

# OUTSTANDING CASES ACHIEVED THROUGH GOVERNMENT GRANT FOR ICT

INFORMATION AND  
COMMUNICATION TECHNOLOGY

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## DIGITAL CONTENTS

IoT

NETWORK

CLOUD

BIG DATA

AI

SOFTWARE

BLOCKCHAIN

3D PRINTING

INFRA

REGULATORY SANDBOX



Ministry of Science and ICT



KCA Korea Communications Agency

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# CHAPTER



INFORMATION AND COMMUNICATION TECHNOLOGY

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# Introducing government great for ICT

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DIGITAL CONTENTS

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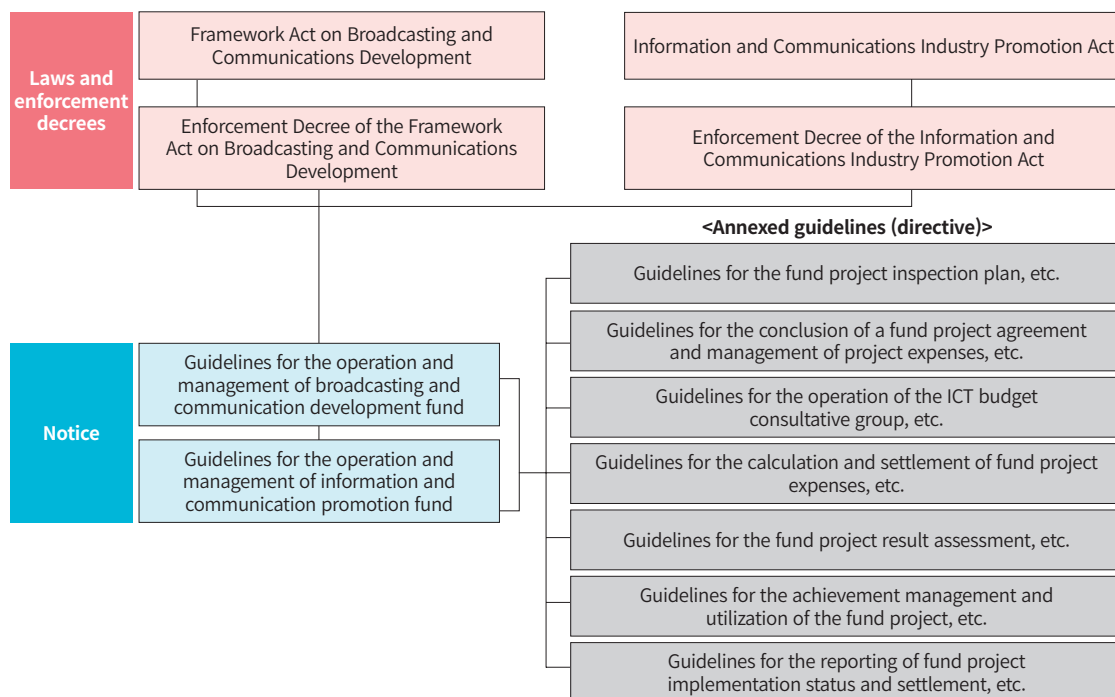
REGULATORY SANDBOX

## 01 What is an ICT fund project (non-R&D)

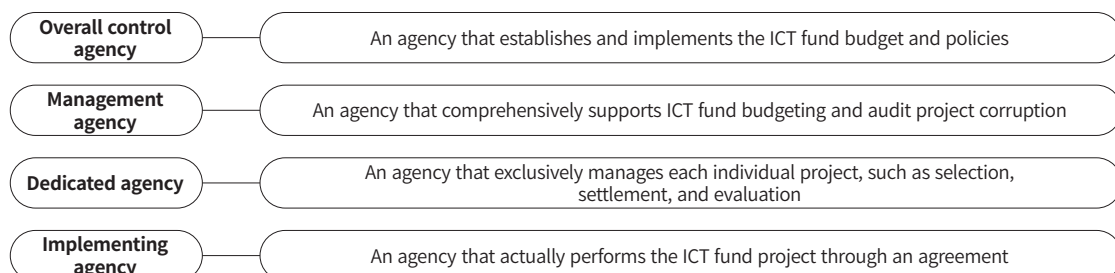
The ICT fund project is designed to secure a growth engine for the content broadcasting industry, implement the promotion of new ICT industries, narrow the network and infrastructure gap, nurture competent personnel in ICT, and support the digital economy and inclusion.

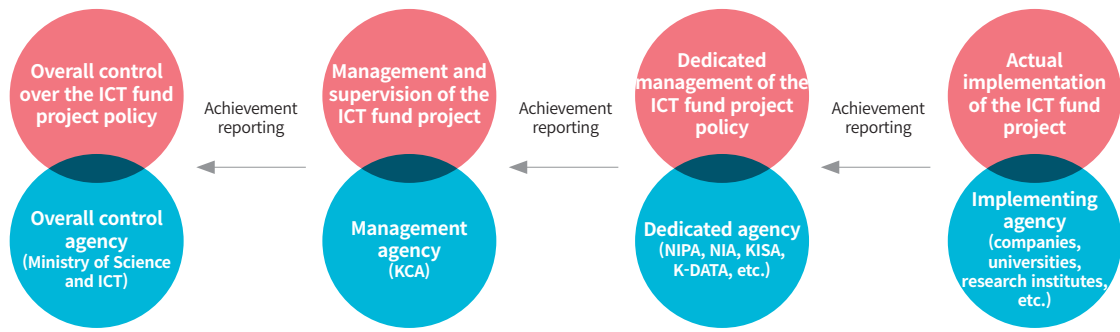
## 02 Purpose and basis of establishing the ICT fund project (non-R&D)

	Information and communication promotion fund	Broadcasting and communication development fund
<b>Purpose of installation</b>	The information and communication promotion fund was established to support the promotion of information and communication.	The broadcasting and communication promotion fund was established to support the promotion of broadcasting and communication.
<b>Basis of establishment</b>	Article 41 of the Information and Communications Industry Promotion Act	Article 24 of the Framework Act on Broadcasting and Communications Development



## 03 Implementation system of the ICT fund project (non-R&D)





## 04

## Annual invested budget of the ICT fund project (non-R&amp;D)

The budget was doubled in 2019 compared to the KRW 300 billion between 2016 and 2018. The amount increased to KRW 2 trillion in 2020 as per the Digital New Deal policy.

Item	2016	2017	2018	2019	2020
<b>Project budget</b>	KRW 331 billion	KRW 331 billion	KRW 306.6 billion	KRW 673.1 billion	KRW 2.23 trillion
<b>Number of covered projects</b>	125 ea.	136 ea.	138 ea.	171 ea.	179 ea.
<b>Dedicated agency</b>	31 ea.	32 ea.	31 ea.	31 ea.	26 ea.
<b>Implementing agency</b>	1,231 ea.	1,099 ea.	958 ea.	1,389 ea.	2,621 ea.

## Number of cases selected as an excellent case for each dedicated agency

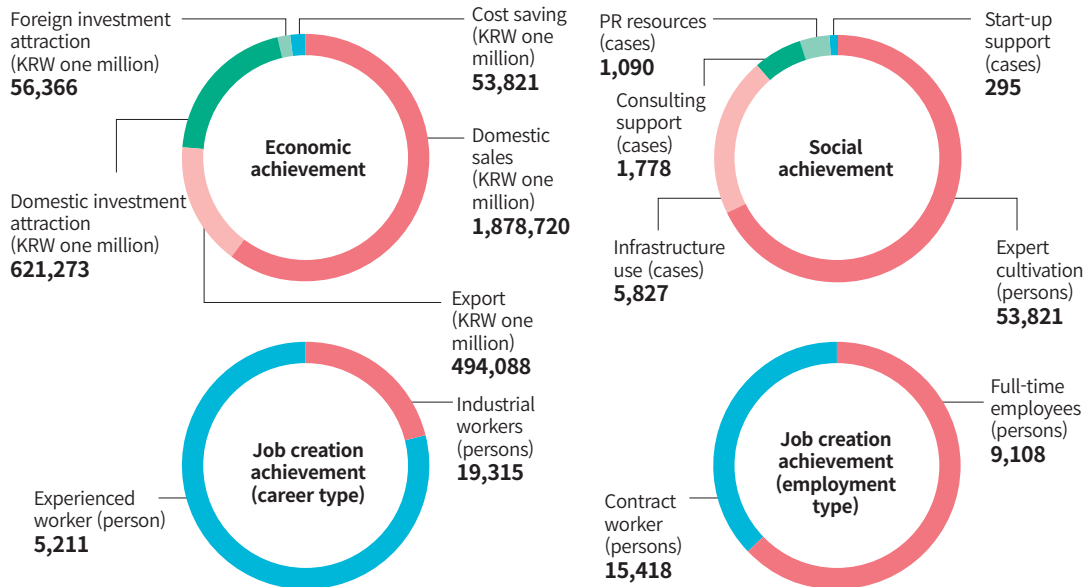
Item	No. of selections												
Project budget	Content	IoT	Network	Cloud	Big data	Artificial intelligence	Software	Blockchain	Miscellaneous	Digital New Deal	Social value	Global market entry	Sum
National IT Industry Promotion Agency	2	1		1		2	3		2	5		3	19
National Information Society Agency			2	1	1	1			1	6	4	1	17
Korea Internet & Security Agency					1		1	1			1		4
Korea Data Agency										3			3
Korea Communications Agency	1												1
Korea Trade-Investment Promotion Agency (KOTRA)												1	1
Korea Radio Promotion Association	1		1			2							4
Korea Electronics Association			1										1
Sum	4	1	4	2	2	5	4	1	3	14	5	5	50

\* Other fields: 3D printing, infrastructure construction, regulatory sandbox

## 05

## Overview of ICT fund projects (non-R&amp;D)

A total of KRW 2.23 trillion was invested for the ICT fund project (non-R&D) in 2020, creating an economic achievement of KRW 3.104 trillion and 24,526 jobs including sales of KRW 2,372.8 billion and KRW 677.6 billion investment at home and abroad and cost reduction of KRW 53.8 billion.



The project created an economic achievement of KRW 8.325 trillion in all over the past five years (annual average growth rate of 33%) and 43,264 jobs in all (annual average increase of 88%).

## Major achievements of the ICT fund project (non-R&amp;D) over a five-year period (2016-2020)

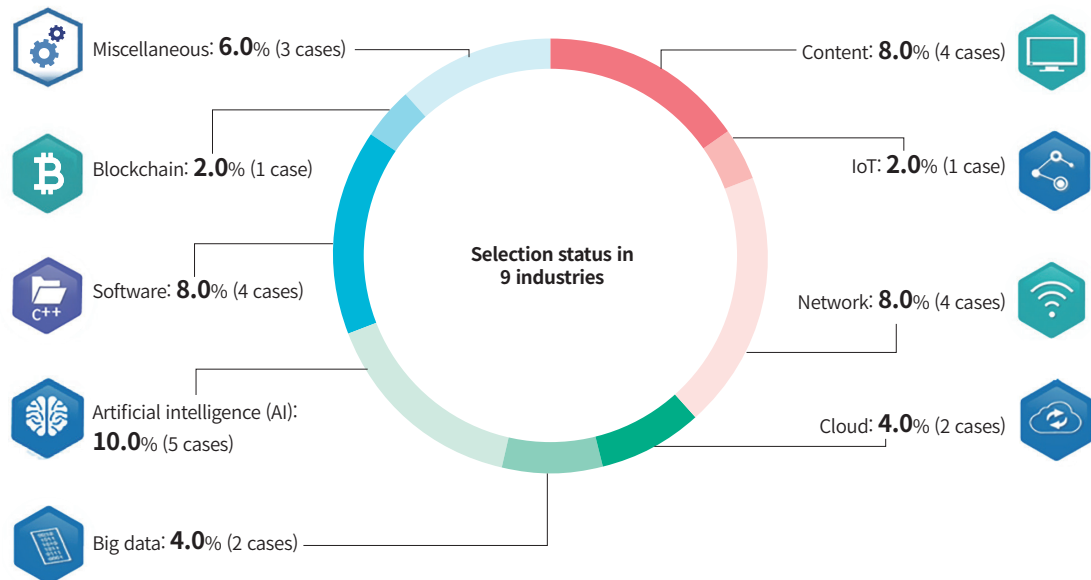
Item			2016	2017	2018	2019	2020
Economic achievement	Direct achievement (KRW one million)	Domestic sales	451,427	677,664	489,992	748,482	1,878,720
		Export amount	278,848	410,565	292,350	142,926	494,088
	Indirect achievement (KRW one million)	Domestic investment attraction	197,769	148,442	176,855	320,783	621,273
		Foreign investment attraction	22,775	68,643	57,428	162,247	56,366
		Cost saving	50,555	256,524	10,086	257,771	53,821
	Total economic achievement (KRW million)		1,001,375	1,561,838	1,026,711	1,632,209	3,104,269
Job creation achievement	Created jobs (persons)		1,952	3,783	4,117	8,886	24,526
Foundation development achievement	Expert fostering (persons)		20,399	18,901	34,767	17,930	18,945
	Start-up support (companies)		328	307	131	40	295
Project support achievement	PR (cases)		3,676	3,237	3,163	2,606	1,090
	Consulting (cases)		5,290	6,258	5,731	3,830	1,778
	Infrastructure use (cases)		9,711	8,370	6,541	3,842	5,827

## 06

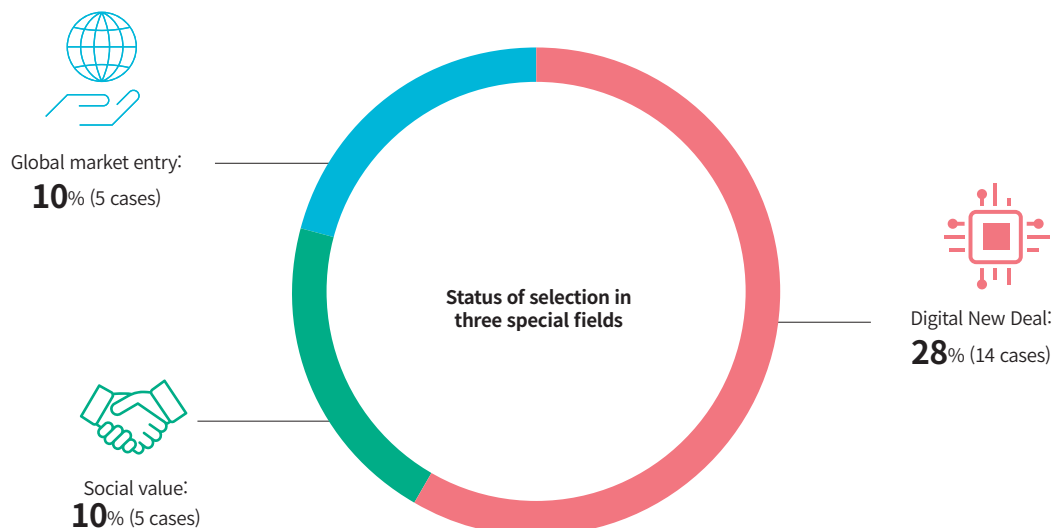
## Status of selecting excellent ICT fund project (non-R&D) achievements

Artificial intelligence (AI) was selected most frequently among the excellent achievement cases of the ICT fund project (non-R&D) from 9 industries (10%, 5 cases), followed by content and network (8%, 4 cases each), other fields (6%, 3 cases)\*, cloud and big data (4%, 2 cases each), and IoT and blockchain (2%, 1 case).

\* Other fields: 3D printing, regulatory sandbox, infrastructure construction, etc.



As the excellent achievement case of three special areas (Digital New Deal, social value, global market entry), 14 cases (28%) were selected from Digital New Deal, with 5 cases (10%) each selected from social value and global market entry.



## Representative excellent achievements of the ICT fund project (non-R&D) by nine industries

The excellent achievement of the ICT fund project (non-R&D) was selected from 9 industries. “CMS,” an integrated creator content management platform, was selected from the content field, and the disaster safety management platform based on intelligent rail robots was chosen from the IoT field; the network integration device based on wireless 5G was selected from the network field. “CORN,” a SaaS-based logistics management system, was selected from the cloud field, and “Petlink,” a dedicated insurance platform for pet shops, was chosen from the big data field. In the AI field, the radar device based on indoor life detection sensors was selected. “Cerviray AI,” a remote diagnosis system for cervical cancer, drew attention in the other software field. The personalized healthcare service for chronic diseases and development of 3D printing process for rocket engine oxidizer pumps drew attention in the blockchain field and other fields, respectively.





## 08

## Representative excellent achievements of the ICT fund project (non-R&D) in three special areas

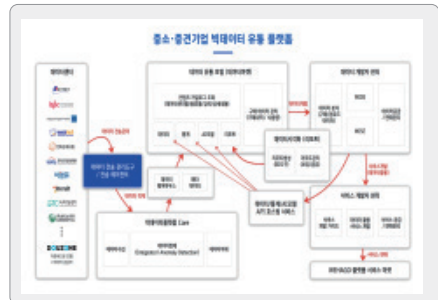
In three special fields, Douzone Co., Ltd. was selected in the Digital New Deal field for developing a big data platform for SMEs and enterprises of middle standing, whereas STC Co., Ltd. was chosen in the social value field for developing the “Smart relief nursing home,” a customized smart healthcare platform for the aged. In addition, Younglim Soft Lab Co., Ltd. was selected in the global market entry field based on successful Japanese market development with its cloud ERP “SystemEver.”

### Digital New Deal

### Developed a big data platform for SMEs

**Douzone Co., Ltd.**

- Collected fragmented data by developing a big data platform for SMEs and enterprises of middle standing
- Spread quality data and promoted the entire life cycle of the data value chain through data standardization and quality management



### Social value

### “Smart relief nursing home,” a customized smart healthcare platform

**SCT**

- Reduced the workload of caregivers by developing a smart healthcare platform
- Developed non-face-to-face visit reservation service, non-face-to-face video call reservation service, etc.
- Developed a chatbot system with a nursing knowledge library



### Global market entry

### Developed the Japanese market with the cloud ERP “SystemEver”

**Younglimwon Soft Lab**

- Ready to provide ERP service that can be flexibly introduced by Japanese SMES without cost burdens
- Signed a partner agreement with 11 IT-related Japanese companies and provided cloud ERP system service to SMEs including conglomerates in Japan



# CHAPTER



INFORMATION AND COMMUNICATION TECHNOLOGY

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# Success Stories Of Outstanding Cases

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DIGITAL CONTENTS

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A.I.

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# Content

IoT

Network

Cloud

Big data

AI

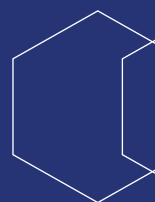
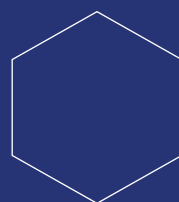
Software

Blockchain

Miscellaneous

## C H A P T E R

INFORMATION AND COMMUNICATION TECHNOLOGY





## Success Stories Of Outstanding Cases

### **Adoba Co., Ltd.**

The largest creator content platform in Korea, specializing in China

### **Solutionmaker**

A company leading the lecture content market by developing a platform based on lecture service

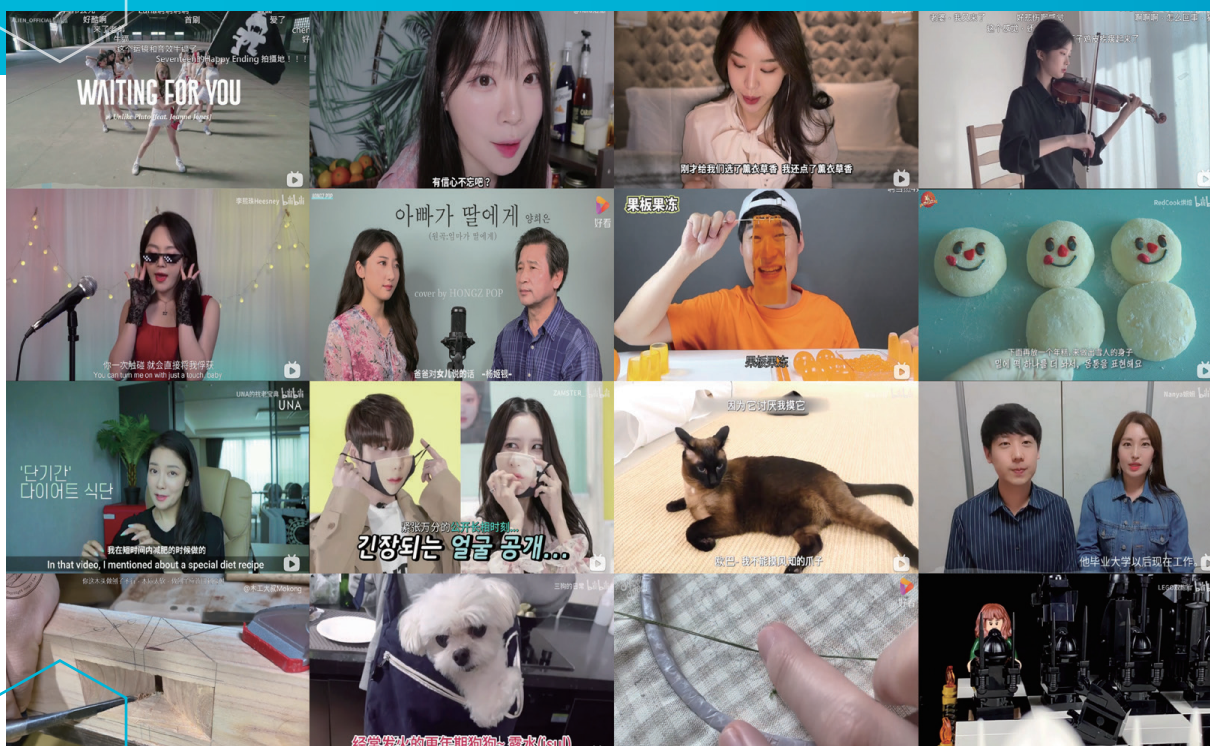
### **Remedi Co., Ltd.**

Developed a portable X-ray imaging system as a revolutionary paradigm change in medical examination in the non-face-to-face era

### **JNE Systech Co., Ltd.**

Developed a ground remote control system that controls an unmanned tower crane for a safe construction culture

# The largest creator content platform in Korea, specializing in China



## Adoba Co., Ltd.

### General information

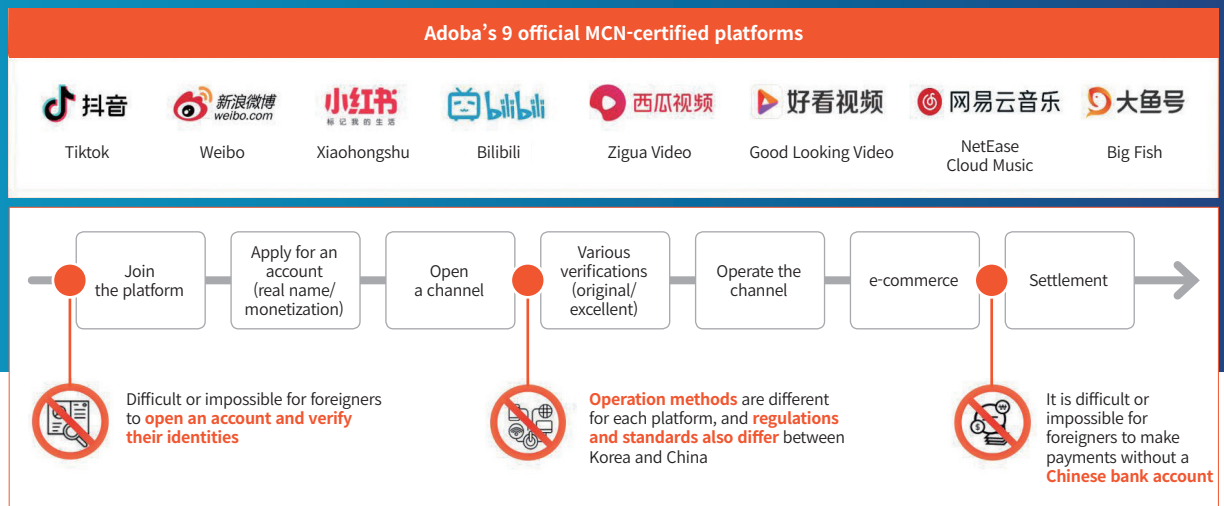
Detailed project name	Broadcast content promotion
Name of dedicated agency	Korea Radio Promotion Association

### Company information

CEO	Ahn Junhan
Type of business	Video platform channel operation in China, creator management
Year of establishment	October 2018
Website	<a href="http://www.adoba.net">www.adoba.net</a>



▲ Scan the QR code



### Prologue

The online content market in China continues to grow rapidly, and there is a company that predicted this future and developed a CMS system for integrated monitoring of multiple platforms by opening and operating channels and developing a settlement process within Chinese video platforms.

Adoba dispatched 100 creator teams to the Chinese market as of December last year and launched a total of 250 teams in the Chinese online content market as of July this year.

In addition, the company is operating about 700 channels through such creator teams and solidifying its foothold in the Chinese online content market.

Meanwhile, Adoba acquired official MCN certification from all of the eight major platforms in China, and it is strengthening its standing as Korea's largest professional creator content platform specializing in China.



### key achievements

- Established the process of channel opening, operation, and settlement within Chinese video platforms, developed CMS systems for monitoring multiple platforms in an integrated manner.
- Dispatched 100 creator teams to the Chinese market as of December 2020. As of July 2021, more than 250 creator teams were dispatched. Operating about 700 channels on Chinese platforms Established its position as Korea's largest creator content platform specializing in China by acquiring official MCN certification for 8 major platforms in China.

### Why do we have to enter the huge online content market in China?

In Korea, YouTube enjoys an 80-90% market share, but there are dozens of platforms similar to YouTube in the Chinese market. The average MAU (monthly active users) of each platform is over 100 million. With this environment, creators can choose from a variety of platforms. Each platform has no choice but to compete fiercely to secure creators. Nowadays, major domestic MCNs and creators are trying to enter various Chinese platforms with the help of Chinese market experts, as they are driven by China's huge market size and high expected returns. Thanks to the explosive demand and core business of Adoba, it has been able to establish many creator partnerships in a short period of time, and it is doing surprisingly well.

### Laying the foundation for the one-person media industry—anyone can become a Chinese content creator

As a creator content platform company specializing in China, Adoba supports competitive global MCNs and domestic and foreign creators in entering the Chinese market. It has a rich local network based on professional manpower specializing in China. Adoba exclusively distributes content from many domestic and foreign MCNs and creators in the Chinese market using an operating system specialized for Chinese platforms. The company has over 80 million subscribers (based on YouTube), and it has established official partnership with 8 major platforms in China (Tiktok, Weibo, Xiaohongshu, Bilibili, Zigua Video, Good Looking Video, NetEase Cloud Music, Big Fish), distributing content to a total of 14 platforms.

### Building a global creator fast track within Chinese video platforms

Adoba has solved the problems of joining the global creator platform as well as authentication of original channels and profit settlement, which were pointed out as the biggest challenges for those who have been distributing their content on Chinese platforms. As a result, it provides stable revenue settlement and currency exchange services to content creators by linking their Korean and Chinese corporations.

### Establishing a growth hacking and multi-platform linking operation strategy for maximizing channel growth

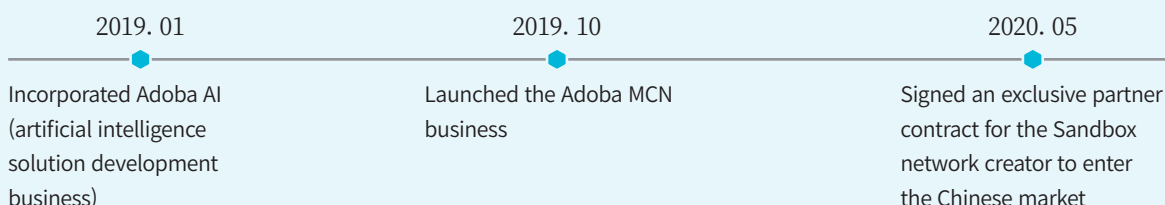
Adoba is also attempting a multi-platform linkage operation strategy to increase the number of content views and channel subscribers rapidly based on "internal growth hacking" and dedicated management for each platform. Internal growth hacking refers to the entire process of finding the best way to grow channels. In fact, Adobe has continued to shorten the average number of days for recording 10,000 subscribers. It was 132 days in June 2020 but was shortened to 62 days in February 2021, showing a remarkable growth rate.

Adoba plans to pursue quantitative growth by establishing many partnerships and implementing a multi-platform strategy in order to grow rapidly all of its affiliated creators and maximize platform advertising revenue and business opportunities.

Through these activities, the company plans to secure a monopolistic position as a "creator content platform" in the Chinese market and analyze the resulting data continuously and conduct channel growth hacking to prepare for various risks and to establish a growth manual structurally.



#### TIMELINE





## MINI INTERVIEW

**Ahn Junhan**  
CEO



**Q1. What did you achieve by participating in this project?**

We helped about 250 teams enter the Chinese market. As a result, we were able to accumulate a lot of channel operation know-how and data. We're going to apply the lessons obtained from this data to many businesses in the future.

**Q2. What was the key to the successful achievements?**

We have made efforts and improvements to realize our mission of "Completing the cultural silk road that increases the value of content by enabling everyone to access the Chinese market fairly." We placed more emphasis on developing markets in China and guiding people and content to those markets, instead of creating a one-time success story.

2020. 11

Received a commendation from the Minister of Science and ICT for promoting the smart media industry

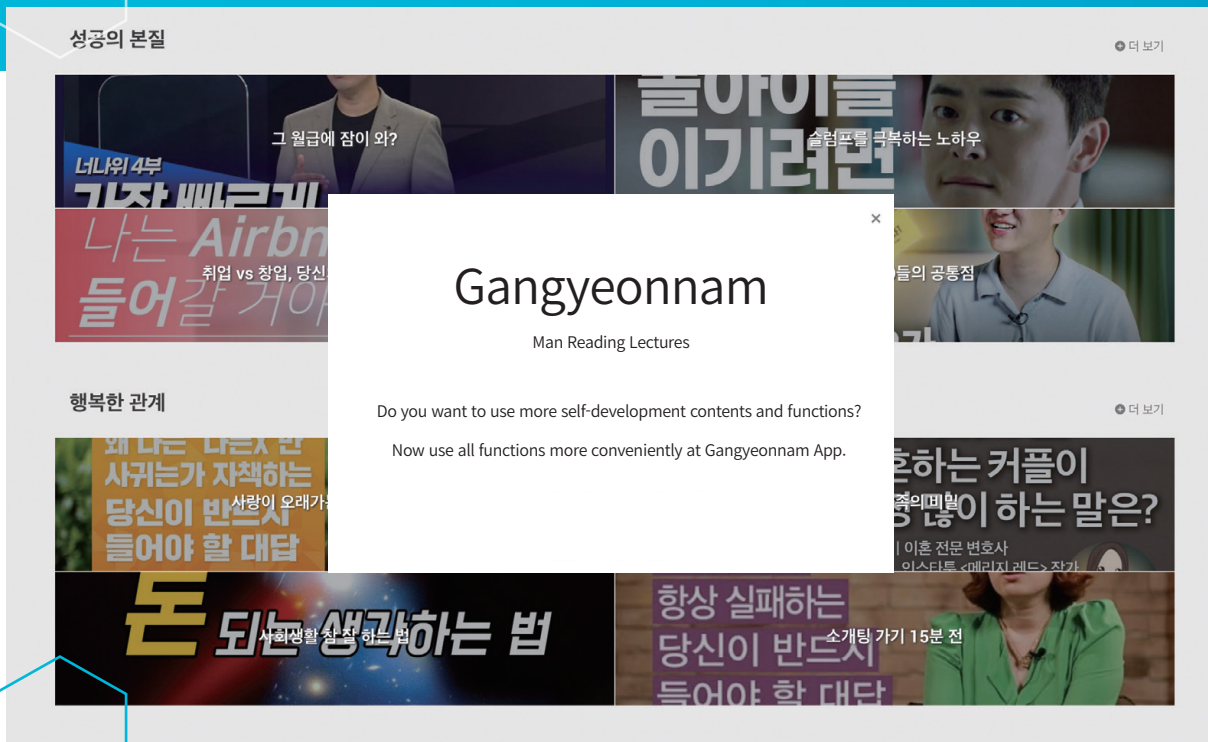
2020. 11

Won the grand prize in the 2020 Korea Creator Festa investment pitching contest

2021. 04

- Operated the Korea-China live commerce training (Adoba-SBA-YA Media)
- Signed an MoU with the News content creator (official TikTok partner) for the Korea-China platform linking business
- More than 200 creator teams and 600 channels entered the Chinese market

# A company leading the lecture content market by developing a platform based on lecture service



## Solutionmaker

### General information

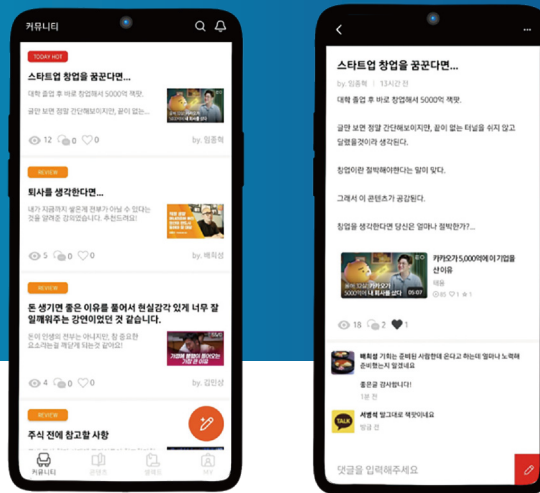
Detailed project name	Broadcast content promotion
Name of dedicated agency	Korea Communications Agency

### Company information

CEO	Im Jong-hyeok
Type of business	Computer programming service industry
Year of establishment	September 2017
Website	www.wable.kr



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### Prologue

As non-face-to-face daily life continued, the existing education market really took a direct hit. The education market found a breakthrough in the development of non-face-to-face educational contents in a poor environment where people could not meet and gather. Accordingly, the online lecture market has grown explosively, and how to take the lead in this market environment has become very important.

Solutionmaker laid the foundation for its business with its Facebook page boasting of 270,000 followers. Solutionmaker forecast that the online lecture service market will grow and developed the Web/APP service recently to provide convenient services to more people.

Solutionmaker's main technology is two-way communication and synchronization; the company is transforming itself into a leading player in the online content market and a leader in next-generation micro-learning platforms.



### key achievements

- Established the foundation for mutual communication channels between lecturers and viewers by developing the next-generation micro-learning platform.
- Developed community service that enables everyone to share opinions by building its own web/APP platform.

As the Internet environment develops and personal devices such as smartphones become common, online lecture use and transaction volume have shown steady growth since the mid-2010s. In addition, the online lecture service market has grown into a KRW 10 trillion market in 2020 as non-face-to-face life has become common and continued due to COVID-19; this is an increase of more than 150% compared to 2018. This year, 19 edutech unicorn companies are expected to be founded worldwide.

As a result of such effort, Solutionmaker was able to provide content to 3.5 million people each month, developing a Web/APP platform to provide convenience to more people. Solutionmaker's micro-learning platform is a service for the youth in their 20s and 30s who have a strong desire for self-improvement, but there are practical limitations due to lack of space and time. Solutionmaker also provides a community service wherein students can view various lectures and share their opinions.

Solutionmaker used live chat as a real-time, two-way communication channel. In the mentoring space, continuous communication was induced by the lecturer's direct answer. This function solved the problem of communication disconnection, which was associated with the existing online self-development service, and paved the way for maximizing development through mutual communication. In particular, outlinks were inserted to encourage customers to take action while watching customized self-improvement content. Therefore, customers can continue to develop by themselves and form a community between them.

Solutionmaker also built a relational database management system (RDBMS) and implemented a data communication model using a Representational State Transfer (REST) API to create the tables needed for bulletin board implementation. For popular posts, the caching function was used to manage the main database CPU more efficiently.

For video streaming, two outlink methods were adopted at a specific point in time, because a lot of packets are switched in real time. One method is that the server returns outlink data together when data is requested at a specific point in time. The other method is that, when video streaming data

### Trends of using online lectures by age group

Average utilization ratio (20's to 50's)

Year	50's	40's	30's	20's	Average
2014	57.6	57.6	57.6	57.6	57.6
2015	58.2	58.2	58.2	58.2	58.2
2016	58.7	58.7	58.7	58.7	58.7
2017	58.9	58.9	58.9	58.9	58.9
2018	59.0	59.0	59.0	59.0	59.0

(unit: %)

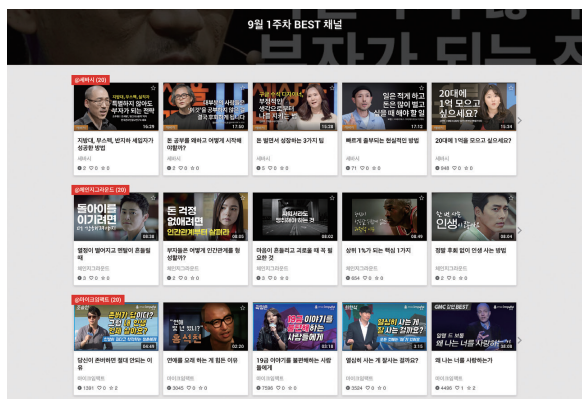
National IT Industry Promotion Agency (2018)

Year	Individuals (age group)	Business
2014	314	-
2015	341	-
2016	342	-
2017	362	-
2018	377	-

Source: National IT Industry Promotion Agency (2018)

All age groups are showing a steady growth rate in using online lecture services.

Individual and unit users alone created a KRW 3.8 trillion market (as of 2018).



These technologies enabled Solutionmaker to increase the delivery efficiency of educational contents and user satisfaction with their services.

Speakers can advertise their books using the free advertising service for outlink CTA. Solutionmaker plans to analyze the data collected from SNS channels and its own platform (number of views, viewing time, age group, playback section, preferences, meta value, etc.) and use it to create improved content.

Solutionmaker will also produce live content, allowing speakers and viewers to ask and answer questions in real time via two-way communication. It plans to continue developing the online community so that it can also serve as a communication platform and prepare lectures in various fields such as humanities, sociology, and philosophy to create and distribute various contents.

## MINI INTERVIEW

Im Jong-hyeok

CEO



## Q1. What did you achieve by participating in this project?

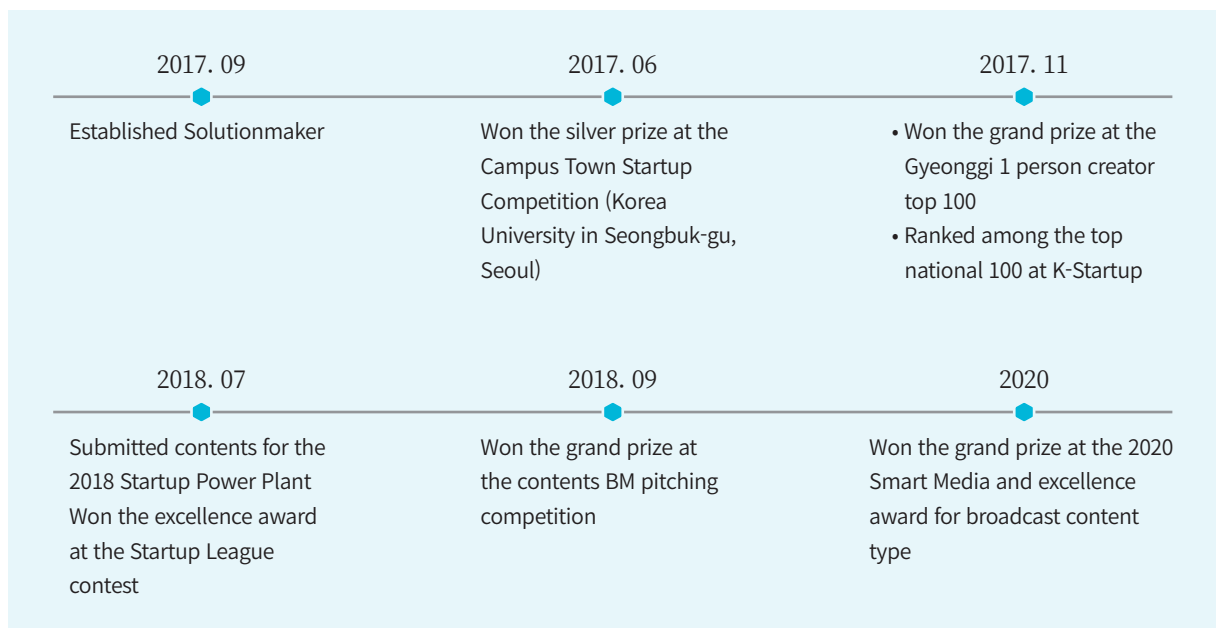
We were able to develop a next-generation micro-learning platform with focus on two-way communication and synchronization. Using the two-way communication function between lecturers and viewers, we developed a good platform where various people can share their opinions.

## Q2. What was the key to the successful achievements?

We needed a lot of personnel including developers to develop the various functions of our services. Thanks to the support project, we hired more personnel and overcome difficulties, and we were able to complete the project on schedule.



## TIMELINE



# Developed a portable X-ray imaging system as a revolutionary paradigm change in medical examination in the non-face-to-face era

Portable X-ray imaging device based on wireless communication (REMEX-KA6)



Examiner  
(medical staff)



Examinee  
(patient)

5G

REMEDI



Digital manual  
(UI/UX)



Non-face-to-face x-ray equipment



Wireless communication technology

## Remedi Co., Ltd.

### General information

Detailed project name Promoting a digital content industry ecosystem (informatization)

Name of dedicated agency National IT Industry Promotion Agency

### Company information

CEO Lee Rena

Type of business Manufacturing

Year of establishment July 7, 2012

Website [www.remедиhc.com](http://www.remедиhc.com)




▲ Scan the QR code



#### Portable Dental X-ray Apparatus

- A portable X-ray apparatus with which HD X-ray shooting of intraoral structure is possible through high specifications.



High Quality Portable X-ray Digital Camera

FDA


CE

* Spec	
Tube voltage	70KV
Tube current	2mA
Focal Spot	0.4mm
Irradiance duration	0.01~1.3 sec
Weight	1.9 kg


#### Portable Medical X-ray apparatus

- A portable X-ray apparatus with which HD X-ray shooting of the human body including the chest, hands, and feet is possible


- With reduction of radiation exposure time, minimization of exposure dose (low dose)
- Through miniaturization and light weight, improvement of portability and user convenience
- Through 0.4mm focal spot, actualization of high definition and resolution image
- With high dose rate compared to competitors', Minimization of motion artifact




#### Non-destructive X-ray Inspection Equipment for Industrial Use




High voltage junction box




Tire wheel




Air filter rod




Battery electrode




Mobile (standing) imaging system



Imaging system for bed use



Shielding KIOSK imaging system



Fixed imaging system

## Prologue

With COVID-19 spreading around the world, non-face-to-face life has become commonplace. Accordingly, various treatment methods in hospitals and clinics—which inevitably have to come in contact with patients directly—also required changes in various aspects.

Remedi Co., Ltd. paid attention to X-ray imaging. For X-ray image, installation-type image and diagnosis equipment are essential to process a huge amount of data. Remedi has developed a portable X-ray imaging device based on the 5G environment and an application that can process X-ray imaging data. As a result, Remedi paved the way for wirelessly performing X-ray imaging, which was the most limited in space.

Remedi provides a more convenient and safe examination environment to all patients and medical staff who need to do X-ray examinations as well as COVID-19 screening clinics and patient treatment centers by developing X-ray examination devices that can minimize contact between medical staff and confirmed patients.



## key achievements

- Created a non-face-to-face X-ray imaging environment by developing portable X-ray imaging devices based on the 5G environment and contents that can utilize imaging data.
- Created a non-face-to-face X-ray imaging environment for Eunpyeong St. Mary's Hospital, which was designated as a COVID-19 patient treatment center by the Seoul Metropolitan Government, and recorded sales of KRW 1 billion in the second half of 2020 by signing an exclusive sales contract with Dongguk Lifescience.

### Improving the quality of life by reinventing radiation technology

Remedi was established to popularize radiation imaging medical devices with the vision of “Improving the quality of life by reinventing radiation technology.” The company decided that it was necessary to improve the accessibility of radiation medical device services and develop high value-added products that meet the needs of customers. Accordingly, it focused on research on original technology that can meet the future demand for radiographic diagnostic examinations.

Remedi is spearheading innovation in the digital healthcare total solution field based on high-level radiation technology and various clinical experiences. It is also leading the global market using parts and materials for ultra-compact X-ray diagnostic devices and core technologies of the XIT platform. Remedi provides the optimal system for each X-ray imaging and treatment industry, based on the key competitiveness and price competitiveness of the XIT platform technology, know-how on reducing the size, and rapid development capability. The company has developed and distributed portable X-ray imaging devices, which are essential in the non-face-to-face era, and is drawing considerable attention in the radiation diagnostic device industry.

### Developing portable X-ray imaging technology that is essential in the non-face-to-face era

The portable X-ray digital camera and handheld X-ray camera developed by Remedi provide a high degree of freedom for medical staff to take pictures just as easily with a portable camera, instead of the conventional method wherein the subject had to change positions on a fixed X-ray diagnostic device.

When a portable X-ray imaging device is used, the medical staff need not instruct the subject to change position to find the desired image angle. The device is drawing great attention as it can be used in places such as screening clinics and patient treatment centers where the patient and the medical staff should minimize physical contact, such as the COVID-19 test.

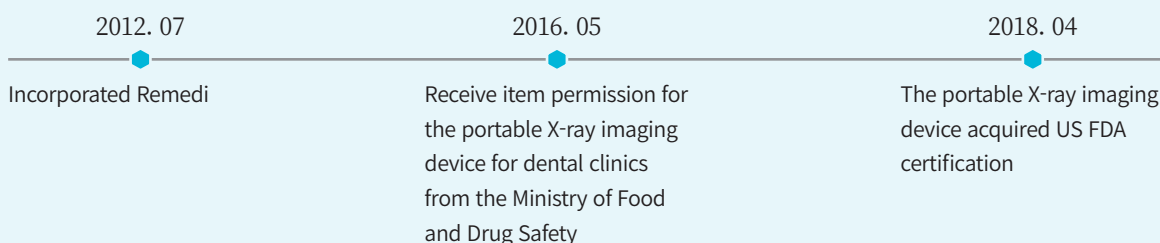
Remedi has also implemented a chest X-ray imaging and non-face-to-face examination system essential for testing COVID-19 by developing digital content suitable for non-face-to-face use environments. Users can use the device conveniently because they can utilize an application that includes digital manuals and video content.

### Leading the promotion of the digital content industry by proposing the direction of future medical services

The company plans to develop a technology that allows patients and medical staff to diagnose quickly without fear of contracting contagious diseases including COVID-19, while improving the interface with focus on user convenience. Remedi has achieved remarkable results every year, such as getting selected as a promising SME in Gangwon-do in 2018, winning the silver award at the 2019 Gangwon Export Awards, receiving technical innovation-type SME certification (Inno-Biz) in 2020, getting selected as a promising export SME by the Ministry of SMEs and Startups in 2021, etc. Remedi is expected to lead the future medical service optimized for the non-face-to-face era and which prioritizes user convenience and to make new history continuously in the field by developing an accurate, convenient X-ray imaging device.



