricultural status as a leading future growth industry.

HM Tech partook in the ICT Fund project to improve agricultural village reality and promote corporate growth in line with the market situation. HM Tech has developed an AI specialized crop discrimination solution that can judge good and bad products to solve the problems that agricultural villages face. AI discriminates defective fruits accurately and quickly, provided that AI obtains data of each specialized crop species' characteristics. In the process, no separate manpower is needed, so constancy in quality can be secured. Consequently, it can be a solution to promotion of productivity and efficiency, and it receives a good response from farmers.

Enhancing Achievements and Confidence through the ICT Fund

HM Tech could accomplish technical and social achievements through its participation in the ICT Fund project. As a technical achievement, an AI discrimination model with high accuracy could be obtained in relation to the characteristics and defects of specialized crops. Also the company obtained industrial embedded system optimization and lightweight AI technological competence, and laid the foundation for sharing and activation of the AI discrimination model for specialized crops.

In terms of social achievement, workers' workload sharply decreased due to accurate and even AI discrimination, not to mention the quality it provided. Consequently, there is a possibility that agricultural villages' market competitiveness and the AI solution can be expanded and diffused into other agricultural products.

Remarkable changes occurred within the company through the ICT Fund project. As a result of each employee's establishing clear objectives, and awarding corresponding authority, teamwork was exerted for the success of the project through mutual supplementation among them.

Next Goal is Promoting the Quality of Life in All Agricultural Villages

HM Tech hopes that the opportunity that the company obtained through the ICT Fund project can be enjoyed by latecomers. The company analyzes the project worked as a key factor for consulting with farmhouses supplementing corporate weaknesses and enhancing competitiveness. The process of close consulting with farmhouses forming rapport becomes a good opportunity to objectively analyze a market possibility, corporate potential and direction.

HM Tech became confident through its participation in the ICT project, and is devoting itself to a new goal: developing an AI discrimination solution for local specialized crops targeting agricultural villages nationwide and upgrading farmers' quality of life by enhancing market competitiveness. HM Tech plans to make its utmost efforts to take a leap towards an ICT expert company discovering future key growth engines and supplying differentiated products and services in the ICT-convergence market.

TIME LINE

2016. 12.

Established HM Tech Co., Ltd.

Bicycle rental system using portable device (patented)

Key wallet patented

2018. 08.

Filed for the patent of dissolved oxygen concentration measuring system

2020. 03.

Filed for the patent of a deep learning-based image processing device on fine dust-including images and a fine dust information offering system

2021. 06.

Selected as a smart village service discovery and demonstration project