#### TIMELINE





MINI INTERVIEW

Lee Rena  
CEO

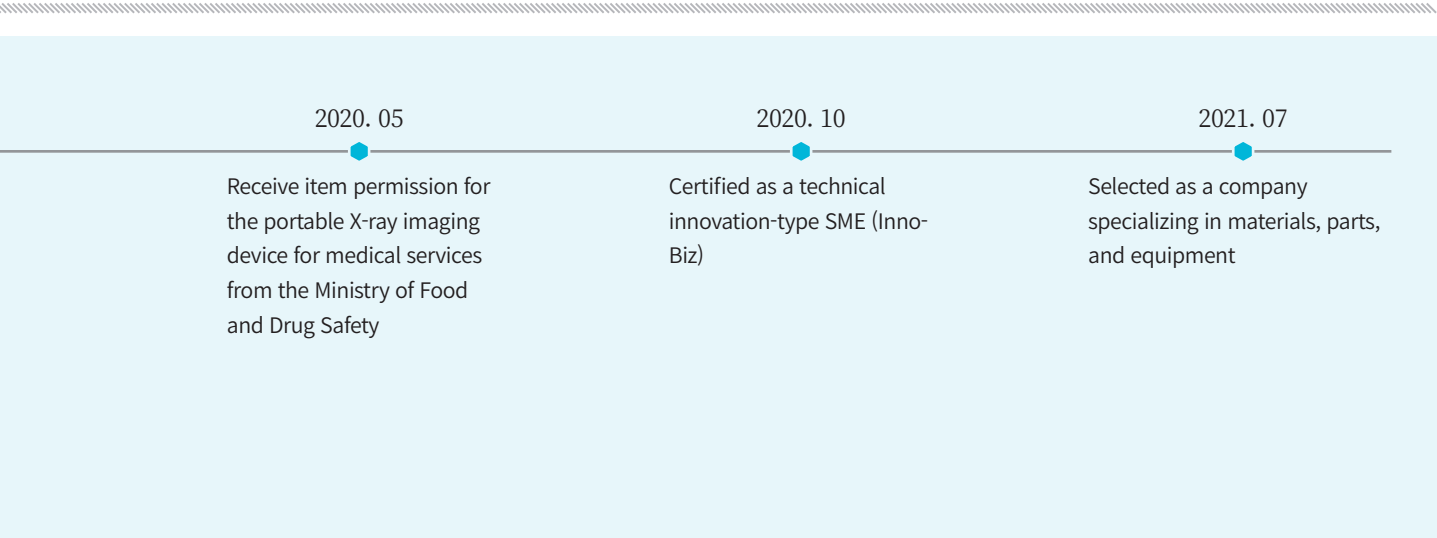


Q1. What did you achieve by participating in this project?

We developed an app and a program that can be linked with an X-ray imaging device using wireless communication technology. We implemented an X-ray system suitable for a non-face-to-face service environment using the app, which can be linked with a kiosk (like a screening clinic), and signed an exclusive sales contract with related hospitals and universities.

Q2. What was the key to the successful achievements?

I believe that we have quickly prepared for future demand based on high quality competitiveness, by forecasting changes in the market environment caused by COVID-19. In addition, we were able to reach the commercialization phase by significantly reducing the amount of radiation and providing convenience in mobility through continuous R&D.



# Developed a ground remote control system that controls an unmanned tower crane for a safe construction culture



## JNE Systech Co., Ltd.

### General information

Detailed project name	Creation of Global ICT Innovation Cluster
Name of dedicated agency	National IT Industry Promotion Agency

### Company information

CEO	Kim Jeong-Eun
Type of business	Automation equipment, computer simulators, system software, service industry
Year of establishment	March 6, 2008
Website	<a href="http://www.jnesystech.com">www.jnesystech.com</a>



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### Prologue

Unfortunately, fatal accidents that occur during tower crane work are continuously reported. Due to these fatal accidents, the importance of following safety rules is continuously emphasized. However, it was difficult to find a case that offers a fundamental solution.

JNE Systech has solved this problem by commercializing a tower crane with concerns of human accidents by developing a remote control system based on 5G technology and implementing a dangerous situation recognition algorithm through AI image recognition.

The company has brought about new change so that tower crane operators can work in a safer environment. It is also contributing to the improvement of industrial safety and life safety by utilizing 4th industrial revolution technology, such as the AI solution that manages the safety of subway screen doors using CCTV images.



### key achievements

- Developed an unmanned tower crane system/technology that is remotely controlled, secured 5G MEC communication devices and edge applications and dangerous situation recognition algorithm using AI image recognition.
- Hired one youth employee and an experienced worker in the second half of 2020; sales in the first quarter of 2021 increased by about 20% compared to the previous year.

### **Unfortunate tower crane accidents that occur continually**

In 2017, there were 6 accidents involving tower cranes, in which 17 people lost their lives.

The Ministry of Employment and Labor announced that it will enact and implement the enforcement ordinance of the Industrial Safety and Health Act to prevent casualties caused by tower crane accidents, which requires the installation of a collision avoidance device on the tower crane and recording of the entire work process on video. According to this enforcement ordinance, all tower cranes used at construction sites must record the entire work process on video from July 1, 2018.

Unmanned tower cranes are frequently used nowadays. When a tower crane is controlled using a simple remote system only, however, there is a high possibility that a blind spot may occur, and it is difficult to check the condition of the equipment frequently. In addition, anyone can get a license to operate a tower crane after completing 20 hours of training, so accidents caused by unskilled operators are on the rise.

As a result, various government measures have been continuously enforced, such as strengthening the qualification test for tower crane operators, installation of hazard indicator lights for remote-controlled tower cranes, and mandatory installation of safety devices such as imaging devices and remote controllers. Therefore, there is a need for competent companies to implement and manage these government policies thoroughly.

### **A company specializing in the development of a digital twin system in line with the construction of the global ICT innovation cluster**

JNE Systech is a company specializing in researching HILS-based digital twin system development technology.

The digital twin system is composed of three core technical elements: building a virtual physical model; collecting and analyzing the data generated when operating the system, and visualizing the developed system. JNE Systech has the system building technology that integrates all these three elements. Recently, it has been jointly carrying out

development services and national projects related to the development of a digital twin system, together with national technology research institutes and large corporations.

If an object lifted by the tower crane collides with an on-site worker while driving a tower crane, serious safety disasters such as casualties occur. To prevent such accidents, the video captured by the camera installed on the tower crane is analyzed using the AI image recognition training model and inference engine installed on the 5G MEC server, and alarms are generated to reduce accidents when workers are in a dangerous situation.

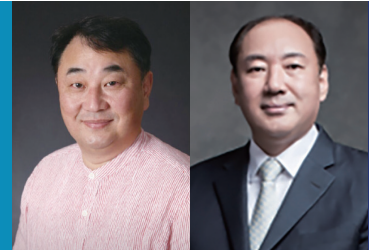
The work status can be relayed in high-definition using the 5G MEC server's 4K or higher high-definition video, ultra-low latency communication of 10 ms or less, and high-resolution video relay system installed in an unmanned tower crane. Therefore, operators can control the crane in the same way as using a ground remote control system similar to the tower crane operation cabin. In addition, since the system runs on a cloud web-based basis, it can also receive support from experts located remotely. Accordingly, it is possible to increase the safety of tower crane operation at the construction site.

### **Entered the digital twin market in the hydrogen fuel cell field for battery propulsion systems for eco-friendly ships**

JNE Systech plans to enter the digital twin system field as well to develop the market and increase sales. The digital twin system is used to analyze and monitor moving objects powered by battery only, hybrid-type energy delivery system that combines a battery and other energy sources, and hybrid system with battery-hydrogen fuel cells that can be used for large ships.

## MINI INTERVIEW

**Jang Min-ho** managing director  
**Hong Eui-seok** technical director

**Q1. What did you achieve by participating in this project?**

We were able to secure the technology for recognizing dangerous situations using wireless communication connection and AI image recognition technology and remote support technology based on the cloud by developing a 5G MEC convergence remote control system for the unmanned tower crane.

**Q2. What was the key to the successful achievements?**

Sincere and strenuous efforts and continuous management by employees including the CEO, and support from MEC Systems were of great help.



## TIMELINE



Content

**IoT**

Network

Cloud

Big data

AI

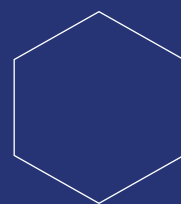
Software

Blockchain

Miscellaneous

## C H A P T E R

INFORMATION AND COMMUNICATION TECHNOLOGY





02

## Success Stories Of Outstanding Cases

**Hyunsung Co., Ltd**

A platform for preventing and responding to disaster and safety accidents in underground facilities using intelligent rail robots



# A platform for preventing and responding to disaster and safety accidents in underground facilities using intelligent rail robots



## Hyunsung Co., Ltd.

### General information

Detailed project name      Reinforcing the competitiveness of the next-generation Internet business

Name of dedicated agency      National IT Industry Promotion Agency

### Company information

CEO      Lee Heui Seong

Type of business      Manufacturing ultra-high frequency RF coaxial cable for 5G testing

Year of establishment      July 2018

Website      [www.uhyunsung.com](http://www.uhyunsung.com)



▲ Scan the QR code





### Prologue

As the density of cities increases, more infrastructure is being built vertically, and most of the water, telecommunication, and gas facilities are installed underground.

There is growing interest in technology for maintaining and safely managing these facilities. In this situation, Hyunsung is drawing attention by utilizing the 4th industrial revolution technology as a complex alternative to these demands.

As a company specializing in disaster safety management of tunnel-type underground common areas, Hyunsung uses IoT technology to pinpoint areas where management is required, completely monitors facilities using rail robot and advanced video platform, and detects and prevents a potential incident early based on AI analysis.

Hyunsung is expected to be a leading company in the field of management of underground common ducts in Korea by expanding its service area not only to corporations but also to local governments nationwide.



### key achievements

- Secured and commercialized the platform for preventing and responding to disaster safety accidents of tunnel-type underground facilities using intelligent rail robots and IoT technology.
- Won the order and completed rail robot installation for the smart management system development project for underground common ducts in Sejong City in the second half of 2020 (recorded sales revenue of KRW 820 million).

### **Disaster safety management platform that converges IoT and AI technology**

Governments worldwide are showing interest in shifting to a system-oriented safety management system using the 4th industrial revolution technology as one of the fundamental countermeasures, since various disasters and safety accidents are getting bigger in recent years.

The Korean government has also set the goal of leaping forward into an advanced country in terms of safety where people can feel safe and assured. Specifically, it is promoting the establishment and verification of various disaster safety platforms to prevent safety accidents that occur in facilities such as tunnels and underground common ducts by utilizing IoT and AI technology and to support initial response quickly in case of an accident.

The disaster safety platform for tunnel facilities prevents safety accidents and continuously learns data to prevent and respond to safety accidents effectively, by analyzing big data collected in real time by various sensors and cameras installed on the rail robot. As such, how the vast amount of data collected in the field is utilized will greatly affect the quality of products and services.

The Korean government announced the Korean version of the New Deal last year. As part of the Digital New Deal, four major strategic projects were selected including “strengthening the D-N-A (Data, Network, AI) ecosystem.” The disaster safety platform development project with focus on the intelligent rail robot platform is a core project that will strengthen the D-N-A ecosystem and is a very important project to protect the safety of the people. Hyunsung is doing its best to develop cutting-edge technology to increase the efficiency of this project.



### **A company specializing in the next-generation Internet business that will take the lead in global hi-tech logistics**

As a company specializing in the tunnel-type disaster safety management platform using intelligent rail robots, Hyunseong has been developing the platform for

underground common ducts and tunnels since 2019; it is currently concentrating on developing related products and enhancing functions.

Hyunseong was also selected as a TIPS technology development company for the global logistics management of hi-tech products such as hi-tech electronic products, semiconductors, and pharmaceuticals, and it is currently preparing for product development and commercialization. The company is set to launch the smart pet tracker product designed for pet care and loss prevention in the second half of 2021.

### **Commercialization of disaster safety platform using intelligent rail robots**

While driving along the rail installed on the ceiling of the facility, the intelligent rail robot collects various kinds of environmental information in real time using high-definition FHD real video and thermal imaging cameras and sensors detecting temperature/humidity, various harmful gases, and dust.

The collected data is sent to the server and analyzed by AI, and various alarm and guidance services are provided to prevent safety accidents. The robot also advances safety accident prevention functions through deep learning and provides quick initial response functions in the event of an accident.

Because this product is installed and operated in relatively narrow, harsh environment and space (tunnel), its structure must be compact, and a high-speed driving function is required to move quickly in case of an emergency. In addition, it is sometimes operated in a harsh environment with dust and moisture by installing a fire extinguisher that can extinguish a fire at its initial stage using IP65 rating waterproof and dustproof function.

### **Developing edge-based AI technology that will lead the growth of the new IoT industry**

The existing commercialized disaster safety platform sends all environmental data collected by the robot to the AI server at the control center for analysis, and then issues the necessary commands or takes action according to the analysis results. Therefore, data transmission is inevitably delayed, and actions are taken according to the server analysis results, so it is not possible to take immediate action properly when a problem occurs.

Hyunseong plans to address these problems by enabling the robot—which is an edge device—to implement quickly the solution that can be taken immediately by using the data pattern learned from the AI analysis data. It will develop the necessary technology for this function.

## MINI INTERVIEW

## Lee Heui Seong

CEO



## Q1. What did you achieve by participating in this project?

We were able to collect and utilize various data necessary for commercialization by developing a disaster safety management platform for tunnel-type facilities and verifying it on-site based on intelligent rail robots through the use of various industrial IoT technologies and AI technologies. I am proud to be able to contribute greatly to the advancement of Korea into an advanced safety country by utilizing the disaster safety platform technology obtained from this project.

## Q2. What was the key to the successful achievements?

The secret to success is that the platform technology was developed through collaboration between large and small businesses, and it was able to secure a verification site for commercialization effectively. In particular, local governments' active support in the form of tunnel facilities necessary for platform verification was very helpful for technology development.



## TIMELINE



Content

IoT

**Network**

Cloud

Big data

AI

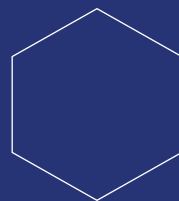
Software

Blockchain

Miscellaneous

## C H A P T E R

INFORMATION AND COMMUNICATION TECHNOLOGY





## Success Stories Of Outstanding Cases

### **AllRadio Co., Ltd.**

Toward the 10G era by going beyond 5G with modular network integration devices based on optics

### **Eldis Co., Ltd.**

Successfully localized and commercialized core components for optical communication networks with bandwidth suitable for the 5G era

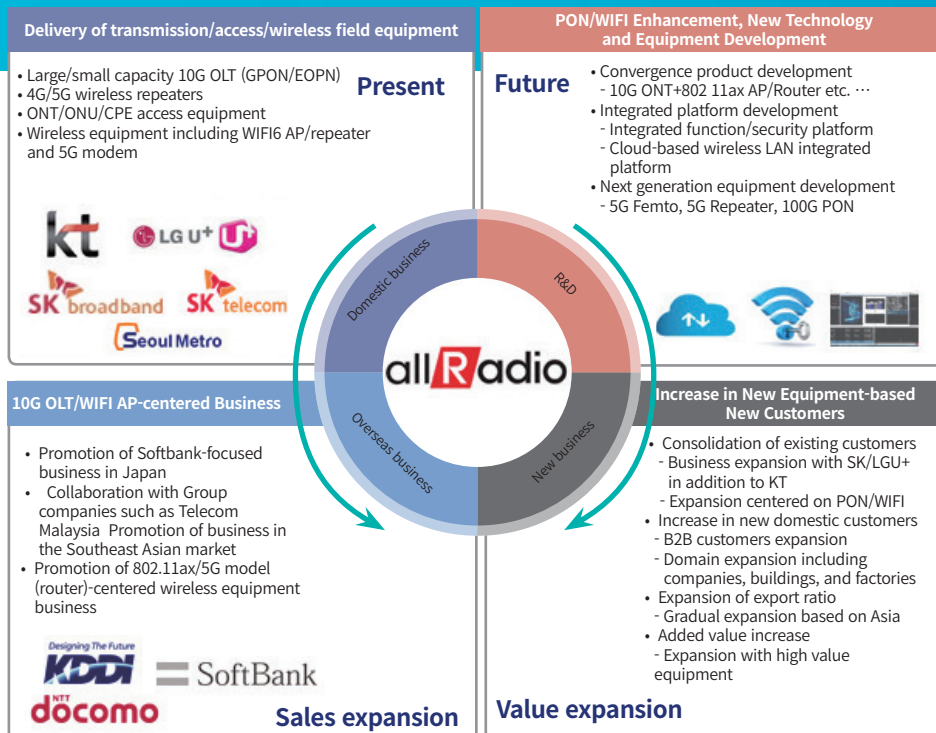
### **Salrayworks Co., Ltd.**

Dominated the non-face-to-face video network market by establishing Ip-based NDI broadcasting infrastructure

### **OSI Co., Ltd.**

A future-oriented company that leads the global market by localizing 5G transmission/reception cables

# Toward the 10G era by going beyond 5G with modular network integration devices based on optics



## AllRadio Co., Ltd.

### General information

Detailed project name	Project for promoting the 10Giga Internet service
Name of dedicated agency	National Information Society Agency

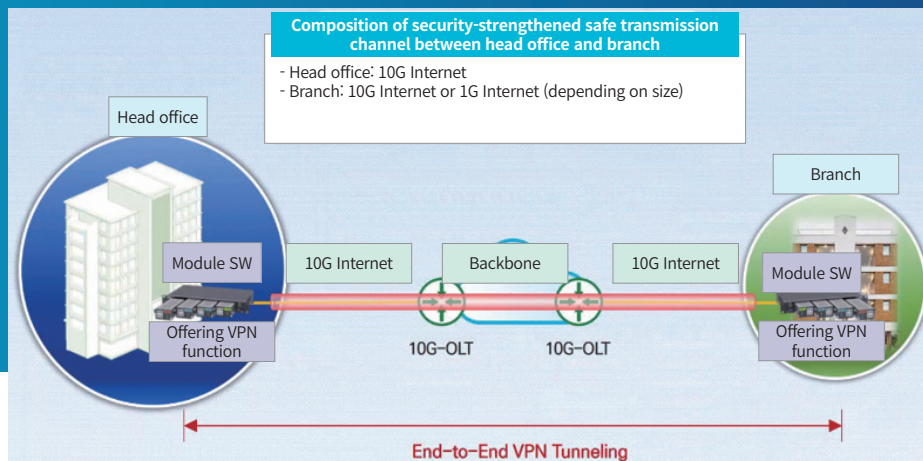
### Company information

CEO	Lee Ju Yeon
Type of business	Manufacture of wired/wireless communication devices and components
Year of establishment	January 2, 2013
Website	<a href="http://www.allradio.co.kr">www.allradio.co.kr</a>



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### Prologue

Countries and companies looking forward to the next era are developing the 5G network—which has become the basis of the 4th industrial revolution—into a faster, more stable one. Considering the speed of technological development that has gone through 2G, 3G, and 4G to reach 5G, the future communication environment will make the world even more amazing.

A future that can only be seen in science fiction novels and movies can be realized even one day sooner if we have the technology that can lead to rapid development ahead of others. AllRadio is expanding its technological horizons beyond 5G to the 10G era, using optical-based modular network integration devices.

AllRadio is a communications equipment specialist company that is making every effort to build the world's best information and communications network. Let's take a look at its growth process and future vision.



### key achievements

- Received an award in the field of “Change in customer’s life” at the 2020 KT Partner Awards by providing innovative Wi-Fi AP technology.
- Providing 10G-class NAT and VPN functions by developing an office network integration device based on optics and using new technology (WiFi6E).

## Paying attention to 5G infrastructure in the era of the 4th industrial revolution

The concept of “5G” includes not only the technological evolution of each generation of mobile communication, but also various services and technologies made possible using the technology. In the 5G era, content such as AR/VR that causes large data traffic will be consumed more, and various application services based on the characteristics of ultra-high-speed and low-latency are expected to emerge, such as autonomous driving, remote medical examination and treatment, smart factory, etc.

All major countries such as the US, Europe, China, and Japan have started their 5G commercial services since 2019.

In some countries, such as the United States and China, the government and telecommunication companies are expected to make large-scale investments to preoccupy the 5G market. Accordingly, the number of communication equipment and parts manufacturers is expected to increase, and the mobile device market is seen to expand significantly.

## A company specializing in telecommunication equipment and which has taken the lead in installing the world's best high-speed information and communication network

The predecessor of AllRadio was Sungmi Electronics Co., Ltd., which was established in May 1980 to manufacture electronic and communication devices. Then, in January 2013, part of the information and communication construction business was split to establish Dongwon Systems, which later developed into Dongwon T&I. In March 2015, the main office was moved to Gasan-dong, and the name was changed to T&I in October 2016 and again to the current AllRadio in September 2018.

The main office was relocated to Anyang-dong in August 2019, and current CEO Lee Ju Yeon who took office in October has been leading the company.

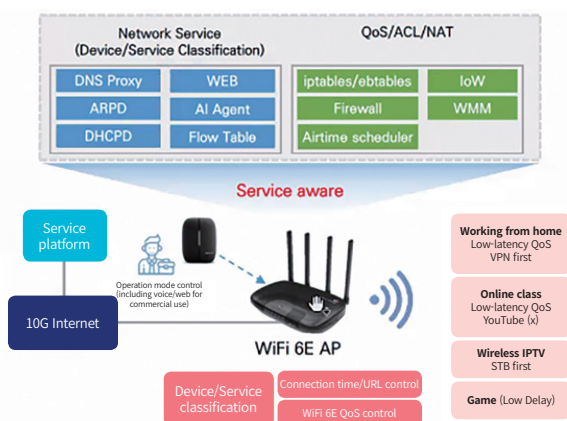
AllRadio has been manufacturing communication equipment since its foundation and has been designing and manufacturing various wired/wireless communication equipment based on technology accumulated steadily during that time. The company supplies equipment and services to three major telecommunication operators (KT, SK Telecom, and LG U+) in Korea and provides a total solution from development and production to quality control, post-maintenance, and customer management. In particular, the technological prowess and quality of AllRadio products are recognized, with KT continuously selecting AllRadio as its best partner, beyond being a first-tier supplier.

## To create a communication environment faster ahead of others

The modular office network integration device based on optics provides 10G-class NAT and VPN functions and enables customers to create a flexible communication environment by type, size, and speed. The device also has remote troubleshooting functions, reducing customer investment and operating cost of the service provider.

The slim-type home network solution is a wired and wireless network solution for distributing more in-house 10G services. The difference is that it is equipped with 10G-ONT and gateway functions, which in turn expands the wireless AP with one network configuration in the house and easy mesh. Service providers can reduce investment costs by optimizing wired and wireless devices, and customers can experience improved quality of 10G Internet service.

The Service Aware WiFi6E AP solution provides an optimized high-quality service by making use of the broadband low-latency characteristics of 10G Internet and WiFi6E. The AP has special differentiation as it can provide high-quality distance learning and media services using 6E, the next-generation AP technology. AllRadio is concentrating its investments on securing technologies to provide optimal quality for each service.



## Becoming the No. 1 device manufacturer in Korea and entering the global market

As we can see from the vision “top wireless access provider” being pursued by AllRadio, it is planning an IPO by entering the global market in the future based on the technology it has accumulated in the domestic telecommunication market. To this end, AllRadio expects to be in the black in 2021, laying the foundation for becoming Korea’s No. 1 device company. AllRadio plans to become the number one device company in Korea and enter the global market in 2022. In 2023, it will conduct an IPO to increase its credibility at home and abroad and continue to grow quantitatively and qualitatively by expanding new businesses.



## MINI INTERVIEW

**Lee Ju Yeon**  
CEO

**Q1. What did you achieve by participating in this project?**

We expanded our business considerably by developing modular integration solutions for enterprise 10G services.

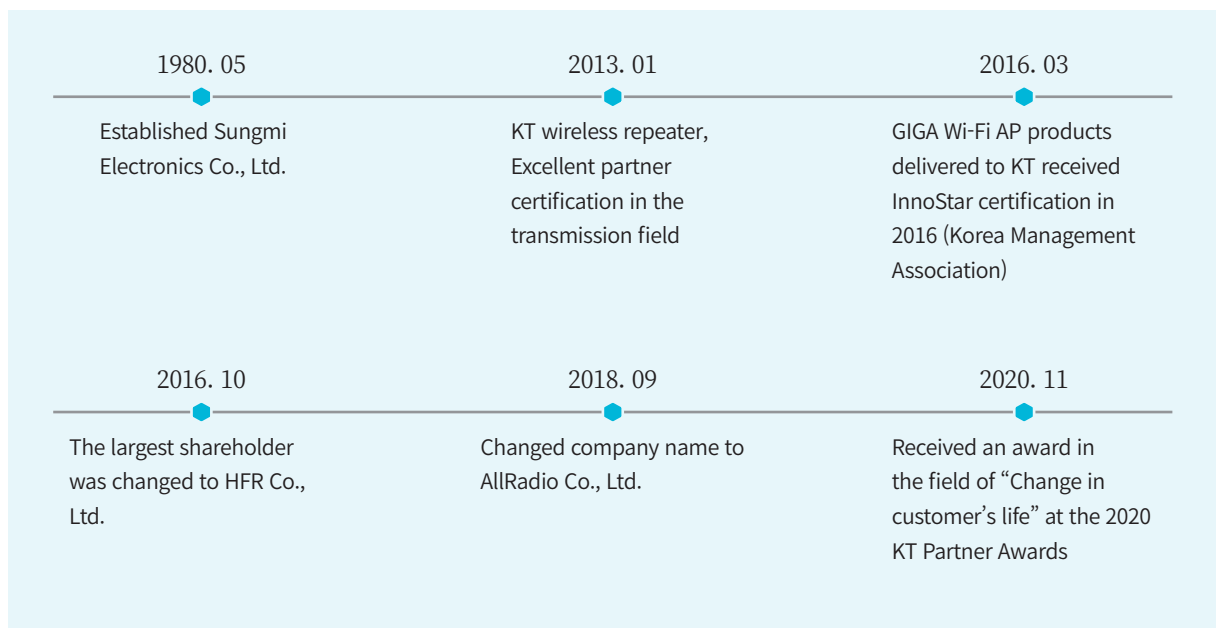
We also expect to expand the scope of home customer services by applying QoS-specialized functions, as we're developing a slim hub-lite AP that applies W-iFi 6E, a new technology.

**Q2. What was the key to the successful achievements?**

I believe the preemptive development of new technology and new product through this project paid off. We have developed and commercialized network equipment by actively applying new technologies acquired from this project, based on the capability of developing core technologies such as FTTH and Giga Wi-Fi AP. I also think that we were able to develop new markets by securing technological independence and scalability using major technological competitiveness, including originality that can be differentiated from competing technologies and products.



## TIMELINE





# Successfully localized and commercialized core components for optical communication networks with bandwidth suitable for the 5G era



## Eldis Co., Ltd.

### General information

Detailed project name      Spreading the commercialization and demonstration of optical communication components for the intelligent information network

Name of dedicated agency      National Information Society Agency

### Company information

CEO      Cho Ho-sung

Type of business      Manufacture of optical communication module and semiconductor chips

Year of establishment      May 3, 2006

Website      [www.eldis.co.kr](http://www.eldis.co.kr)



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### Prologue

In the 5G mobile communication environment, the transmission capacity increased by 20 times compared to 4G, and the delay time was reduced to less than 1 ms. Korea has relied on imports from Japan for key components that build optical networks supporting sufficient performance in such an environment. Eldis successfully localized these light source components according to the government-led policy of strengthening the competitiveness of materials, parts, and equipment.

Eldis also commercialized the world's first two types of "25Gbps tunable DFB-LD" that operate variably with 4 DWDM channels in the 1270nm and 1290nm bands, a key optical component to establish a front-haul optical communication network with a PON structure for 5G mobile communication. As a result, Eldis is expected to contribute considerably to the stabilization of the domestic market and overseas exports.

When everyone was worried about the impossible task, Eldis made it a reality with thirst for challenge, persistence, and passion.

Let's take a look at the growth history of Eldis, which will lead the next-generation optical communication network component market.



### key achievements

- Commercialized key light source components for the PON structure optical communication network designed to send the large-capacity information of 5G mobile communication.
- Developed and commercialized 4-wavelength 25Gbps tunable DFB-LD in the 1270nm and 1290nm bands, developing 4-wavelength 25Gbps tunable DFB-LD in the 1330nm and 1350nm bands.

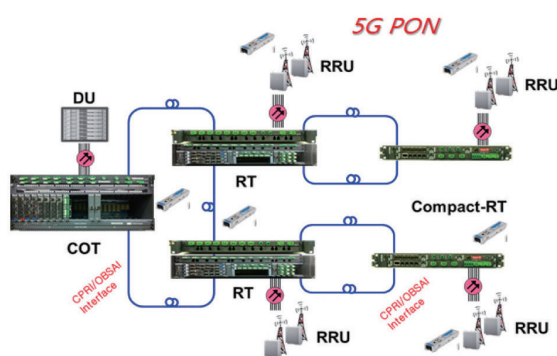


### Established an optical network with sufficient bandwidth for 5G mobile communication

As the characteristics of 5G mobile communication, compared to 4G LTE, the network transmission capacity has increased by 20 times (20 Gbps per cell site), the delay time has been reduced to 1 ms or less, which is 1/10, and the number of remote cells has doubled. Therefore, a new optical communication network that satisfies these characteristics needs to be established. A 5G front-haul network with a passive optical network (PON) structure can secure sufficient bandwidth to distribute 5G services rapidly, because the DWDM transmission method was adopted while utilizing the existing CWDM-based OSP (outside plant) for 4G LTE service without change.

In other words, this network is scalable. In the optical communication front-haul network connecting DU (distributed unit) and RU (remote unit), one DWDM wavelength is allocated to DU and RU (AAU) each. Therefore, a new DU-RU pair can be easily added according to the 5G service demand in the 5G mobile communication network. This network is also flexible because the operating wavelength of the tunable DFB-LD can be remotely controlled, so the DU-RU pair combination can be changed. Currently, 5G PON is evolving into a complete PON structure composed of main RN and sub (cell site) RN, and plans of increasing the speed from 10 Gbps to 25 Gbps are being implemented.

[Conceptual diagram of 5G PON]



### Developed 25Gbps tunable DFB-LD, a core optical component

The core optical component, 25Gbps tunable DFB-LD, must be developed and commercialized to establish a front-haul optical communication network with a PON structure used for 5G mobile communication. In particular, a method of gradually expanding the operating wavelength band of DWDM tunable DFB-LD to 1270nm, 1290nm, 1330nm, and 1350nm is required to utilize the entire CWDM band of the O-band with excellent transmission quality. Consistent facilities and advanced technological prowess related to compound semiconductor epi growth, process of manufacturing semiconductor laser, and light source

module assembly and mass production are required to commercialize the O-band 25Gbps tunable DFB-LD. Currently, Japanese companies such as Sumitomo and Mitsubishi with long experience in development and mass production are leading the market. The Korean government is pursuing a policy of strengthening the competitiveness of materials, parts, and equipment to respond to Japan's trade retaliation and is paying attention to localizing O-band 25Gbps tunable DFB-LD to replace imports.

### A company that spread demonstration by commercializing optical communication components for the intelligent information network

LD is used as a core component for optical communication and is monopolized by Japan and the United States. Therefore, it is important to ease the dependence of the domestic optical communication market on foreign countries by localizing these components. The core product of Eldis is DFB-LD with 2.5Gbps~10Gbps modulation bandwidth. With this product, Eldis contributed to the localization of mobile communication network components in Korea by supplying the core light source of the mobile communication network from 4G-LTE to 5G.

### Commercialized O-band 25Gbps tunable DFB-LD by securing advance technology

There is no record of domestic and foreign companies having commercially installed O-band 25Gbps tunable DFB-LD optimized for 5G PON installation. However, Eldis is exclusively mass-producing and supplying O-band 10Gbps tunable DFB-LD—which is a preliminary level product—and it has secured the technology to increase the speed to 24.33Gbps by carrying out the fund project task. This way, Eldis was able to secure the technology for commercializing O-band 25Gbps tunable DFB-LD in advance, and it successfully developed two types of 4-wavelength 25Gbps tunable DFB-LD in the 1270nm and 1290nm bands by carrying out the fund project. The company is also smoothly developing two types of 4-wavelength 25Gbps tunable DFB-LD in the 1330nm and 1350nm bands.

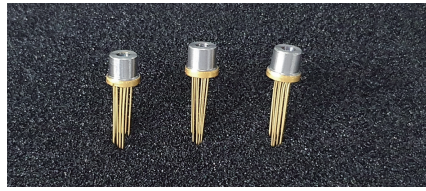
Two types of 4-wavelength 25Gbps tunable DFB-LD in the 1270nm and 1290nm bands, which were successfully commercialized through this fund project, are key light source components used for establishing an optical communication front-haul network with a PON structure for 5G mobile communication.

The performance of the 4-wavelength 25Gbps tunable DFB-LD in the 1270nm with 100GHz intervals is as follows: wavelength variable range of 1271.115nm (CH1) to 1272.734nm (CH4), modulation rate of 25Gbps (small signal response bandwidth: >18GHz), transmission distance of 10km, and light output of >7dBm.

The performance of the 4-wavelength 25Gbps tunable DFB-LD in the 1290nm with 100GHz intervals is as follows:



25Gbps tunable DFD-LD



25Gbps tunable DFD-LD light source module

wavelength variable range of 1290.818nm (CH1) to 1292.487nm (CH4), modulation rate of 25Gbps (small signal response bandwidth: >18GHz), transmission distance of 10km, and light output of >7dBm.

Eldis plans to produce light source modules massively based on the previously developed tunable 25Gbps DFB-LD. The light source module is manufactured as an optical transceiver by the backward industry company and installed on network equipment manufactured by domestic companies like Samsung, HFR, Solid, etc., and then used to construct a front-haul optical communication network for 5G mobile communication.

#### Established an optical network with sufficient bandwidth for 5G mobile communication

As the technology for the core light source of the tunable 25Gbps DFB-LD was developed independently, a supply chain consisting of domestic optical transceiver manufacturers and network equipment manufacturers in the backward industry was formed. Accordingly, a new ecosystem with a core light source market valued at KRW 250 billion, a KRW 500 billion optical transceiver market, and a network equipment market valued at more than KRW 3 trillion is expected to be created in Korea for the 5G mobile communication front-haul network. Domestic manufacturers also seem to hold a dominant position over overseas companies in terms of technological prowess and price competitiveness.

#### MINI INTERVIEW

**Cho Ho-sung**  
CEO



#### Q1. What did you achieve by participating in this project?

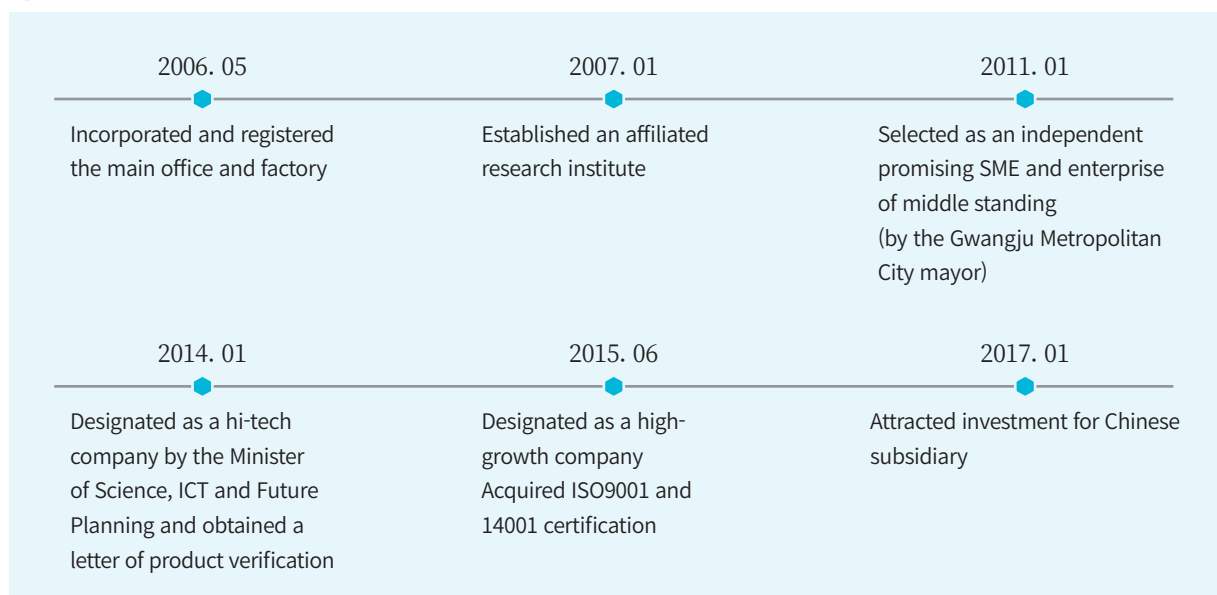
We have commercialized the world's first two types of "25Gbps tunable DFB-LD" that operate wavelength variably with 4 DWDM channels in the 1270nm and 1290nm bands, a key optical component to establish a front-haul optical communication network with a PON structure for 5G mobile communication.

#### Q2. What was the key to the successful achievements?

Eldis is a specialist company in the field of semiconductor laser light source for optical communication. We have accumulated technology for more than 10 years by responding to the demands of domestic mobile operators by supplying specialized light source with wavelength adjustment functions. As a result, we exclusively mass-produced and supplied 2-6 wavelength DFB-LD for 4G LTE and 10Gbps tunable DFB-LD for the initial 5G PON installation. We were also able to secure the technology of speeding up DFB-LD to 24.33Gbps by carrying out this fund project. Based on such achievements, we have successfully developed two types of 4-wavelength 25Gbps tunable DFB-LD in the 1270nm and 1290nm bands during this fund project.



#### TIMELINE





# Dominated the non-face-to-face video network market by establishing Ip-based NDI broadcasting infrastructure



## Salrayworks Co., Ltd.

### General information

Detailed project name      Creating broadcasting equipment industry infrastructure (informatization)

Name of dedicated agency      Korea Electronics Association

### Company information

CEO      Kim Chang-su, Jeong Jin-won

Type of business      Information and communication service

Year of establishment      July 1, 2019

Website      [www.Salrayworks.com](http://www.Salrayworks.com)



▲ Scan the QR code



### Prologue

As non-face-to-face society became routine due to the COVID-19 pandemic, most group activities shifted to online videoconferencing and education. This global trend has sharply increased the demand for PTZ (Pan Tilt Zoom) cameras, which are essential for videoconferencing and online education environments, and fierce competition is taking place in the related industry.

Salrayworks' core technology is IP-based video processing, which provides videoconferencing and online education environments optimized for streaming broadcasting services through the Internet.

Salrayworks has entered the US and UK markets, proving its excellent export capabilities, and has continued to enjoy remarkable growth by establishing conference systems for various local assemblies and online high school education systems in Korea.



### key achievements

- Developed new IP-based PTZ cameras based on the popularization of remote videoconferencing due to COVID-19 and the increase in demand for PTZ (Pan Tilt Zoom) cameras and laid the foundation for entering the global market.
- Signed a contract with Digibox in the UK to supply USD 100,000 worth of products to Digibox, supplied products to 1SourceVideo in the US, and registered in the B&H online shopping mall. Installed meeting broadcast system or multiple local assemblies in Jinju, Goseong, and Taebaek and online lecture system for Daechon Girls' High School.

### Separately but together, IP streaming

Many local governments are introducing broadcasting equipment to increase the public's right to know and the transparency of municipal administration. However, domestic broadcasting equipment is not quite competitive. Therefore, the project is mainly carried out using imported products, and the broadcasting equipment manufacturing industry is experiencing difficulties due to excessive competition among domestic companies; hence the difficulty of proper AS.

Currently, SDI/HDMI-based equipment is mainly installed and operated, and there is no difficulty in basic operation, but there is a lot of room for improvement considering the future demand for 4K upgrades and user convenience improvement. Therefore, the convergence capability of broadcasting and communication technology and technology related to IP-based interconnection is considered essential for developing related markets in the future. In addition, since streaming broadcasting over the Internet is predominant today, it has become very important to use IP-based broadcasting equipment to increase its efficiency.





### A company holding the core technology for IP-based video processing

As the teleconference market grows due to the COVID-19 pandemic and the demand for IP-based technology in the broadcasting field increases, the demand for IP-based PTZ (Pan Tilt Zoom) cameras is also increasing. However, domestic broadcasting equipment manufacturers are unable to respond adequately to these demands in terms of technology and sales. During this project, Salrayworks collaborated with two other companies to develop an IP-based PTZ camera.

Salrayworks is a startup company founded in July 2019. Although small in scale, it has the core technology for IP-based video processing, based on manpower with more than 20 years' experience in the field of broadcasting and communication. Salrayworks develops and supplies integrated solutions for IP-based video equipment including software, in addition to hardware such as broadcasting equipment. It is actively exporting domestic broadcasting equipment based on close relationship with many overseas dealers.

"I believe that NDI can replace SDI solutions in schools, government offices, churches, and enterprises where videoconferencing is required due to the COVID-19 pandemic."

"Broadcasting is changing to IP streaming due to the rapid development of network technology. The advantages of SDI are lost. Broadcast technology is no longer accessible by a limited number of players only thanks to the popular use of IP videos. Our mission is to develop smart IP broadcasting equipment that can be commonly used by anyone in the Internet era."

NDI technology can easily and simply replace existing SDI infrastructure with a more efficient IP workflow. This technology can be used for various purposes such as church gatherings, sports broadcasting, videoconference, live events, and school lectures. The technology was developed, and the sales network was established with multiple companies

holding technical skills and capabilities in their fields.

The convergence of broadcasting and communication and IP-based interconnection are becoming important issues. As streaming broadcasting on the Internet becomes popular, local broadcasting equipment is highly likely to be upgraded gradually to IP-based equipment.

Y&M Systems Co., Ltd., a partner company, has been making PTZ (Pan Tilt Zoom) cameras in Korea for a long time; Tinno Co., Ltd., another partner company, has understanding and sales skills for domestic public offices and national assembly broadcasting. Salrayworks is doing business by adding its core technologies for IP-based video processing, experience in overseas marketing, and overseas network to the partnership with those companies.

### Marketability of the NDI-based IP PTZ camera

Although Salrayworks has failed to export repeatedly due to low-priced Chinese products, the IP-based PTZ camera developed by carrying out this task is gradually being recognized in overseas countries, which makes its export promising. In addition, Salrayworks has been competing fiercely in the small domestic broadcasting market. With the development of the IP-based camera and system, however, a sales increase is expected thanks to an opportunity to pioneer and preoccupy a new market.

Sharon-series PTZ cameras use high-bandwidth NDI version 4.6 technology implemented in Intel FPGA using Salrayworks' own technology. Salrayworks plans to provide low-latency, high-quality video for multiple end users. The company also seeks to develop and produce all products in Korea to ensure the highest quality. Sharon 360, Sharon 30, and Sharon 20 support all NDI, 3G-SDI, HDMI, and CVBS interfaces with 1080p resolution. Salrayworks will also produce 4K NDI high-bandwidth products in 2021.

### The first NDI switcher for the local assembly and Chamber of Commerce

Mugunghwa Switcher is the first NDI switcher for local governments and is a conference automation system based on software. It is a 100% domestic solution developed with government support and is installed in several local assemblies, and its excellent performance has been recognized by many domestic government offices. As such, it is a stable product that is actively exported.

Unlike the existing switcher system, it has an automatic transmission system that tracks the speaker, and operation is simple and easy. In addition, as 100% IP digital input, output, and transmission are supported, noise suppression is high. It provides various functions and technical support, including 6-channel NDI and movie, NDI audio support, SDI audio support, live graphics and title implementation, external multi-viewer, audio delay control, frame drop monitor, video file support, etc.



## MINI INTERVIEW

**Kim Chang-su** CEO  
**Jeong Jin-won** CEO

**Q1. What did you achieve by participating in this project?**

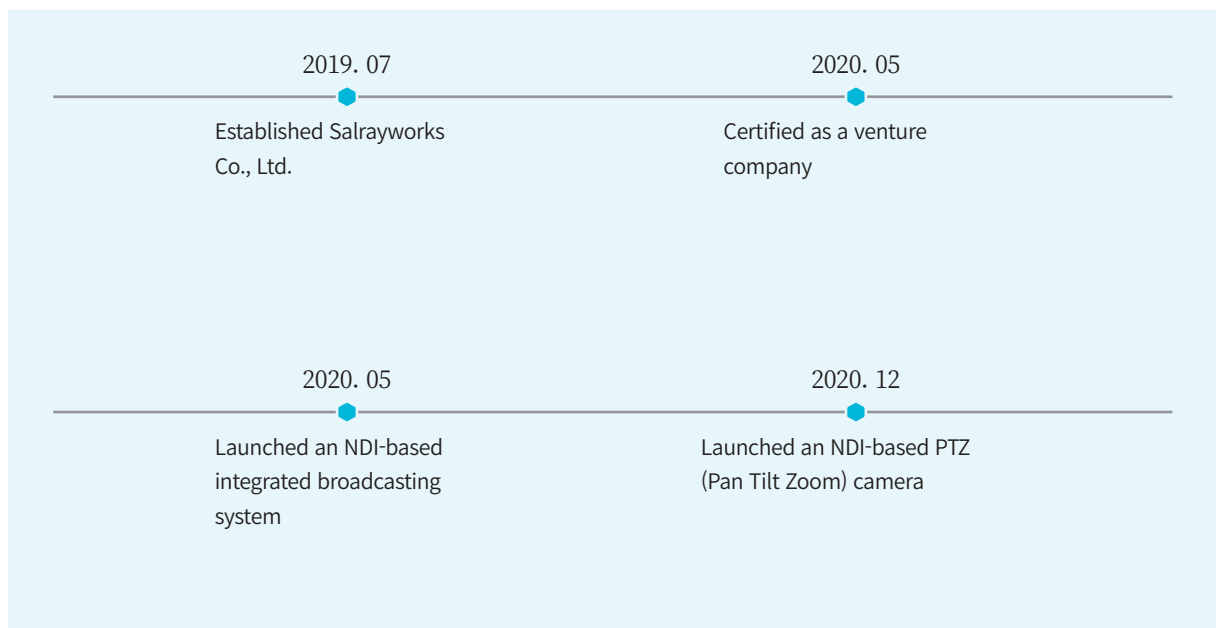
Three companies worked together to develop an IP-based PTZ (Pan Tilt Zoom) camera system. As a result, in terms of technology and sales, we were able to respond actively to the growing demand for IP-based PTZ cameras in the videoconferencing market and the broadcasting sector due to COVID-19. We also expect an increase in export, since our technology is recognized overseas, and we have an opportunity to develop and preoccupy a new market in the domestic broadcasting market.

**Q2. What was the key to the successful achievements?**

We have forecast the direction of technological development, based on over 20 years' experience in the field of broadcasting and communication. We were also helped a lot by the will to implement the concept design into a real product. In addition, I think we succeeded because several companies holding technology and capabilities in their respective fields cooperated with each other.



## TIMELINE



# A future-oriented company that leads the global market by localizing 5G transmission/reception cables.



## OSI Co., Ltd.

### General information

Detailed project name	Creation of new radio-based industries and SME nurturing
Name of dedicated agency	Korea Radio Promotion Association

### Company information

CEO	Jo Yong-seok
Type of business	Manufacturing ultra-high frequency RF coaxial cable for 5G testing
Year of establishment	July 4, 2011
Website	<a href="http://www.osinter.com">www.osinter.com</a>



▲ Scan the QR code



### Prologue

So far, the biggest issue in the 5G millimeter wave band transmission/reception test cable product was the technology to realize electrical stability and low loss. OSI threw a challenge to localize the cable in the domestic market, which had been dependent on imports because it failed to secure such technology.

OSI succeeded in localization by overcoming various technical limitations with its outstanding capabilities and established a new territory in the 5G millimeter wave cable market, which has growth potential due to increasing wireless data and rising demand in the defense and aerospace sectors.

OSI has improved product quality through repeated tests and intense research, and it has been recognized for its capabilities by supplying products to large companies. Thus, further growth is expected in the future.



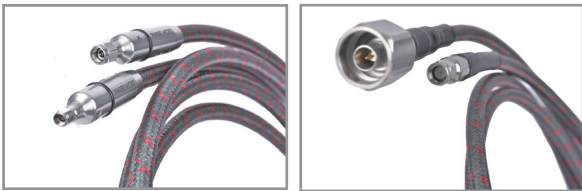
### key achievements

- Enhanced 5G Frequency Range 2 (FR2) test reliability by localizing the 5G millimeter wave cable assembly, which has been 100% imported, and maximizing its stability.
- Supplied products to the conglomerate 5G component manufacturers by registering a trademark and entered the 5G FR2 test market.



### Leading a new radio-based industry

Increasing wireless data and rising demand in the defense and aerospace sectors are increasing demand for technology development in the millimeter wave band. In addition to such rapidly increasing demand for wireless data, the demand for faster and better connectivity is growing, such as 4k video, cloud service, virtual reality, and augmented reality. OSI has been expanding its business area with various domestic and foreign customers for a long time by developing and producing antennas with excellent electrical stability and RF cable assembly for high-speed digital testing with low loss characteristics in the millimeter wave band. OSI's cable assembly for phase micro and test core testing, which shows excellent product effects with lower loss and characteristic stability, has been recognized for its excellent performance and smoothly supplied to 5G millimeter wave communication module and electronic component development companies at home and abroad.

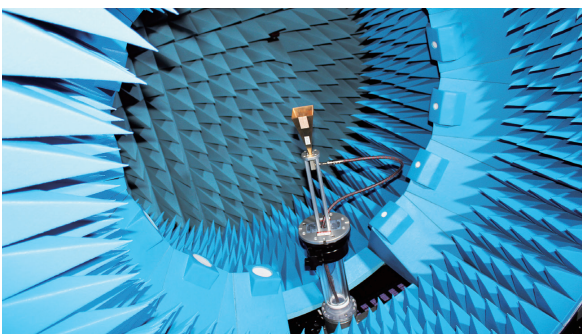


### Pioneering the future of the radio industry by localizing 5G millimeter wave cables

The market for global wireless connected devices is expected to reach an average annual rate of 19% by 2022. Data usage based on this forecast is expected to increase significantly at an average annual rate of 47%.

As of 2021, only a few companies in some developed countries such as the US and Japan have commercialized microwave cable assemblies that produce high-frequency characteristics in millimeter wave. Customers also choose the product of specific companies only.

However, transmission lines in the millimeter wave band are high value-added products that have been applied to various fields recently. There is also high potential for market growth, since the utilization of 5G frequencies is allowed up to 70 GHz; thus increasing the importance of cable assembly components for related signal transmission and verification.

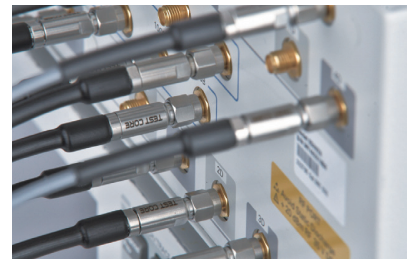
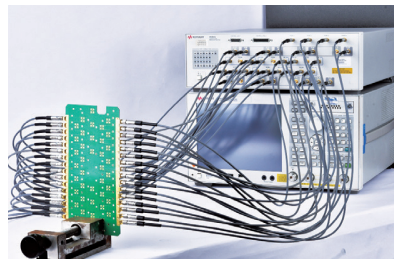


### A sample of SME growth in the radio wave industry, which was recognized by technical skills

Domestic and foreign customers are demanding cable assembly up to the millimeter wave band (1.85mm, 2.4mm interface). In a situation wherein demand is diversifying and increasing, OSI has developed a 50GHz low-loss cable assembly that has been 100% imported through the <Commercialization support project for SMEs in the radio industry>.

OSI's phase micro (high-frequency, low-loss cable assembly) technology requires high reliability and stability, and it is designed to provide optimal solutions for the application area of precision testing. Long product life and consistent performance provide the advantage of cost saving in the development and production environment. OSI's unique connector design and special cable structure provide excellent electrical performance.

The strong cable structure maximizes the physical endurance limit, and it is designed to withstand repeated twisting and bending and external pressure conditions. Precise test and measurement are possible because a stable phase is maintained even when the state and environment change. As a result, amplitude stability is improved, which has the advantage of a long calibration cycle.



OSI is also developing and operating cable assembly production technology to achieve high yield. High-quality characteristics can be maintained by using various ultra-precision jigs and automated assembly production processes.

The company plans to strengthen the relationship with Leader Networking of the Korea Radio Promotion Association and domestic RF component distributors. To this end, it will first target companies in the 5G communication system and defense industry, which have high demand for localization. OSI will also hold technical seminars on a regular basis to reinforce PR by responding to questions on product usage and inquiries from existing business partners and large enterprise customers and make efforts to secure potential customers through video marketing and website promotion, considering the non-face-to-face environment.

## MINI INTERVIEW

**Jo Yong-seok**  
CEO



**Q1. What did you achieve by participating in this project?**

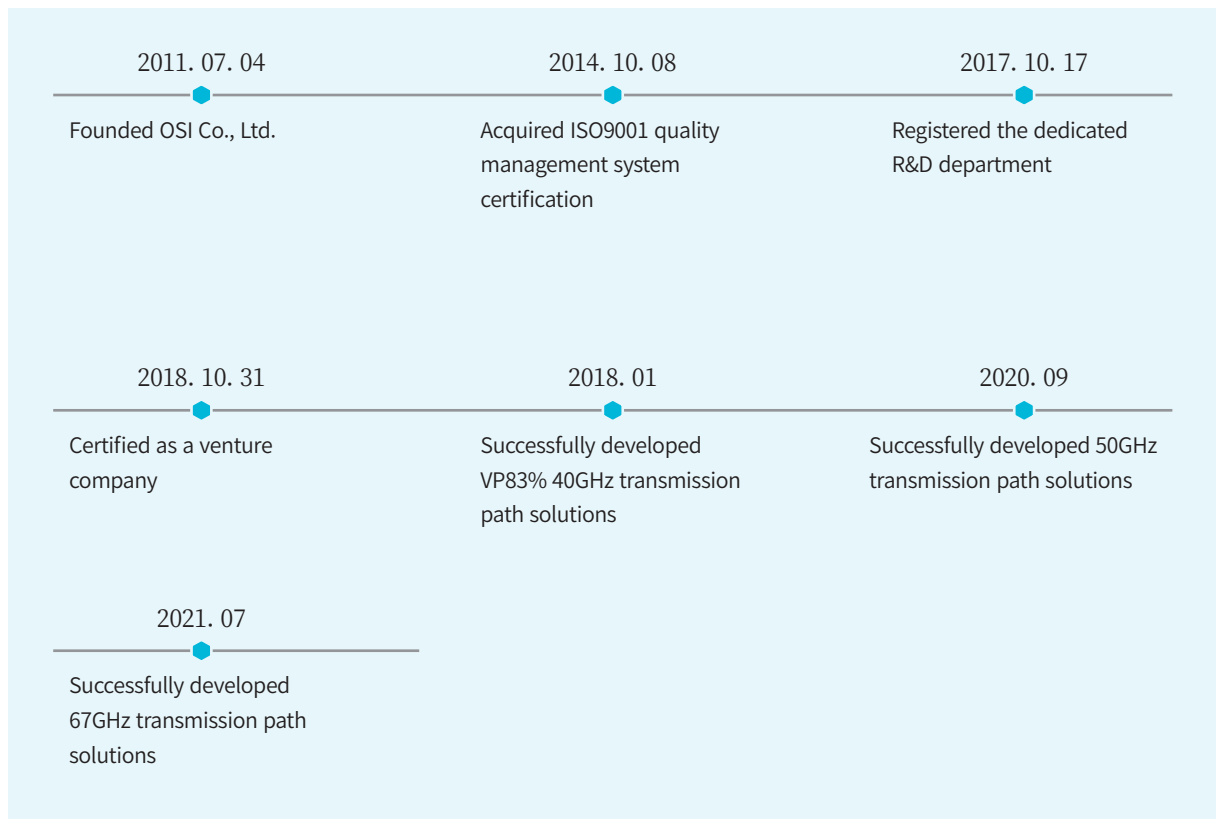
After 5G was commercialized, we were able to contribute to the stable supply of 5G parts in Korea by localizing test & measurement technology. Furthermore, we will be able to create a new industry in the aerospace field.

**Q2. What was the key to the successful achievements?**

We successfully mass-produced products using the technology of assembling VP (Velocity of Propagation) 83%, high-frequency, low-loss cable and high-frequency connector for the first time in Korea in 2018. It was of great help to us. We were also able to develop and deliver the crush resistance armor for the first time in Korea, which maximized test reliability. I believe it was the secret to our success.



## TIMELINE



Content

IoT

Network

**Cloud**

Big data

AI

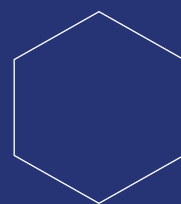
Software

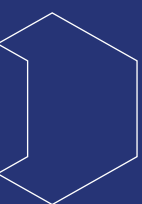
Blockchain

Miscellaneous

## C H A P T E R

INFORMATION AND COMMUNICATION TECHNOLOGY





## 02

### Success Stories Of Outstanding Cases

**E&C GLS Co., Ltd.**

A modular logistics management solution based on cloud SaaS that reduces logistics costs innovatively

**CICSoft Co., Ltd.**

Developing cloud computing-based software that enables electronic publishing for everyone

Cloud

# A modular logistics management solution based on cloud SaaS that reduces logistics costs innovatively



## E&C GLS Co., Ltd.

### General information

Detailed project name	Fostering the cloud computing industry
Name of dedicated agency	National IT Industry Promotion Agency

### Company information

CEO	Oh In-ho
Type of business	Professional technology service business, information service business
Year of establishment	January 1, 2014
Website	<a href="http://www.encgls.com">www.encgls.com</a>



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### Prologue

Online shopping has increased explosively in the 21st century. Due to COVID-19, the big bang in the logistics industry has reached another turning point. Competition for the development of an efficient logistics management system based on the 4th industrial revolution technology has also begun to intensify.

Most companies were looking for a way within a closed solution structure, but E&C GLS has developed a modular logistics management solution based on cloud computing. Accordingly, E&C GLS has created a magic wand that can handle all types of logistics regardless of size and field.

In particular, E&C GLS is expanding its business with the mission of supporting the smart operation of small and medium-sized logistics companies, thereby becoming a driving force to make all flows smooth in the logistics industry.

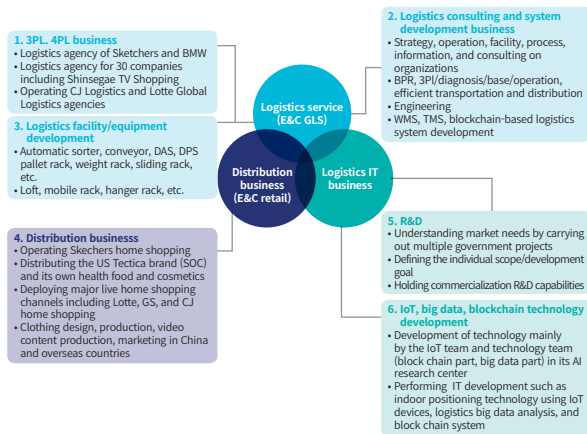


### key achievements

- Enhanced 5G Frequency Range 2 (FR2) test reliability by localizing the 5G millimeter wave cable assembly, which has been 100% imported, and maximizing its stability.
- Supplied products to the conglomerate 5G component manufacturers by registering a trademark and entered the 5G FR2 test market.

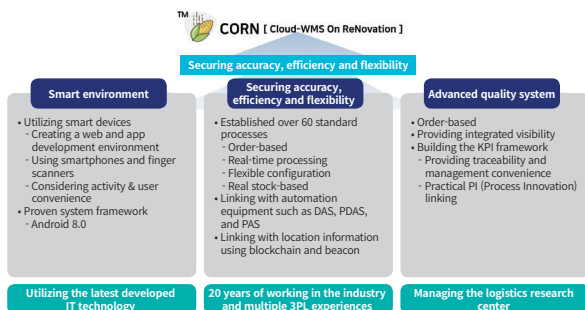
## Rapidly growing e-commerce and changing logistics industry

The logistics industry is undergoing major changes as demand in the e-commerce market increases due to COVID-19 and new technologies such as big data, AI, and IoT emerge in line with the 4th industrial revolution. Smart logistics, which is mentioned these days, does not simply mean the introduction of automation equipment. Monitoring and feedback using software, including efficient operation based on data analysis, should be supported. Even though data management is becoming important, most small and medium-sized logistics companies cannot manage data systematically because they do not have specialized logistics management software.



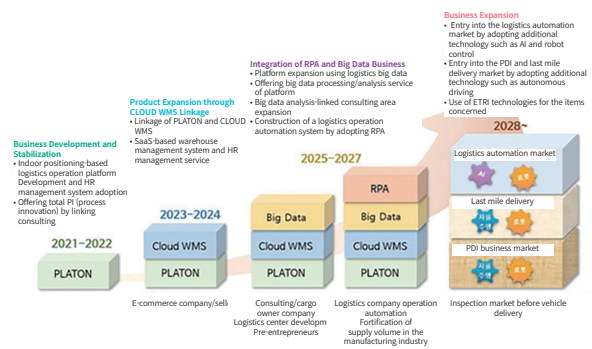
## A leading company in the logistics industry that provides the best value to customers

E&C GLS is a specialized logistics company that is endeavoring wholeheartedly with passion and dedication for its customers with the management philosophy of “Realize passion for logistics and dedication to customers.” E&C GLS provides a total logistics solution service such as establishing a customer-customized logistics center, providing logistics consulting, developing logistics IT systems, providing logistics operation agency (3PL, 4PL) service, etc.



## A future-oriented company that grows by fostering the cloud computer industry

E&C GLS is laying the foundation for adapting to changes in the smart logistics ecosystem based on data management by



applying the operational know-how of its logistics center to WMS CORN.

As the biggest advantage of cloud SaaS modular WMS, it can reduce the cost of building a logistics system. Another advantage is that customers can use it at a reasonable price because there is no separate installation and construction cost, and only the amount used in the distribution center is charged. Maintenance is also done by applying a patch to the cloud server, so it plays a big role in helping logistics companies build systems without difficulty.

Customers can also use the unique business process of the logistics center as a common module for each function and have the advantage of choosing such functions by setting on/off without additional customization costs.

Another advantage that cannot be overlooked is that it can reduce costs through efficient operation. Customers can flexibly operate the system to prepare for an increase in event frequency such as peak season, off-peak season, or discount events according to the characteristics of each product and establish a storage strategy by systematically managing inventory.

## Developing an intelligent logistics center operation platform(PLATO)

The future goal of E&C GLS is to realize a truly smart logistics center by storing real-time job information in the logistics center in the database and managing the logistics work digitally.

E&C GLS also plans to develop a logistics operation platform based on indoor positioning to provide a comprehensive SaaS warehouse management system and a human resource management service linked with CLOUD WMS as well as data report service by processing and analyzing the big data collected through PLATON, such as worker movement data and picking work quantity, etc.

Furthermore, E&C GLS will develop a logistics operation automation system by introducing RPA, which expands the platform that uses logistics operation data as a logistics big data center.

E&C GLS will enter the logistics automation market aggressively by applying additional advanced technologies such as AI and robot control to comprehensive logistics solutions and enter the PDI and last-mile delivery market through autonomous driving and robots.

## MINI INTERVIEW

**Oh In-ho**  
CEO

**Q1. What did you achieve by participating in this project?**

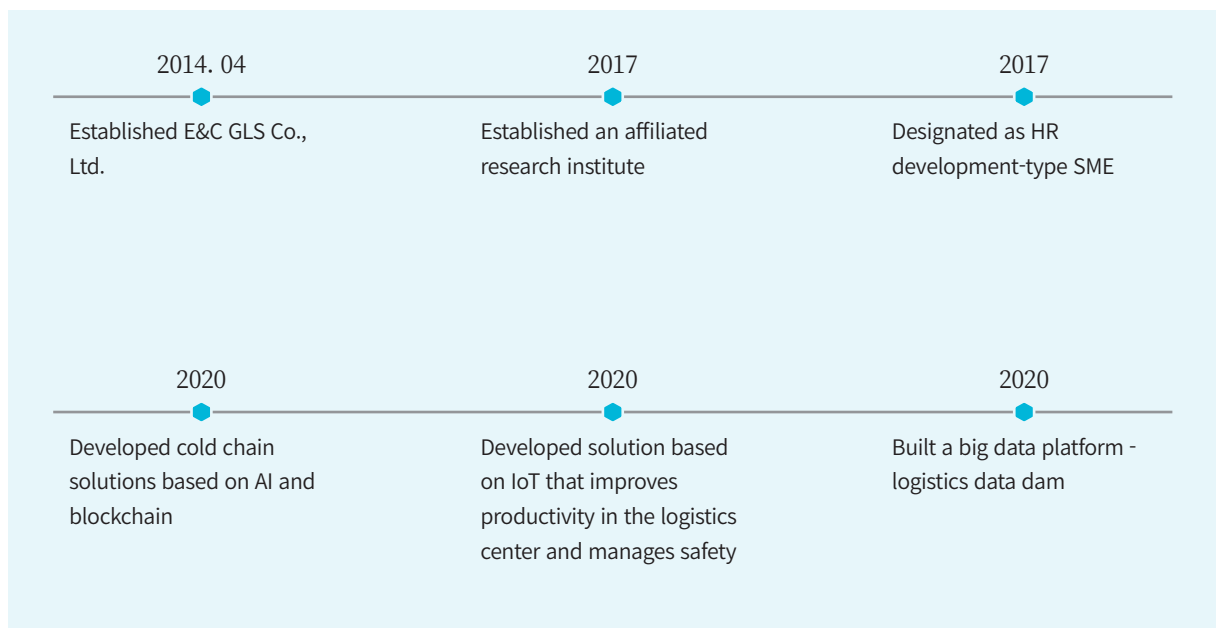
We were able to develop related solutions by applying IT to the logistics industry, and it helped us take a quantum leap to logistics IT. The biggest achievement is that the customer's logistics system is taking the first step in the evolution of smart logistics, thanks to the data management method and solution consulted by E&CGS.

**Q2. What was the key to the successful achievements?**

We focused on creating smart logistics foundation and ecosystem after development instead of producing results within a short period of project time and tried to make the project successful by filling a need. In particular, I think the secret to success is to try to manage data reliably and efficiently.



## TIMELINE





# Developing cloud computing-based software that enables electronic publishing for everyone



## CIC Soft Co., Ltd.

### General information

Detailed project name	Fostering the cloud computing industry
Name of dedicated agency	National Information Society Agency

### Company information

CEO	Kang Jeong-hyeon
Type of business	Information processing, software R&D and supply/ e-commerce business Development and provision of e-learning contents/e-book publishing, translation, and related education business
Year of establishment	September 2016
Website	<a href="http://www.cicsoft.co.kr">www.cicsoft.co.kr</a>



▲ Scan the QR code



### Prologue

With personal devices such as smartphones and tablet PCs becoming popular and diversified, e-books are consumed more and more, but most e-books are still scans of publishers' paper books.

But what if we create a world where anyone can become a writer using easy-to-use software to create and publish our own e-books?

CIC Soft is revolutionizing the field of e-books—where anyone can become a writer and publish their own book—by developing Namo Author, a WYSIWYG-style e-book creation software that is convenient and easy-to-use.



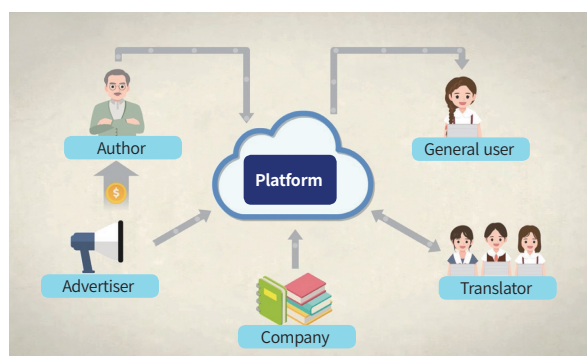
### key achievements

- Recorded sales of KRW 180 million in 2020 and secured the budget for 2021 by signing an agreement with Daegu Future Education Research Institute and Changwon City for introducing e-book creation and authoring tools and with Woosong University for developing contents for the intelligent rail system course (EPUB3.0) and introducing authoring tools.
- Acquired various certifications such as patents, GS certification, V&V certification, and green technology certification and secured overseas distribution channels in Vietnam and Philippines.

## A company that develops WYSIWYG-style e-book authoring tools

Currently, ePub3.0 is being used all over the world as an e-book standard. However, the core element of ePub3.0 is HTML5, which makes it difficult to create books if the author is not an HTML5 expert.

### [Platform and concept of e-book distribution]



CIC Soft predicts that a new paradigm of e-book publishing will be formed when an authoring tool that lets anyone create and distribute e-books easily becomes common. CIC Soft is continuously investing in realizing such a paradigm using the WYSIWYG-style software “Namo Author,” which reflects the editing screen on the actual e-book page. Built on a cloud service (SaaS) basis, Namo Author allows users to manage, create, edit, and modify content anytime, anywhere at a low cost. In addition, by utilizing the IaaS (Infrastructure as a Service) environment, it reduces the burden of various online constraints (speed, security, safety, etc.). This service is called Mosaic, meaning an e-book can be created by sticking the pieces together like a mosaic, and is available on the company website.

## E-books that can be easily created by anyone

Paper books and printed materials made of paper are rapidly destroying the global environment due to the abuse of natural resources.

The distribution and spread of e-books not only contribute to reducing the indiscriminate consumption of paper, the e-book was also certified as green IT technology by protecting trees that absorb carbon dioxide. If anyone can easily publish e-books, readers will have more options, and it will be of great help in securing and protecting authors' copyrights.

Even though e-books look simpler than paper books, highly specialized skills are required to produce e-books. Accordingly, most of the e-books still remain only at the level of electronically converting existing paper books. As such, e-books so far were simply the electronic conversion of paper books. If e-books include interactive functions with

multimedia, they are expected to overcome the limitations of paper books and to be used more widely in educational books.

### [Signing an exclusive distributor contract in Vietnam in 2019 (CEO Kang Jeong-hyeon, far right)]



## E-book authoring tools recognized for its excellence in overseas countries first

CIC Soft's Namo Author is the first commercial software exclusively for e-books in the world. Thanks to its excellent functions, it is already widely used in foreign countries such as Japan. CIC Soft is continuing its efforts to become a global e-book distribution platform company by keeping up with the rapid changes in the e-book market to secure the best technology.

Type	2017	2018	2019	Remarks
Content	7,206	7,301	7,512	Company sales in 2019 amounted to KRW 6.139 billion, which is 2.8 times the industry average.
Solution (platform, LMS, etc.)	3,561	3,652	3,662	
Service	26,623	27,497	28,342	
Total (KRW 100 million)	36,992	38,450	39,516	
Total number of businesses (ea)	1,680	1,753	1,811	
Average corporate sales (KRW million)	2,202	2,190	2,182	

※ Source: 2019 actual condition survey on the e-learning industry, Ministry of Trade Industry and Energy & NIPA, 2019

Due to frequent employee changes and low awareness of related industries, CIC Soft is operating overseas development outposts it has established in Vietnam, etc., and is carrying out various marketing activities to raise awareness of e-books in Korea.

CIC Soft plans to open an e-book distribution platform in the second half of the year to secure various e-book contents and grow into the world's first C2C platform. It is focusing on advertising in terrestrial broadcasting media and overseas marketing to record KRW 100 billion in sales within the next five years, based on such positioning.

## MINI INTERVIEW

**Kang Jeong-hyeon**  
 CEO

**Q1. What did you achieve by participating in this project?**

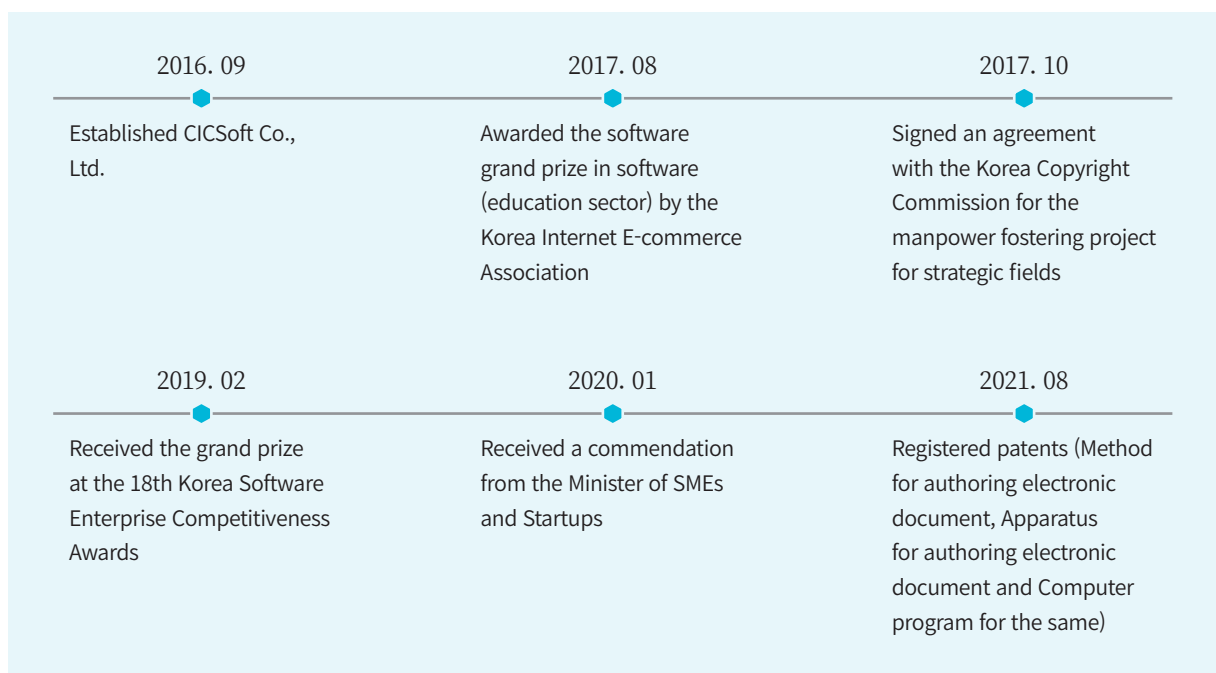
We signed various contracts this year, such as the contract for introducing e-book creation and authoring tools of the Daegu Future Education Research Institute, creating e-books for office duty manuals and introducing authoring tools by Changwon-si, Gyeongnam, and developing ePUB contents and introducing authoring tools in the intelligent rail system course of Woosong University, a university leading the 4th industry. We are in contact with various organizations to increase our sales in 2021.

**Q2. What was the key to the successful achievements?**

The demand for new e-books has increased due to COVID-19 and increasing interest in non-face-to-face services. Another driving force was our mission of creating a world where anyone can easily create his/her own books by preventing the destruction of the global environment due to the abuse of resources through the distribution of next-generation e-books that include various multimedia and interaction while replacing paper books, considering the global concern over carbon neutrality.



## TIMELINE



Content

IoT

Network

Cloud

**Big data**

AI

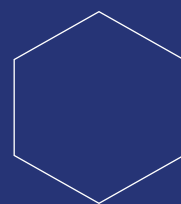
Software

Blockchain

Miscellaneous

## C H A P T E R

INFORMATION AND COMMUNICATION TECHNOLOGY







02

## Success Stories Of Outstanding Cases

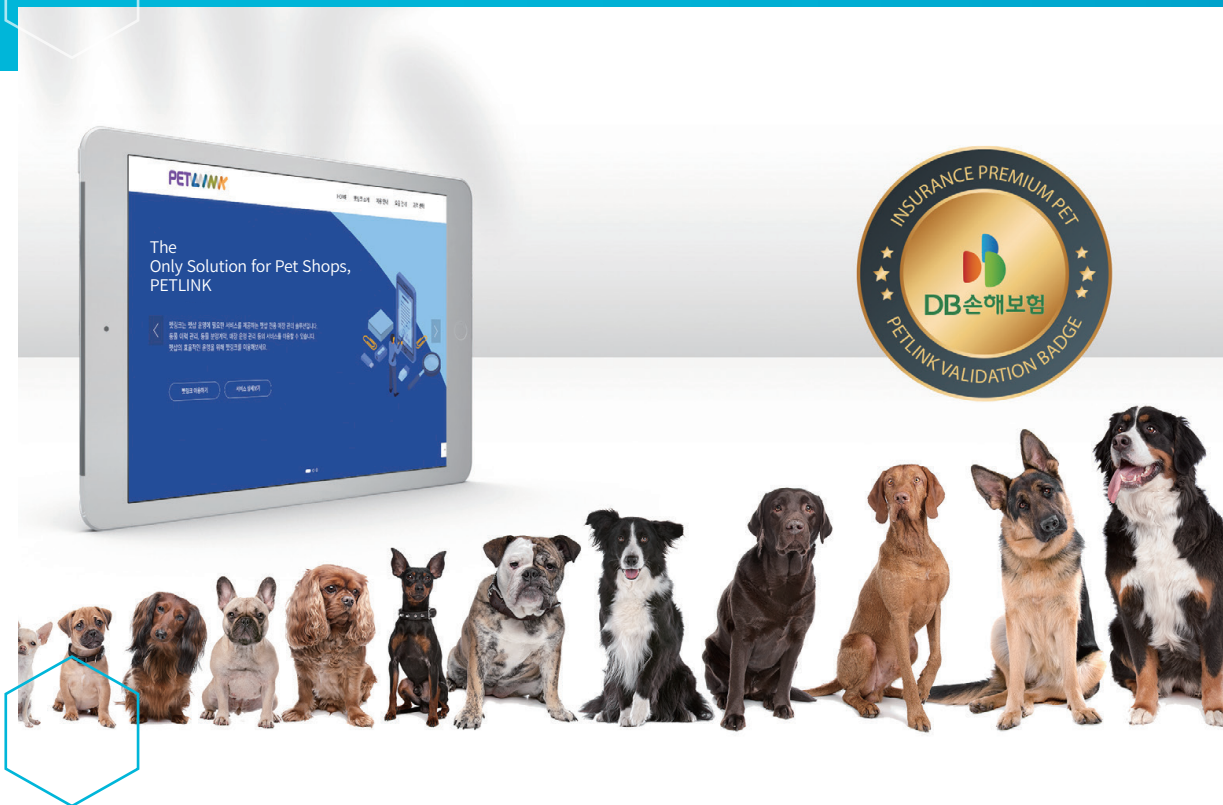
### **My Puppy Co., Ltd**

Big data technology essential for beautiful companionship between companion animals and owners

### **Pythagraph Co., Ltd.**

A big data visualization solution that easily edits and displays data at a glance

# Big data technology essential for beautiful companionship between companion animals and owners



## My Puppy Co., Ltd.

### General information

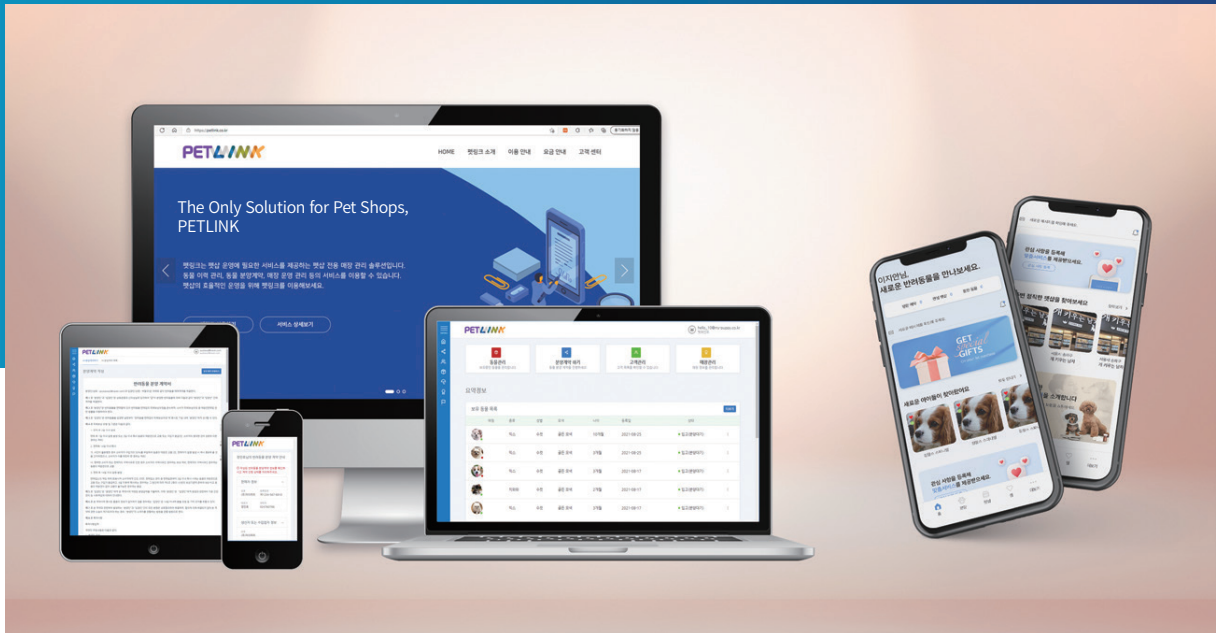
Detailed project name	Laying the foundation for promoting the Fintech industry
Name of dedicated agency	Korea Internet & Security Agency

### Company information

CEO	Kim Seong-hun
Type of business	Software development
Year of establishment	November 12, 2018
Website	<a href="http://www.my-puppy.co.kr">www.my-puppy.co.kr</a>



▲ Scan the QR code



### Prologue

According to statistics released by the Korea Rural Economic Institute last year, there are about 15 million people raising companion animals in Korea. Therefore, an estimated 1 out of 4 households is living with companion animals.

More and more people view living with companion animals as a common lifestyle. As a result, the building and utilization of big data are becoming a very important task for related industries.

My Puppy is rapidly emerging as a leading company in the companion animal industry by developing the companion animal big data platform and solution based on its prediction of the growth potential of the companion animal market.



### key achievements

- Laid the foundation for revitalizing and growing various companion animal industries by developing a big data platform for collecting companion animal and owner raw data.
- Developed Korea's first solution that collects raw data related to companion animals and developed and sold exclusive insurance products for pet shops.

### Companion animal insurance market, a blue ocean that none has pioneered

The size of the companion animal insurance market in Korea was approximately KRW 20 billion. An estimated 0.3% of the total companion animals, or about 8 million, are insured. Conversely, this market can be said to be a blue ocean where the remaining 99.7% are potential customers to purchase insurance.

Moreover, there are currently no sufficient insurance products that can satisfy the needs of dog and cat owners, and existing insurance companies are only launching insurance products with high rates under the pretext that the loss ratio can be calculated.

From an insurance company's standpoint, it is difficult to develop a new product because there is no data that exactly matches the companion animal and owner information. In addition, even after launching a new product, there is no systematic management system for securing customers and analyzing time to market; hence the hesitation to conduct such.

If insurance companies can collect data, build an analysis system, and secure customers to launch various products, the domestic companion animal insurance market is expected to grow into a huge market that exceeds Japan's KRW 1.5 trillion.



### A company that secured raw data for companion animals for the first time in Korea

My Puppy develops and supplies the platform that can secure companion animal and owner data created at the time of re-homing at 10,000 pet shops across the nation; it is actively developing the market by launching pet shop-exclusive insurance products together with DB Insurance. In addition, My Puppy is making efforts in various aspects based on this platform to dominate the entire market of the companion animal insurance industry and enter related financial, commerce, AI, and VR industries.

As My Puppy's exclusive pet shop management system, "PetLink" is an insurance product platform for companion animals that is operated based on companion animal and owner data. The platform manages the electronic contract and data of companion animal insurance and purchasing members and easily implements buying and claiming pet

shop-exclusive insurance.

My Puppy provides suitable promotions based on accumulated companion animal owner data and helps all pet shops in the country manage their shops efficiently by providing online network solutions.

"PetCody" is a service that provides information on raising costs and insurance for each companion animal by life cycle. It links with the "Pet Link" platform to provide information on abandoned dogs, domestic animals, and re-homing at pet shops based on location information.

My Puppy is contributing to the improved reliability of re-homing by adding objectivity to seller and buyer information by signing the contract electronically. It operates an app that increases consumers' convenience using various functions, such as search and comparison of companion animal insurance, purchase, and claim. In addition, My Puppy integrates and provides information on 8 insurance companies' products in Korea, including useful information about the treatment of pet diseases to support the convenient life of those who keep companion animals.

### Developed pet shop insurance exclusive for all companion animals

My Puppy will actively encourage all pet shops across the country to purchase insurance by letting them experience the virtuous functions of pet insurance and concentrate all its efforts on implementing the strategy of turning the pet shop into an insurance sales agency. It also plans to make efforts to keep the loss ratio of companion animal insurance stable. My Puppy aims to increase the insurance subscription rate of companion animals in Korea to 10% by 2026 by developing and supplying various insurance products with accurate data.

## MINI INTERVIEW

Kim Seong-hun

CEO



## Q1. What did you achieve by participating in this project?

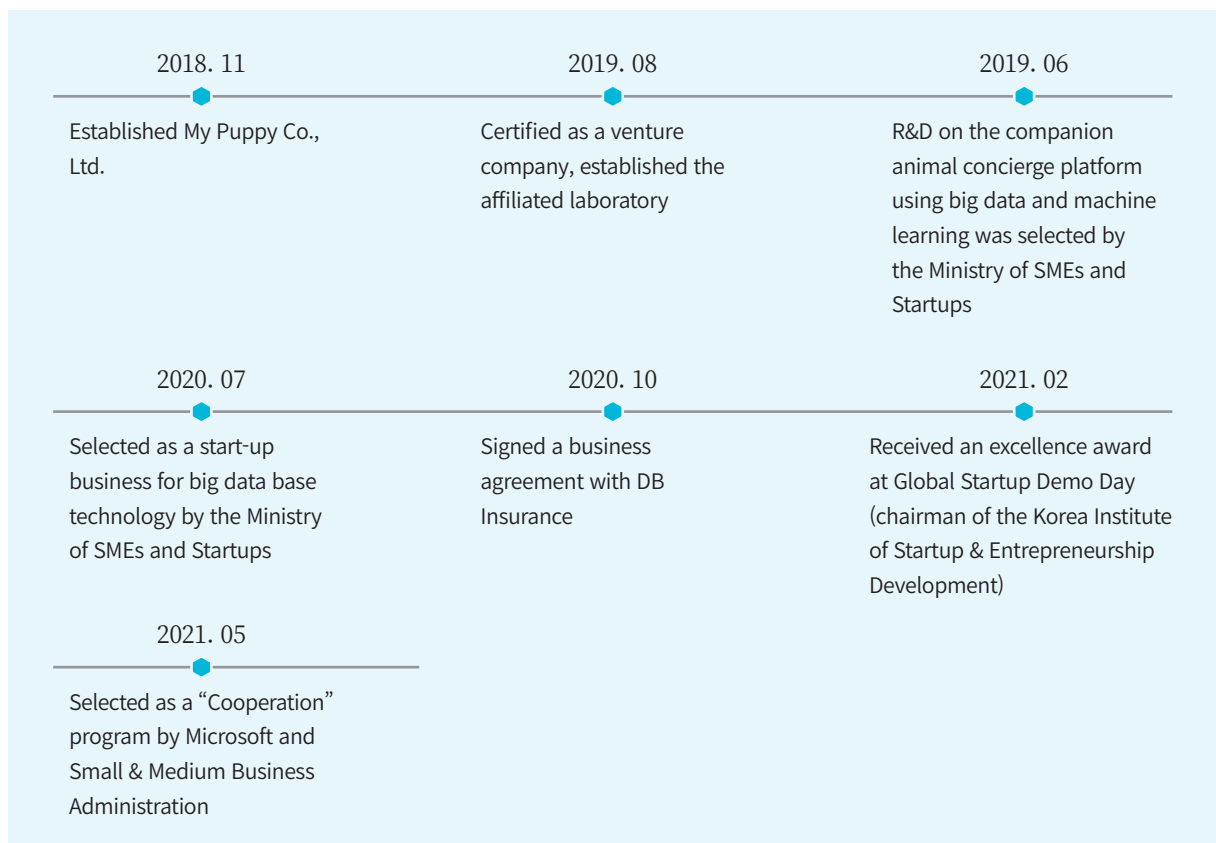
We have secured the technical means to obtain quality source data that can be used across the companion industry and developed an abnormality detection algorithm regarding the market trend by comparatively analyzing the source data and insurance claim data.

## Q2. What was the key to the successful achievements?

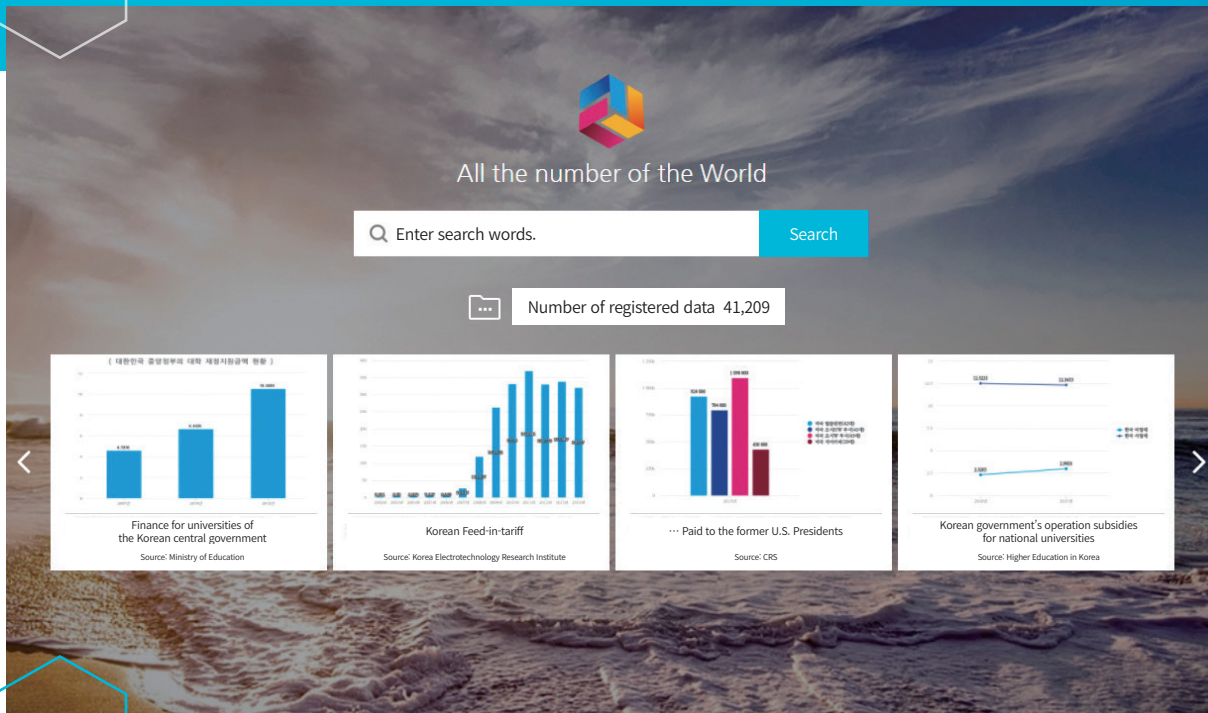
We have made sincere approaches based on more than 15 years' experience in the companion animal industry and understood the specific factors required in the actual field to provide appropriate services and technologies. I think those were effective.



## TIMELINE



# A big data visualization solution that easily edits and displays data at a glance



## Pythagraph Co., Ltd.

### General information

Detailed project name Reinforcing the competitiveness of the next-generation Internet business

Name of dedicated agency National Information Society Agency

### Company information

CEO Kim Hun

Type of business Software development and platform development

Year of establishment April 30, 2016

Website [www.pythagraph.com](http://www.pythagraph.com)



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### Prologue

Since the amount of data is at least tens of terabytes when we say “big data,” standardized charts or graphs are essential to utilize them. In addition, there is a need to think about the application and method of data utilization, not just numbers displayed on coordinates, to implement big data efficiently.

Pythagraph provides an essential solution in the field of big data by using technology that visualizes massive, big data in three dimensions to increase data utilization and support dynamic implementation that enables merging and overlapping between graphs.

Such visualization is absolutely necessary in order to use even valuable data usefully. Let's take a look at Pythagraph's technology and line of business that highlights the precious value of big data.



### key achievements

- Identified 420,000 unstructured data on rehabilitation and protection counseling and integrated with the AI platform.
- Developed Pythagraph Red, a dynamic visualization solution that can express a unique 3D DB structure in various graphs and merge overlapping graphs.



## Taking the lead in improving the competitiveness of the next-generation Internet business

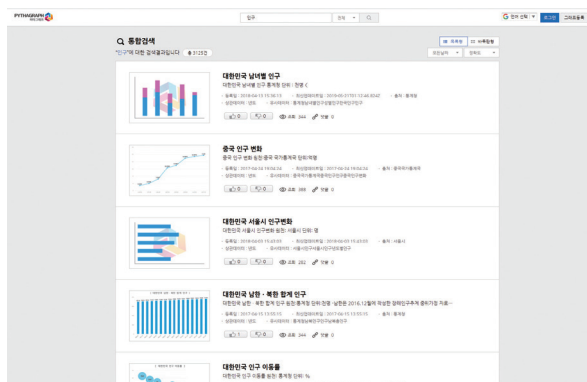
Technical data and numbers produced in the big data industry provide complete meaning only when visualized in the final stage. In this case, the solution must be easy to input and manage, so that it can be used stably. If the management method makes visually expressing the latest data difficult, the competitiveness of information will disappear. Therefore, it is most important to develop a solution that reduces inefficiency and stores and visualizes a lot of data created in time and space.

Pythagraph has been recognized for its technology and operational capabilities by successfully building numerous data portals, and it is upgrading its version considering management convenience, ease of use, and ease of utilization.

## Big data visualization solution based on domestic technology only

We find new data each time we implement a new project. On every occasion, we review data from various angles such as the data security level, user interest, perspective of interpretation, etc. We revise the template design and change the order of data while thinking about “How can people view data in a fun, efficient way?” and “How should it be different from other graphs?”

Various visualization tools available in the market mainly focus only on design elements, so they are not very useful after visualizing graphs. In contrast, Pythagraph’s solution allows users to view multiple graphs together with a single mouse click or to compare them by overlapping them, which dramatically reduces the time and effort required. In particular, Pythagraph’s solution can be said to be an example of a big data visualization solution, since the essential purpose of statistical analysis, i.e., deriving insights from statistical comparison, is implemented with focus on users.



## Pythagraph RED and Hypermap, Pita.com

The three main technologies of Pythagraph are Pythagraph Red, hypermap, and Pita.com. As a dynamic visualization solution that expresses data in various graphs and enables merging and overlapping between graphs, Pythagraph Red has a unique three-dimensional DB structure and it can contain various types of data.

Hypermap is a GIS-based big data solution. When the existing administrative dong or regional data is distributed as coordinates in the GIS, and a desired range is selected based on space and time, the result is automatically calculated and provided.

Lastly, there is Pita.com, a graph search portal (data distribution platform) service. As a web service that realizes Pythagraph Red and Hypermap, it loads data and supports data transactions between individuals and enterprises. Using this technology, multiple graphs can be merged or overlapped into a single graph and compared with a single click, as well as rearranged by time and space. If the space has the form of city/gun/gu, an automatic adding aggregation function by dong/district/city/region unit is also provided.



## Technology and status of Pythagraph

Pythagraph already has 4 technology patents and 1 BM patent in Korea and 1 technology patent in Japan. Since the motivation for developing the solution was to understand the mechanism of data accumulation and the cause of data generation, it is specialized for local governments or organizations dealing with a lot of annual data. Pythagraph is also working hard to create statistics related to people’s daily lives in addition to the existing institution-centric data through continuous version upgrades.

## A company that dreams of improving social safety and entering the global market through big data visualization

The big data-based AI platform development project for

the prevention of second conviction of released prisoners was selected as an excellent achievement this time. Since the increase in the second conviction rate due to the social maladjustment of released prisoners is incurring huge social costs, an AI platform was developed to prevent a second conviction and improve social adaptation through various big data analyses related to the released prisoners. Its purpose was to relieve public anxiety by reducing the second conviction rate and improve the reliability of public services, reduce social costs, and stabilize the jobs of released prisoners and their families. During this project, the managing and participating organizations with expertise did their best to collect, refine, and process data in their respective fields with focus on public interest to improve the safety of society.

While many task outcomes become obsolete after project closing, the platform developed by the Pythagraph project is utilized for various analyses after project closing. This system can be established as an excellent system regardless of the field because it is a well-made, complete system from the planning phase with the synergy effect of each participating company from the specialized field.

Companies that deal with data are always aiming to grow into a global market. In markets with different characteristics and cultures, many companies are facing difficulties due to such atypical characteristics. Since the world of numbers that Pythagraph deals with is highly structured, however, it is quite advantageous for globalization.

## MINI INTERVIEW

**Kim Hun**  
CEO



### Q1. What did you achieve by participating in this project?

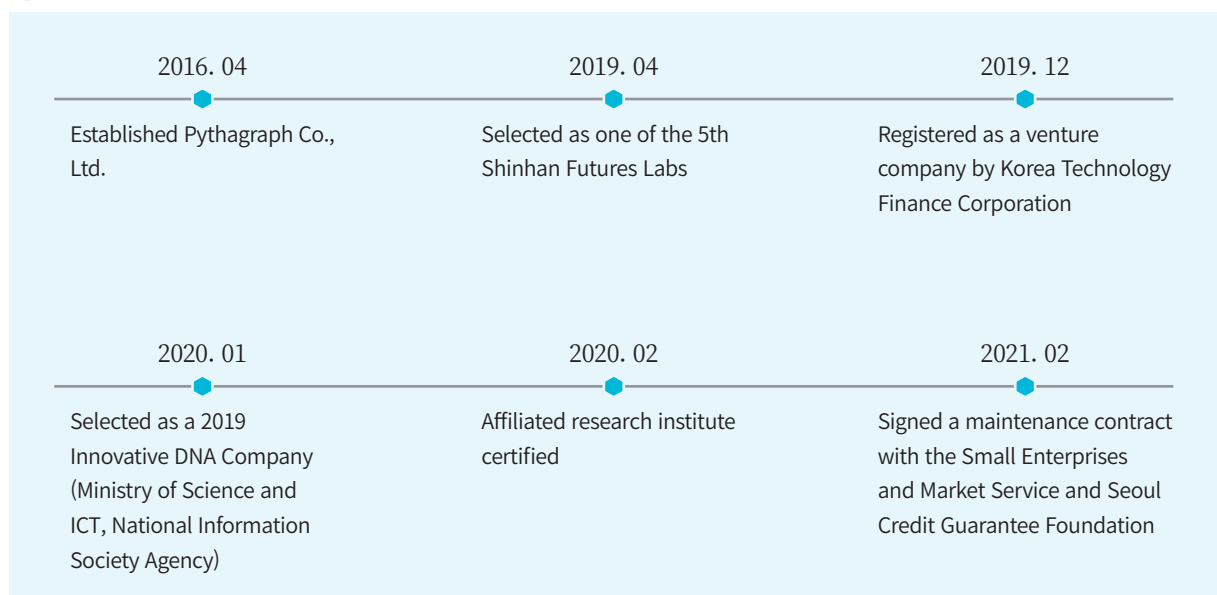
Participating companies were given as much autonomy as possible, but the time to manage was not missed. The project was very different from others since the consortium participants actively communicated during the project. The process of bringing into line with each other was quite interesting, and we were able to complete the project successfully by having fun.

### Q2. What was the key to the successful achievements?

The key success factor was the joint efforts with the Korea Rehabilitation Agency, Kyonggi University Industry-Academe Cooperation Foundation, and National Information Society Agency that supervised this project well. I would also like to express my gratitude to the Korea Communications Agency, which managed the fund of this project.



## TIMELINE



Content

IoT

Network

Cloud

Big data

**AI**

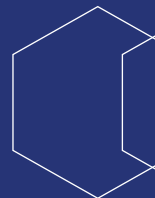
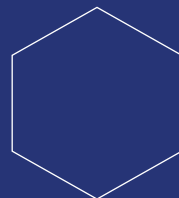
Software

Blockchain

Miscellaneous

## C H A P T E R

INFORMATION AND COMMUNICATION TECHNOLOGY





## Success Stories Of Outstanding Cases

### **AU Co., Ltd**

Taking responsibility for passenger safety using AI and deep learning technology

### **OceansBio Co., Ltd.**

AI-based implantable electronic drug for epilepsy—a first in Korea—which opened a new horizon in disease treatment

### **Next K Co., Ltd**

C-ITS, advance risk prediction technology, by analyzing CCTV images using AI

### **SQISoft Co., Ltd.**

An immigration management system that analyzes faces and abnormal behavior based on AI for the safety of the future society

### **Alchera Inc., Ltd**

No.1 AI image recognition solution in Korea, which was also recognized in the U.S.

# Taking responsibility for passenger safety using AI and deep learning technology

AU senses life  
IN everyday ...

AU Inc.



## AU Co., Ltd.

### General information

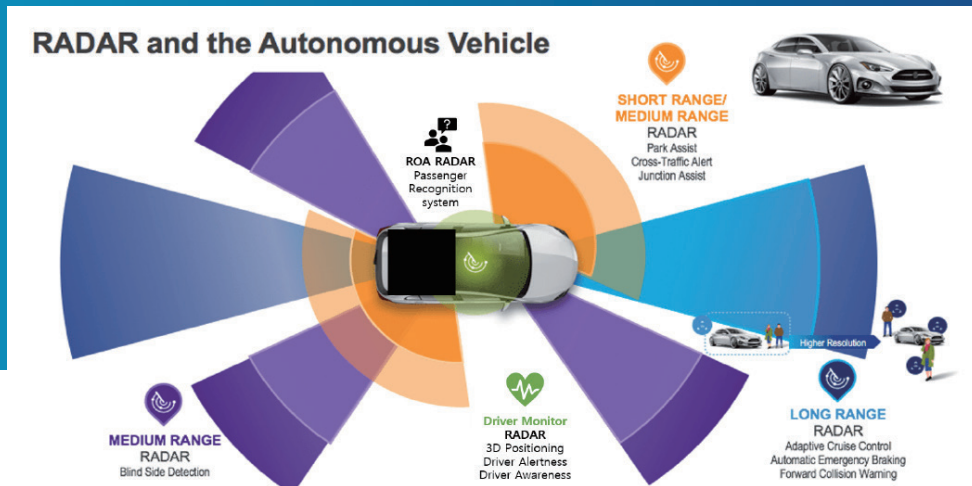
Detailed project name	Creation of new radio-based industries and SME nurturing
Name of dedicated agency	Korea Radio Promotion Association

### Company information

CEO	Kim Baek-hyeon
Type of business	Manufacturing
Year of establishment	March 8, 2019
Website	au-sensor.com



▲ Scan the QR code



### Prologue

After seeing the sad news that a child left in a car is trapped and has an accident, CEO Kim Baek-hyeon came up with a business item to develop a system that uses radar technology to inform the situation of the back seat of a car. He could apply the system, which recognizes life inside the room using 60 GHz high-frequency radar, to another field afterwards.

Such systems include a system that monitors the emergency situation of patients in hospital beds, and a system that can check the safety of the elderly living alone and companion animals. AU's systems were found to be used not only for the safety of people and animals staying indoors, but also for security purposes by detecting outsider's intrusions.

These systems protect people's lives and safety, and furthermore, protect valuable property. As a result, these systems are receiving a lot of attention from various people and driving company growth continuously.



### key achievements

- Developed technology of detecting human bio-signals (respiration, heart rate) in the car.
- Passed the performance test by the Korea Testing Laboratory.



## Discovering the possibility of business with the car rear seat detection system

CEO Kim Baek-hyeon, who was researching radar system development and radar chip, module, and signal processing as a doctoral student, saw and greatly motivated by sad news while he was researching the commercialization of automotive radar. The accident happened because the child was left unattended in the vehicle. He became confident that accidents could be prevented by developing an indoor life-recognition system using high-frequency radar, and as a result, he immediately started his own business.

The most frequent application of the system was in the detection of rear-seat passengers in vehicles. However, it has been found that the system can be used in many other areas as well, such as monitoring the breathing and heart rate of patients in the hospital room or the elderly living alone, personnel detection and intrusion detection in the office, and indoor GPS.

AU's staff consisted mainly of people with high technical skills, such as those with master's or doctoral degrees from KAIST, Seoul National University, Yonsei University, and Korea University. A total of 18 employees are divided into the signal processing team, hardware team, firmware team, and management planning team.

AU's main product is the in-cabin passenger detection radar system for vehicles (so called "60GHz FMCW rear seat detection and position detection system").

This system can be installed anywhere in the car interior, such as the top of the rearview mirror, next to the center light, top of the rear window, etc., and provides the functions of detecting rear seat passengers and the position of the passenger and measuring the driver's bio-signals.

### [AU's total solution for non-contact passenger detection]



## Taking the leading in solving social problems with technology

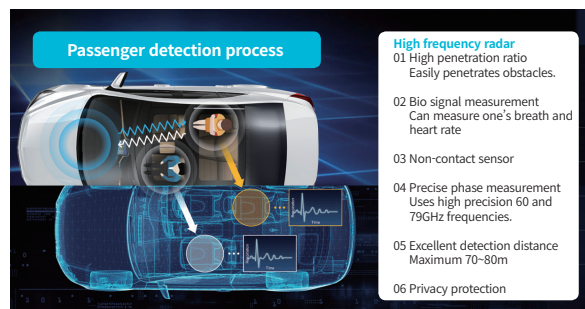
AU has a sense of mission to prevent accidents involving infants neglected in vehicles that continue to occur every year. Euro NCAP also decided to give additional safety points to vehicles with an infant detection device from 2021 and make the system mandatory from 2022. Therefore, this system is becoming an essential condition for obtaining a

safety score when exporting cars in the future.

The moderate price compared to the performance of the sensor is the biggest advantage of this system. Another advantage is no blind spots since it has excellent permeability. In addition, there is no problem of infringement of privacy because only the presence of a person is identified. Currently, the rear seat detection radar is almost completed, and AU is waiting for a mass production contract with Hyundai Mobis.

AU also aims to enter the overseas market targeting overseas automotive electronics companies such as Volkswagen when it occupies more than 40% of the domestic ROA market.

### [mmWave radar sensor]



### [Layout of the autonomous driving sensor]



## Changes brought by the support project and the expected future

AU had only one employment insurance subscriber at the end of 2019 by receiving labor costs through this project, but it actively recruited new employees enough to increase the number to 10 in one year, giving great strength to the system development.

By hiring additional staff, AU was able to further research and develop the parts that were lacking in hardware and software development and develop a system with improved performance. Recently, the Korea Testing Laboratory conducted a radar sensor performance test, and AU successfully passed all the standards required by the customer with high scores.

The biggest help was that this project created an environment in which R&D startups with insufficient funds could focus on development.

## MINI INTERVIEW

## Kim Baek-hyeon

CEO



## Q1. What did you achieve by participating in this project?

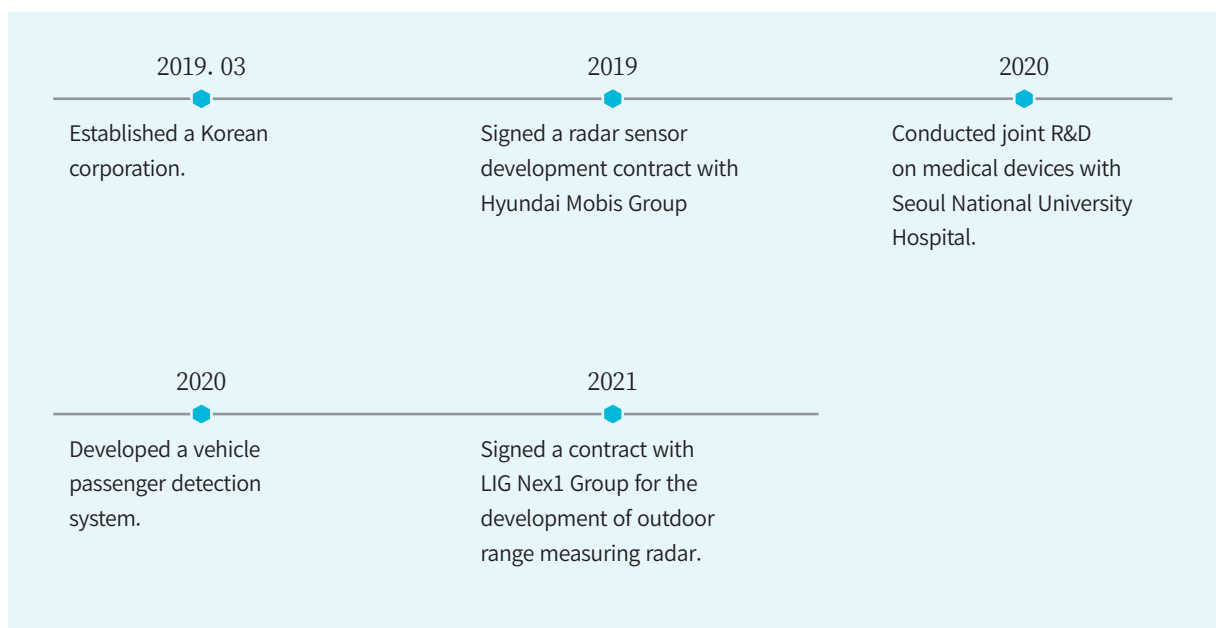
We were able to develop a better system by conducting R&D on the parts that were lacking in the hardware and software development process. Another great achievement was that we were certified by satisfying the standards required by consumers with high scores.

## Q2. What was the key to the successful achievements?

Our employees were working together to achieve our business goals, and we were greatly helped by the establishment and implementation of detailed development schedules on our own.



## TIMELINE



# AI-based implantable electronic medicine for epilepsy, first in Korea, which opened a new horizon in disease treatment



## OceansBio Co., Ltd.

### General information

Detailed project name	Creation of new radio-based industries and SME nurturing
Name of dedicated agency	Korea Radio Promotion Association

### Company information

CEO	Lee Hyeonung
Type of business	Manufacturing
Year of establishment	July 20, 2018
Website	<a href="http://www.oceansbio.co.kr">www.oceansbio.co.kr</a>



▲ Scan the QR code



### Prologue

Epilepsy is caused by abnormalities in electrical stimulation signals in the brain. Until now, only drugs have been used for adjuvant treatment. However, the development of electronic drug technology that controls electrical stimulation signals has set a turning point for change.

Now, it is possible to periodically treat the condition by applying microscopic electrical stimulation to the vagus nerve, without any drug tolerance and taking medication every day. More functions can be applied to electronic drugs, which had many limitations in the past, through specific shape design using AI.

Using such electronic medicine, OceansBio is trying to treat rare and intractable diseases in various fields and continue to challenge themselves to cure various diseases that are difficult to treat using chemical components.

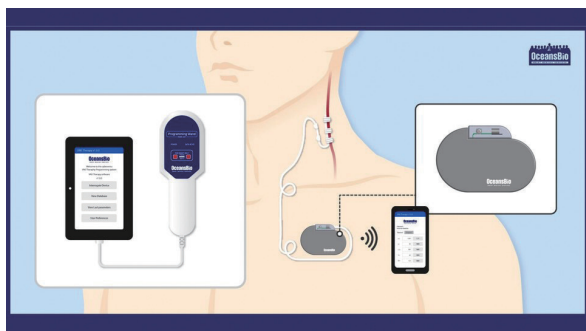


### key achievements

- Preliminary study on the shape design optimization inside AI-based electronic medicine for epilepsy.
- Created electronic medicine prototype based on seed investment and developed implantable electronic medicine (VNS, DBS, RNS, etc.) owing to AI level advancement for the first time in Korea.

### Treating epilepsy with cutting edge electronic medicine

OceansBio is an epilepsy electronic medicine development company that can secure optimal charging efficiency with shape design optimization technology using AI. OceansBio also has originality that can find an efficient space in the physically created epilepsy electronic medicine and add various treatment functions that the patient wants. The size of the electronic medicine does not increase even when the wireless charging function is added, by optimizing the shape design to increase the internal structural efficiency of the electronic medicine. OceansBio received great help in joint R&D from the radio wave engineering lab support project. They were able to attract KRW 100 million as government subsidies, KRW 200 million for R&D, KRW 200 million investments, and KRW 100 million loans. OceansBio were able to develop various electronic medicine prototypes and further advance the AI level. In addition, OceansBio developed human implantable electronic medicine (VNS, DBS, RNS, etc.) for the first time in Korea, and is working hard on R&D every day to grow into a company that supplies products to various overseas markets.



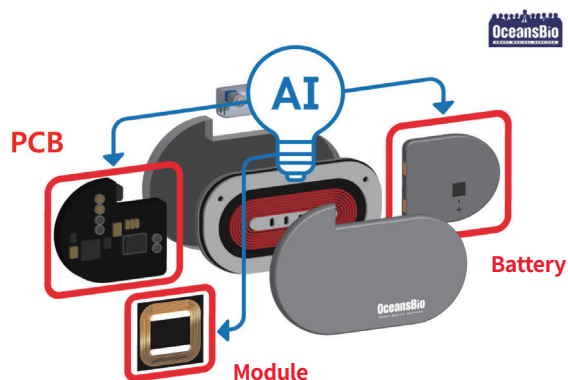
### Implantable medical device integrated with advanced technologies

OceansBio was founded in July 2018 with the help of the Korea SMEs and Startups Agency, and opened an affiliated research institute, listed on the Korea Exchange KSM, and obtained venture business certification in 2019. OceansBio also received two investments from institutions in 2020. The electronic medicine produced by OceansBio plays the role of an implantable medical device by treating certain symptoms of diseases such as epilepsy by giving microscopic electrical stimulation to the vagus nervous system. OceansBio CEO Lee Hyeonung regretted that the patents he obtained through various researches such as corporate research institutes, government-funded research institutes, and university laboratories were dormant without winning recognition. So, he started the e-pharmaceutical business with the belief that “I can create a virtuous cycle of technology and industry through rapid clinical trials and

contribute to our society and the medical industry.”

At the beginning of the business, most electronic medicine used primary batteries, which caused the inconvenience of having to perform surgery frequently when the battery is discharged. However, the use of secondary batteries for e-medication reduces the frequency of surgery and allows patients to enjoy more benefits.

Taking one step further from here, OceansBio aims to increase the battery capacity and lifespan of the device with an optimal shape design that is better than competitors by applying AI technology.



### OceansBio, a main character of fostering SMEs by creating new radio wave-based industries

AI can learn various situations by itself and use the optimal shape. Therefore, OceansBio can have a differentiation in that it can make smaller and lighter products than competitors

As an alternative new medicine in modern society, electronic medicine is challenging various that cannot be solved with drugs based on chemical components. OceansBio plans to strive to establish a pipeline that treats idiopathic diseases together with medicine by developing advanced electronic medicine, create M&A models, and unify corporate value and technology development.



MINI INTERVIEW

Lee Hyeonung

CEO

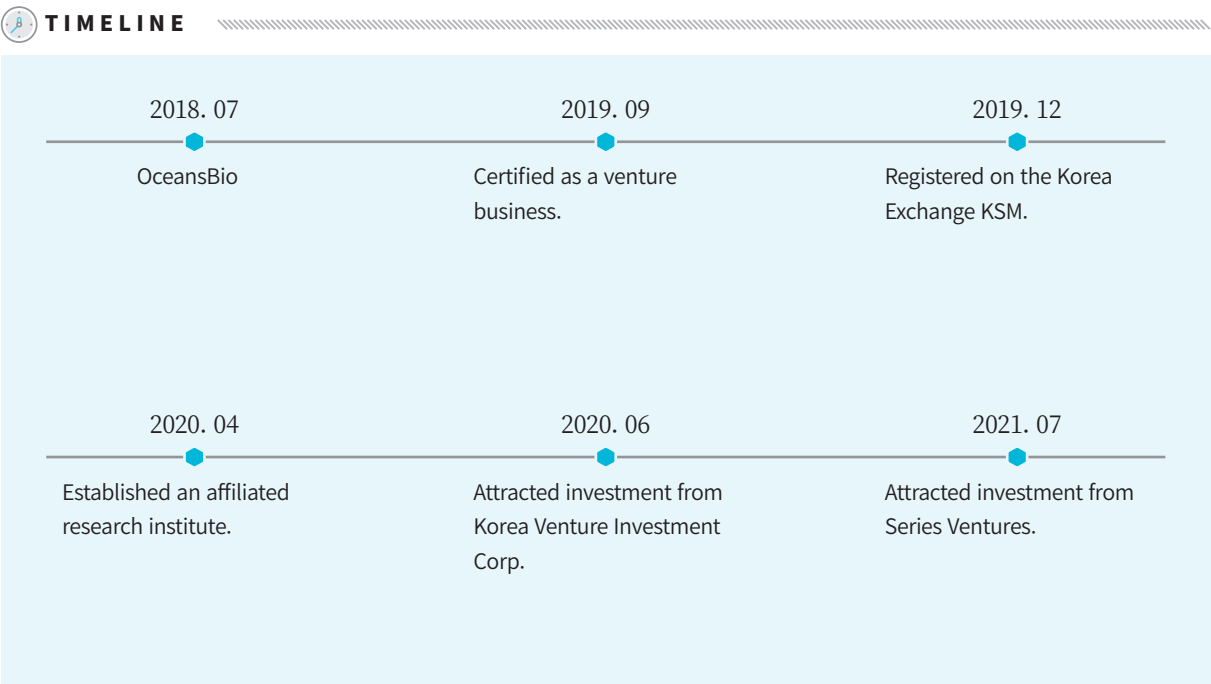


Q1. What did you achieve by participating in this project?

We were able to conduct preliminary research on the optimization of electronic medicine shape design and receive seed investment. We were also able to attract project funds in time for more R&D.

Q2. What was the key to the successful achievements?

We received a lot of help to continue our research without any inconvenience or delay even though it was our first project and were able to use the necessary equipment every time. The project also established a systematic network with experts who cannot be contacted one by one. I think that was the biggest secret to our success.





# C-ITS, advance risk prediction technology, by analyzing CCTV images using AI



## Next K Co., Ltd.

### General information

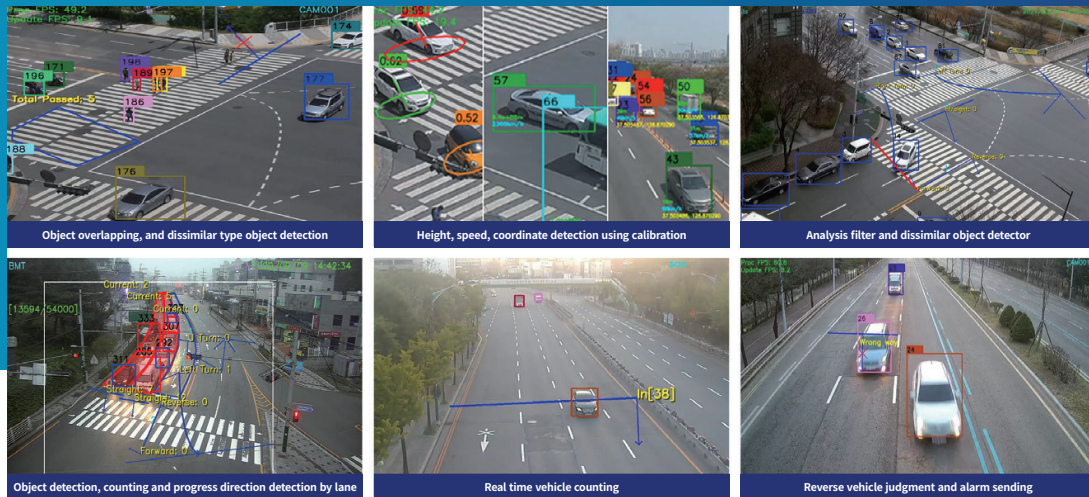
Detailed project name	Spread of intelligent information service
Name of dedicated agency	National Information Society Agency

### Company information

CEO	Ko Hyeon-jun
Type of business	Software development and supply
Year of establishment	May 9, 2019
Website	<a href="http://www.nextk.co.kr">www.nextk.co.kr</a>



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### Prologue

The construction of a smart city based on ICT has recently become a major concern for governments and companies and has become a huge task for the industry developing related technologies. The performance of safety and efficiency is highly dependent on how different technologies are combined and utilized.

Next K is a promising company with rapid growth in its field, because it also possesses technology for risk prediction and linking with related organizations, based on real-time CCTV control through intelligent video analysis using AI, the 4th industrial revolution technology, as well as various event-based video analysis.

In particular, Next K is attracting attention because of its high detection rate, accuracy, and system stability, based on NK-AI, a hybrid platform that enables users to configure desired functions by implementing various detection algorithms in a modular way.



### key achievements

- Developed a platform that responds in real time and in advance, based on the data, using the experience of installing a C-ITS management system within the Jinju-si industrial complex.
- Developed an integrated management and response system by converging intelligent image analysis and ICT technology, and its own algorithm with high accuracy for heterogeneous objects.

## Developed a C-ITS management system based on ICT

When we analyze 170 major projects related to the smart city around the world, 80% of them are focused on public services in the field of transportation and energy. In particular, more than 50% of these are research projects related to transportation or traffic problems such as parking and stopping, traffic accidents, and violations of road traffic laws. To keep pace with this trend, the Korean government is also promoting the development ICT technology-based solutions at the ministry level in various ways.

The rate of traffic accidents in domestic life safety sectors is the highest among OECD member countries. In particular, traffic accidents of children and the elderly while walking are the most serious problem. Next K has grown into a leading technology company recognized at home and abroad, by developing its own algorithm with high accuracy for heterogeneous objects through this task and solved the persistent problems of C-ITS.

## Laying the technological foundation of the smart City by spreading intelligent information services

With the recent development of deep learning technology, AI's capabilities and scope of application have been greatly expanded and the demand for technology development to solve various social problems is increasing every day, such as security and safety strengthening based on through selective control, major facility management, parking issues, etc. So far, the domestic video analysis market did not meet the demand and lacked competitiveness, since it has depended on imported technologies and simple analysis technology was the mainstream.

Next K is a company founded in May 2019 to improve these points and develop an AI analysis platform that is applicable to various fields such as smart city, smart retail, industrial safety, security, and healthcare. Next K currently hires 22 employees, mainly researchers, and is a growing company that concentrates on building infrastructure and developing technologies.

In particular, Next K provides various services using NK-AI, an integrated platform, as a company with its own algorithm for AI analysis.

NK-AI is a hybrid solution that allows users to configure desired functions by monitoring images in real time and implementing various detection algorithms in a modular way. It is a highly competitive product that has secured high detection rate, accuracy, and system stability by receiving KISA certification (99.99%) and GS certification.

## A company that protects our lives and safety by analyzing CCTV videos using AI

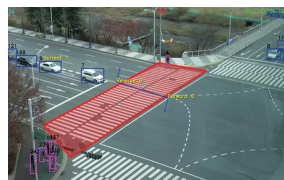
Next K installed a CCTV-based video analysis system in Sangpyeong Industrial Complex in Jinju City through this project. The intelligent management system built in the complex analyzes various events such as vehicle congestion, reverse driving, and illegal parking.

Over 150,000 pieces of data were collected and learned during this project, and an accuracy of 98.02% was achieved that exceeded the goals.

Next K plans to focus on upgrading solutions and expanding commercialization items by developing a left turn response system based on AI and an automatic pedestrian signal extension system that applies C-ITS related solutions and platforms.

Next K will continuously provide monitoring services against various unexpected accidents that occur on the road, such as school zones, signal control at intersections, and illegal parking control, approach more diverse social issues, and think about solutions and find alternatives with a focus on technological prowess.

### [Automatic pedestrian signal extension system]

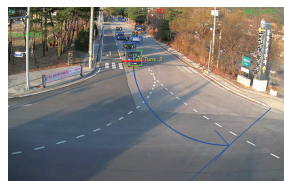
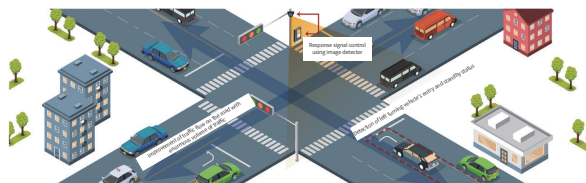


A system that supports the safe crossing of mobility handicaps by automatically extending walking time within the allowed time range for the pedestrians who have not crossed the road during the given walking time.

#### ► Applied algorithms and technologies



### [Left-turn sensing system]



A video-based sensitive traffic control system that guarantees the rights of moving straight by omitting and minimizing unnecessary left-turn signals at the point where left-turn traffic is low and supplements the shortcomings of the existing loop detector (weak durability).

#### ► Applied algorithms and technologies



## MINI INTERVIEW

**Go Hyeon-jun**  
CEO



**Q1. What did you achieve by participating in this project?**

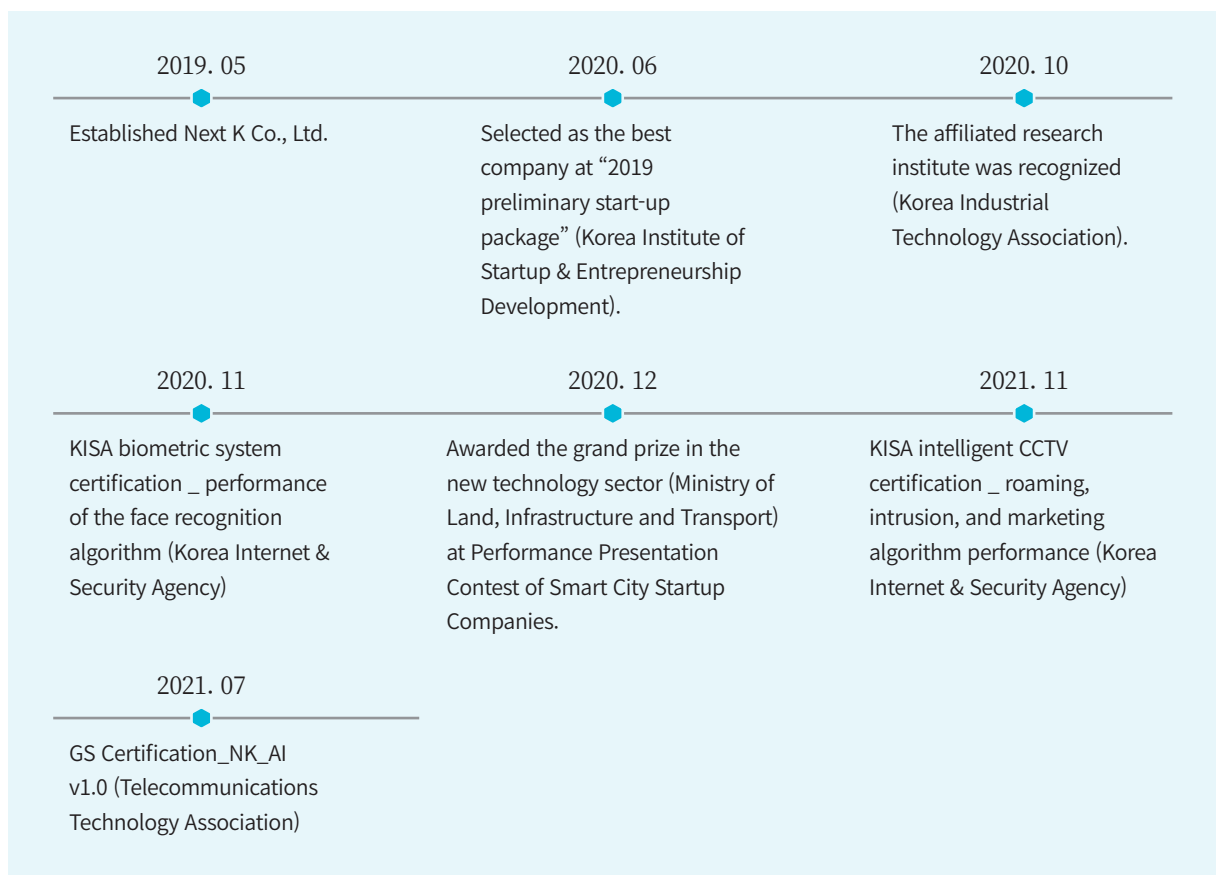
It was a project to develop a CCTV image analysis platform in the Jinju industrial complex, and to verify it after development. Through close cooperation with government agencies and local governments, we were able to lay the groundwork for expanding our business items in the future.

**Q2. What was the key to the successful achievements?**

Because it was a consortium consisting of various solution companies including Jinju City, the managing local government, we gave the highest priority to collaboration based on reliability. I also think that the project was successful because we invested a lot of time and effort to produce effective results, from collecting numerous data for demonstration algorithm advancement.



## TIMELINE





# An immigration management system that analyzes faces and abnormal behavior based on AI for the safety of the future society



## SQISoft Co., Ltd.

### General information

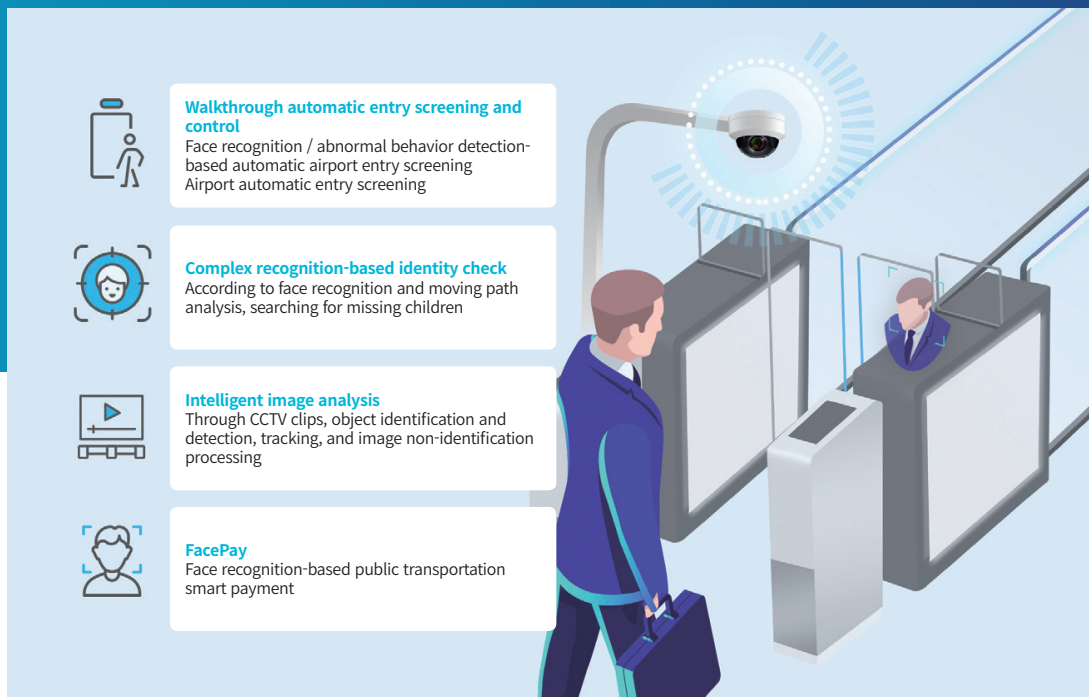
Detailed project name	AI identification and tracking system development
Name of dedicated agency	National IT Industry Promotion Agency

### Company information

CEO	Cho Yeong-jun
Type of business	Application software development and supply business
Year of establishment	December 16, 1999
Website	<a href="http://www.sqisoft.com">www.sqisoft.com</a>



▲ Scan the QR code



### Prologue

Today, a pandemic like COVID-19 makes the world uneasy, However, just 10 years ago, various terrorist incidents that made the security measures of each country incapacitated were the biggest unrest factor.

Thanks to the airport checkpoint and search system that was strengthened through such a period, there was not much resistance to quarantine examination due to COVID-19. Governments all over the world have been eager to secure cutting-edge technology that can accurately identify terrorist risk factors.

SQISoft is a company with a unique system that blocks terrorist threats against most public facilities such as airports and stadiums through facial recognition and abnormal behavior detection technology.



### key achievements

- Developed the next-generation system for immigration management system services for airport advancement such as facial recognition and abnormal behavior detection.
- Shortened the immigration processing time by simplifying immigration screening with the improvement of the airport immigration management system and contributed to terror and crime prevention by improving the rate of identifying and tracking suspicious persons in the airport.



## An immigration management system using the AI and identification tracking system

Artificial intelligence (AI) is a general-purpose technology driving the 4th industrial revolution and is a key element that determines national competitiveness today. It is forecast that 70% of companies around the world will use AI technology by 2030. AI is expected to increase global GDP by USD 13 trillion by contributing to productivity improvement and the creation of new industries.

In particular, computer vision has developed the fastest since deep learning and is showing high utilization among various AI technologies. Recently, it is emerging as an important technology to protect the social safety net of each country from terrorism and crimes.

The immigration management system at airports is the representative field where cutting-edge ICT technology is used. When the computer vision field using AI technology is applied to the system, it will change the security system innovatively.

If the system is introduced, people can be accurately identified with simple facial information, which simplifies immigration screening and shortens the screening time, so efficient airport operation can be expected. The system contributes to the prevention of terrorism and crimes by automatically identifying and tracing suspicious persons in the airport.

## Face recognition algorithm that obtained KISA biometric certification

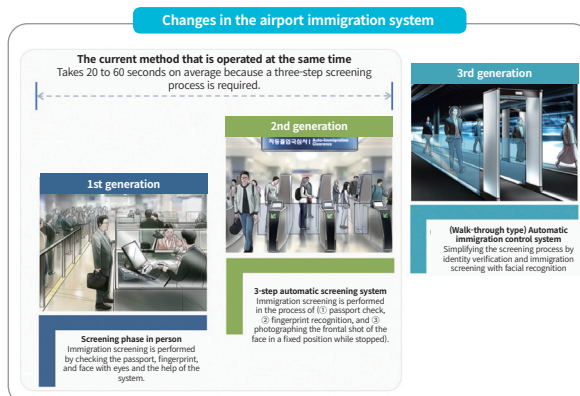
SQISoft is a company specializing in system integration and solution development. SQISoft is developing optimal IT services based on a clear understanding of the IT industry and various project experiences.

SQISoft acquired KISA biometric certification with its face recognition algorithm, and its 15 years of experience and know-how about recognition systems are recognized in the public sector, such as the “project for developing a platform to respond to missing persons based on complex cognitive technology”.

In particular, SQISoft was selected by the National Information Society Agency for the family relation face image, mask wearing dataset project in the vision field of the “data building project for AI learning” this year. As a result, its face recognition technology will be further upgraded.

## Realizing a safe society based on access control systems

SQISoft was selected as a company that implements the “track 1 project for demonstrating and verifying the development of the AI identification tracking system” 2 years in a row from 2020. This project is to develop a next-generation airport immigration control system that operates based on an AI system, which automatically identify the moving person and detects dangerous situations in real time. This project implements the second-generation automatic screening system such as e-passport authentication, digital fingerprint recognition, and facial image data check, which is a step forward from the existing first-generation immigration control system, where people check passports, faces, and fingerprints in person during the immigration process. SQISoft plans to its best to develop and distribute the technology of the third-generation walk-through type automatic immigration control system that can perform verification and immigration screening as one-stop service by recognizing faces while walking. SQISoft will future advance its technologies to prepare various linking methods, so that additional services can be provided, such as tracking criminals, missing persons, and infected persons, and access control and fire safety management.



## MINI INTERVIEW

**Lim Gwang-seop**  
managing director



**Q1. What did you achieve by participating in this project?**

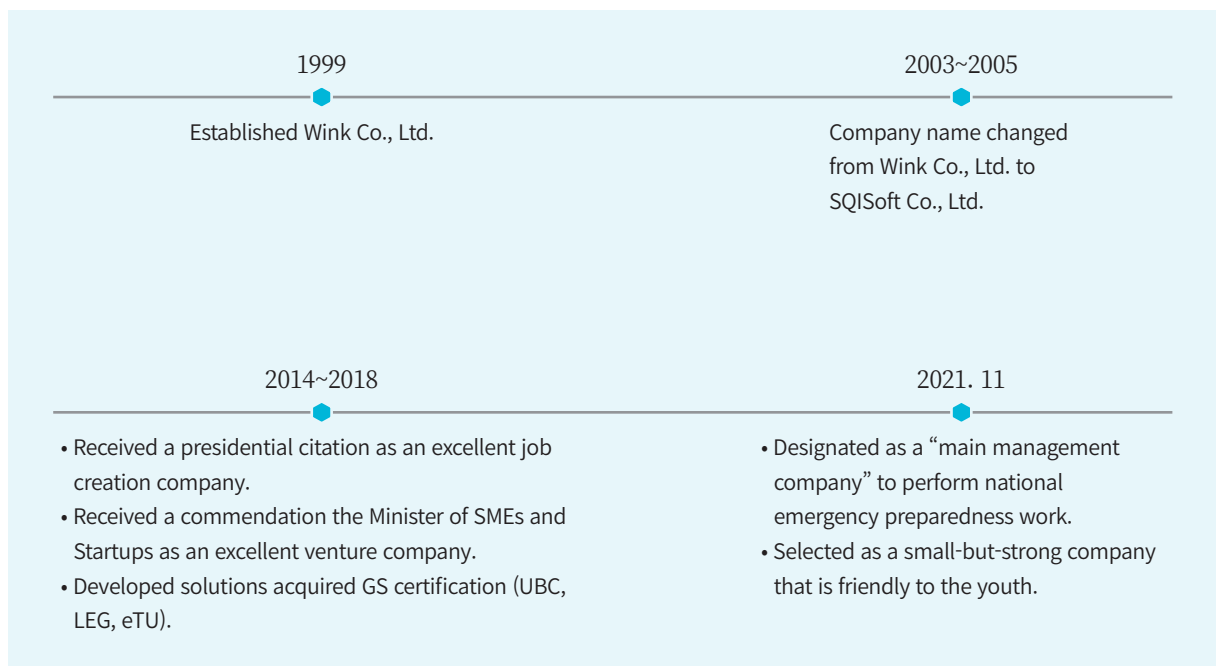
We created a huge achievement of KRW 500 million in sales with three cases of facial recognition and one case of abnormal behavior detection. In particular, we increased our sales and contributed to the prevention of COVID-19 spread at the national level, by developing a non-face-to-face kiosk that checks for people with heat and abnormal body temperature based on face recognition in the era of COVID-19.

**Q2. What was the key to the successful achievements?**

A big asset of our success was participation in the project for developing and demonstrating departure procedure integration and automation system for the Incheon International Airport in 2009 and the project for developing a foreigner fingerprint verification system for the G20 event by the Ministry of Justice in 2020. The National IT Industry Promotion Agency also gave us full support and it was very helpful.



## TIMELINE



# No.1 AI image recognition solution in Korea, which was also recognized in the U.S.



## Alchera Inc., Ltd

### General information

Detailed project name	Laying the foundation for an intelligent hyper-connected network infrastructure
Name of dedicated agency	National Information Society Agency

### Company information

CEO	Hwang Young-gyu
Type of business	Artificial intelligence and augmented reality development, software development, consulting and supply business, IT device manufacturing, IT device sales business
Year of establishment	June 2016
Website	<a href="http://www.alcherainc.com">www.alcherainc.com</a>



▲ Scan the QR code



### Prologue

Masks have become a part of our lives due to the spread of COVID-19. Masks protect our body from infectious diseases, but there is a problem that we cannot accurately identify others when they wear a mask. Accordingly, people should take off their masks and check their identity in places where identification is essential, such as airports and banks. But taking off a mask in such a high-traffic place means exposing yourself to an infectious environment.

So, what if we could use AI rather than our eyes to verify other person's identity while wearing a mask? We may be able to say, "AI is more accurate and safer".

Alchera has developed and commercialized an AI algorithm with an 88% recognition rate for face wearing a mask for the first time in Korea. Alchera's technology has been recognized enough in a way that Sonoma County, California, U.S. Introduced Alchera's bush fire detection solution. Alchera also supplied face authentication technology to many domestic financial institutions.

As such, Alchera plans to provide services beyond face recognition to the global market including the U.S., based on various AI image recognition technologies such as object recognition and fire detection, and strive to develop the solution that will manage both social safety and disaster safety.



### key achievements

- Developed and commercialized the AI algorithm that can recognize faces wearing masks up to 88% for the first time in Korea.
- Exported own bush fire monitoring solution to Sonoma County, California, U.S., and provided face authentication service to the domestic financial sector.

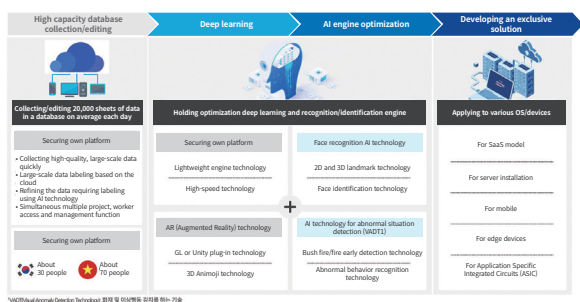


## A company holding the best technology in the AI image recognition field

Alchera is a leader in the AI image recognition field in Korea and also a technology-oriented company that conducts the entire process on its own, from large-scale data processing to AI development.

Alchera is developing image recognition AI technology that can be used in everyday life with the motto of “using AI to make cameras smarter to create a safer world and a better society.”

Alchera is increasing its references by commercializing AI image recognition technology is commercialized in various industrial fields based on this technological prowess.



## AIIR, a synthesis of easy and convenient AI image recognition technology

Alchera's AIIR stands for Artificial Intelligence Image Recognition. It is a brand that collectively refers to image recognition AI technology. Because Alchera's AI is based on a SaaS model, it is highly scalable and economical because it recognizes quickly, has a high recognition rate, and can be applied to anyplace with a camera.

In fact, AIIR provides security and authentication services using face recognition AI by applying to cameras around the world and detects anomalies such as fire hazards through anomaly detection AI.

Facial recognition AI is used in various industrial fields in Korea such as fintech, non-face-to-face passport issuance, access security, and overseas construction site management. It will be used all aspects of our lives, such as unmanned convenience stores and non-face-to-face identity verification. Anomaly detection AI was selected as the best one for the government project in the U.S. (bush fire in Sonoma County, California) this year by defeating leading global technology companies. AIIR has been applied to about 200 cameras and detects about 1.1 million abnormal situation photos per day in real time. In fact, anomaly detection AI is attracting attention by proving its effectiveness, since it detected a fire 10 minutes earlier than a call to report a bush fire. Based on reliable AI technology, AIIR aims to provide safety as it permeates the lives of people around the world just like the air we breathe.

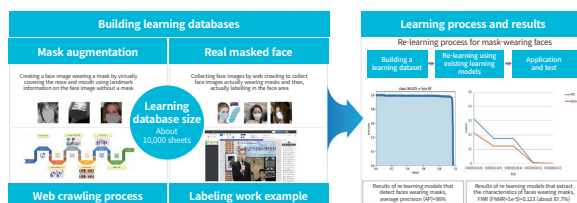
## Won the first place in the global face recognition test, proving the best technological prowess in Korea

Alchera ranked first in Korea and global top in the global face recognition test (FRVT) hosted by the National Institute of Standards and Technology (NIST) in 2021, following 2019. FRVT is a face recognition performance test participated and competed by global technology companies.

The sector in which Alchera took first place is a field that requires stable performance in an environment with various variables such as facial aging recognition and photos taken at immigration checkpoint. The face aging recognition sector should show a high face recognition rate even with an aging variable with an age difference of at least 12 years. The sector of photos taken at the immigration checkpoint should consider environmental variables such as backlighting and lighting that occur in a situation similar to the actual site. Alchera won the 1st place in both categories in Korea and recognized as an image recognition AI technology that can be used stably in real life.

“These results indicate that Alchera has secured world-class technological process. It is the result of hiring domestic and foreign talents and actively putting them into technology development while carrying out the entire process on our own, from data to learning and development.”

Hwang Young-gyu, CEO of Alchera, applied for the “project for laying the foundation for an intelligent hyper-connected network infrastructure” managed by the National Information Society Agency together with KT. As a result, Alchera could develop life safety and convenience services based on AI face recognition with the 5G edge box and 5G AI MEC that can smoothly provide AI services based on 5G infrastructure. By carrying out this project, Alchera also developed a face recognition AI engine that provides a high recognition rate even when wearing a mask, as non-face-to-face is becoming a daily routine. Alchera has shown the highest accuracy in Korea by achieving more than 88% of a mask wearing face recognition rate first in Korea in the actual use environment test conducted by the Telecommunications Technology Association (TTA). At the same time, Alchera developed an efficient facial temperature estimation algorithm, demonstrating that they evolve technology in time for COVID-19.





### A leader in laying the foundation for intelligent hyper-connected network infrastructure

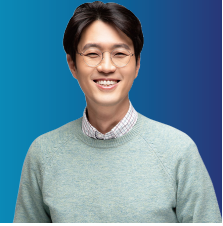
Alchera actively recruited talent and invested heavily in technology to carry out this project. Alchera laid the foundation for competing with world-class AI face recognition companies through this project. In particular, more and more companies are looking for reliable technology in Korea, since the importance of authentication is highlighted all over the world. As a leading image recognition AI company in Korea, Alchera is contributing to society and economy by occupying overseas markets in advance.

In particular, as non-face-to-face are becoming more and more common, the demand for identity authentication is likely to increase even in the post-COVID-19 era. Commercial non-face-to-face identity authentication services are already available at convenience stores and airports, and industries that require the services are gradually increasing. The market pay attention to face recognition because it is more economical, faster and more accurate than any other biometrics in that faces can be recognized using the basic camera only without any special equipment.

Alchera plans to actively enter the global market by securing high technological prowess and reliability with a sense of responsibility as a leading AI image recognition company in Korea.

### MINI INTERVIEW

**Hwang Young-gyu**  
CEO



#### Q1. What did you achieve by participating in this project?

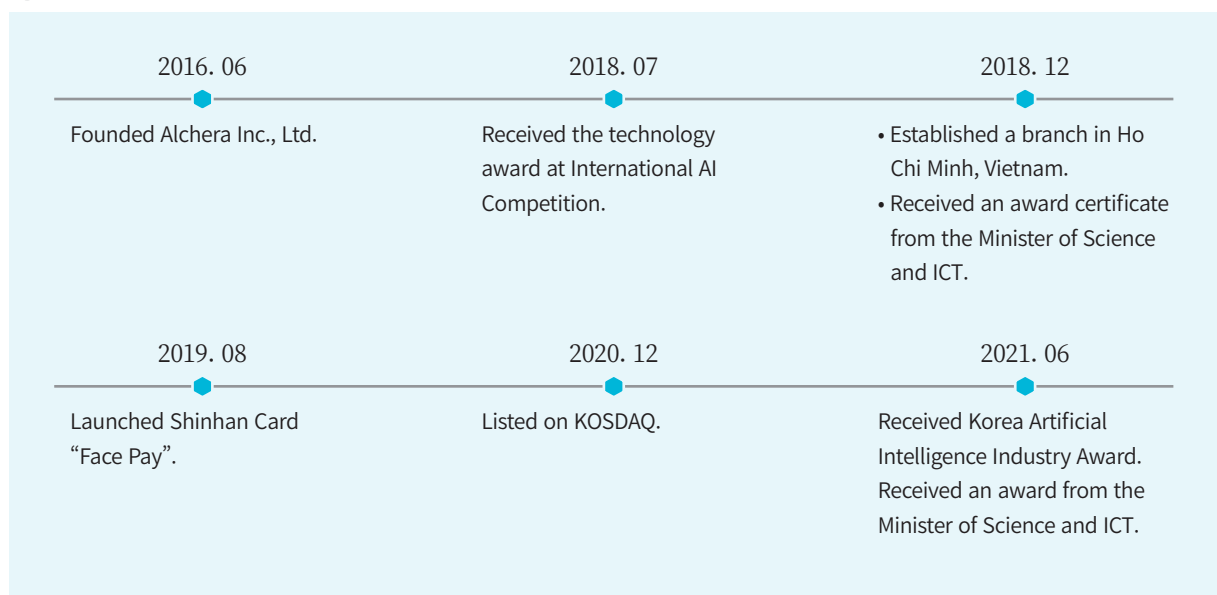
Our achievement is that we have laid the foundation for developing a face recognition AI technology that can be used quickly and reliably in real life with various variables. In particular, we achieved more than 88% of a mask wearing face recognition rate first in Korea in the environment test conducted by the Telecommunications Technology Association (TTA) and developed an AI algorithm that can measure the face temperature efficiently. This indicates that Alchera is growing in line with the rapidly changing world. We will continue to actively invest in technology to provide reliable technology that makes our daily lives safer.

#### Q2. What was the key to the successful achievements?

The key to success of this project is that we collected and processed our own data and continued to strive to rapidly develop algorithms based on it. Most of all, our employees who silently worked together and the support of many companies and agencies were also important factors.



### TIMELINE





Content

IoT

Network

Cloud

Big data

AI

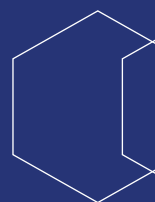
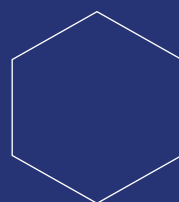
**Software**

Blockchain

Miscellaneous

## C H A P T E R

INFORMATION AND COMMUNICATION TECHNOLOGY





## Success Stories Of Outstanding Cases

### **Aidot Inc., Ltd.**

Developed professional medical diagnosis software that diagnoses a patient with AI and helps diagnostic tests

### **Newin Co., Ltd.**

Educational software solutions covering all functions necessary for e-learning education

### **PSDL Co., Ltd.**

Taking the lead in information security with physical random number encryption keys, core technology for security

### **Welix Co., Ltd.**

Developed failure prediction algorithms for operating industrial facilities safely

# Developed professional medical diagnosis software that diagnoses a patient with AI and helps diagnostic tests



## Aidot Co., Ltd.

### General information

Detailed project name	SW industry foundation expansion
Name of dedicated agency	National IT Industry Promotion Agency

### Company information

CEO	Jeong Jae-hun
Type of business	Service business/software development and supply (mobile, IT)
Year of establishment	June 2014
Website	<a href="http://www.aidot.ai">www.aidot.ai</a>



▲ Scan the QR code



### Prologue

Even if a minor symptom of disease is detected, if the diagnosis is not made accurately, the patient may miss the treatment time and be at great risk. Therefore, interest in medical diagnosis technology using advanced ICT technology is increasing every day. Aidot predicted this demand and developed technology early and established itself as the best medical ICT company in Korea.

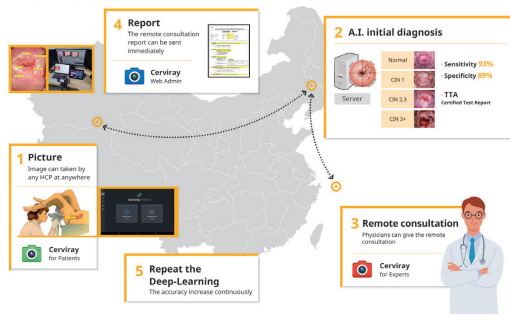
Aidot is showing its unique capabilities in the field of various diagnostic examinations that apply various ICT, such as cervical cancer screening, stroke screening, and gastroenterology examination using artificial intelligence technology.

Aidot continues to go forward without hesitation by receiving the award from the Minister of Science & Technology, and being designated as one of K-Global 300 and promising export SME, and one of 100 national representative innovative companies.



### key achievements

- Commercialized "Cerviray AI" globally, the only AI-based remote diagnosis system in Korea.
- Signed 2 contracts with Chinese partners and 5 contracts with global partners, won the grand prize of the Minister of Science and ICT in December 2020.



## Strongest AI-based medical ICT company based on the expansion of the SW industry base

Aidot is a medical ICT company established in 2014 and composed of excellent workforce, such as medical image AI specialists, global marketing specialists in the healthcare sector, medical professionals and advisors, etc. Aidot was discovering items targeting the global market in the early stages of its business. Aidot found an opportunity in applying IT to the medical field and started the medical ICT business in earnest.

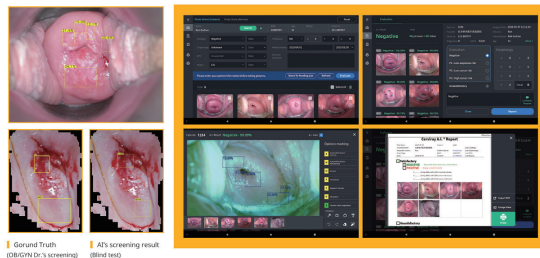
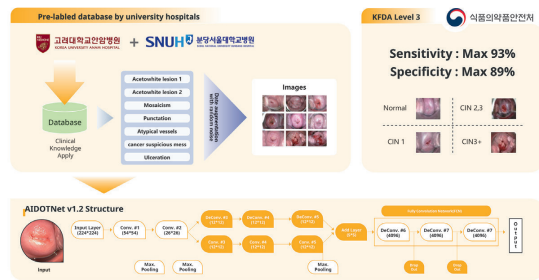
As Aidot pursued its business, Aidot met many doctors who sympathized with the purpose of the business. Above all, Aidot felt great pride and delight in the fact that patients' access to medical care increased and contribution is made to improve patients' health as the service began to be used in actual medical fields.

Aidot has been developing artificial intelligence systems with support from government budgets. In recognition of its excellence by government agencies, Aidot received several awards, including the Minister of SMEs and Startups' Award and the Minister of Science and Technology Award. In addition, Aidot was selected as one of K-Global 300 and promising export SME, and one of 100 national representative innovative companies.

Aidot has a corporate philosophy and sense of mission that the company's achievements should be returned to society because the taxes of the people were used to grow Aidot. That's why Aidot is proud that it is the only company in Korea that has a track record of exporting AI-based medical ICT systems.

## Cutting edge software technology for diagnosing diseases with AI

Aidot is specialized in developing an artificial intelligence-based medical imaging system. The AI system for cervical cancer screening was supported by Software High Growth Club 200 and its commercialization has been already started. The development of the stroke screening system based on carotid artery ultrasound was completed, and clinical testing is under way in 4 university hospitals and medical device certification is in progress. Aidot also successfully developed



systems related to all fields of internal medicine. Aidot installed endoscopy equipment for stomach, large intestine and small intestine at the gastroenterology department of Chuncheon Sacred Heart Hospital for clinical testing. The AI system for remote cervical cancer diagnosis is called "Cerviray AI". Cervical cancer and breast cancer are the most common cancers that threaten women's health, and the cervical cancer is a serious disease with a fatality rate of 50%. Healthy women can prevent this disease with regular checkups once a year, but it is difficult for women in underdeveloped countries to undergo screening due to poor medical infrastructure, making it a major cause of death. The current main screening method, cervical cytology, requires the establishment of infrastructure such as laboratory facilities and pathologists. Therefore, this method has limitations in developing and underdeveloped countries. Cerviray AI was developed for overseas markets with poor medical infrastructure such as China and Southeast Asia from the product planning stage, with the goal of contributing to the improvement of women's health all over the world.

## ICT company expanding to the world with medical software technology based on a different philosophy

The global commercialization of the Cerviray product began in 2020. Aidot signed an exclusive distributor agreement with Snet in Beijing, China, and exported the first volume. Aidot also established a joint venture with a Shenzhen partner and are conducting aggressive sales activities. In addition, Aidot signed an exclusive distributor contract with CerviQ in the Philippines and are conducting local clinical testing. Aidot held a joint online event under the management of NIPA in May to commemorate the Month of Cervical Cancer

Eradication.

To enter the Indonesian market, Aidot have established a joint system with domestic and local Indonesian conglomerates. Aidot plans to demonstrate Cerviray products and hold webinars for 1,000 doctors who are the members of the Indonesian Obstetrics and Gynecology Association. Aidot also have signed a contract or are discussing product introduction with partners in Thailand, Vietnam, Japan, and Paraguay.

Aidot received approval for the KFDA grade 3 clinical test for local use in Korea and entered the clinical testing stage and plans to conduct sales for a network of 3,000 hospitals in Korea, which was established by the joint venture partner Phil Medical Foundation from the first half of the year. Aidot is expected to become a really strong “small-but-strong” company based on leading ICT technology.

### MINI INTERVIEW

**Jeong Jae-hun**  
CEO



#### Q1. What did you achieve by participating in this project?

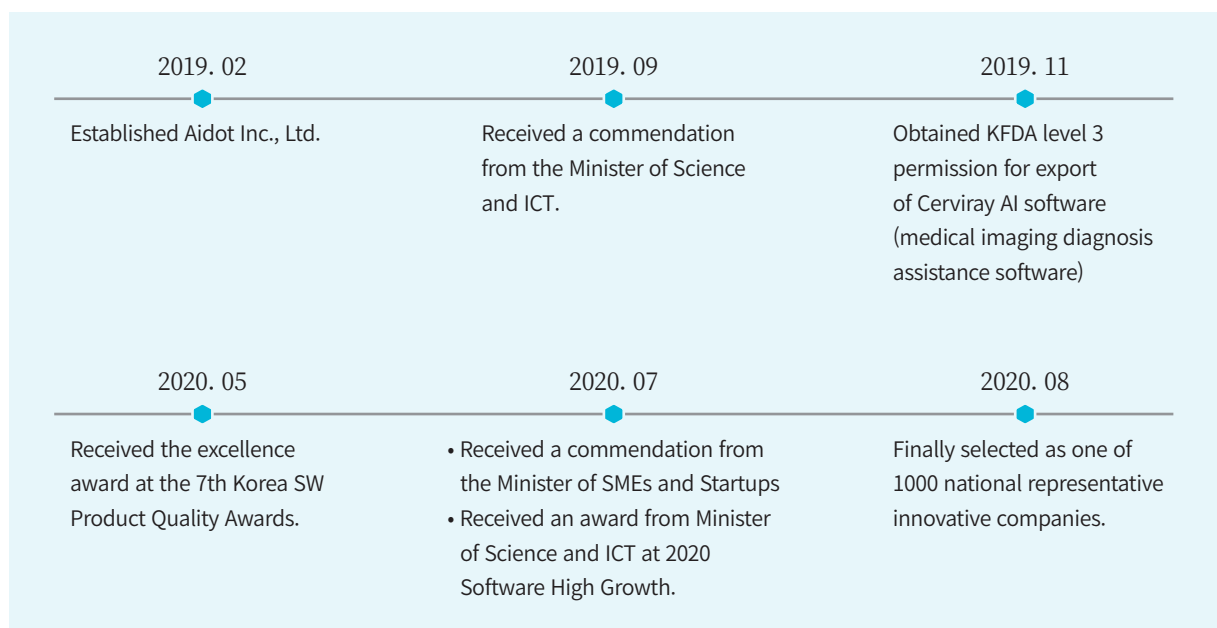
We were able to improve the perfection of Cerviray AI products, and as a result, we were able to successfully commercialize Cerviray AI. We have exported products through two partners in China since 2020 when we participated in the project. We're making full-fledged overseas achievements such as tangible results in the Philippines and Indonesia. We received the grand prize of the Minister of Science and ICT in December 2020 in recognition of these achievements.

#### Q2. What was the key to the successful achievements?

Researchers who have been silently devoted to R&D made all this possible. Also, the main effect was that the marketing budget was quickly changed to the online activity budget in preparation for the COVID-19 situation. We were fully prepared for online activities, such as the new production of high-quality product promotional videos and online brochures, and reorganization of the website into a multilingual version. Those activities were a great help.



### TIMELINE





# Educational software solutions covering all functions necessary for e-learning education



## Newin Co., Ltd.

### General information

Detailed project name      Strengthening the overseas market entry capability of the software industry (informatization)

Name of dedicated agency      National IT Industry Promotion Agency

### Company information

CEO      Han Gi-nam

Type of business      Educational service industry

Year of establishment      April 2010

Website      [www.touchclass.com](http://www.touchclass.com)



▲ Scan the QR code



## Prologue

With the prolonged COVID-19 outbreak, the global village has entered an era of non-face-to-face and is focusing more on online content consumption than before COVID-19. The educational content field cannot be an exception and is attracting attention as the field showing the steepest growth among all video contents.

However, production of high-quality educational contents requires a lot of equipment and costs. Newin is an educational solution development company that is drawing attention in Japan by developing Touchclass, a solution that enables anyone to create and distribute content in an easy and simple way.

Instead of remaining in Japan or Asian countries, Newin has aspirations to expand educational content production services to the whole world. Let's give strong support to the Newin's challenge.



## key achievements

- Successfully secured customers by establishing a Japanese subsidiary and 5 local sales agent offices and exported to public institutions such as municipal elementary schools.
- Improved the usability of Japanese users by localizing the solution (local testing, Japanese font, and emoticon support, etc.)

## E-learning solution company used by 3 million users across the world

Mobile messengers, SNS, and the Internet have now become a part of our lives. Since the mobile era has already become our daily life for more than 10 years, we emphasize a communication platform that can communicate anytime, anywhere.

Due to this environment, the prolonged spread of COVID-19 has made non-face-to-face education routine. The demand for non-contact educational content is increasing exponentially. However, a lot of cost and time investment required for creating mobile content is burdensome for companies.

Newin provides an educational solution that enables anyone to easily create and distribute the content optimized for mobile devices, and learn anytime, anywhere.

Newin, an edutech company, was established in 2010 to research and develop content-related software. Currently, it is providing services such as New Campus, an integrated e-learning solution, nPlayer, a video player, and Touchclass, a mobile learning solution.

When Newin was founded, software was recognized as an add-in service provided as a bonus when providing content in the e-learning market. The software was commonly developed by the corporation with a lot of cost and time, which made it infeasible for SMEs. Therefore, Newin initially started its business with the concept of renting an e-learning solution at the lowest cost.

## Touchclass that dreams of global success by strengthening the capability of entering overseas market by the software industry

Touchclass, Newin's mobile learning solution, is a SaaS (Software as a Service) type of education solution that enables the user to quickly and easily create and distribute information as content. Touchclass is continuously updating various functions that reflect corporate education trends, such as social learning, real-time lectures, etc., besides member and course management.

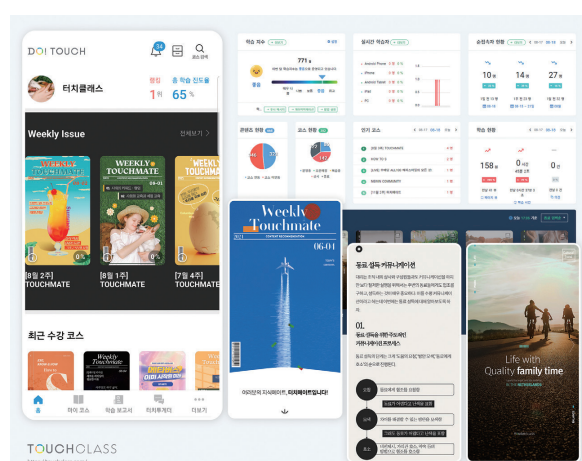
Touchclass was designed with the goal of entering overseas markets from the early stage of development. Newin started market research and localization to enter the Japanese market from 2019. In the meantime, Newin came to know the "project for supporting export-type software commercialization" managed by the National IT Industry Promotion Agency, and received support for all tasks by phase, which should be practically considered when entering overseas markets, such as localization strategy establishment and product localization and verification.

## Valuable outcomes obtained from voluntary task selection and support

Newin conducted local market research, established a Japanese corporation, secured sales agents, maintained and verified solutions, and presented products through this project. Nuin was able to achieve meaningful results by performing a wide range of activities owing to the nature of the support project, which supports companies to plan and carry out tasks by themselves.

Newin has secured 5 local sales agencies since the establishment of the Japanese subsidiary in September 2020 and successfully secured customers right after. In particular, it is very meaningful to have exported to public institutions such as Kitayama Elementary School in Fujinomiya City, Shizuoka Prefecture.

Since public institutions review localization more rigorously than general corporations, Newin repeated testing for localization and made efforts for elementary school students such as adding children's character emoticons. As a result, teachers and students were quite satisfied, and Newin plans to distribute the Touchclass solution to all Fujinomiya municipal schools.



### Educational content that can be created and learned by anyone

Japan established online education and non-face-to-face work systems later than Korea, but like Korea, young people use mobile devices at a high rate. With Touchclass, users can easily create and distribute content and analyze statistical data on learning. Therefore, Touchclass is effectively used for online training of educational institutions itself, and it is drawing attention not only from schools but also in various fields.

Many banking, financial system, advertising, sales, and real estate companies participated in the Touchclass briefing held in Fukuoka, Japan, in November last year, even though the event was held on a limited scale due to COVID-19. Newin was able to realize how much interest the Japanese market has about Touchclass.

It was a little disappointing for Newin that the task could be performed more actively due to COVID-19. Newin planned to attend a large exhibition to check the response of local corporate training managers and educational institutions and find partners, but the event was repeatedly canceled due to COVID-19. Instead, Newin hired local staffs and held a solution briefing with resellers in the Fukuoka area to understand the needs of local users at least a little.

#### MINI INTERVIEW

**Kim Su-young**  
director



#### Q1. What did you achieve by participating in this project?

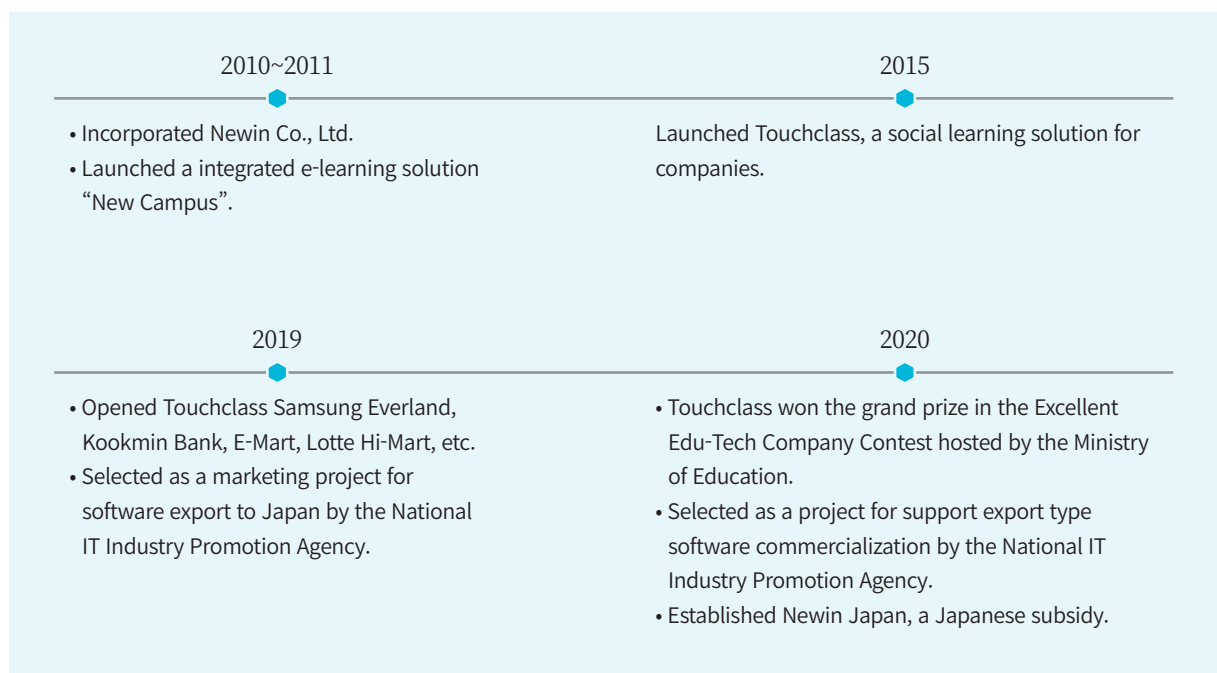
We were able to establish a bridgehead for entering the Japanese market by advancing services and obtain a great help in strengthening our overseas expansion capabilities.

#### Q2. What was the key to the successful achievements?

We held a joint briefing session with local resellers by hiring local staffs in spite of COVID-19. In such a way, we did not give up and continued our efforts. I believe that was the secret to our success.



#### TIMELINE





# Taking the lead in information protection

## By generating a physical random number encryption key,

### A core security technology

**PSDL** will be **strictly**  
responsible for their **security**.

PSDL

## PSDL Co., Ltd.

### General information

Detailed project name      Creation of Global ICT Innovation Cluster

Name of dedicated agency      Korea Internet & Security Agency

### Company information

CEO      Cheon Seong-woo

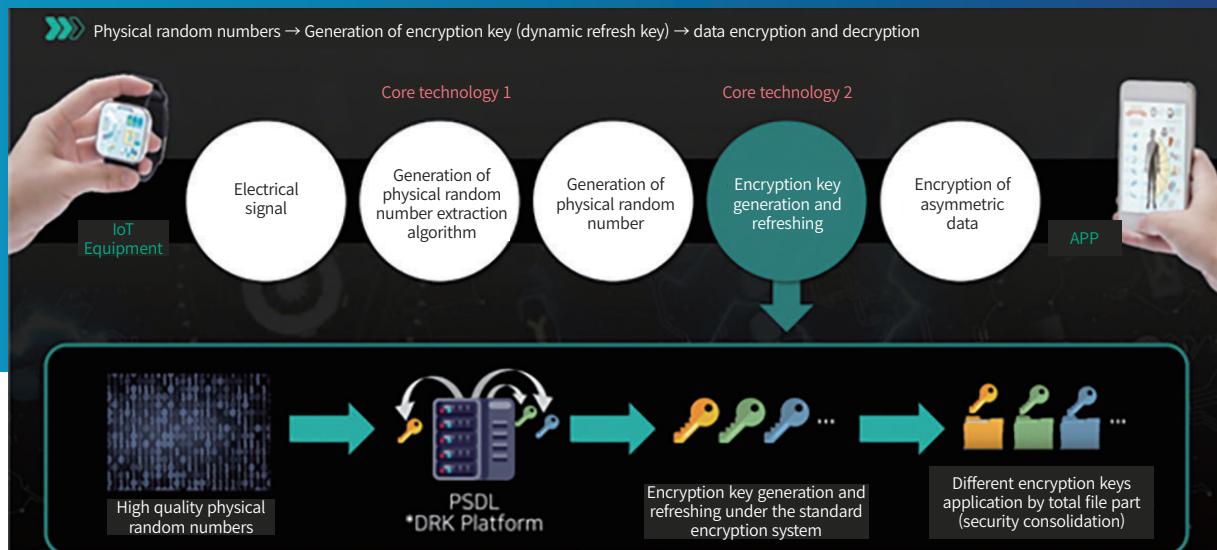
Type of business      Software development and supply

Year of establishment      February 2019

Website      <https://www.psd.co.kr>



▲ Scan the QR code



### Prologue

The vulnerability in the era of the Fourth Industrial Revolution is security. Mainly hacking and cyber attacks, and in particular, cyber attacks, are expected to increase in scope and intensity. This is analyzed as a side effect of the rapid development of new technologies leading the Fourth Industrial Revolution.

Experts predict that the development of a random number (encryption key) generator that can be easily linked with existing devices and security core technology using it will have a high ripple effect for the stable establishment of the fourth industry and information protection in the network environment.

Recently, we met PSDL, which is attracting attention for its high-speed encryption key generation and refresh technology by extracting random physical numbers from electrical signals.



### key achievements

- Algorithm for automatically classifying random numbers for electrical signal input and grading success by setting the quality grade of random numbers to 6 levels for electrical signal bit strings (256, 512, 1024, 2048 bits) generated by electronic/communication devices.
- Utilizing the corresponding random number classification algorithm and signal processing technology to develop and utilize the voice call security radio.

### Physical random number encryption key and hardware-based security

Prior to the Fourth Industrial Revolution, technologies and services could build a security system framework with a pseudorandom number-based security system, but the fourth industry's technologies must be approached in a different way due to the improvement of computing performance and increasing network connectivity. Until now, security is being treated as costly and troublesome in the market, but it directly corresponds to information security in the ten core industries in the 5G+ era. In various 5G-related technologies such as digital health care, network terminals, VR/AR devices, drones, and robots, 5G network-based information security is a core technology that creates new products and services of the Fourth Industrial



Revolution. Security technology to prevent hacking is expected to require encryption key security based on a physical random number that is fundamentally impossible for development by industry.

PSDL's novel technology is summarized as electrical signal-based physical random number encryption key generation and refresh technology. It is differentiated in that it develops hardware-based security solutions that can be applied to actual electronic communication products and services, rather than focusing only on security software technology that most security companies offer. Its main products are security radios, security gateways, security tags, and logistics automation platform construction.

As mentioned earlier, security in the Fourth Industrial Revolution will be enacted and become an essential element of electronic communication products and services. Currently, domestic and overseas markets are in the process of enacting legislation that requires security in electronic communication products and services, and security functions are essential for the fourth industry, smart cities, and smart factories to become a reality in the future.

When it becomes mandatory to install security technology on IoT and industrial devices, related companies will look for solutions, and the goal is to provide a strong security system solution through security hardware to meet the market demand. In other words, the goal is to provide electronic communication products and platform services based on source technology and security hardware. For this purpose, products that generate electrical signals in electronic communication devices using the corresponding random number classification algorithm and signal processing technology generate high-quality random numbers on their own, and apply this to the encryption/decryption system to develop a system for secure transmission when sending and receiving data.

PSDL boasts of a team composition in which experts from various fields can gather to create synergy, focusing on the commercialization of products so that it can grow into a global company. Based on the creative thinking unique to startups, meetings on core items are held frequently, and PSDL has a corporate culture in which personnel trust and respect each other. The relationship between seniors at the vice president, managing director, and research center level and young developers is also strong.

### **Core security technology, high-quality encryption key based on electrical signals**

Through the information protection cluster project of the Korea Internet and Security Agency, PSDL has carried out end-to-end real-time encryption/decryption SoC development for IoT security equipped with high-quality, high-quality physical random number encryption key

update technology. A core technology for generating high-quality random number-based encryption keys using the characteristics of electronic communication device signals was developed and combined with the random number classification algorithm exclusively owned by PSDL. A summary of the supported business is to develop ultra-high-speed, high-quality, ultra-low-priced, and ultra-light security chips using these security core technologies and to ensure the reliability of fourth industry technologies and services. A summary of the project's performance is as follows.

1. Development of source technology that generates and refreshes high-quality physical random number encryption keys from electrical signals and applies them to electronic communication products and services.
  2. Expansion of derivative technology and commercialization by securing source technology.
  3. Establishment of new electronic communication products and new services based on the company's core technology.
- The biggest advantage has been that stable development has been possible through the support project, and it was an opportunity to check the technology with the head office in the middle of development through academic activities. The greatest achievement is that through this project, PSDL established a statistical test environment for random number evaluation conforming to the NIST SP 800-22 international standard and utilized the random number classification algorithm and signal processing technology to develop a voice call security radio and an integrated security gateway. This is the information security technology of the 5G+ ten core industries and is directly or indirectly related to achieving 5G network-based information security in various 5G-related technologies such as digital healthcare, network terminals, VR/AR devices, drones, and robots. In particular, the development of a device to generate random number (encryption key) that is highly compatible with existing electronic communication devices and is inexpensive, small, light, and can be easily linked to existing devices without compromising the functions/performance of other electronic devices is expected to continue to grow in the future. Using the same development of core security technology is essential for the secure stabilization of the fourth industry and the protection of information in the network environment.

It is an incidental achievement that R&D capabilities were strengthened by hiring new personnel and quantifying security-related basic development contents through the funding. It is said that if know-how is selected for excellence, it must be done with a sincere attitude, such as grasping the nature of the task; securing optimized technology through faithful pre-preparation, constant discussions and meetings; and finally, sticking to the basics and securing differentiation from surrounding technologies. This seemed to be the key.

### Development of secure semiconductor IC chips and expansion into diverse industries

In the future, PSDL aims to increase company value and apply security technology to more products and services through the development of secure semiconductor IC chips. To this end, they are securing investment through various domestic start-up programs and investment matching programs in the country. Currently, PSDL security hardware devices and an integrated security gateway are installed on COMMAX's wallpad, and an MOU was also signed with AVOTEK, which officially supplies the wallpad to UTC (United Technologies Corporation) in the United States, for joint development of the security wallpad. PSDL plans to develop a semiconductor IP through FPGA design and use it to develop security semiconductors and related application products and services in the future. As a short-term strategy, most products and services are being developed as of September 2021 and expected to be launched in 2022. PSDL has also announced its ambition to achieve a corporate value of 1 trillion won by 2025.

The most urgent task right now is to secure excellent manpower, he said. They are being introduced through acquaintances around them. When asked about the talents of PSDL, he said that the door is wide open for those who can finish what they start, value themselves highly, and can properly balance work and personal life.

### MINI INTERVIEW

**Cheon Seong-woo**  
CEO



#### Q1. What did you achieve by participating in this project?

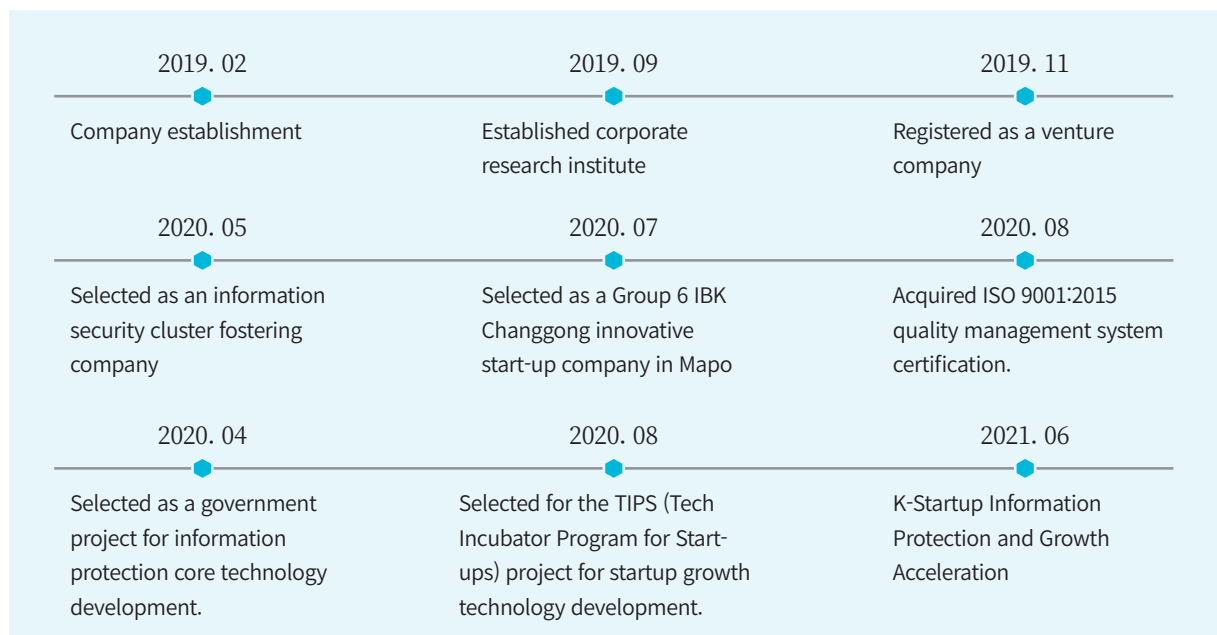
By establishing a random number evaluation statistical test environment that meets the NIST SP 800-22 international standard, we have succeeded in applying the voice call security radio and the integrated security gateway by using random number classification algorithm and signal processing technology. We are developing hardware-based security solutions that can be applied to actual electronic communication products and services rather than focusing only on the security software technology as most security companies do. Through the development of secure semiconductor IC chips, we can increase the company's value and apply them to most products and services in the future.

#### Q2. What was the key to the successful achievements?

Based on the technology that generates and refreshes encryption keys at high speed by extracting physical random numbers from electrical signals, we obtained results with random number generation rates of approximately 13 Mbps and a random number generation efficiency of approximately 83%. For electrical signal bit strings (256, 512, 1024, 2048 bits) generated by electronic communication devices, the quality rating of random numbers is set at Grade 6, securing a technological advantage in automatically classifying random numbers for electrical signal input. In the future, we plan to develop and service security semiconductors and related application products and services that perform data encryption/decryption in real time.



### TIMELINE



# Developed failure prediction algorithms for operating industrial facilities safely



## Welix Co., Ltd.

### General information

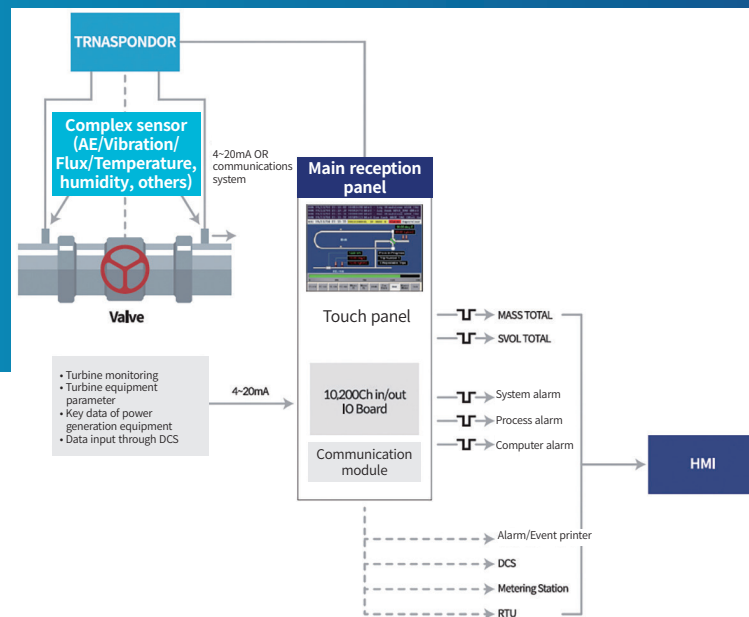
Detailed project name	Support for regional software industry promotion
Name of dedicated agency	National IT Industry Promotion Agency

### Company information

CEO	Hwang Jeong-hui
Type of business	Electricity and electronics
Year of establishment	November 18, 2018
Website	<a href="http://www.welix.kr">www.welix.kr</a>



▲ Scan the QR code



### Prologue

It is important to monitor the safety of power generation facilities as much as the various added values produced using the facilities. The reason is that if production is disrupted due to an abnormality caused by overlooking safety, the company's losses are accumulated as much as the time the equipment is stopped.

Welix rolled its sleeves up to localize real-time facility monitoring sensors, which had been imported so far. Recognizing the future growth potential of the related market, Welix is giving impetus to the development of sensors that are required for developing a valve monitoring system.

In addition, Welix also registered various patents and received professional certifications under the belief that there is no value more important than safety. Let's take a look at how fiercely Welix is researching.



### key achievements

- Developed a system that monitors the valves of plant power generation facilities, operation condition, facilities in real time, and developed a failure prediction algorithm by collecting and analyzing the facility operation condition based on big data.
- Hired 14 employees directly and indirectly, and applied for 2 patents and professional certification, and increased sales by 20% by applying technology to the site, and successfully produced the prototype.



### Indispensable for facility safety

According to KEPCO, coal-fired power generation totaled 238,984 Gh in 2018, ranking top by occupying 41.9% of the total power generation sources. However, more than 20% of thermal power plants are using old equipment aging more than 20 years and causing serious problems such as leakage, operation error, functional deterioration, and damage one after another. It is necessary to build a valve monitoring system based on predictable big data to solve these problems, by monitoring the abnormal state of the valves directly related to safety in real time to diagnose risks and detect valve errors.

Moreover, most of the systems monitoring power generation facilities in the plants are imported products. Since these products have a big impact on the domestic industry, domestic products should be urgently developed to replace imported products.

### Necessity for localizing the valve monitoring system sensor

Currently, the U.S., Germany, and Japan are giving impetus the development of more advanced sensors by combining world-leading sensor technologies that monitor power generation facilities with manufacturing technologies such as semiconductors and MEMS.

However, the Korea's level of core technology for power generation facilities is very low (55.8% of the advanced countries). In particular, industrial sensors still rely mostly on imported products for domestic demand due to the lack of compatibility and stability with existing products.

However, it is predicted that we could secure enough competitiveness if we can improve product quality by narrowing this technical gap, develop and manufacture high-quality products with domestic technologies only.

The supported task was to develop an AE complex MEMS sensor and integrated valve monitoring system based on big data. It was a part of the local software industry promotion support project of the National IT Industry Promotion Agency.

#### [Detailed promotion tasks]

- Development of software infrastructure using big data
- Development of a monitoring system that can control and manage data sensing

### Welix challenged the localization the sensor that monitors power generation facilities

Welix thought that cost reduction and advanced industrial facility software could be realized by securing domestic



technologies by the software-related industry and developing monitoring systems for outdated power generation facilities. In particular, most of the local plant facilities are in a serious situation due to aging problems. Such a system could prevent the astronomical cost in advance that could occur when the operation of plant facilities is stopped during maintenance work for inspecting the conditions of each valve.

Recently, the importance of monitoring systems was recognized due to the recent fatal accident of the worker at the Dangjin thermal power plant of Korea East-West Power Co., Ltd. and the Taean thermal power plant of Korea Western Power Co. Ltd. As a result, Welix is discussing about applying this technology for the field test and commercialization. Welix is strengthening the monitoring system for dangerous facilities and valves in cooperation with each business site of Korea East-West Power and trying to build a real-time environmental monitoring system. In addition to this, its activities in the global market are also remarkable. Welix exported its plant valve monitoring system worth of KRW 66 million to PT. DEWA PUTERA in Indonesia. Welix was selected as a resident of Silicon Valley Plug & Play in the U.S., where leading global companies were founded such as Facebook and PayPal. Plug & Play is famous for its strict standards for technological achievements and prowess when selecting a resident company. However, it is also famous for creating the foundation for rapid growth through investment.

Welix Co., Ltd. was founded by researchers with outstanding technology development capabilities in their fields. In particular, Welix has been conducting R&D for a long time on sensor-based hardware that can be used in real life, based on the technology accumulated while developing memory semiconductors. Based on those achievements, Welix seems to be able to provide better quality sensors to the industry, by developing the sensor module that can be used throughout the domestic industry.

## MINI INTERVIEW

**Jeong Gi-won**  
director



**Q1. What did you achieve by participating in this project?**

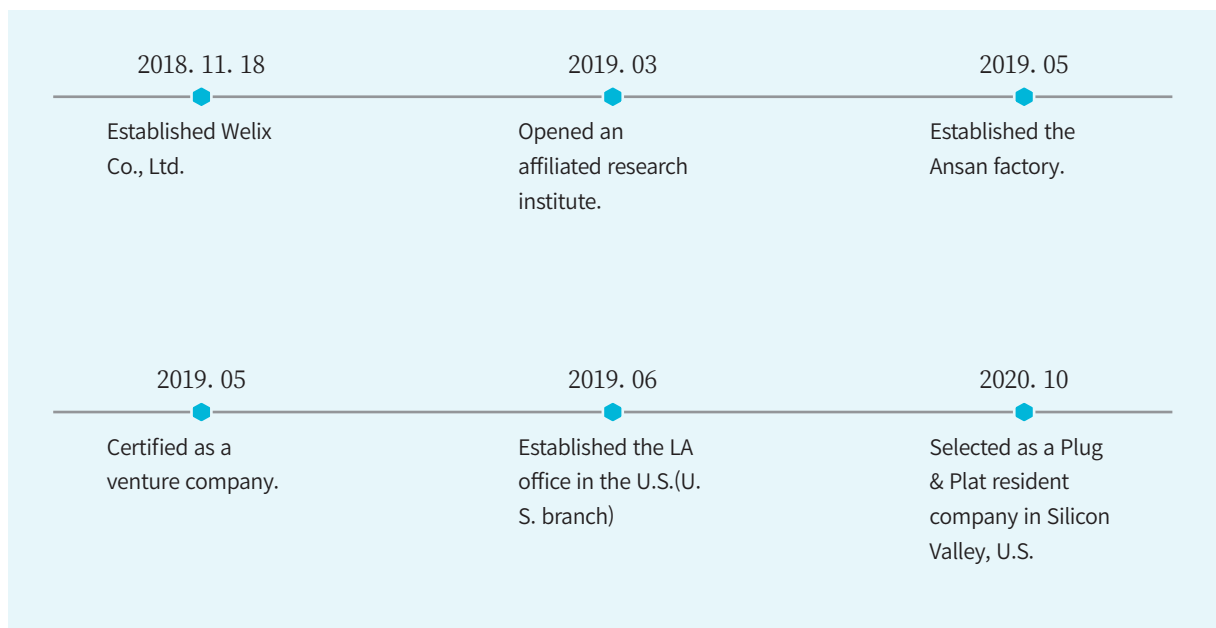
Most of the industrial facilities in Ansan, Gyeonggi-do are manufacturers' facilities, mainly producing large-scale processing plants. Due to such distinct characteristics, demand for various valves is high, to monitor the facility risk level in real time. We have the opportunity to replace imported parts used for such facilities with products that will be developed by us, and to develop customized products specialized for local industrial complexes at the same time.

**Q2. What was the key to the successful achievements?**

Welix has a group of R&D teams with outstanding abilities in their fields, who can apply the accumulated technological skills in the memory semiconductor sector to real life in various ways. I think that we developed sensor modules that can be used throughout the domestic industry and achieved good results in our business, thanks to these human capabilities.



## TIMELINE





Content

IoT

Network

Cloud

Big data

AI

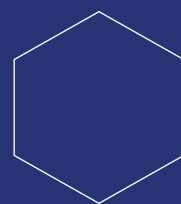
Software

**Blockchain**

Miscellaneous

## C H A P T E R

INFORMATION AND COMMUNICATION TECHNOLOGY





02

## Success Stories Of Outstanding Cases

**UbiPlus Co., Ltd.**

Blockchain-based Reliability  
Robust Security Safety  
AI-customized Smart Healthcare

# Blockchain-based Reliability Robust Security Safety AI-customized Smart Healthcare



## UbiPlus Co., Ltd.

### General information

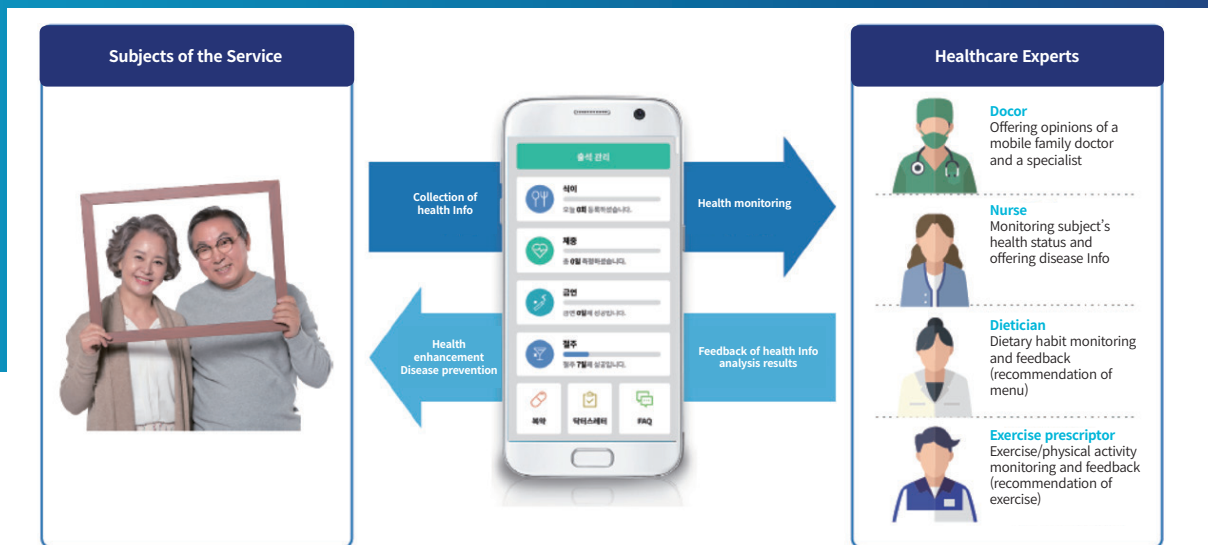
Detailed project name	Blockchain-using infrastructure shaping
Name of dedicated agency	Korea Internet & Security Agency

### Company information

CEO	Cho Jae-eok
Type of business	Software development and supply
Year of establishment	April 1, 2010
Website	<a href="http://www.ubi-plus.com">www.ubi-plus.com</a>



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### Prologue

The development of various technologies brought about by the Fourth Industrial Revolution has been contributing enormously to protecting life and health.

This applies to the digital healthcare field, which systematically analyzes and uses the personal health data and medical treatment data of hospital and clinics.

Ubiplus.net is a leading blockchain technology company that is positively affecting the market based on its unique technological capabilities in the digital healthcare field, putting high priority on reliability and safety.

Proving outstanding effectiveness through test bed along with Gangwon-do, Ubiplus will grow into a company that needs to pay attention in the digital healthcare market.



### key achievements

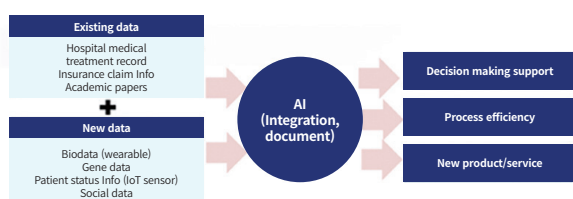
- Blockchain-based, AI-customized smart healthcare solution (Web, App, Platform) development.
- Blockchain-based, Gangwon-do-type AI smart healthcare service model test bed and provincial resident service expansion.

## Thinking of the Reliability and Safety of Personal Health Info

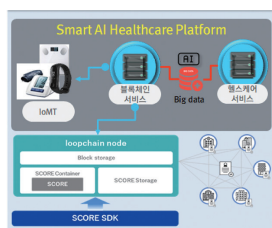
The healthcare industry environment is shifting to the digital healthcare service era wherein chronic disease care and prevention are the focus.

AI technology in the healthcare field aims to create new values through data integration and mega data analysis. Indeed, reliable network construction through blockchain is demanded, because sensitive personal information is handled. High-level deep learning on vast amounts of data is essential.

Ubiplus has laid the foundation for customized AI healthcare service wherein personal health information's reliability, safety, and self-sovereignty are secured with blockchain technology.



## Digital Healthcare Developer and Service Provider



Ubiplus.net CEO Cho Jae-eok has paid attention to digital healthcare service expansion and AI big data industry growth alongside the development of the Fourth Industrial Revolution. He thought that patients'

convenience will be enhanced, and health insurance finance wastage can be prevented if a healthcare solution platform is developed and supplied. He established the company thinking that disease deterioration due to lack of personal health information can be prevented through patient health change analysis data, if patients can receive healthcare service anywhere, anytime with data through which patient health change can be analyzed.

## Ensuring Blockchain Use-based Security and Data Analysis Through Deep Learning

In the recent medical sector, the reading and distribution ecosystem of the personal health record (PHR) is requested. In view of the PHR properties, it handles sensitive personal information, so a high level of reliability and security is necessary. Therefore, the adoption of blockchain—a technology meeting the requirement—is needed. A deep learning analysis of the collected data is essential for the integration management of mega medical data especially

chronic diseases, such as cardio-cerebrovascular patients, based on blockchain technology. If mega data is analyzed through deep learning, help can be offered for quick, accurate, and precise diagnosis and treatment. In addition, consistent person-tailored disease prediction, preventive service, and medical treatment environment construction without temporal and spatial restrictions are possible. Ubiplus has constructed personal health data based on blockchain, providing remote healthcare service, contactless healthcare, AI care service for elderly people, and chatbot platform based on AI analysis and prediction.

## Korea's First Public Health and Medical Care Service Application for Local Governments

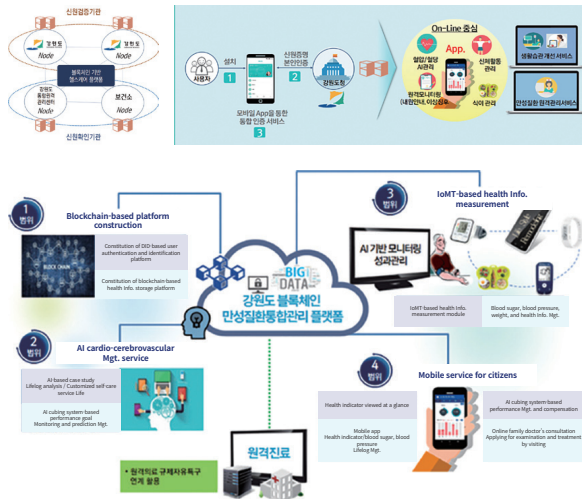
The pilot operation area of this project, Gangwon-do, is leading the domestic market by fostering digital healthcare centered on Chuncheon and Wonju. The company is continuously gathering lifelog data such as blood pressure, blood sugar, activity amount, and nutrition state by providing IoMT health gauge and app to the chronic disease management subjects. Through comprehensive monitoring of the analyzed data by the remote medical team (hospital, health institution, online coordinator, etc.), adequate feedback and coaching service are offered.

Blockchain and DID certification technology was applied to the process, and reliable personal health information data platform was constructed with the safe storage of all personal medical and health information. AI analyzes the collected PHR data, and cardio-cerebrovascular disease prediction and AI-based customized health management coaching service have been provided.

Ubiplus applied the blockchain and AI-based digital healthcare service to the local government's public health and medical service for the first time in Korea. Due to personal PHR Information collection and analysis, personal customized medical treatment became possible, and the company could lay the foundation for smart healthcare big data market creation through ensured safety and reliability of a third party's personal PHR reading and distribution. Ubiplus ensured the safety of sensitive personal medical information based on blockchain and increased the usage through consent to personal information inquiry and use. By offering healthcare prediction information with the AI technology, the company has provided customized healthcare service optimized to individuals.

Although the remote medical service test bed project is actively performed in Gangwon-do, a free special zone in terms of digital healthcare restrictions, the service expansion has a constraint due to the regulation issue of laws, systems, and the Medical Act. With gradual improvement, however, a social cost savings effect is expected by quantifying incentives depending on the provincial residents' health





practice achievement and transparent operation with blockchain technology. Gangwon-do expects the expansion to various services including Ubiplus's health practice incentive system, smart AI healthcare, blockchain, and big data.

Ubiplus is opening a new chapter of digital healthcare through the super-connection of precise sensor technology and IoT and by fusing the varieties of technologies including AI with high intelligence level via the advent of the Fourth Industrial Revolution.

## MINI INTERVIEW

**Cho Jae-Eok**  
CEO



### Q1. What did you achieve by participating in this project?

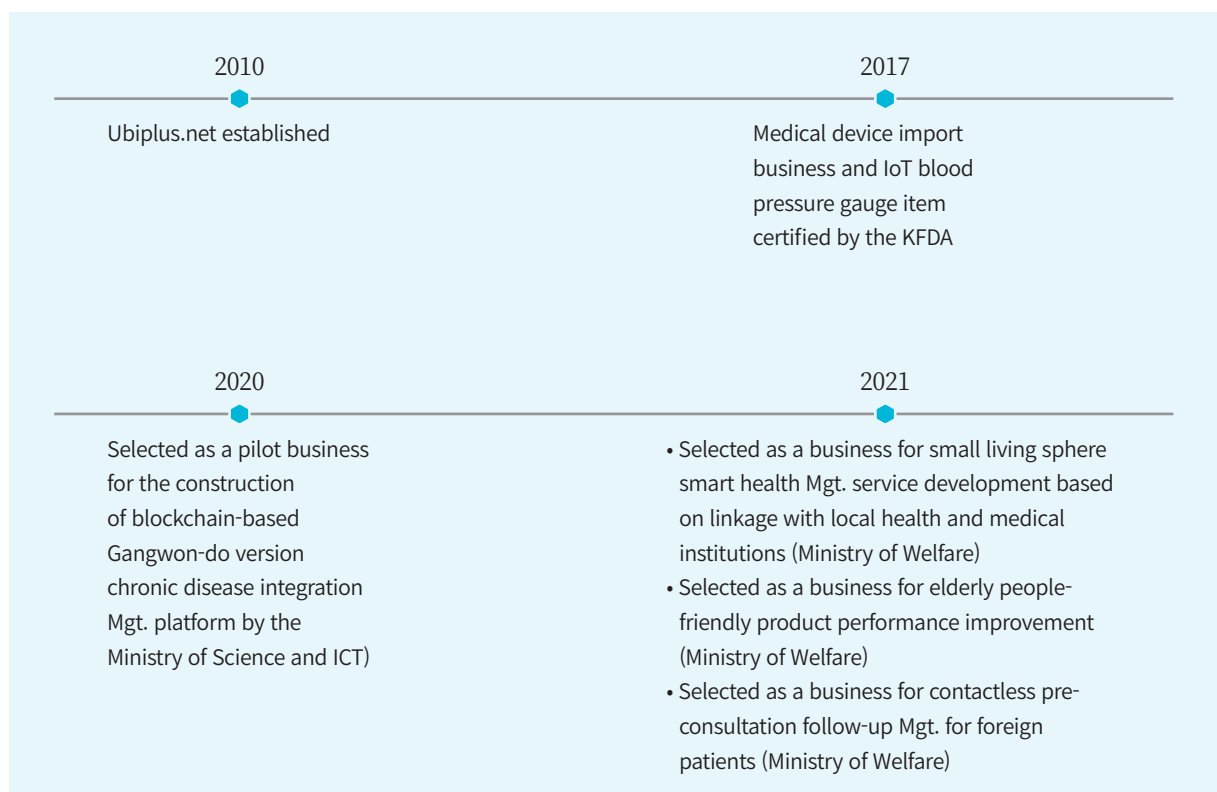
We have secured the blockchain-based AI customized smart healthcare solution product and laid the foundation for commercialization through recognized tests and service test bed on the product. We have competitiveness through which we can respond to the contactless medical service market.

### Q2. What was the key to the successful achievements?

I think we recruited technical talent suitable for our project, which has been a great help in carrying out the project. Small and medium businesses equipped with expertise/professionalism in each area can create synergy by understanding each other and focusing on the solution to social issues. We have created successful service through active support for the project from Gangwon-do and each relevant institution as well as Gangwon provincial residents' voluntary test bed participation.



## TIMELINE



Content

IoT

Network

Cloud

Big data

AI

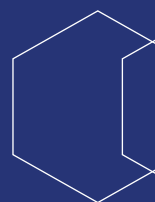
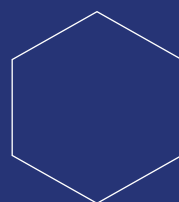
Software

Blockchain

**Miscellaneous**

## C H A P T E R

INFORMATION AND COMMUNICATION TECHNOLOGY





## Success Stories Of Outstanding Cases

### **Innospace Co., Ltd.**

Development of hybrid rocket engine-propelled small satellite launch vehicle through 3D printing technology

### **LifeSemantics Co., Ltd.**

Development of medical my data platform with ICT-convergence infrastructure, the new future of human health

### **WARP Solution Co., Ltd.**

Toward RF remote wireless charging technology standardization through ICT regulatory sandbox

# Development of Hybrid Rocket Engine-Propelled Small Satellite Launch Vehicle through 3D Printing Technology



## Innospace Co., Ltd.

### General information

Detailed project name	3D printing industry fostering infrastructure construction
Name of dedicated agency	Korea Internet & Security Agency

### Company information

CEO	Kim Su-jong
Type of business	Aircraft and spaceship manufacturing
Year of establishment	September 2017
Website	<a href="http://www.innospc.com">www.innospc.com</a>



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### Prologue

The industrial perspective of the 21st century extends to the universe beyond ground, underground, and sky. In line with this, the new space market is enormously growing globally. As each country's government-driven market expands led by the private sector, the area of private launch vehicles and small satellites are gradually diversified. .

Innospace is a company that has been drawing attention recently in the small satellite launch market with excellent performance meeting the safety and economic feasibility of small satellite launch vehicles.

Innospace, which can upgrade Korea's space industry with Korea's first 3, 5, and 15-ton 3D printing hybrid rocket engine manufacturing technology, has passion to take a leap forward, aiming at 5% global market share by 2025.



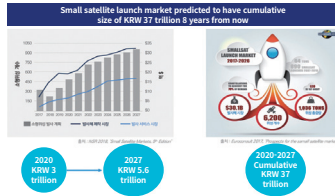
### key achievements

- Completion of cooperative system construction with Korea's leading institution for the hybrid rocket engine, oxidant electric pump.
- Development of 3-ton and 5-ton propulsion power hybrid rocket engines for the first time in Korea; completion of 15-ton engine manufacture.
- Secured the independent development capability of rocket engines through the construction of a private company's ground combustion test site.



## Hybrid Rocket to be Developed with Safety and Economic Feasibility for the Short Term

With the new space market recently becoming activated globally and the existing government-driven large satellite market paradigm shifting to private sector-driven small satellite, demand for the products of companies with price competitiveness and technology is growing explosively.



To use small satellites, businesses for satellite manufacture, operation, service, and

launch are needed. Demand for satellite launch is explosively increasing at present, but there are only about 10 businesses providing satellite launch service; hence the insufficient launch service supply.

As a major satellite launch vehicle, liquid rocket has limitations in the aspect of price competitiveness—the most important factor in the private sector-led new space market—due to difficulty in development and high R&D cost. Solid rocket has limitations in application due to the explosion risk and impossible propulsion power control. The US and Europe, developed countries in rocket engine, pay attention to the development of small satellite launch vehicle using hybrid rocket engine with many merits such as simple system compared to liquid rocket engine in the safety and economic feasibility aspects.

## Small Hidden Champion with World's No. 3 and Korea's No. 1 Technological Capabilities in the Hybrid Rocket Field

Innospace is a startup preparing to enter the world's new space market in the aerospace and defense fields through the small satellite launch vehicle, based on hybrid rocket engine technology. Since its establishment in 2017, the company has been researching the development of nanosatellite launch vehicle (loading weight: 50kg), microsatellite launch vehicle (loading weight: 150kg), and mini satellite launch vehicle (loading weight: 500kg). Innospace possesses the following technologies: high performance fuel development/manufacture, performance design and interpretation, oxidant supply system design/operation, propulsion power control, flight vehicle body design, development of small scientific rocket, and flight vehicle operation and data transmission/reception technology through over 10 times' launching experience. The company has key technologies and facilities required for small satellite launch vehicle including the construction of ground combustion test center, the first private company in Korea to do so.

By January 2021, Innospace completed the development of the 3- and 5-ton hybrid rocket engine, having completed



performance test preparation on the 15-ton engine as the main engine of the small satellite launch vehicle that the company is currently developing as of July 2021.

## Attraction of Global Satellite Launch Service by Securing the Launching Site in Each Continent

Securing launch sites is essential for satellite launch service. For this reason, Innospace is actively seeking to secure domestic and overseas launch sites along with the R&D of small satellite launch vehicles.

Since a private launch site is planned to be built in Goheung-gun, Jeollanam-do in Korea under the supervision of the Ministry of Science and ICT, the company has consulted on the site, facilities, and technical support. In view of the satellite launch service characteristics, the international market is much bigger than the domestic market, so the company is endeavoring to secure launch sites in South America, North America, and Europe additionally in order to attract global satellite entrepreneurs as customers.

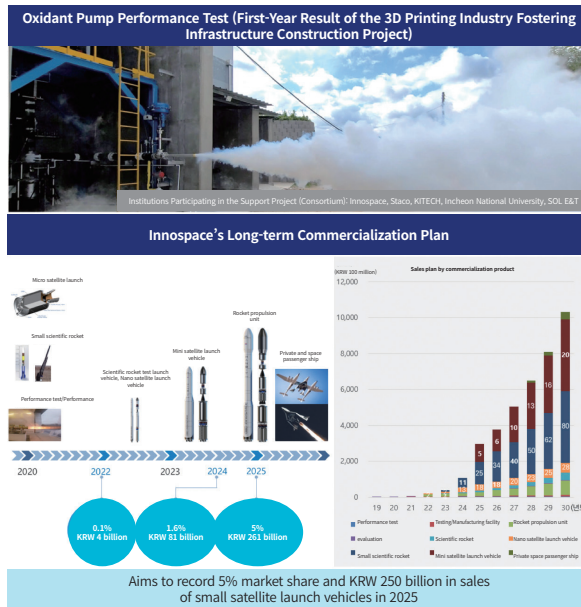
Innospace completed the test launch consultation for the Brazilian Alcântara Launch Center, which boasts of a prime location in the world in 2019, and it is discussing the launch plan by acquiring the operator's license in January 2021.

## Participation in the 3D Printing Industry Fostering for Oxidant Pump Layered Manufacturing

The 3D printing industry fostering infrastructure construction support project is carried out in a consortium type. Each participating institution's specialized area business is performed including 3D printing material properties evaluation and analysis, optimal process technology development and manufacture, productivity improvement technology construction, and weight lightening design. Innospace has accomplished technology enhancement and internalization of the 3D printing technique-applied electric motor actuation oxidant pump through technological cooperation with the Korea Institute of Machinery & Materials and various companies in Korea.

The company could complete all cycle processes such as design, manufacture, system comprehension, and test evaluation required for electric motor oxidant pump





development through funding. Based on the technology established in this process, the company achieved an advanced result in the aspect of securing global market competitiveness of the small satellite launch vehicle currently developed by Innospace.

Innospace is performing small satellite launch vehicle development by establishing a long-term commercialization plan by 2030, aiming at preempting the global small satellite launch service market. The company aims to achieve global market entry and market share expansion quickly through scale-up development of the nano, micro, and mini satellite launch vehicles. In 2025 when the three types of launch vehicles development are completed, Innospace's goal is to record 5% global market share and over KRW 250 billion in annual sales.

## MINI INTERVIEW

**Kim Su-jong**  
CEO



### Q1. What did you achieve by participating in this project?

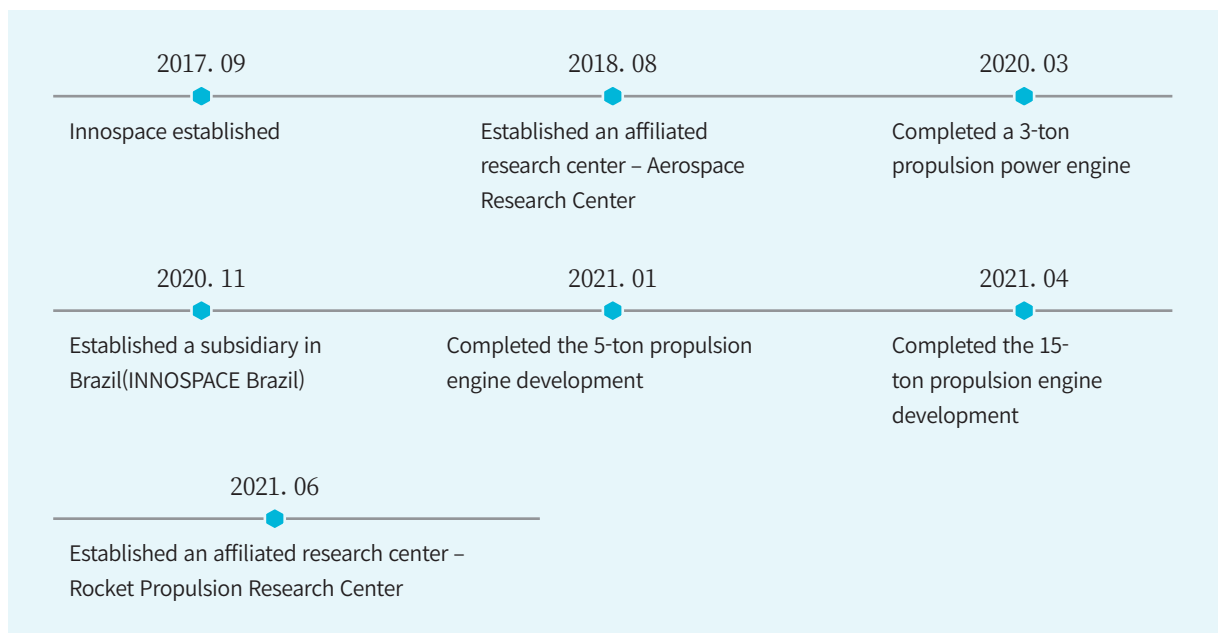
The construction of a development cooperative system is one of the main achievements. Through the cooperative system, we could manufacture a light, high-strength, and low-cost oxidant pump. We confirmed the possibility of expansion application for the components of the small satellite launch vehicles currently developed by us, and we have established a strategy of seizing technological and economic advantages compared to competitors.

### Q2. What was the key to the successful achievements?

I think research for actual product development whose commercialization is possible, rather than research for the project only, can be a key to success. To obtain technology at the level of entering the global new space market, we have established a strategy of specialize the specialized area of participating institutions from the time of proposal. In addition, we have made efforts to produce effective results in the entire process from design to performance evaluation.



## TIMELINE



# Development of medical my data platform with ICT-convergence infrastructure, the new future of human health



## LifeSemantics Co., Ltd.

### General information

Detailed project name	ICT-based Public Service Promotion (Digitalization)
Name of dedicated agency	National Information Society Agency

### Company information

CEO	Song Seung-jae
Type of business	Software Development and Supply
Year of establishment	September 2012
Website	<a href="http://www.lifeseantics.kr">www.lifeseantics.kr</a>



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### Prologue

Do we have to accept that, whenever we go to a hospital or a clinic, we need to undergo examinations each time, and high price examinations and treatment fees are charged to us, although we have just one body? If there is a standard medical information system, we need not undergo the same examinations and questions anymore through the smooth exchange of patient data between hospitals/clinics.

To solve this problem, LifeSemantics is opening a new horizon for the future medical market by developing various platforms such as life record, doctor call, and Redpill, which are patient-centered ICT convergence healthcare service.

Furthermore, LifeSemantics—which has actualized CDSS (Clinical Decision Support System), a disease prediction service based on the EMR certification standard—is presenting the new future of human health.



### key achievements

- Medical My Data Service PR with competitiveness in the patient-centered ICT-convergence healthcare service field, patient medical service improvement through smooth cooperative medical treatment between medical institutions.
- Enhancement of business model including B2C service technological improvement and Life Record, proving technological competitiveness with technological exception listing with the KOSDAQ in March 2021.

## Innovative Change to Medical Treatment Environment Using Patient Health Data

Concerns over the financial soundness of health insurance according to rapid aging continue. The current government is strongly committed to adopting digital healthcare in full swing to distribute medical resources efficiently using IT and maintain a sustainable health insurance system from a prevention viewpoint.

Use of the EMR certification platform to realize such has been focusing on medical treatment information exchange between hospitals including medical treatment request and sending back. Nowadays when the MyData era looms, however, there is a need to disseminate the service for patients to use medical treatment records and for hospitals to send and use them smoothly between them. If the robust foundation of technological development is laid, various private businesses including customized health management service, MyData service, digital medicine, and AI service are forecast to be created.

## Digital Healthcare Starting from Rich Experience

The CEO of LifeSemantics researched the process of sending bio signals to hospitals by measuring them as his master's degree theme. In the research process, he continued a doctoral degree program under the judgment that data consumption mode is important in the hospital and care institutions, which became the foundation of the company's establishment.

His personal experience of his mother's struggle against cancer has greatly influenced his business development. He saw how patients have difficulty understanding the examination results and precision examination results, and that they can just getting elementary knowledge through Internet search after they heard about a diagnosis opinion including a specific disease name. Even after a physiological opinion is issued, the seriousness of disease differs depending on the genetic trait, and there are diverse treatment methods and processes as information that the general public cannot easily understand.

One needs to understand one's own body condition, so that one can decide without regret when requested to make a decision by a hospital, which is a difficult thing for the patient or guardian.

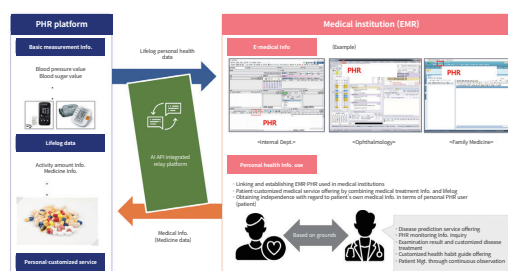
Enough information on medical service should be provided to all, and they need to understand it. To do so, LifeSemantics has developed diverse services under the assumption that the patients should obtain and understand the personal health record (PHR).

## Commercialization of Digital Health Platform Life Record for the First Time in Korea

As a digital health platform, Life Record has become the foundation enabling contactless medical treatment, digital medicine and medical devices, and medical my data service to be offered by analyzing and treating 800 million cases of high-quality medical data.

All essential functions for digital health, such as the collection, storage, analysis, use, and security of health data, are supported. Essential common technology for digital health service development and establishment is safely offered on the basis of cloud by acquiring ISO 27000 certifications (3 categories) related to personal information protection and security.

Therefore, differentiated competitiveness through which infrastructure can be provided without various third parties acquiring separate certification for personal information protection including global companies is secured.



## Everything Cutting-edge Medical Service Including Doctor Call and Redpill

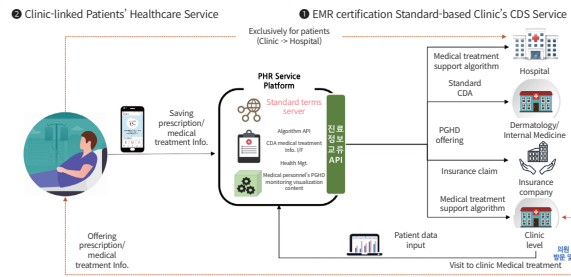
The patient data monitoring-based contactless medical treatment solution

“Doctor Call” has competitiveness as a contactless medical treatment medical device based on actual clinical practice. The service standard is set forth to meet high-level standard including the US Medical Information Protection Act. LifeSemantics provides the service reported to the KFDA and service receiving authorization and permission in Korea as the only company to offer the service, which can be a source of huge differentiation and competitiveness.

The digital treatment device “Redpill” is a software medical device with verified clinical effectiveness and efficacy. Redpill, which can realize change to a patient's body, can offer a treatment effect to anyone as if having taken medicine. The clinical practice has been completed with the breathing rehabilitation program “Redpill Breathing” and cancer prognosis program “Redpill Care” and they are carried out aiming at completing the confirmation permission (clinical practice).

With the enforcement of the Medical Device Industry Fostering and Medical Device Support Act, the digital treatment device authorization and permission guideline





was established last year; thus, the item classification plan on the software medical device including the digital treatment device was newly established. The regulation standards on digital treatment and the medical fee foundation are prepared for innovative medical technology evaluation. For the second half of 2022, the contact point of customers and sales are expected to be expanded with the commercialization of digital treatment medicine.



#### Q1. What did you achieve by participating in this project?

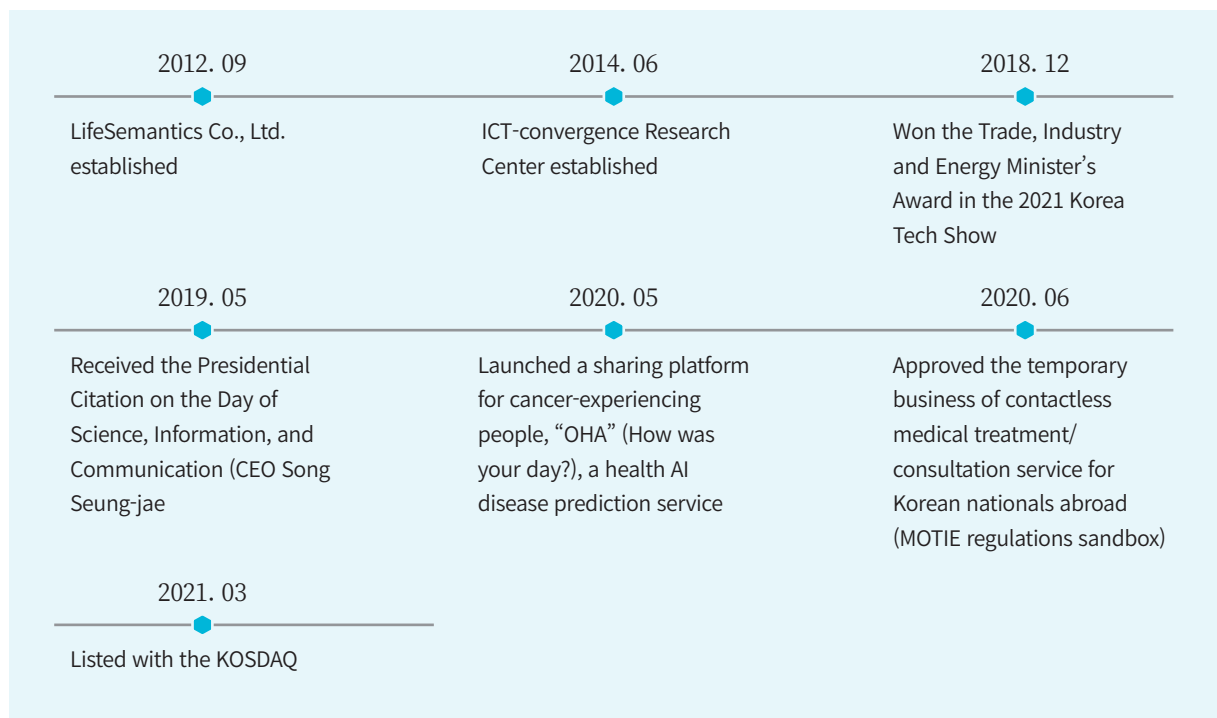
It was difficult to check hospital medical records from the patient's own system, and hospitals had difficulties in checking patients' daily health record with data. The key to the standard EMR system is that patients can link with the PHR-based service through which patients can input their health examination result and health information, and the biggest achievement of the project is developing the technology, I think.

#### Q2. What was the key to the successful achievements?

In the process of my mother's struggle against cancer, I encountered medical service problems that helped the business systematization. We have developed the technology by focusing on providing adequate information by which patients and guardians can make high-quality decisions, while the patients realize that they do not know important information related to their lives. The realization of clinic-linked patient service using the standard technology seems to be a key to the business success.

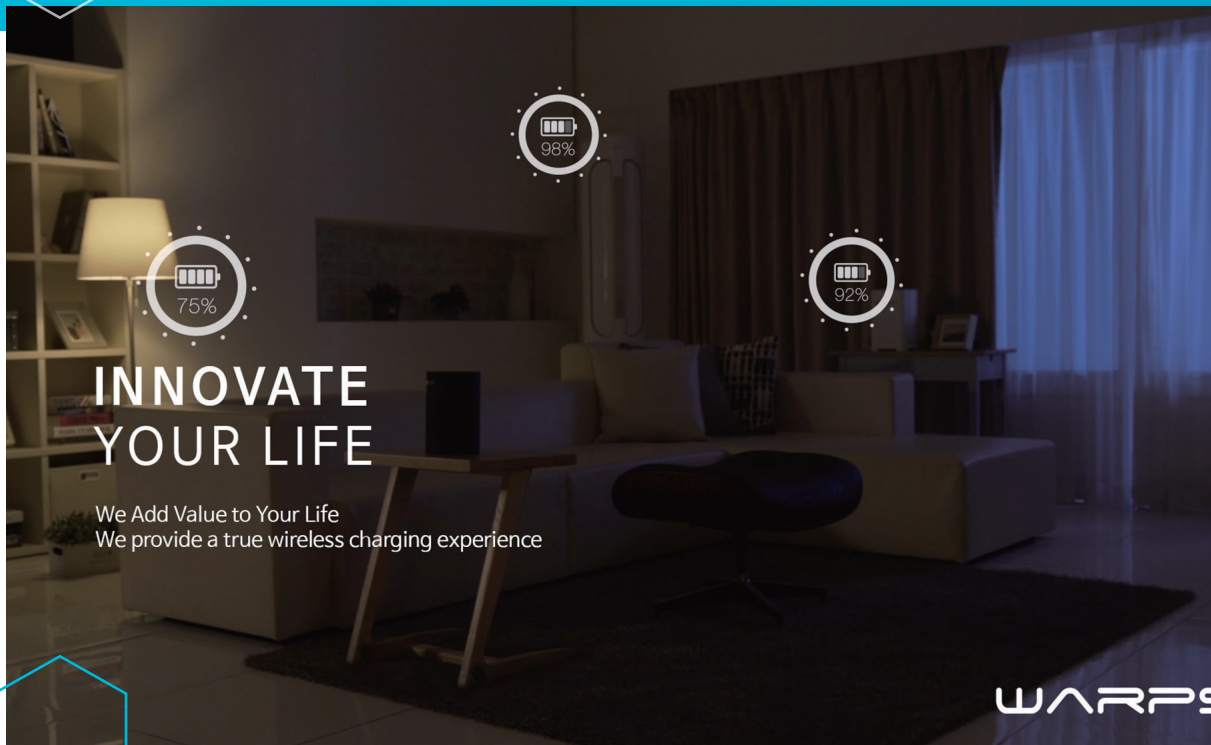


#### TIMELINE





# Toward RF Remote Wireless Charging Technology Standardization through ICT Regulations Sandbox



## WARP Solution Co., Ltd.

### General information

Detailed project name	Internet Use Environment Enhancement
Name of dedicated agency	National IT Industry Promotion Agency

### Company information

CEO	Lee Kyung-hak
Type of business	Electronic (electrical) parts manufacturing, etc.
Year of establishment	January 2016
Website	warpsolution.com



▲ Scan the QR code



### Prologue

WARP Solution possessing RF-based remote wireless charging technology is a company realizing a magic-like business that enables charging in a distance like warp in a science fiction transcending spaces by making time and space warp.

While almost all companies in the world focus on technology development suitable for the contactless environment since the COVID-19 pandemic, contactless electronic device recharging is a huge advantage.

WARP Solution is committed to taking off as a top-level company expanding to the global market by enhancing technological power in the wireless charging field.



### key achievements

- Currently preparing for commercialization including obtaining global competition edge, standardization, and certification with the RF-based remote wireless charging solution core technology.
- Currently, the company is developing its own Rx Chip technology with attraction of KRW 2.3 billion, and it is predicted to respond to year-end high-power charging.

### Wireless Charging Industry Led by Global Companies

RF wireless power transmission is future society's essential infrastructure technology based on super-connection; therefore, explosive demand is projected in the age of the Fourth Industrial Revolution. It is forecast to be the foundation to lead the innovative growth of associated industries by being converged with various applied fields such as IoT equipment, drones, smart factories, home appliances, medical devices, and vehicles.

As a shift to the digital society in the overall economy, industry, and society based on contactless technology is expected to accelerate following the COVID-19 pandemic, the electromagnetic wave-based convergence field including energy transmission is forecast to show a 39% annual average growth by 2023 (ICT R&D technology road map, 2023).

However, the launch of products is difficult even if product development is completed, because regulations and certifications are not established. Just as the US and Japan are promoting the establishment of standards, it is urgent to lead the market by quickly performing standardization work in Korea. WARP Solution is striving to achieve RF remote wireless charging technology standardization through the ICT regulations sandbox as the only firm to do so in Korea.

### The Only Company Possessing RF Power Amplifier Technology Using Frequency in Korea

The wireless charging method is classified into self-induction, magnetic resonant coupling, and RF charging type. WARP Solution is Korea's innovative company possessing the technology of manufacturing a key part of RF wireless charging using frequency, specifically RF power amplifier. As a research company established in January 2016, the company was selected as a cutting-edge technology company this year in recognition of its RF technology. Last year, too, WARP Solution was selected as a cutting-edge technology company with a smart pad mini product with which charging of several devices is possible within 1m. The multi-frequency multi-charging (MFMC) technology that can simultaneously charge multiple devices using several frequencies is the company's own technology that can quickly charge more than two times faster than competitors'. The company has price competitiveness with the RF power amplifier, a key part manufactured by the company itself. This can be a huge advantage.

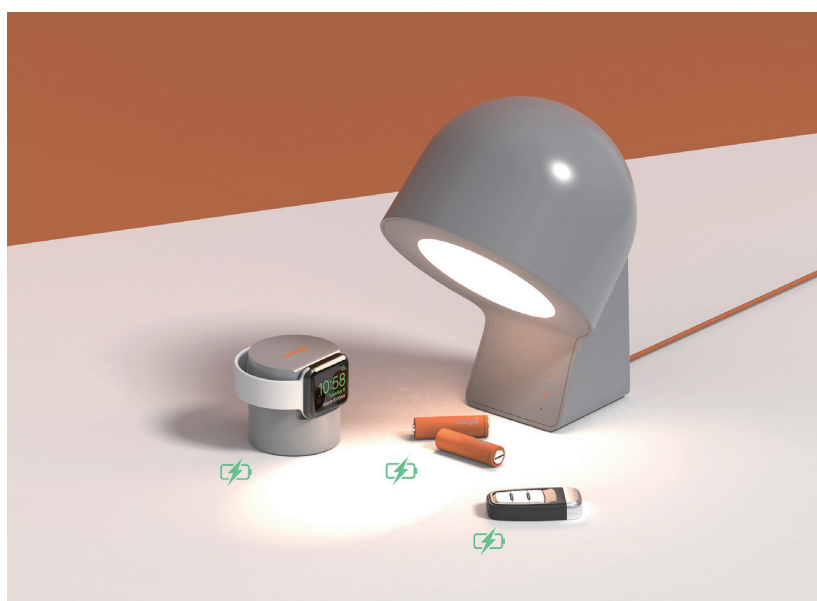
### Designated as an ICT Regulations Special Exception Test Bed Firm with Neat Quality without Confusion and Intervention Between Bandwidths

WARP Solution was designated as a test bed special

exception firm with the full support of the Korea Chamber of Commerce and Industry in the 2020 ICT Regulations sandbox. Actually, the company has successfully carried out the test bed on the wireless charging technology between bandwidths using verified frequency.

"The company aims to enable remote multi-wireless charging stand developed through the ICT regulations sandbox to be used in smart offices. The product enables one product to use two functions by installing the RF wireless charging function to the desk top stand, which is a key point.

RF wireless charging technology is a core technology that can open the perfect wireless age. Charging is possible, despite the distance between devices, as one transmitter can convey to several receivers and on-the-move charging can be performed.



### Leading Korea's Remote Wireless Charging Technology Standardization

WARP Solution is currently solving the key issue for the frequency allocation test required for RF wireless charging, receiving help and support from various relevant institutions. The company expects a result in the near future. "We wish to lead the global commercialization of the remote wireless charging technology that great inventors like Edison or Tesla could not complete, and we are committed to creating a true wireless market."

## MINI INTERVIEW

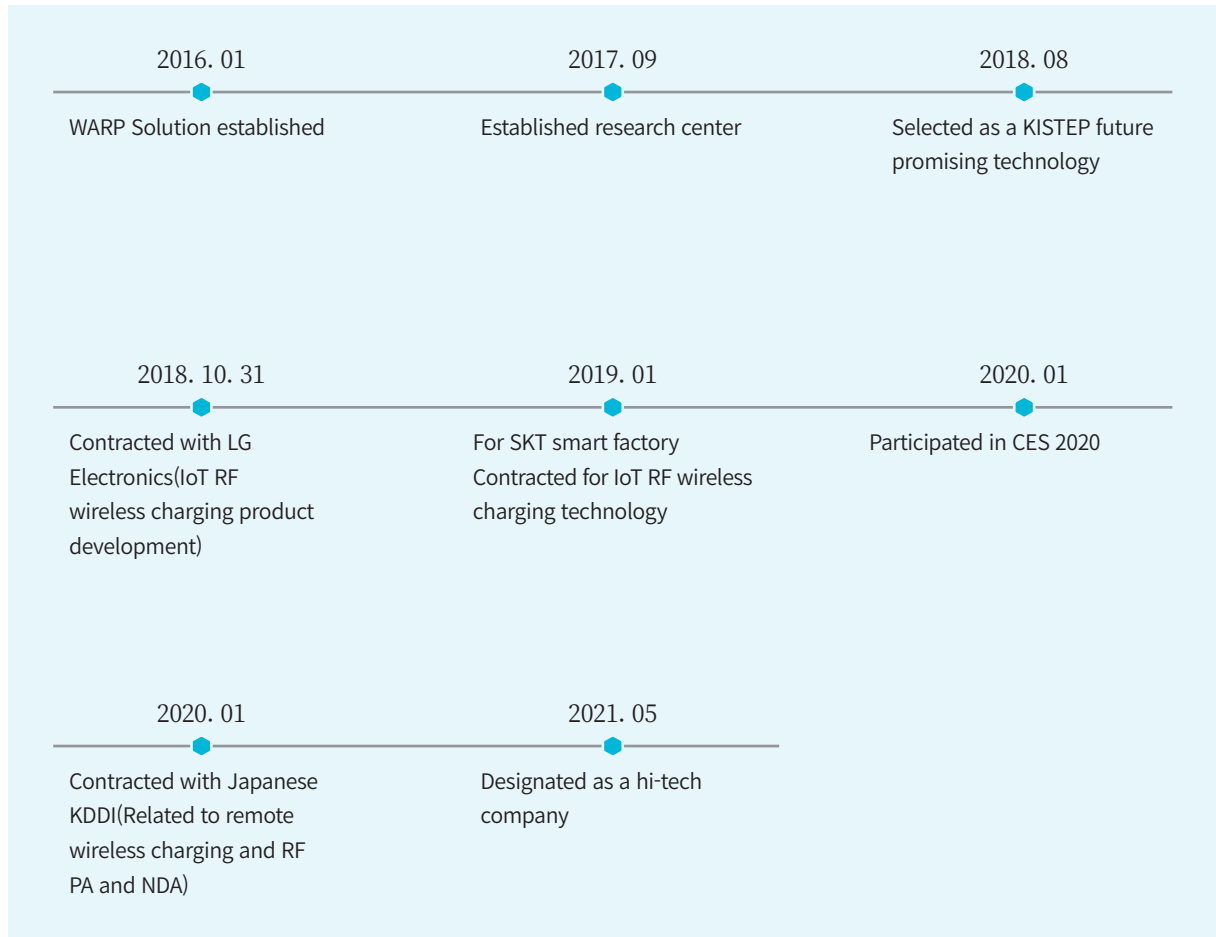
**Lee Kyung-hak**  
CEO

**Q1. What did you achieve by participating in this project?**

We could receive KRW 2.3 billion investment from domestic and foreign companies, and we are striving to develop technologies based on the invested funds. We could embody frequency allocation, which was regarded as impossible. We expect to establish a standard for remote wireless charging technology when the test bed is completed.

**Q2. What was the key to the successful achievements?**

I think the steady development of the technology, which was regarded as impossible, without giving up and continuous knocking on the door of the ICT regulations sandbox to receive the relevant institutions' cooperation are the key to success. The actualization of test bed through cooperation with large companies played a pivotal role in the selection.

**TIMELINE**

# CHAPTER



INFORMATION AND COMMUNICATION TECHNOLOGY

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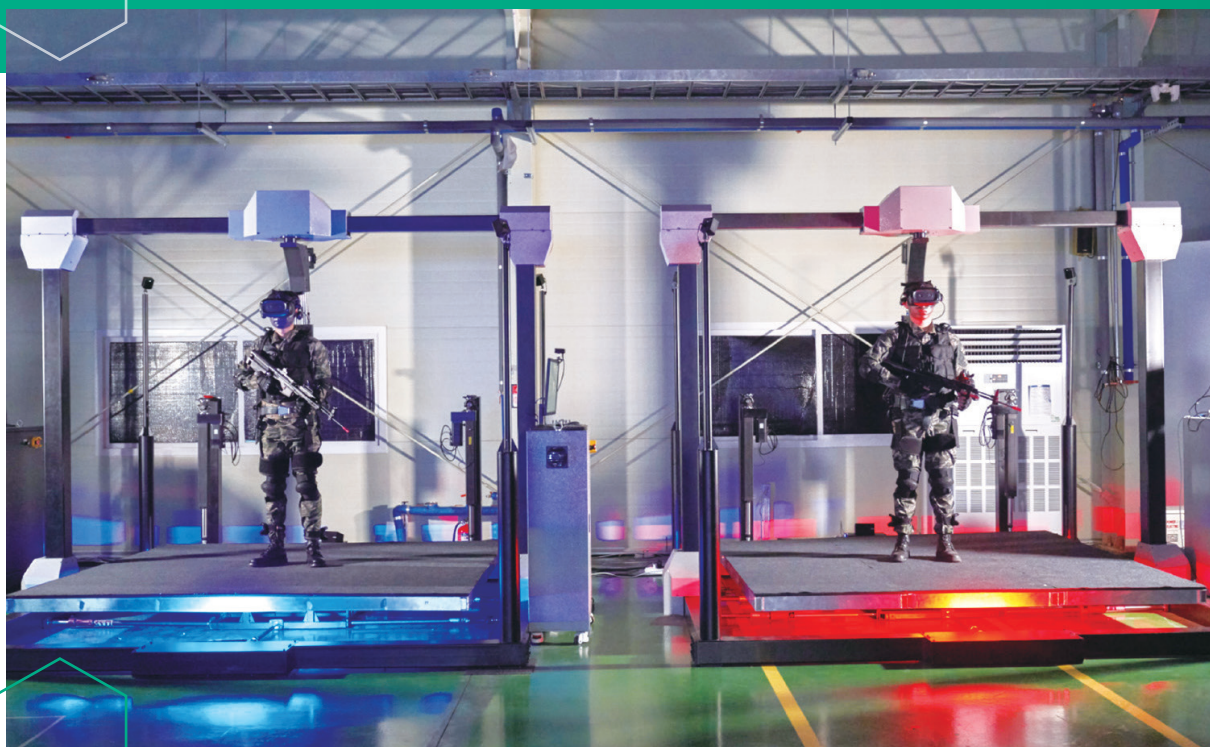


# Excellent Achievements In Global expansion

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<b>Optimus System Co. Ltd.</b>	Military training system like real training in virtual reality
<b>Illuni Co., Ltd.</b>	With the realization of AI convergence, Next Disney Makes Realistic Fairy Tales
<b>Vuno Co., Ltd.</b>	A New Healthcare Environment in the Digital New Deal Era Created by Big Data and AI
<b>Moneybrain Ltd.</b>	‘AI Human’ Service that Benefits Human Lives
<b>HEYUM ICT Co., Ltd.</b>	In the contactless age, the future industry vision is presented
<b>SeaVantage Co., Ltd.</b>	A Company Specializing in Maritime Transportation Information Solutions Navigating the Vast Digital Sea
<b>Select Star Co., Ltd.</b>	Faster, More Accurate! SelectStar Data Handling Procedures
<b>Tanker Co. Ltd.</b>	Pay Attention! How Real Estate Data Affects Our Lives
<b>InfoBoss Co., Ltd</b>	Key to the Digital New Deal Big data companies, Coexist with nature and communicate with the future
<b>Douzone Bizon Co., Ltd.</b>	This Is the Era of the Data Economy. We Are Responsible for the Growth and Competitiveness of SMEs
<b>SNP LAB</b>	Creating a World Where Personal Data Becomes Personal Assets
<b>U&amp;E Co., Ltd.</b>	As a Digital Twin Anytime, Anywhere Safe World
<b>KI Co., Ltd.</b>	Directly Connected to People’s Safety! The Power of Digital New Deal Protecting Underground Culvert
<b>Enitt Co., Ltd.</b>	Disaster safety and energy efficiency at the forefront of SOC digitalization

# Military training system like real training in virtual reality



## Optimus System Co., Ltd.

### General information

Detailed project name	VR, AR Contents Industry Fostering
Name of dedicated agency	National IT Industry Promotion Agency

### Company information

CEO	Kim Nam-hyeok
Type of business	Manufacturing, service
Year of establishment	April 2009
Website	<a href="http://www.optimus-military.com">http://www.optimus-military.com</a> <a href="http://www.optimus-sys.com">http://www.optimus-sys.com</a>



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### Prologue

The Digital New Deal is the Korean New Deal's core axis alongside the Green New Deal, and it heralds a large-scale digital shift in each field in our society. The military field is no exception.

The digital education/training environment will be shaped including changing the existing tactical and combat training and equipment familiarization training to virtual training based on virtual reality (VR) and augmented reality (AR) technologies. Military maintenance and logistics operations are planned to be digitalized as well.

Our military has had difficulties in performing efficient training due to social and economic burdens according to military training and political interests of the surrounding countries. Therefore, military training using virtual reality is emerging as an efficient alternative.



### key achievements

- Received a KRW 4.8 billion order for mobilization reserve (delivery result of the developed product) and won a KRW 1.8 billion order for small unit scientific combat system development.
- Completed two agreements with Malaysia; participated in the DX KOREA 2020 and British AWE Military Training System Adoption Review.

### Next- Generation Military Training System with the Korea Military Academy Under Development

Established in 2009, Optimus System is an engineering VR system developer consisting of manpower in the digital manufacturing field. The company has been operating the specialized simulation engineering business in the manufacturing industry with Samsung Electronics, Hyundai Rotem, Ssangyong Motor, and POSCO. Since 2015, the company has been carrying out diverse R&D combining virtual reality technology.

“In the military training field, technologies abroad are much more developed, and foreign products’ market dominance is strong.”

Optimus System has been carrying out research to develop an efficient, economical military training system alongside the Korea Military Academy since 2017. The company is equipped with high-quality VR development technology. The Korea Military Academy has military training and other specialized military technologies. Based on the two institutions’ characteristics, a next-generation simulation system consisting of Korean technology is being developed. Yongin-based Optimus System has a factory in Daegu. For entry into foreign markets in full swing from 2021, the company founded the Optimus System Global Business Office; it is expanding its entry into Southeast Asia, Middle East, and Europe starting from Malaysia and the Philippines.

### New-concept VR Training System Using Space Synchronization Technology

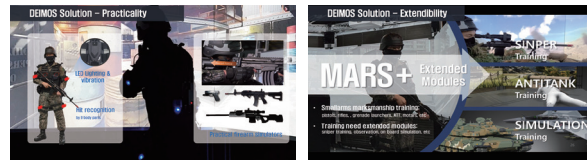
The company has been developing diverse VR control technologies including high-altitude descending location control & tension control, VR space synchronization, motion control simulation system, and VR visualization technologies. The current core business is the military training simulation sector.

Optimus System’s military training system consists of various training modules. Many trainees can receive various types of military training through mutually linked type. The company is currently carrying out training scope expansion through arms system expansion.

What requires attention in this system is the space synchronization technology.

Space synchronization technology is a technology that physically matches virtual space and real space. This is Optimus System’s unique technology of making experience in virtual reality be more realistic.

The existing screen shooting system uses a screen aiming recognition method using invisible laser. However, the space synchronization technology applies a real-time shooting method through real-time tracking, so actual battle shooting training such as real-time mutual battle shooting training, remote simultaneous training, and precision shooting



recognition—which are limited to the existing technology—is possible.

Through the support project, the company could develop a peculiar, efficient military training simulator equipped with global market competitiveness based on space synchronization technology. This was developed based on Korean technology. After completion of the R&D, it was applied to the military project, and entry into foreign markets is underway.

### Securing Global Competitiveness in the Rapidly Growing Digital Military Training Market!

Agonizing over an effective military training method is not just an issue of Korea. Demand for VR-based military training that can replace the existing training method is growing due to economic burden and concerns over conflicts with the surrounding countries.

Military training using VR can prevent mortality accidents during the training and also block various social disputes in advance. The burden of defense cost increase or military strength consumption problems caused by military training can also be avoided.

Optimus System plans to concentrate on the development of an efficient, cutting-edge training system based on its own technology. The company also intends to develop global markets actively by introducing a differentiated scientific training system abroad.

The company’s military training system in the global market receives enthusiastic response. However, continuous leading status can be maintained only if persistent technology development is carried out. This is because competition in the field is so fierce.

We could achieve good results through this support project. We hope the government’s interest and support can be maintained to ensure competitiveness in the global market. Despite its small size, Optimus System boasts of high-level product quality and technology capabilities in the global market. If the company accurately identifies what the target market needs and promotes its business consistently, good results are believed to be achieved.

The organizational members’ efforts, which have made Optimus System what it is today with positive attitude and passion, are expected to receive bigger outcomes.



## MINI INTERVIEW

**Kim Nam-hyeok**  
CEO

**Q1. What did you achieve by participating in this project?**

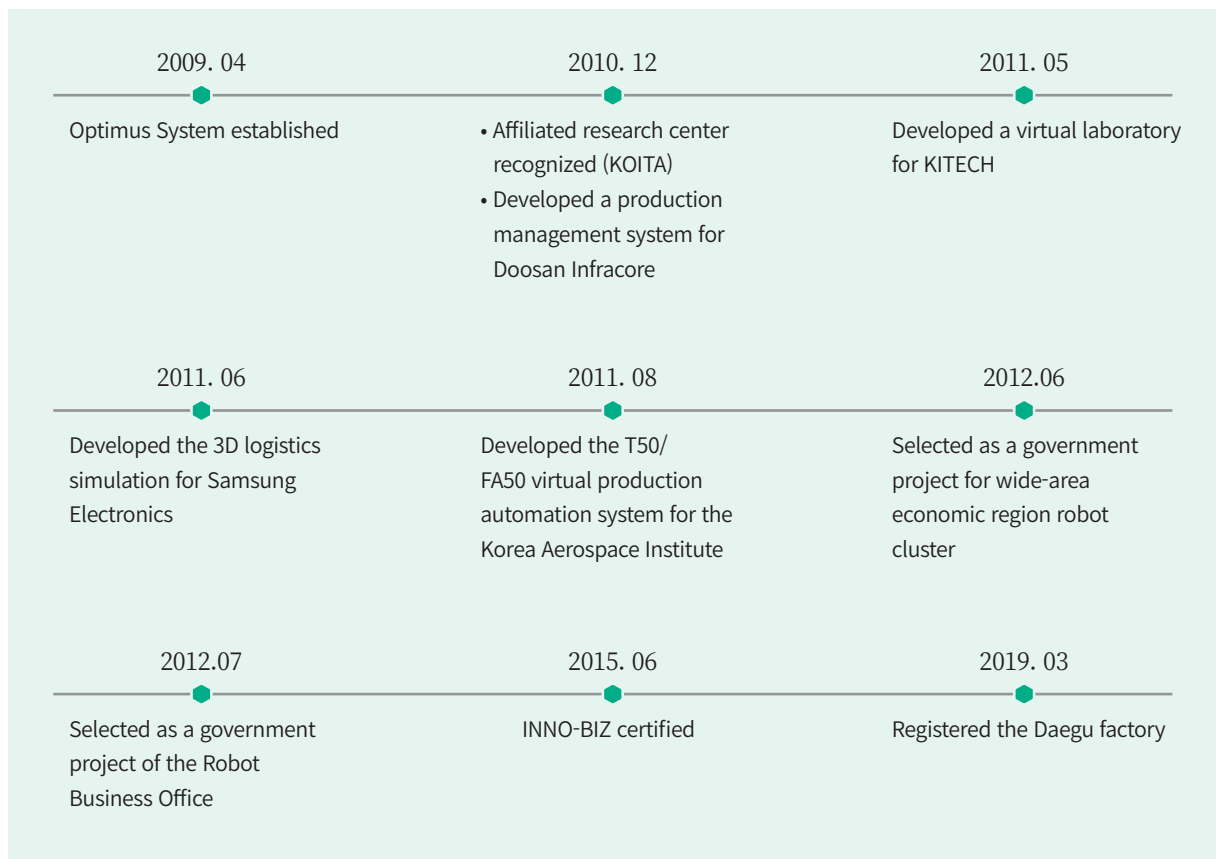
The existing R&D outcome could provide only a small unit training environment. However, we have obtained the base technology through which training can be expanded to training for battalion or larger, while applying observation training through this support project. We could also expand product sales in overseas markets.

**Q2. What was the key to the successful achievements?**

Development of products equipped with performance suitable for user needs, namely the needs of our military and active product PR. The government's adequate support for all this can be the key to success.



## TIMELINE





# With the realization of AI convergence, Next Disney Makes Realistic Fairy Tales



## Illuni Co., Ltd.

### General information

Detailed project name	VR · AR Contents Industry Fostering
Name of dedicated agency	National IT Industry Promotion Agency

### Company information

CEO	Park Byung-hwa
Type of business	System software development and supply
Year of establishment	March 2018
Website	<a href="http://www.illuni.com">www.illuni.com</a>



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### Prologue

In our current generation, it is impossible to talk about anything other than “digital.” As artificial intelligence (AI) convergence takes place in traditional industries, convergence projects are being pursued to apply technology to various fields. One of them is “realistic content,” which is being supported with a total of 70 XR (extended reality) developments in the public and industrial sectors.

The digitalization of the contents of children’s book has been in progress for a long time, and in particular, many streaming businesses have been created through the use of animation. In Korea, large corporations are occupying the market. In other words, there is a closed market in which animation contents can be enjoyed only by using services such as IPTV and tablets of large companies.

Children’s books are active content by nature. However, advances in technology are making children’s books into passive video content. Illuni intends to create a platform service that transforms children’s book content into more active, that is, interactive, storytelling content.



### key achievements

- Illuni confirmed its market potential by achieving 554% of Wadiz crowdfunding, 356 MAU (monthly active users) immediately after service launch, and 500 downloads during its promotion week.
- In addition, by completing patent applications in the United States and Japan, Illuni has laid the stepping stones for entering the global market.

## We Will Make You the Leading Character of the Children's Tale

The Digital New Deal project that the government is promoting includes “the spread of AI convergence across all industries.” It is planning to build a smart museum and exhibition hall based on information and communication technology by producing realistic content in various fields such as culture, sports, and tourism.

Illuni is a company that develops realistic content with AI technology-based R&D and convergence reality. By using “photorealistic face character creation technology” to create realistic-looking characters for users (children), Illuni provides a realistic and interactive storytelling content platform and the “Story Self” service through which the whole family becomes the main characters in the children's story. Unlike general animation videos, various interactive elements are applied so that users can be more immersed in the story. Children grow up with stories. Illuni aims to enable children to experience reading storybooks in the most modern way. This is the philosophy of the Story Self service: to tell the story in a new way so that the child can participate in the story, immerse themselves in it, and play with it. In addition, Illuni creates content by self-producing the “Interactive and Realistic Story Content Creation GUI Program” so that anyone can easily create interactive and realistic story content. Through this, Illuni plans to expand their service into a platform that provides high-quality children's story content from around the world and transform it into interactive and realistic animations. This is consistent with the goal of the Digital New Deal: to realize the strengthening of the D·N·A (data, network, and AI) ecosystem through the expansion of AI use and convergence.

## Growth and Development Through Beta Service Implementation

“This is the third year since the establishment of the Illuni. During this time, the company faced many operational difficulties. First, I thought I just had to make a product. But while actually running the business, I realized that this was not it at all. We had to overcome many problems that we hadn't anticipated in the beginning.”

There were so many things that the company had to do as a representative startup, such as recruiting talent, managing human resources, marketing, and budgeting. There are still many issues to be solved, but Illuni is sure that they will be able to solve them one step at a time.

One of the important tasks in the digital transformation business infrastructure of the Digital New Deal is to newly develop and expand VR/AR contents. Participation in the VR/AR content idea commercialization support project was another foundation stone for the growth of Illuni based on AI technology. It was another opportunity for growth. Illuni had



to develop an actual product based on original technology and prototype contents developed through in-house R&D, but it helped them to commercialize it in the process.

First, they were able to develop commercial service products based on the photorealistic face character creation technology and on the interactive and realistic content creation GUI program that the company had built. After product development, various marketing channels were created to reach real customers, by opening a branding webpage and an Instagram account, and by collaborating with several authors. During marketing, the beta service was introduced to the market.

However, the beta product initially developed by Illuni had many issues. One was that the company overlooked problems that could arise in the market because they started their business by first looking at the technology rather than the market. However, through the support project, they were able to fix the UI and UX (user interface and user experience) design problems one by one before the official release and also upgrade the animation of the content.

The direction of the content was also set more clearly. Luck was on their side as they were able to develop content as quickly while experiencing problems from a marketability point of view.

## Using New Experiences as Assets for the Future

This support project consisted of three stages. The first stage was mentoring, the second stage was the production of prototypes, and the third stage was the commercialization stage. Illuni's Story Self service was selected through all three stages.

“The final third stage was only four months. I had to use all the project funds in only four months, but because I had no prior experience, it was very difficult to effectively appropriate funds for a large project in such a short period of time.”

Fortunately, the team was able to effectively create a strategy and allocate all the project funds. Through this project, they



gained the experience of managing a large project budget with the team members. Now, Illuni has a Story Self beta product through the support project. Through product discussions of even greater depth, Illuni will be able to develop greatly in the future.

### To the World and to the Future

In the future, Illuni will evolve from interactive and realistic storytelling content centered on AI-based face characters, in which users (children) and the whole family are the main characters, to develop into a story content platform that expresses varied interactive elements, realistic elements, and educational elements.

For this, Illuni plans to build a cooperative network with various external writers and publishing companies to produce content within the Story Self service one by one. Currently, it is created in cooperation with various other organizations.

Today's children, called the digital generation, will grow up with a different experience and culture than previous generations. Illuni hopes that the Story Self service will be used as interactive and realistic storybook content that best suits children as they grow up.

"There is a saying that children's stories are the beginning of children's education. We want to provide opportunities for children to learn all that they can through children's stories in a more enjoyable and realistic way through our Story Self service. Another goal is to enter the global market. We will do our best to deliver value through our Story Self service to more customers and achieve greater growth."

### MINI INTERVIEW

**Park Byung-hwa**  
CEO



#### Q1. What did you achieve by participating in this project?

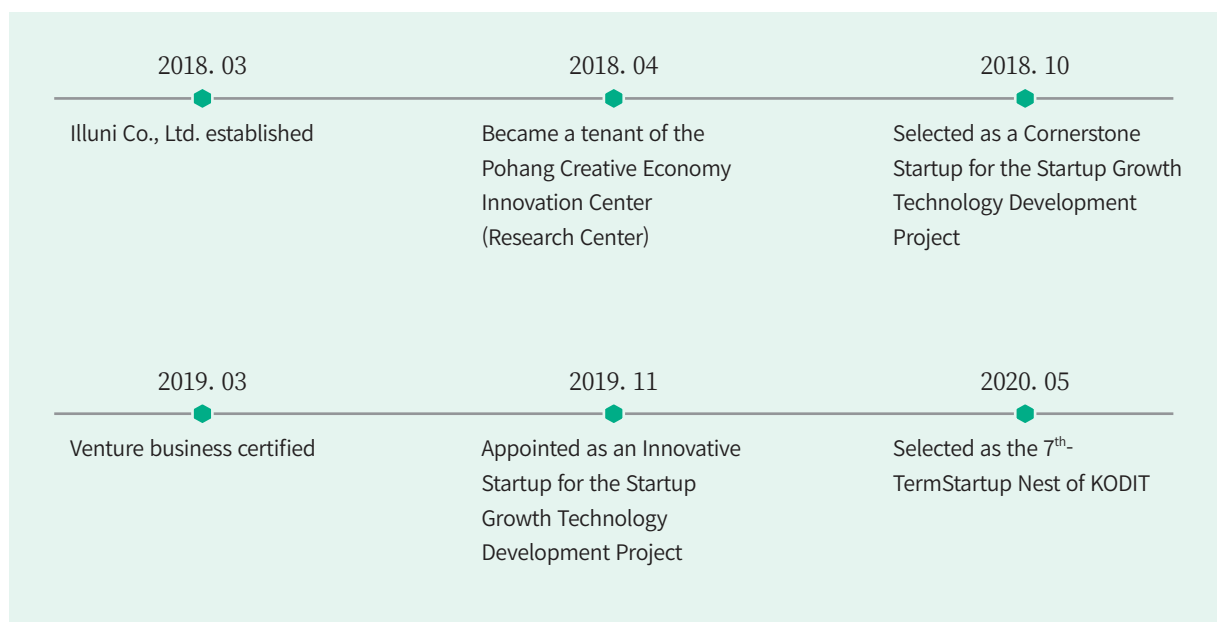
We were able to launch the Story Self service as a beta. It was a meaningful project that allowed us to commercialize products that we had researched and developed in-house over a long time. During the beta release, I also conducted marketing on Kids Note, and it was an opportunity to feel the importance of marketing. In addition, we were able to establish a product development system within the company by actually making and commercializing products beyond mere R&D.

#### Q2. What was the key to the successful achievements?

I think our success was because we had great and wonderful team members. I was able to get financial support through the support project, but I couldn't do everything just with the funds. Great team members in each field have accomplished things that I could not have done before. The business budget was also effectively utilized with the team members.



### TIMELINE



# A New Healthcare Environment in the Digital New Deal Era Created by Big Data and AI



## Vuno Co., Ltd.

### General information

Detailed project name	AI Convergence New Infectious Disease Response System
Name of dedicated agency	National IT Industry Promotion Agency

### Company information

CEO	Kim Hyeon-jun
Type of business	Medical AI Solutions
Year of establishment	December 2014
Website	<a href="http://www.vuno.co">www.vuno.co</a>



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### Prologue

COVID-19, which has put the world at risk, is accelerating the digital transformation of hospitals. This is because the establishment of a digital-based smart medical infrastructure is essential to protect patients and medical staff from the risk of infectious diseases and to provide accurate medical services.

Although there are trials and errors due to the sudden change, hospitals are gradually coping with the current situation and starting the transition to a “smart hospital” in preparation for the post-Covid era. At the heart of this change is medical artificial intelligence (AI).

The performance of medical AI depends on the level of medical data it collects. The competitiveness of medical AI is determined by how efficiently it collects and utilizes quality medical data.



### key achievements

- Developed the first AI-based diagnosis and prognosis solutions for patients with new infectious diseases in Korea.
- Implemented a prototype that can provide information on the type, location, and volume of lung disease, and identify the severity score.

## A Company Specializing in the Development of Deep Learning Technology-Based Medical Artificial Intelligence

Founded in December 2014, Vuno, Inc. is a company that develops various medical AI solutions, including Korea's first AI medical device. Currently, it has a "medical AI solution pipeline" that analyzes various medical data to encompass diagnosis, treatment, and prognosis prediction, and among them, eight medical AI solutions have been successfully commercialized.

"Even before its foundation, I thought that AI technology could have a big impact in the future, and I chose the medical sector while thinking about the business area. This is because we decided that AI would be the most competitive because we expect an increase in medical data due to the increase in the number of medical tests, a shortage of medical staff, and an increase in demand for medical services due to an aging population."

The biggest difference that separates Vuno, Inc. from the rest is that it has its own technology and product pipeline that analyzes various types of data generated in a medical environment, such as medical images, pathology, biosignals, and medical voices, and develops them as solutions, unlike most medical AI solution companies that focus on products in a specific data area.

This means that almost all kinds of data generated during diagnosis and patient treatment in medical institutions can be comprehensively analyzed. In the future, it is expected that these solutions will work synergistically to help support more sophisticated clinical decisions in more medical fields.

## A New Medical Era Created by AI

Through this support project, Vuno's unique medical AI development technology led to the success of developing a "diagnosis and prognosis solution for new infectious disease patients based on AI" for the first time in Korea. Using this solution, the patient's CT image data can be utilized to detect lung disease-related lesions and to predict the severity of COVID-19 based on the type, volume, and location.

"Once the early diagnosis and prognosis of COVID-19 patients become possible, we can predict severe cases and provide prompt and appropriate treatment. It will be of great help in allocating medical resources efficiently, as well as reducing patient mortality and minimizing the spread of infectious diseases."

The criteria for performance indicators related to the development of infectious disease prognosis prediction solutions were sensitivity and specificity.

Sensitivity is an indicator of the accuracy of predicting critical patients in a solution, and a model with high sensitivity can diagnose really critical patients as much as possible.

Specificity is an indicator of the accuracy of non-severe patient prediction, and a model with high specificity can increase the efficiency of healthcare resources by diagnosing patients severity. The CT image-based prognostic prediction solution developed by Vuno Inc. achieved performance of 74% sensitivity and 93% specificity.

The solution will be introduced to actual clinical sites to verify its performance, and after efficiency evaluation, it will be commercialized so that it can be used in various medical institutions. In the future, it plans to expand its commercialization by diversifying business models such as EMR, PACS, and medical equipment in cooperation with the domestic and foreign medical institutions and companies with existing medical market such as medical devices and medical software.

## Expansion into the Global Market with the Goal of Becoming the World's No.1

This is not the only achievement by Vuno, Inc. through this support project. In 2020, Vuno achieved 1.26 billion won in sales, 30 million won in exports, and 4.8 billion won in domestic investment, while large-scale and high-quality clinical data for COVID-19 were secured through 20 medical institutions nationwide. There was also an opportunity to hire new workforce personnel for research and development. "Vuno has been making strides in research by publishing more than 60 papers in world-renowned academic society and other journals. The newly employed workforce will greatly help Vuno's mission to lead in the global medical AI market."

Starting with the KOSDAQ listing in February 2021, Vuno is actively promoting overseas expansion by strengthening product marketing activities and expanding additional licenses and approvals for subsequent products and overseas licenses, such as those of the U.S.'s FDA. As Korea's first AI medical device has the potential to successfully settle into the market, Vuno is also confident to stand out in the global medical device market as a global medical AI leader. We applaud Vuno, Inc.'s vision of contributing to the healthy life of mankind by preventing disease, detecting diseases early, and helping people recover quickly through optimal treatment.



## MINI INTERVIEW

**Kim Hyeon-jun**

CEO



**Q1. What did you achieve by participating in this project?**

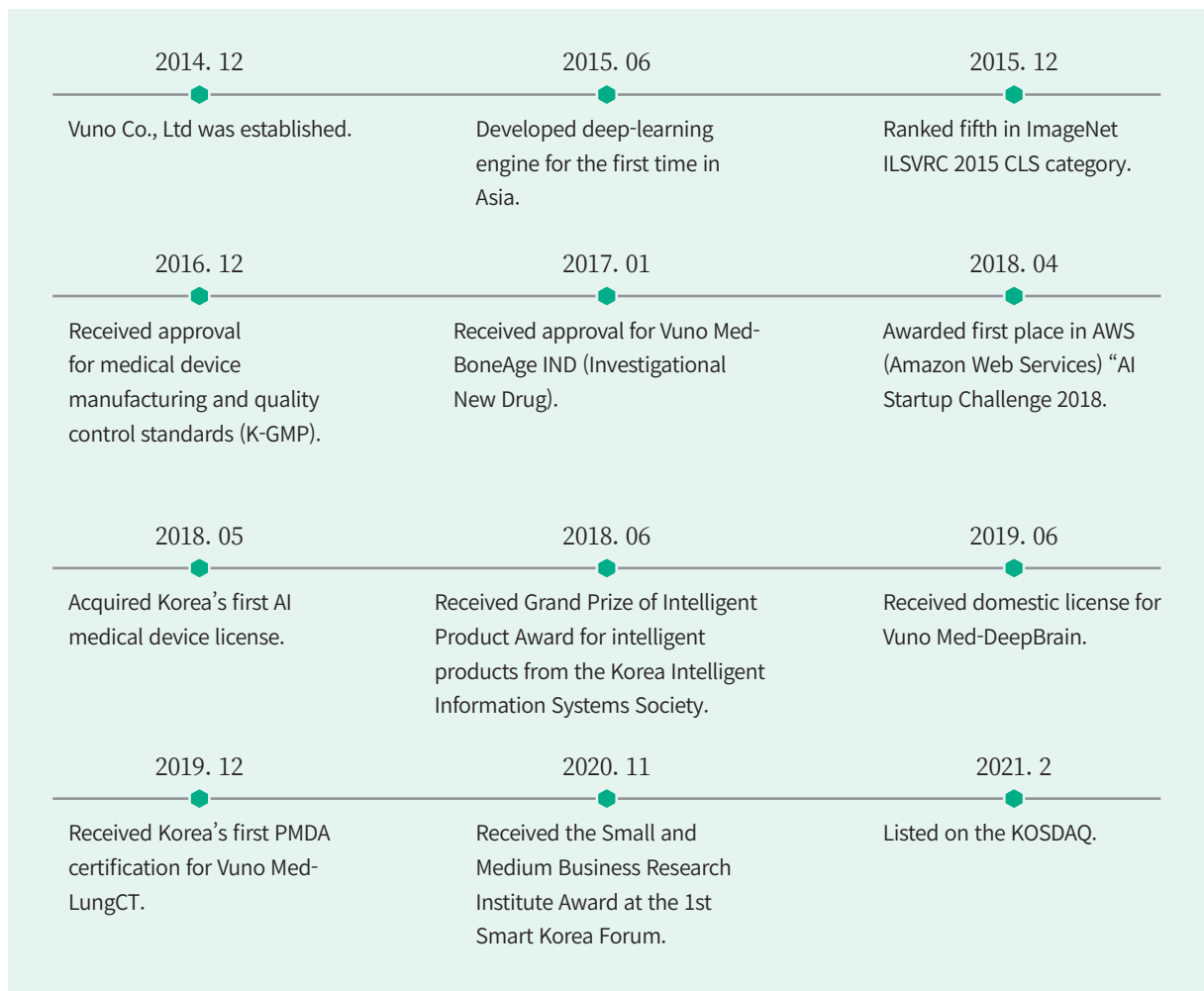
Vuno is the first in Korea to develop an AI-based diagnosis and prognosis solution for patients with new infectious diseases, which helps medical staff quickly and accurately determine respiratory diseases, including COVID-19. In the future, we expect to improve the efficiency of medical resources and increase the ability to respond to infectious diseases early.

**Q2. What was the key to the successful achievements?**

We are able to develop AI models that can be operationalized in various environments. During the development process, based on Vuno-Net, we were able to establish the direction for the development of technology to detect lung disease and predict the severity of COVID-19, and minimize the time required for optimization.



## TIMELINE



# ‘AI Human’ Service that Benefits Human Lives



## Moneybrain Ltd.

### General information

Detailed project name	Creating an intelligent information industry infrastructure
Name of dedicated agency	National IT Industry Promotion Agency

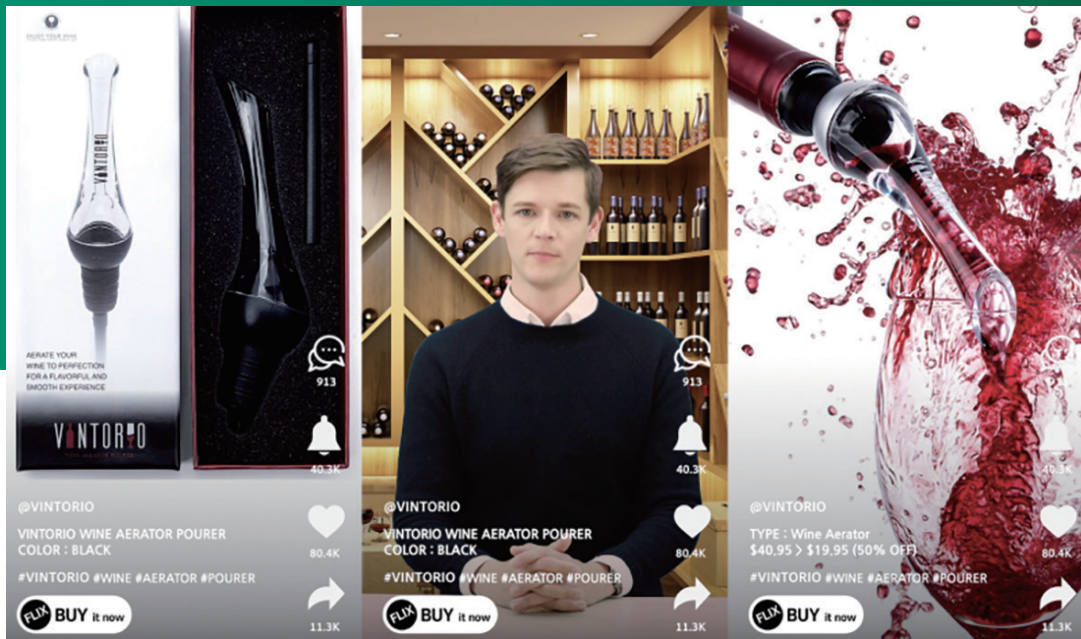
### Company information

CEO	Jang Se-young
Type of business	Database and online information provider
Year of establishment	June 2016
Website	<a href="http://www.moneybrain.ai">www.moneybrain.ai</a>



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### Prologue

Now, “AI” (artificial intelligence) has become a general household term. AI is widely applied throughout our industry to the extent that it is difficult to find an sector where AI technology is not being developed.

From smart factories, smart construction, smart farms, robots, medical, sports, and various public services to an AI military, AI-based technological innovation is taking place.

As non-face-to-face culture and digital transformation are rapidly progressing due to the COVID-19 crisis, the world is fiercely competing for technology to turn the crisis into an opportunity. In such a situation, an interactive AI service that can take over the role of humans without the necessity of being in physical contact is emerging as a key technology that will lead the post-COVID-19 era.



### key achievements

- AI Human multimedia video production and the development of an AI Human advertising system with a bar-code electronic price indicator system that can be used in retail stores.
- Multilingual content planning and user-customized multimedia information using the AI Human service.
- The world’s first implementation and commercialization of a system in which AI reads and provides customized product information to distribution stores.



### The Essential Element of the D.N.A Ecosystem “AI”

MoneyBrain is a company that specializes in deep learning AI video synthesis. As a domestic IT startup that is recognized for its world-class technology, it is the only company in Korea that possesses both deep learning-based video synthesis and voice synthesis source technology.

Based on this, it is possible to create “AI Human” technology, which appears similar to a real human, and create video that looks like a real person talking naturally by only inputting text. AI Human is applied to AI news anchors and AI announcers of major media outlets such as MBN and LG Hello Vision. It has also succeeded in commercializing an interactive AI service that can provide natural consultation and guidance as realistic as if talking with a real human. Currently, the company has supplied AI kiosk counselors to Kookmin Bank’s AI experience zone, and this year MoneyBrain are preparing a service for introducing AI bankers to the financial sector. In addition, it is expanding its business area to several fields such as AI tutors, AI lawyers, AI shopping, AI signage, AI video consultation, AI concierges, and AI show hosts. Although various industries around the world are focusing on developing AI-based technologies, MoneyBrain is confident that it has the world’s best technology in the AI services field. Only MoneyBrain and iFLYTEK in China have succeeded in developing both voice synthesis and image synthesis technology on their own, and have succeeded in commercializing an interactive AI service based on it. In the case of iFLYTEK, overseas business is impossible, so MoneyBrain is the only company that can commercialize globally. As technology competition is fierce, MoneyBrain will continue to research and develop unique technologies to quickly dominate the overseas market and pioneer a stable market.

### The Secret to Rapid Growth in the Fierce Battle for Talent

It is not an exaggeration to say that the success of AI development depends on securing excellent human resources. The same can be said of other areas, but in the AI field, it is literally a “human resources war.” In recent years, almost all companies are moving toward digital transformation, and it is obvious that AI talent is highly sought after. Therefore, startup companies have difficulty in finding talented manpower.

In order to secure and retain excellent human resources, MoneyBrain guarantees comprehensive research conditions for research personnel, and provides performance-based salary negotiations (three months) and stock options (six month units). MoneyBrain is striving to operate and expand various welfare systems so that they can create a work environment that allows its employees to focus on other tasks and to fully recharge between work times. Through the success of this support project, more people have

started to recognize MoneyBrain, which has provided new opportunities to gain an upper hand in the fierce battle for talent.

The purpose of the AI Voucher Support project, which started in 2020, is to promote the use and spread of AI by issuing vouchers to SMEs and venture companies that need to apply for AI solutions. MoneyBrain has participated in this support project to help various social fields with its own high-level AI technology and has achieved excellent results. Currently, For the first time, MoneyBrain is set to achieve in the second quarter sales equivalent to the annual sales achieved last year, and is expected to rapidly grow further.

### Dreaming of AI Technology in Daily Life

In a new challenge, excitement and danger coexist. MoneyBrain has also faced an unexpected crisis as it challenged a new field. Distribution stores worldwide are undergoing rapid changes in line with the rapid expansion and the trend of digital transformation of online markets, including Amazon and Rakuten. However, there was no case of applying AI technology to offline retail stores.

In a situation where technology leadership is needed due to intensifying distribution competition among domestic companies as well as countries, MoneyBrain has developed the world’s first advertising service providing system that introduces AI to information displays. Since there were no existing cases to refer to, the entire team had the difficult task of putting their heads together to optimize the service and find a solution, however, as a result, they gained more. Recently, the virtual influencer market has been growing remarkably. A virtual model created by the American company “Brud” has about 3 million Instagram followers and generates 13 billion won in sales a year. According to an overseas research company’s announcement, the global market based on virtual people is expected to reach 16 trillion won within the next two to three years. The size of the mixed reality (MR) market, which combines virtual reality (VR) and augmented reality (AR), is expected to reach 11 trillion won, and the interactive AI market is expected to reach 15 trillion won.

In other words, in the not-too-distant future, AI humans are expected to play many roles in various industries and daily life on behalf of humans. AI announcers are already delivering news at broadcasting stations, and in the future, AI bankers will perform clerks’ duties, such as loan counseling and account opening, and AI tutors will give lectures on behalf of teachers.

The ultimate goal of MoneyBrain is to grow into a company that leads in the everyday use of artificial intelligence technology. It is MoneyBrain’s unchanging desire to become a company that benefits people’s lives by sharing platforms and devices with MoneyBrain’s technology in every corner of people’s lives.

## MINI INTERVIEW

**Jang Se-young**  
CEO



**Q1. What did you achieve by participating in this project?**

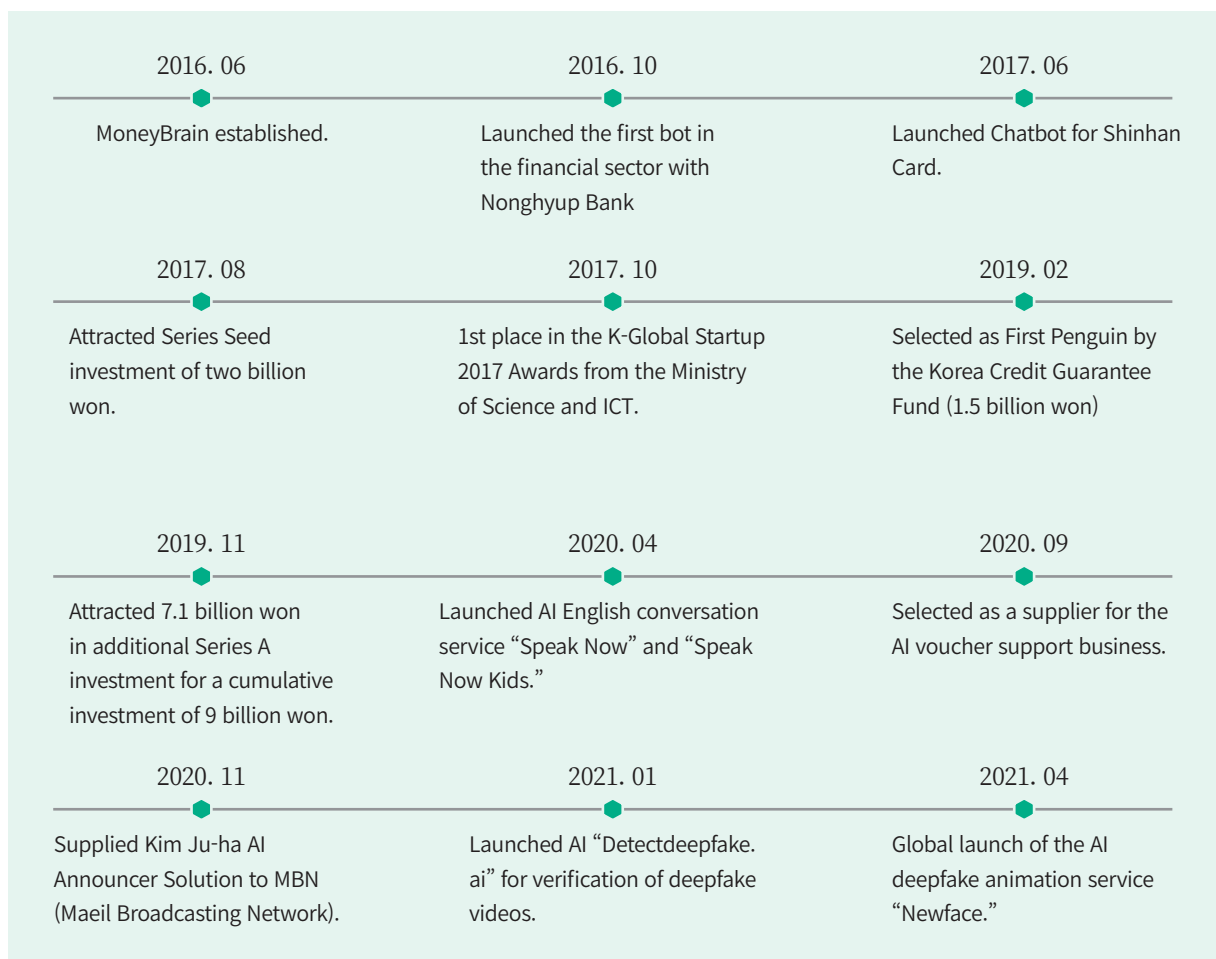
First, we have gained the possibility of dominating the global distribution market. Second, the media report on the production of the world's first electronic price indicator equipped with artificial humans has strengthened the promotion of the AI business. Third, we have achieved economic results such as revitalizing offline stores by creating new services amid the economic contraction caused by COVID-19.

**Q2. What was the key to the successful achievements?**

I think it is due to MoneyBrain's excellent technology and the staff who supported it. MoneyBrain's image synthesis technology is an advanced artificial intelligence technology that appears as natural as real people speak. Through continuous research and development by the deep learning team, we have advanced technology and have been able to implement it to the actual commercialization stage.



## TIMELINE



# In the Contactless Age, the Future Industry Vision is Presented



## HEYUM ICT Co., Ltd.

### General information

Detailed project name	Cloud Computing Industry Fostering
Name of dedicated agency	National Information Society Agency (NIA)

### Company information

CEO	Woo Seok-gyu
Type of business	Applied software development and supply
Year of establishment	January 2018
Website	<a href="http://www.hyict.kr">www.hyict.kr</a>



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### Prologue

The global diffusion of the contactless age due to COVID-19 has accelerated the digital shift throughout society. Korea is no exception.

The digital new deal policy for the digital innovation of all industries includes not only social infrastructure digitalization such as transportation, water resources, city, and logistics but also contactless industry fostering to cope with the post-COVID-19 era.

A plan to support the capabilities and infrastructure required for response to the contactless system or service targeting small and medium businesses and micro business owners by constructing contactless infrastructure and to create future added value and jobs is deemed reflected.



### key achievements

- Signed a LiveEdu service supply contract with Mega Study.
- Signed a contract to supply LiveEdu with Indonesia's Asia Cyber University, entered into a contract to supply LiveEdu with Chinese BL.E
- Sales of product through KT cloud market, construction of videoconference system for the Chungbuk Office of Education. KT Acquired patent for knowledge trading platform system through real-time conversation-type image remote technology.

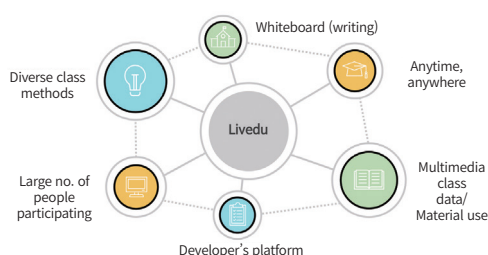


## Developer of Contactless Platform, a Key to Digital New Deal

As a contactless platform developer, Heyum ICT has three patents, a trademark right, and various certifications related to the contactless business. Major service includes “LiveEdu,” a stable video class platform despite the large number of people participating, and RDC (Real-time Digital Counselor),” a 1:1 education and counseling platform.

LiveEdu is a two-way real-time online education platform. Diverse teaching-learning support functions are provided for teachers and students to participate actively in classes through mutual communication online. A stable online class environment is shaped with powerful image compression technology and network saving technology. Although up to more than 200 people are simultaneously connected, online class can be stably carried out, and HD-quality online class is possible in the low network environment. Students’ learning performance can be checked with the e-test function, and the relevant matters can also be managed in the learning management system (LMS). RDC (Real-time Digital Counselor) is a counseling service wherein customer needs are accurately discussed by sharing a customer’s Web browser with the counselor without installing anything on the customer’s device. RDC can be immediately applied to the existing Web page without classifying the platform, and counseling document sharing and signature can be carried out simultaneously, which can be an advantage. The two platforms are mutually complementary. If a user selects a platform depending on his/her needs, more effective education and counseling are possible in the contactless environment.

### [Conceptual diagram of 5G PON]



## Pioneering a New Market with Extraordinary Perspective

The market that LiveEdu tried first was the Southeast Asian market. Educational gap between cities and provincial areas is huge in Southeast Asia. To overcome this, each Southeast Asian government tries to shift to online education, but the network environment is poor; thus, they suffer from difficulties.

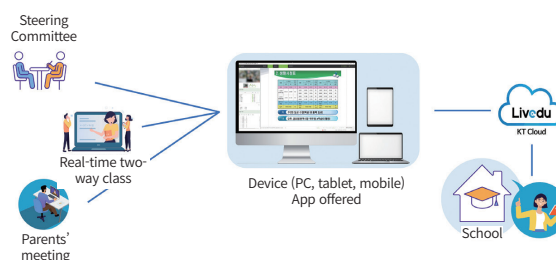
Heyum ICT signed a contract to supply the LiveEdu platform

to Asia Cyber University in Indonesia with sufficiently advanced technological capabilities to hold HD-quality real-time online class in the poor network environment. The company plans to expand the Southeast Asian market including Cambodia and the Philippines. Difficulties in the operation of Heyum ICT started with COVID-19. Due to the invigoration of the rapid contactless education market and the free policy of Zoom and MS, the company inevitably suffered from difficulties. Still, it could not be defeated by such difficulties.

Our motto is “positive thinking, positive behavior.” We endeavor to solve problems on our own, always thinking about that we can do.

Heyum ICT started to enter the public education and company training markets with the differentiated features of LiveEdu for large-scale participation by the people and stable network management. Through the public sector cloud flagship business, the shift to cloud-based service has helped the company’s operation a lot.

### [System Block Diagram and Remote Presentation for Parents]



## Cloud-based Shift, a New Start

Since COVID-19, the government has diversely supported the contactless industry. The public sector cloud flagship project is one of such supports, and Heyum ICT seized the opportunity.

“As contactless online education expanded to various fields due to COVID-19, stable service offering became difficult due to the rapid increase of service users. If it shifts to cloud service, users can stably use the service, and firms can efficiently manage and cut costs.”

The public sector cloud flagship project carried out by Heyum ICT is a project supporting the shift of an already developed product to cloud-based service. Plenty of help could be obtained through this project, because it was time to switch the existing service to a cloud-based service. One project was the pilot LiveEdu project. Since LiveEdu is a platform for real-time two-way online class, many people participated, so the company had to check the image output status and network traffic load for the online class environment test. However, it was not easy to collect many



people for the test.

In such situation, the LiveEdu pilot business could be performed in the public education market along with a communications provider. As teachers and students held real-time two-way class at school, the problems found in the process could be solved.

Based on the success experience, the company plans to provide stable online class-possible LiveEdu by focusing on the public sector and also offer the service to private academies providing online education as well as the corporate market including corporate training consulting firms.

### MINI INTERVIEW

**Woo Seok-gyu**  
CEO



#### Q1. What did you achieve by participating in this project?

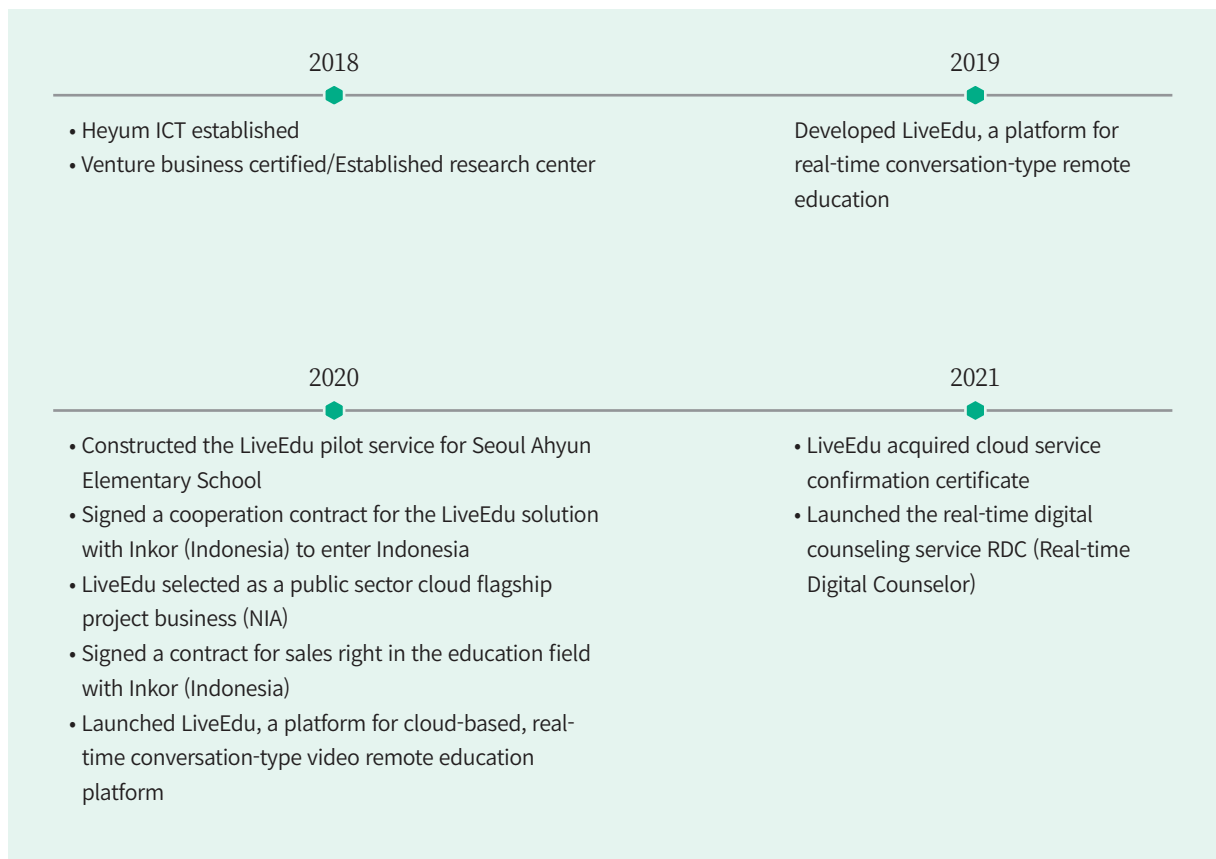
We can actively manage the necessary servers depending on the number of users due to the shift of LiveEdu to cloud-based service. Through this, we can offer users stable online education service, construct servers for service operations, and cut management costs.

#### Q2. What was the key to the successful achievements?

Thanks to the setting of Southeast Asia—whose network environment is poor—as the target market of LiveEdu, we could also provide the service stably in Korea where the network environment is outstanding. We could provide more convenient service by analyzing and improving matters/things to improve as received through the pilot service.



### TIMELINE



# A Company Specializing in Maritime Transportation Information Solutions Navigating the Vast Digital Sea



## SeaVantage Co., Ltd.

### General information

Detailed project name	Fostering the cloud computing industry
Name of dedicated agency	National IT Industry Promotion Agency

### Company information

CEO	Song Hyeong-jin
Type of business	Electronic data exchange service
Year of establishment	May 2018
Website	<a href="http://www.seavantage.com">www.seavantage.com</a>



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### Prologue

The “D.N.A. (Data, Network, AI) Ecosystem Reinforcement” project targets all physical spaces in Korea. Currently, state-of-the-arts digital services that combine big data, 5G, and AI continue to develop regardless of being on land, at sea, or in the air.

Self-driving technology, which used to be applied to automobiles, has already developed into an “autonomous flight” system that travels alone in the air. Our seas and ports have also already begun preparations to welcome the era of “autonomous navigation” ships and smart ports.

From fisheries and aquaculture, to maritime transport and port management, and to environmental protection, SeaVantage is working with the nation to make our seas smarter.



### key achievements

- Development of SaaS-based API service that predicts vessel movement and arrival time at destination port using a variety of maritime data.
- Achieved 272 million won in sales and attracted 2 million won in investment through SaaS services such as KT Market Place registration (Bluepoint Partners).

## **Providing Real-Time and AI-based Maritime Transportation Information**

SeaVantage is a maritime transportation information solution development company established in May 2018. Based on big data and machine learning, it provides services such as real-time ship tracking, optimal route finding, and arrival time prediction. The technology development team in charge of solution development and the planning team in charge of business planning, marketing, and sales strive to provide innovative solutions for the shipping industry.

“Recently, due to COVID-19, the uncertainty at sea is increasing. In this situation, I think it is very important to provide reliable arrival time forecasts based on real-time information.”

SeaVantage’s main technologies include “SVMP,” “PTA,” and “MTN.” First, the SVMP (SeaVantage Maritime Data Platform) is an SaaS (software as a service), a shipping information platform built using satellite AIS (artificial intelligence systems), marine weather, ship and port information, logistics, ship schedules, and route network data. It is an API (application programming interface) service that identifies the movement of shipping vessels around the world and predicts the estimated time of arrival at the destination port. PTA (Predicted Time of Arrival) is an AI-based vessel arrival time prediction service that considers factors that affect vessel operation and arrival time. The estimated time of arrival (ETA) widely used at present in the shipping industry is calculated based on the past experience of the shipping company and simple calculations, causing a big difference in the predicted and actual arrival times of the actual vessel or cargo.

The PTA provided by the SVMP provides more accurate vessel arrival time information by reflecting on the weather, the season, and port congestion that affect actual vessel operation and arrival time.

The MTN (Maritime Traffic Network) is a service that analyzes the location and movement of ships accumulated from data over the past 10 years and shows details of ports by ship type and size. Although arrival port may be the same, routes used may differ depending on the size and type of vessel.

The MTN compensates for the shortcomings of the existing ship location data, which does not accurately show the route of a particular vessel to its destination.

## **Strengthening the DNA Ecosystem to be Realized in Korean Seas**

When global issues occur, such as the global financial crisis in 2009, the Hanjin Shipping crisis in 2016, and COVID-19, extreme changes in cargo volume occur (such as in a ship’s operating schedules and deviations from routes), and the scope has been increasing in recent years.

“We were preparing to move our existing data platform and services to the cloud and launch a SaaS-based web service for global service expansion. It was at that time that I found out about this support project, and thankfully we have been selected.”

Through this support project, SeaVantage is expected to be of great value to the shipping and logistics sector of the Korean New Deal policy by making great achievements in the development and commercialization of SaaS, which is expected to provide optimization in AI-based planning of maritime routes.

SeaVantage also mentioned that this support project has led to many positive things for the company. First, SeaVantage was able to hire a large number of new human resources, such as cloud experts, who were needed at the time of service expansion.

However, most importantly, SeaVantage was able to experiment with variables caused by many uncertainties while transitioning from the existing system to the cloud, and as a result, SeaVantage has been able to find a suitable model.

## **Lighting the Lighthouse of the Digital New Deal for the Conventional Shipping Industry**

In the shipping industry, exact ship or cargo arrival time is unknown, resulting in various costs and resources being wasted. In addition, the lack of real-time information and visibility are likely to cause disruptions in inland transportation and production schedules that take place after the maritime shipping is completed.

SeaVantage provides an innovative real-time prediction information platform to shipping industry affiliates, who have had to deal with high costs and resource waste due to information asymmetry in the past, by analyzing big data related to shipping.

“Of course, we have faced many difficulties while running this business. This is because shipping and logistics is one of the oldest industries, and the old know-how and ways of doing business have long existed, so there is a high resistance to accepting new trends. However, we are expanding the market by providing visibility and forecasting information based on real-time information directly to our customers through our own service.”

SeaVantage plans to establish an end-to-end logistics visibility service that covers not only maritime transportation but the entire logistics supply chain by 2025 and plans to provide logistics-related analytics services from 2026.



## MINI INTERVIEW

**Song Hyeong-jin**  
CEO

**Q1. What did you achieve by participating in this project?**

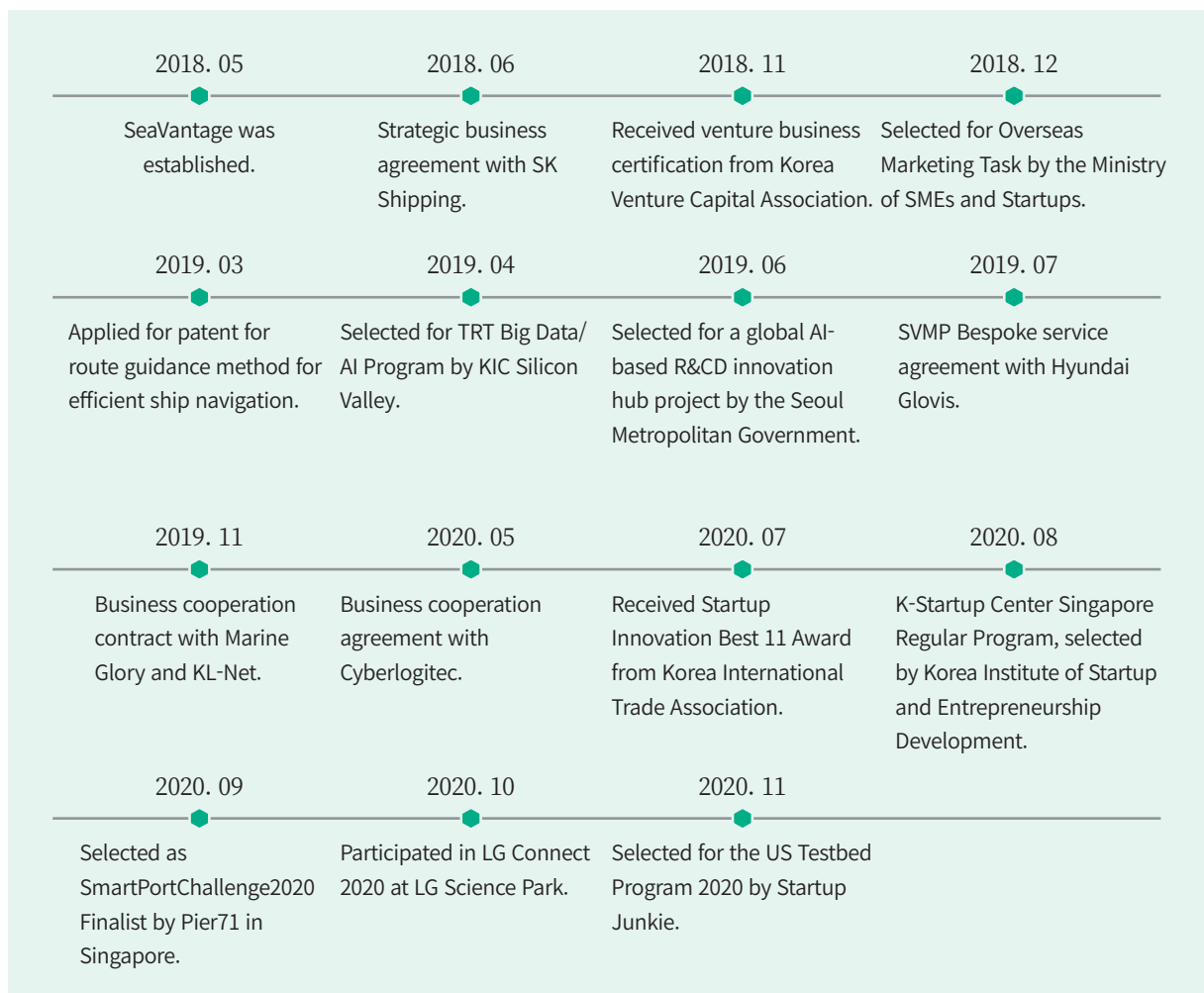
Our biggest achievements above all are the completed SVMP cloud transition and the acquisition of cloud service certification. As the era of autonomous ships is approaching, a high-quality route network is essential. I think the SeaVantage platform is able to do that.

**Q2. What was the key to the successful achievements?**

The SVMP, a SeaVantage platform, is a private data platform specializing in maritime logistics, and is optimized for data sharing, combining with external data, and providing customized information. I think it was very effective to have such a specialized platform in the shipping and logistics sector.



## TIMELINE





# Faster, More Accurate! SelectStar Data Handling Procedures



Clockwise from top left: Haseung Jeon, Howook Shin, Seyeeb Kim and Munhwi Jeon, cofounders of SelectStar.

## Select Star Co., Ltd.

### General information

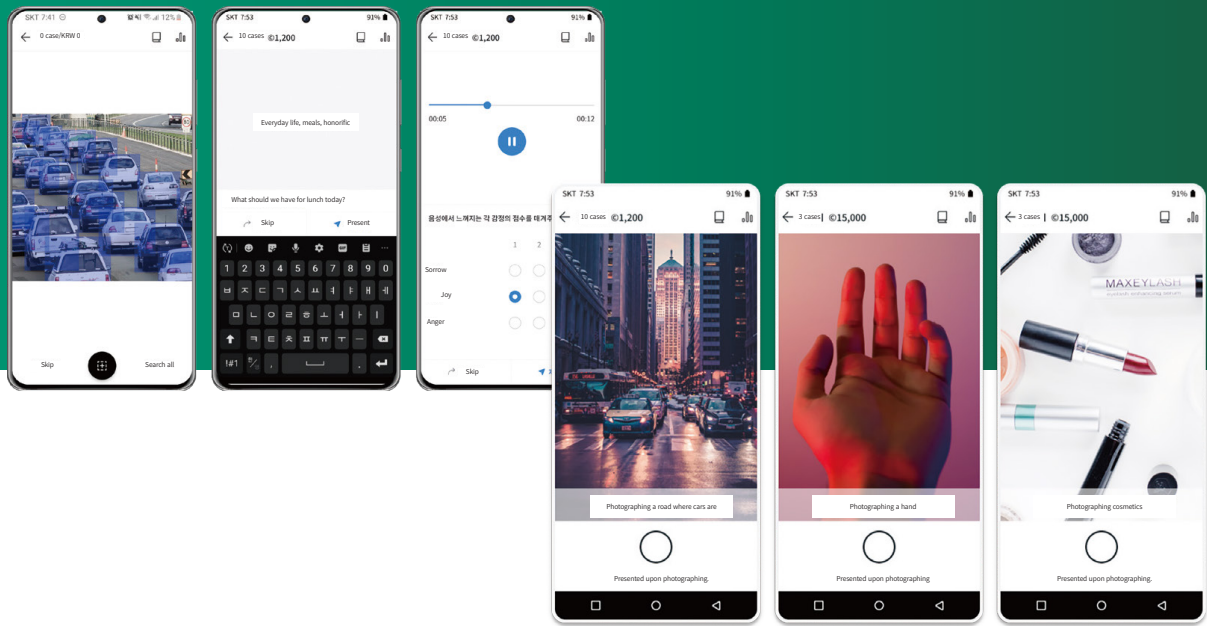
Detailed project name	DB industry development (informatization)
Name of dedicated agency	Korea Data Industry Promotion Agency

### Company information

CEO	Kim Se-yeop, Shin Ho-wook
Type of business	Data Services
Year of establishment	November 2018
Website	selectstar.ai



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### Prologue

The basic ingredient for the Digital New Deal (D.N.A.) is “data.” Therefore, the highest priority of the government’s D.N.A. ecosystem enhancement project is the construction and utilization of data.

With countless data accumulating from multiple fields every day, what we need is a technology that can select “quality data” as quickly and accurately as possible.

But the situation is not as originally expected. The reality is that 80% of AI development time is devoted to data preprocessing. Is there any way to solve this chronic problem in the AI market? SelectStar Inc. provides the answer.



### key achievements

- Official launch of the crowdsourcing-based AI data platform “Cashmission” and attaining 90,000 workers.
- Achieved 6.1 billion won in sales and 41 new employees in 2020, attracted 4 billion won in SeriesA investment, and applied for 15 patents.

## For More Perfect AI Development: Data Production Method

In order to develop AI, it is necessary to collect a large amount of raw data and accurately label it as training data. SelectStar solves the problem of collecting and processing AI learning data that requires a lot of resources through its “Cashmission” AI data platform, through the division of labor using crowdsourcing.

“In the past, data collection and processing for AI research and development were mostly done manually. It took a lot of time and money, and there were cases where there was not enough time for AI research and development.”

In response, SelectStar considered ways to replace manual data work so that AI companies and researchers could focus on AI development. At this time, the idea came about of connecting the needs of consumers to earn money through a reward app released on the market, and this led to the birth of Cashmission.

A crowdsourcing platform for AI training data. When AI companies that need data request a data production project from SelectStar, the data project is uploaded to SelectStar’s crowdsourcing reward service, Cashmission. Cashmission users perform tasks without time or space restrictions and receive rewards. SelectStar performs all inspections through its mathematical algorithms developed in-house and selected inspectors, and in the end, delivers final high-quality data to its customers.

There are four main differences in the service provided by SelectStar. First, high accessibility allows many people to participate in data production without space-time constraints. Second, a mathematical algorithm-based crowd data transfer test enables fast and accurate data verification. Third, efficient data labeling is possible through deep learning-based semi-automatic labeling technology. Fourth, data diversity is guaranteed through deep learning-based analogous data collection and filtering technology.

## Which came first, the chicken or the egg?

While conducting the platform business, SelectStar ran into one difficulty. A customer needs a crowd to produce data in order to entrust them with a request, and the crowd requires a customer in order to be entrusted with a project to use the platform. This is similar to the question “Which came first, the chicken or the egg?”

SelectStar wanted to recruit customers who could reward the crowd first, thinking that even if the crowd was insufficient, they could work on the data themselves. In particular, SelectStar went around to various exhibitions and seminars to recruit customers who could be important references for B2B dealings.

As a result, SelectStar was able to gather good customers such as LG-CNS, KAIST, and Naver, and it was able to gather

more customers, such as other large companies and startups, with the references. As for the crowd, the influx of people naturally increased after winning the project, and utilizing social media marketing was also helpful.

“The motivation for participating in this support project was to improve the working environment for worker data production for Cashmission.”

Through this support project, SelectStar succeeded in improving the inquiry window for non-face-to-face workers and the low loading speed due to the ever-increasing user traffic. As the new data production function was developed and the product was officially launched, the influx of workers increased, which also increased the productivity of the company.

## Towards the Best World Created by Digital Data

SelectStar’s mission is to “make the world more comfortable by developing the IT industry through data.” SelectStar has been working hard for quantitative growth in the meantime, from this year they plan to focus on solidifying the “J-curve.” For this, SelectStar is paying particular attention to the advancement of product and R&D technology, internal process systemization, and their HR system.

In the mid to long term, SelectStar plans to create a technologically sophisticated crowdsourcing platform. Although they feel that crowdsourcing can outperform other production methods in terms of data diversity, speed, and cost, crowdsourcing also has its weaknesses. The more people there are, the more difficult it is to manage the quality of the data. This needs to be refined, and SelectStar is very confident in this area.

“We will allow many crowds to be active while maintaining data quality, and this will create a platform where we can obtain any type of high-quality data in one day.”

The global AI learning data market is expected to grow to 1.5 trillion won by 2025. Maximizing data collection and processing speed through crowdsourcing will accelerate the development of the AI industry. Based on this, it is expected to help boost the AI ecosystem through the growth of non-face-to-face jobs and disclosure of production data.

We look forward to the day when high-quality data that has been refined through the hands of SelectStar can become a source for AI development companies to make our lives more convenient and safe.



## MINI INTERVIEW

**Kim Se-yeop, Shin Ho-wook**  
CEO

**Q1. What did you achieve by participating in this project?**

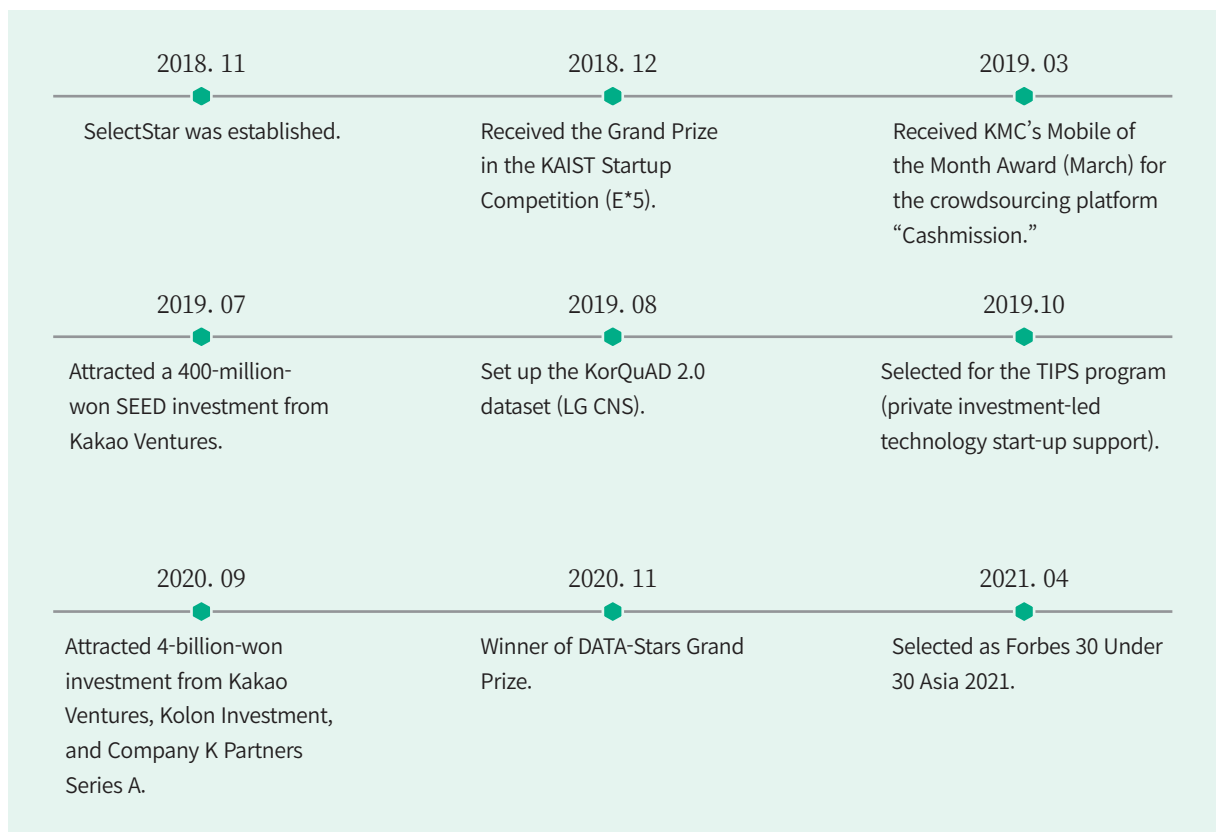
We officially launched the AI learning data platform “Cashmission” on Google Play. In addition, through optimal marketing, we have been able to grow daily active users (DAU) more than sevenfold. Platform technology is also stronger than ever, and we have been able to secure more than 20 new employees.

**Q2. What was the key to the successful achievements?**

Our success is due to a horizontal company culture that values autonomy and responsibility, and outstanding staff who are passionate and genuinely care about their work. Because of this, SelectStar was able to show rapid growth and excellent performances in a short period of time.



## TIMELINE





# Pay Attention! How Real Estate Data Affects Our Lives



## Tanker Co. Ltd.

### General information

Detailed project name	DB industry development (informatization)
Name of dedicated agency	Korea Data Industry Promotion Agency

### Company information

CEO	Lim Hyun-seo
Type of business	Application software and system software development, and supply
Year of establishment	October 2015
Website	blitz.re.kr



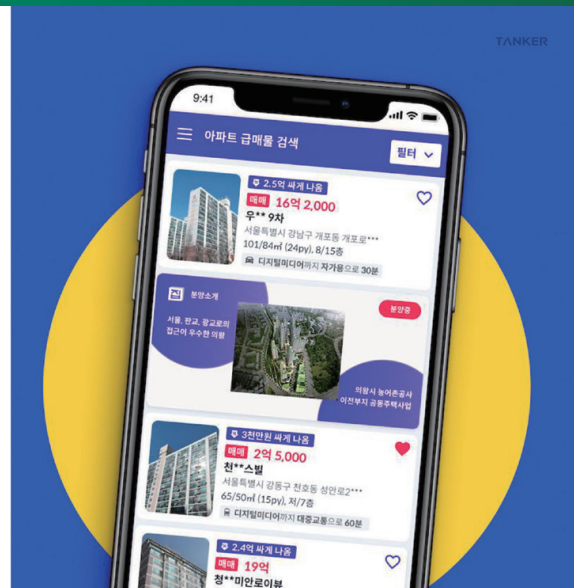
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# TANKER

and real estate financing  
screening automation solution

Tanker Co., Ltd.



## Prologue

The simplest definition of the Digital New Deal would be “digitalization” throughout society. Why is it necessary? It makes people’s lives safer and more convenient.

One of the benefits from the digitalization of each industry sector is efficiency. However, there are areas where change is exceptionally slow and thus lags behind in efficiency, and that area is real estate.

In Korea, real estate technology companies are growing around O2O services, but it still has a long way to go due to a strong tendency to stick to traditional business methods even though artificial intelligence has been introduced and digitalization has taken place in all areas. Tanker Corp. has challenged this conservative real estate industry.



## key achievements

- Increased the work productivity of real estate financial institutions with “AI-based real estate market-price calculation technology” that objectively calculates market prices through public real estate data.
- Providing accurate information and price in a single platform through big data-based recommendations, eliminating inefficient factors and reducing social costs.

## The AI Revolution in the Real Estate Market

Tanker Corp. is a company that develops a next-generation brokerage platform and automation solutions for real estate financial examination based on AI.

Its beginnings were in P2P finance. Afterwards, the real estate market prediction engine was developed while attempting to combine the financial and real estate sectors. Currently, it has released three major services based on AI real estate price prediction and RPA (robotic process automation) technology.

First, Zipzip is an application that provides a search and recommendation service for urgent real estate sales. Through this AI-based residential real estate quick-sale personalized-recommendation service support project, work can be done faster.

Second, Blitz is a cloud-based real estate loan automation system. Using AI technology, the process that used to take around 30 minutes can be reduced to less than three minutes, increasing the efficiency of real estate mortgage loan review and the decision-making process.

Third, Doczip is an innovative service that automates the preparation and registration of legal documents related to real estate brokerage (brokerage agreements and brokerage item confirmation documentation). It is scheduled to be released in the second half of this year as a service that can overcome the time-consuming and cumbersome inefficiencies in creating documents.

“The whole nation is highly interested in real estate, and with the introduction of new real estate policy, there are many changes in the market. We see a lot of opportunities as the demand for AI and RPA continues to increase.”

Currently, Tanker Corp. says that the fruits of AI real estate technology development over the past three years are in sight. The synergy of the entire business is becoming visible as the performance of one business is linked to the development of other new products and services.

## Advanced Technology Capable of Accurate Real-Life Transactions

The purpose of this support project was twofold. One objective was to provide daily updates of accurate market prices using machine-learning technology for a large amount of real estate data to reduce the cost of real estate market activity for potential users by recommending properties based on the price probability distribution.

Tanker Corp. recommends items for sale based on the price probability distribution table. What are the advantages of this method over providing information based on arithmetic standards?

All probability-based future price predictions assume an error, and the key is to minimize the rate of error. For example, even if the actual transaction price is calculated at

200 million won, it will not necessarily lead to a transaction at 200 million won. Prices will be formed along appropriate lines near that figure, and if the average of the transactions is made, the average will be 200 million won. Then what is important is to figure out how much the actual transaction price can move away from the 200-million-won figure.

“Recommendations based on price probability distribution table use an artificial intelligence technique to present predicted market price as a range concept. It gives us a more accurate picture of where a transaction is going to happen and what the probability is of a transaction happening at a specific price point.”

## A True D.N.A. Ecosystem That Predicts the Future with Accurate Information

Data is the basis of the “D.N.A Ecosystem Reinforcement” project, which is the core of the Digital New Deal. More importantly, it is a method that makes the data valuable. No matter how much data there is, millions or tens of millions of pieces of data generated a day are just waste items without the technology to properly use them.

The vision of Tanker Corp. is “real estate for all, for a better society.” The basis for pursuing such a confident vision is “differentiated technology” in utilizing data. Tanker Corp. has a set with more than 150 data for residential real estate that is updated daily, and AI-based transaction prediction, and RPA application technology with the highest level in Korea. The technology of the AI price prediction engine has been certified with more than 50% accuracy compared to other companies through evaluation by a third party, and its technology has also been verified in the market while working with commercial banks.

“While working in the real estate brokerage platform business, I noticed that legal documents such as real estate brokerage agreements and brokerage item confirmation documentation were being written manually. How inconvenient and cumbersome it must be for about six million documents to be completed manually every year?” Tanker Corp. expects to solve the difficulties of real estate agents and create a more efficient work environment by automating the creation of documents with Doczip, which is being prepared for release in the second half of this year. With the launch of Doczip, the company is planning to expand its operations into a full-fledged data business. Tanker Corp. hopes that the common goal of all employees will be to provide products and services that can be used more conveniently by all market users with Tanker Corp.’s AI technology and that from this will come brilliant results.

## MINI INTERVIEW

## Lim Hyun-seo

CEO



## Q1. What did you achieve by participating in this project?

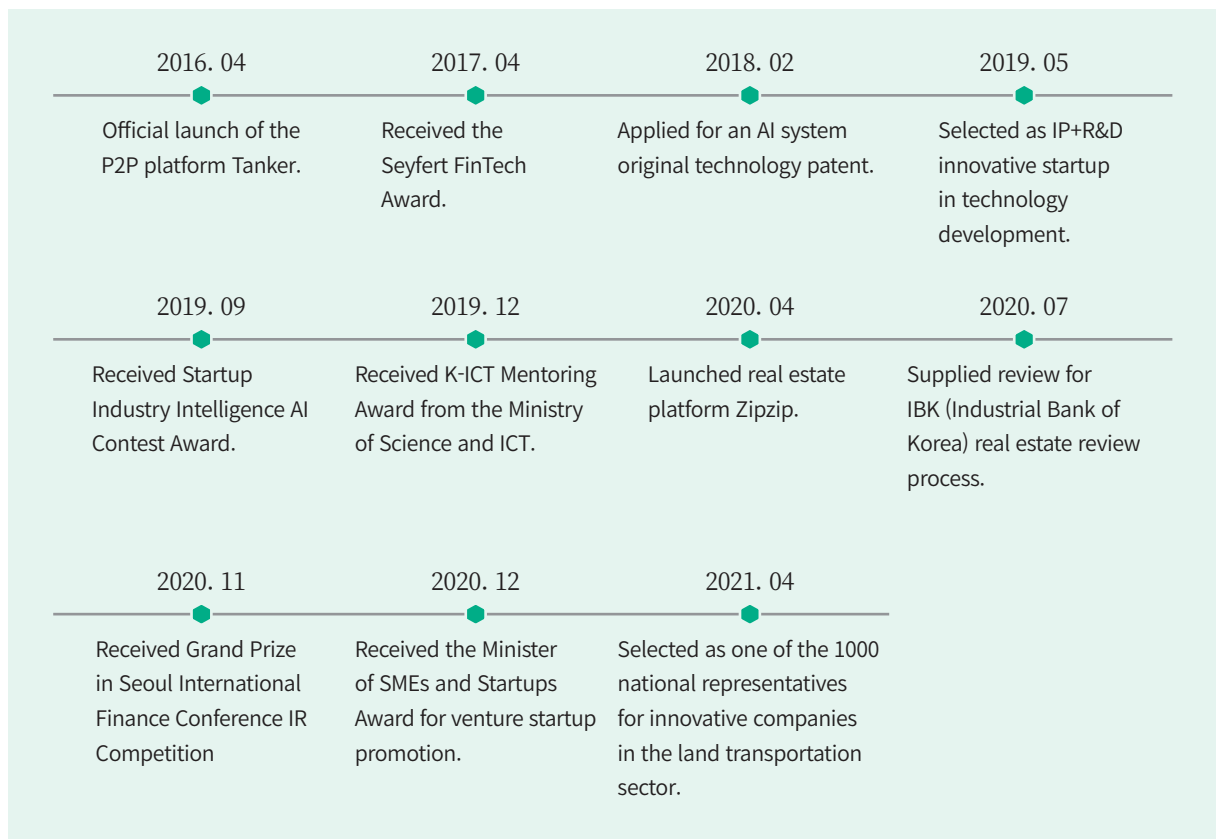
First, we succeeded in commercializing a real estate market-price calculation engine by making a contract with financial institutions. The second is to establish a real estate brokerage platform based on the Zipzip application, our main business service, and finally, Doczip, which uses AI technology to automate the processing of court documents, such as real estate brokerage agreements and brokerage item confirmation documentation.

## Q2. What was the key to the successful achievements?

In the case of the AI commercialization task, it is not a short-term, one-time task. So it was important to distinguish between the development stage and goals to optimize and define the implementation task according to the support period and nature of the project. It was effective to proceed with the next challenges in mind.



## TIMELINE



# Key to the Digital New Deal

## Big data companies, Coexist with nature and communicate with the future



## InfoBoss Co., Ltd.

### General information

Detailed project name	Building a big data platform and network
Name of dedicated agency	National Information Society Agency

### Company information

CEO	Park Jong-seon
Type of business	Research and development, software development and supply
Year of establishment	May 2015
Website	<a href="http://www.infoboss.co.kr">www.infoboss.co.kr</a>



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### Prologue

One of the goals of the 'D·N·A (data, network, and AI) Ecosystem Reinforcement' project of the Digital New Deal, which is currently a major national policy, is to strengthen and actively make available and utilize the entire data ecosystem. This includes public data as well as data from the fields of manufacturing, medicine and biology.

Currently, it is known that there are about 550,000 plant species on earth. It is estimated that there are even more species if we include unexplored areas untouched by humans. The biological industry using plant resources has long been attracting attention as a core industry and high value-added industry that can lead to future economic growth.

Currently, markets that can be accessed using plant resources, such as new drugs, functional foods, and functional cosmetics, are very diverse. In addition, each of these markets is closely related to human life, resulting in a large-scale and very high compound annual growth rate (CAGR). This is also the reason why Infoboss, which is carrying out the industrialization project on plant resources through biological big data analysis, has received a positive evaluation.



### key achievements

- Discovering antiviral drug candidate information that can be used as basic data for the development of therapeutic agents for viral diseases that may cause pandemics similar to that of COVID-19.
- Developing technologies for the utilization of domestic forest biological resources and conducting new functional research and development using AI-based technology to support startups in new drug development.



## A Leader in the “Bio-Digital New Deal”

Infoboss aims to industrialize various undiscovered plant resources based on biological big data analysis including the entire genetic. For this purpose, we are preparing scientific data for discovering plant resources and developing new drugs, functional foods, cosmetics, etc. while producing them.

For biological big data analysis including entire genetic, data collection, modeling, and AI-based technologies were applied, and a solution to verify it was developed, and a GeIS system that can analyze gene big data in bulk was built. It is a very difficult technology to select useful plant resources by analyzing biological big data including entire genetic data, and to predict the substances they produce and their actions. In particular, genetic data contains all the information of an organism, but interpreting it is limited. What sets Infoboss apart is that it overcomes these problems through artificial intelligence models.

## From genetic big data to biological big data

The technology developed by Infoboss requires various experiences and knowledge. Because of this, it was a very difficult process from the initial start until the results were obtained. In addition, it was difficult to find examples or data to refer to as there were few competitors in similar businesses. Building a system and deriving results was the most difficult part of running a company.

“I participated in this support project to overcome the notion that biological big data is not recognized as big data, unlike general big data. The government announced last year that it would provide a lot of support for the Bio-Digital New Deal through the Digital New Deal Plan. Empowered by this, we were able to provide biological big data including genomic big data and useful information while participating in the ‘big data center nurturing and platform building’ project.” Through this work, Infoboss has laid the foundation for materialization of its existing business model and the development of actual products. Of course, the process was not all smooth.

First, it was very difficult to secure the target genetic data of 100 species of native plants with limited resources and to process this data into a usable form. However, while carrying out the project, problems in sampling and sequencing were resolved, and data was successfully obtained.

There was also the task of increasing access to data-related jargon, which is somewhat difficult for the general public deal with, and finding an easier way to use data. To this end, we created an example that can be directly shown to ordinary business people, but this was also not easy. Fortunately, this process is also the business model of Infoboss, so we are solving problems one by one.

## Towards Technology for Human Beings

Viruses that threaten human health, such as the COVID-19 virus, will continue to exist. However, its infectiousness and destructive powers increase in intensity over time, threatening human health and social life. It is not known when the current COVID-19 pandemic will completely end. And after that, it is not known when or where a new virus will appear.

This means that it is necessary to develop a new antiviral agent in addition to the previously developed ones. Infoboss discovers resources with antiviral efficacy from various plant resources and is developing them as antiviral agents. This is because we think that there is a high possibility of developing a new type of antiviral agent that is different from previously known substances.

For this, it is essential to establish the status of biological big data. As mentioned earlier, this is also the biggest motive for Infoboss to participate in the support project.

“Big data is not just about having a lot of data. The amount of information contained in it must be considered as well, and analytical algorithms such as artificial intelligence that can extract, refine, and process the information must also be considered as true ‘big data’. If it is linked with other NIA businesses, I think more synergy will be created.”

## Plant Resources with Infinite Potential

More than 60% of Korea’s territory consists of forest. And there are not many countries where forest biological resources are as well cultivated as in Korea. In the future, if big data of various biological resources is continuously discovered, managed, and effectively used, it will be of great help in creating economic value in various forms and in various fields in addition to the industrialization of plant resources proposed by Infoboss.

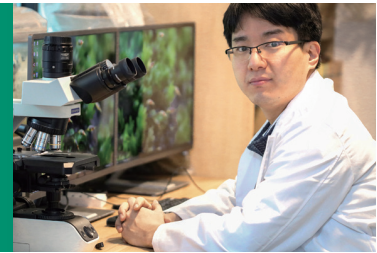
The future goal of Infoboss can be summarized as “industrialization of plant resources through biological big data analysis.” This is also in line with the government’s R&D innovation and job creation policy through the “Bio-Digital New Deal.” Now that the Amazon rainforest, which is a great heritage of mankind and has infinite potential, is being exploited for immediate profit, it is necessary to properly understand the economic value of Amazon region and find a way to coexist in balance with nature.

“The ultimate goal of Infobos is ‘coexistence with nature.’ The fusion and analysis of data from biological resources is to present a new social paradigm in which humans and nature coexist through various types of data integration. For this, we will always do our best.”

## MINI INTERVIEW

## Park Jong-seon

CEO



## Q1. What did you achieve by participating in this project?

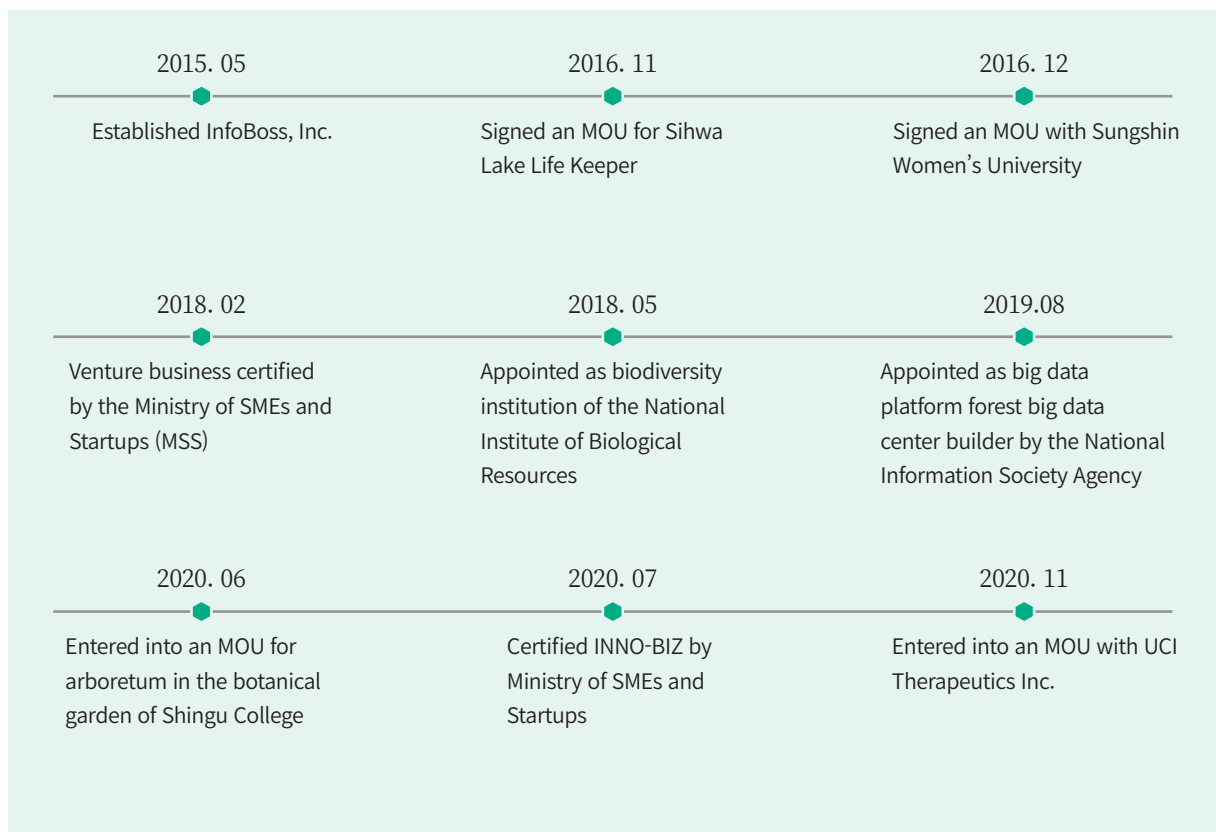
The biggest achievement is the opportunity to secure the genetic big data of 100 species of native plants. It is also essential to build a business network through organic promotion of the company. We think it is a great achievement to be able to receive cold calls with interest from various investment institutions. In addition, this project allowed us to lay the stepping stones for overseas expansion.

## Q2. What was the key to the successful achievements?

I think that the secret to being able to successfully carry out this project is that we have continued our efforts to find ways to utilize bio-big data, including in the field of genetics. Above all, the support from all the executives and employees, who quietly did the difficult work, was key, and the cooperation of the many companies and research institutes who believed in us and supported us was also an important factor.



## TIMELINE



# This Is the Era of the Data Economy. We Are Responsible for the Growth and Competitiveness of SMEs



## Douzone Bizon Co., Ltd.

### General information

Detailed project name	Building a big data platform and network
Name of dedicated agency	National Information Society Agency

### Company information

CEO	Kim Yong-woo
Type of business	Computer Programming Service
Year of establishment	June 2003
Website	<a href="http://www.douzone.com">www.douzone.com</a>



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### Prologue

The keyword in the 2021 Davos Forum report was “data.” It is predicted that the data economy will develop more rapidly after the COVID-19 pandemic, and data will become a growth catalyst for all industries as a major production factor in the era of digital transformation.

The basic concept of the data economy is that the definition of products and services will change depending on how data is used, and that data capital will replace the existing financial capital.

Korea announced the Korean version of the New Deal policy last year and selected four major strategic projects as part of the Digital New Deal. One of these projects is “strengthening the D-N-A (data, network, and AI) ecosystem.” Douzone is striving to develop cutting-edge technology for data construction and utilization in fields closely related to people’s lives.



### key achievements

- Collecting fragmented data from each industry by building a big-data platform for small- and medium-sized enterprises (SMEs) and building a foundation for the dissemination of high-quality data and the vitalization of the data value chain.
- In addition, unlike any other model, this artificial intelligence credit evaluation model uses year-round financial and accounting data at the time of appraisal, and it is the first development in Korea of an accounts-receivable factoring system service without recourse right.



### **Enterprise Informatization Software Field An ICT Company That Stands First in Market Share**

Douzone is an ICT company that provides various solutions and services for corporate digital transformation through cloud service, big data, and AI.

Douzone currently holds first place in market share in corporate information software such as ERP (enterprise resource planning) as well as cloud-based platforms and groupware, and based on this, Douzone is actively carrying out the government's Digital New Deal core business and striving for data-oriented economic growth.

"Douzone's flagship product 'Wehago' is a business platform that provides all services for business productivity, from business management to communications and collaboration, in one place. It can be conveniently accessed anytime and anywhere through the web and on mobile, which can be a great help in reducing corporate expenses and improving the level of information. Douzone also has a strong security system to keep our data safe."

As such, Douzone is building a platform-based consumption ecosystem for digitization of SMEs and strengthening businesses by organically linking all tasks through a cloud platform.

The key is to build a big data platform. It is collecting and distributing data in various industries owned by Douzone and data center institutions, and is developing and providing AI services for management innovation of SMEs.

### **Strengthening the Digital New Deal Ecosystem Centered on Small- and Medium-Sized Enterprises**

As data utilization and transactions are activated and digital transformation in various industries is in full swing, the size of the domestic data market is in excess of 20 trillion won. However, the development of the data industry has brought side effects such as digital inequality, where data is concentrated with a few, and a shortage of manpower. Therefore, the main task for the growth of the current data economy is to resolve the imbalance between supply and demand.

Last year, the government established a D·N·A (data, network, and AI) nurturing plan through the national task for promoting the "Korean version of the New Deal" and "revitalizing the data economy," and presented the concept of a "data dam."

The government's Digital New Deal policy focuses on regulatory innovation such as "revision of the three data regulations" and "My Data Vitalization," as well as the institutionalization of the data trading industry, such as establishing core data infrastructure, strengthening vouchers, and supporting the processing of aliases and integration. Through this, Douzone intends to support the rapidly growing data demand and serve as a bridgehead for the future development of the data industry.

Douzone operates a big data distribution platform for small- and medium-sized enterprises in collaboration with a total of 17 organizations including public and private data centers. This is to promote the use of data to solve current issues and enhance competitiveness of SMEs, which are the foundation of the national economy, and to lay the foundation for the innovative growth of an AI-centered data industry that the public can experience.

Douzone's SMEs big data platform collects and integrates data in various fields such as real-time management information of companies, trade, import/export, job search, real estate, and R&D. This is also one of the core businesses of the Digital New Deal.

In addition, Douzone provides new insights for management and industrial development by predicting company sales and inventory through machine-learning algorithms and developing and supplying AI models for business diagnosis, risk management, and credit evaluation.

### **Fostering Public and Private Data Centers Improving the Financial Conditions for SMEs**

Efforts at the national level are urgently needed to enhance the competitiveness of SMEs and small business owners. For the successful settlement of the Digital New Deal, as the need for resolving current issues and strengthening the capabilities of SMEs through data increases, Douzone launched the "Big Data Platform and Center Construction Project" hosted by the Ministry of Science and ICT and the National Information Society Agency in 2019 and was selected as a big data platform operator in the field of SMEs.

"Douzone is building a big data platform for SMEs, collecting public and private data of each industry and reproducing it as high-quality data. By providing a cloud-based data analysis environment and AI service, Douzone laid the foundation for discovering integrated content through data analysis and prediction for consumers and spreading industrial value, and Douzone also developed a service to improve the financial conditions of SMEs in financial blind spots, namely, the 'accounts receivable factoring service'" "The accounts receivable factoring service' provides timely credit information to SMEs and individual entrepreneurs who have had difficulty in receiving loans from the financial sector due to lack of credit information and can immediately collect accounts receivable through commercial transactions in cash without any collateral, guarantee, or claim for repayment. Unlike the existing financial sector, which evaluates creditworthiness based on the financial statements of the previous year for corporate loans, financial and accounting data, and artificial intelligence (AI) provide timely credit information that accurately reflects the liquidity crisis or financial soundness a company is facing at the time of evaluation. Based on this, it is possible to quickly provide necessary funds by purchasing receivable accounts.



### Creating Competitive Data and Utilizing the Ecosystem

In order to collect and open platform data, it is necessary to solve various problems such as the standardization of data so that consumers can freely access and use it, secure compatibility, and ownership rights. For this, Douzone has participated in the governance of platforms and center experts in each field, starting with the NIA. A system integration and cooperation plan was developed to establish standardization related to data standards, quality, and distribution policy, and to solve regulatory problems such as quality standards and ownership rights. Through this, reliable data could be provided, and industrial and societal use could be expanded. “Douzone will continue to collect various industrial data through its big data platform in line with the government’s Digital New Deal policy and will focus on the production of customized integrated data with high utilization value. In addition, Douzone plans to prepare various linkages between heterogeneous data so that it can provide innovative services to the market that will help companies grow and discover best practices based on data.”

#### MINI INTERVIEW

**Kim Yong-woo**  
CEO



#### Q1. What did you achieve by participating in this project?

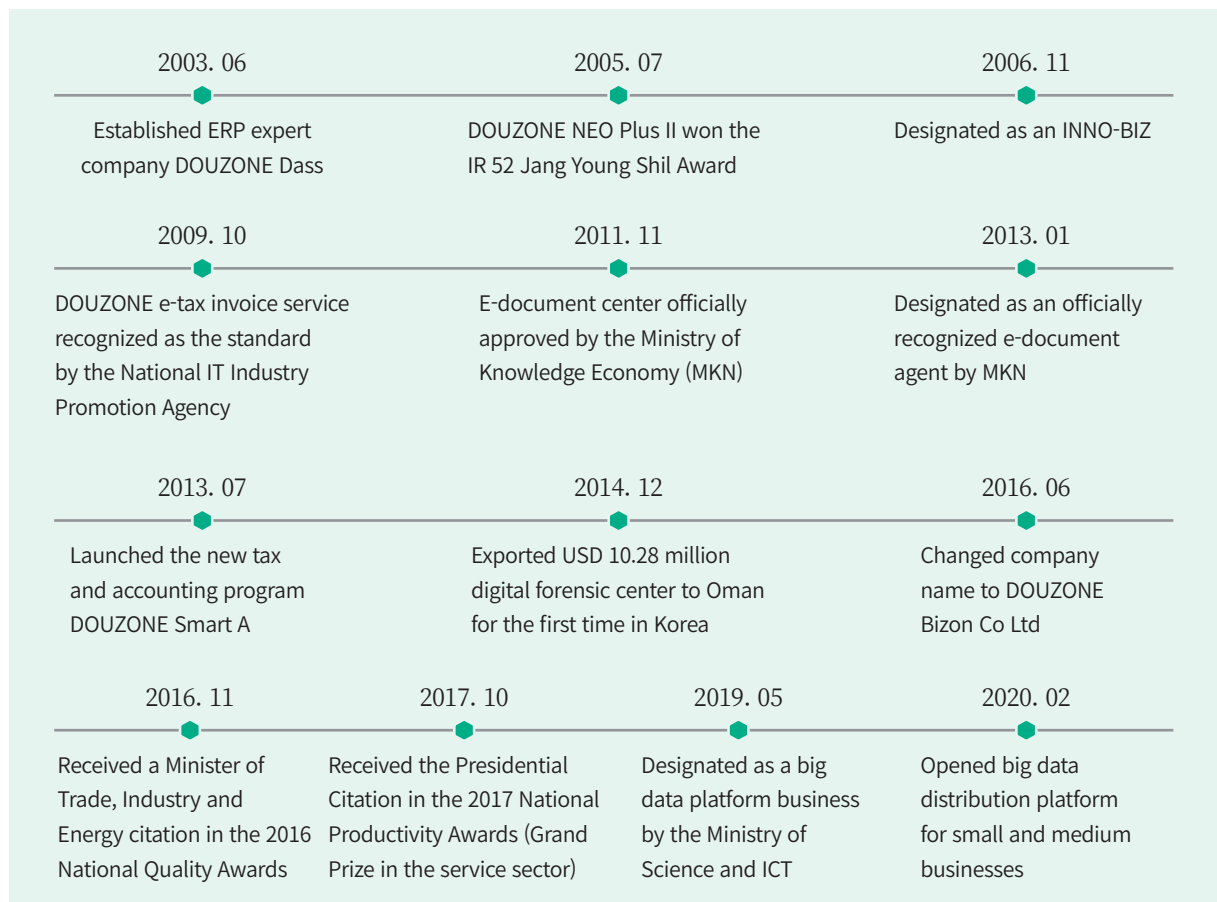
By building a big data platform for SMEs, it is possible to offer high-quality data to the industry, fostering public and private data centers and providing a cloud environment for analyzing collected data, creating an artificial intelligence (AI) credit evaluation model, and the development of an accounts receivable factoring service.

#### Q2. What was the key to the successful achievements?

I think that Douzone has continuously pondered and supplied what was needed to build the foundation and ecosystem of a big data distribution platform rather than producing quick results. Focusing on solving social issues, Douzone has tried to ensure the reliability and effectiveness of the distribution of data and innovative services.



#### TIMELINE



# Creating a World Where Personal Data Becomes Personal Assets



## SNP LAB

### General information

Detailed project name Reinforcing the competitiveness of the next-generation Internet business

Name of dedicated agency Korea Data Industry Promotion Agency

### Company information

CEO Lee Jae-young

Type of business Online personal information service

Year of establishment December 2019

Website [www.snplab.io](http://www.snplab.io)



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### Prologue

Currently, the government is implementing various policy supports so that the D.N.A. Ecosystem Reinforcement project can take root in people's daily lives. One of these supports is the MyData project, which is scheduled to be implemented in the financial and public sectors in the second half of this year.

MyData allows an individual to actively manage and control their own information while actively utilizing it for credit and asset management.

For example, it is a concept that clearly defines the owner of financial data, such as bank account or credit card usage details, as being the individual, not a financial institution. MyData service is already being implemented in the data industry in developed countries such as the U.S. and the UK.



### key achievements

- Securing a mobile terminal-based MyData platform that recommends customized financial products that do not collect personal information.
- To fundamentally solve the problem of personal information leakage, the paradigm for personal data utilization is switched from server-based to mobile-terminal-based.

## Focus on the Asset Value of Data in the Digital New Deal

SNPLab Co., Ltd. is a company specializing in block chain, DID, on-device data combination analysis, and privacy technology. The goal of the support project that SNPLab participated in this time is to provide customized financial information and economic compensation by analyzing leading indicators of combined personal information in mobile terminals targeting financial and non-financial data. This is in line with the “implementation of MyData service focusing on the people” announced by the Ministry of Economy and Finance.

“We have come to the conclusion that the reason why it is difficult to solve the privacy issue while working with software security and privacy prior to its establishment lies in the data utilization mechanism itself, not technology. That’s why we’ve developed a MyData platform, based on individual mobile devices rather than on corporate servers, to shift the paradigm of data utilization.”

What can we do through SNPLab’s MyData platform? First of all, you can directly check and manage which of your own personal data sets is being provided to which companies. Based on your MyData account, you may receive the most necessary information or customized advertisements. You can sell personal data directly to a company and receive various commissions depending on the type, duration, frequency, and purpose of the data. It is also possible to trade new updated information in real time.

In other words, the purpose of the system pursued by SNPLab, Inc. is to return the revenue generated from MyData to yourself; in other words, “my data” goes to “myself.” The goal is to open a true era of “my data” where people can check who uses the data they create, where, and for what activities they use it, and receive a fair price for it.

## Revolutionary Change in the Use of Personal Data

No one would challenge that personal information belongs to the individual. However, it is true that it has been difficult for individuals to properly exercise their data ownership rights in society. When an individual logs onto a site to buy or search for products, the company benefits from data collected and has used it as a marketing tool that they profit from. However, the benefits are not shared with the customers who have provided the personal information. SNPLab Co., Ltd. has changed the unequal consumption structure of personal information and set out to pioneer a new digital ecosystem where both producers and consumers of personal information can benefit.

However, there a problem was encountered that needed to be addressed first. It was necessary to find ways to handle a number of complex consent procedures resulting from personal data movement, and to address security and

privacy risks from data centralization.

To this end, we created a structure that allows individuals to directly control data within the terminal, eliminating the need for consent to collect personal information and, through data decentralization, significantly lowering security risks.

Various patent technologies related to blockchain utilization and personal information management were mobilized to create such platforms. Finally, SNPLab succeeded in establishing a mobile terminal-based MyData platform that fundamentally solved security and privacy issues.

As a result, individuals can receive practical and direct compensation for the use of their data, and companies can safely use personal data without compliance issues.

## Data Market Project Launched by SNPLab Co., Ltd.

Currently, there are two services available from SNPLab. One is MyD, the first MyData platform, through which individuals can register and manage their data and sell the data to companies to purchase exchange products with points. Available data vary widely, such as health information, insurance information, financial information, credit card information, general purchase information, and car purchase information. The other service is MyD B2B. As a platform for purchasing user data, this service allows companies to purchase data of MyD users.

Through this, unlike the Financial MyData platform currently led by the Financial Services Commission, We provide a new MyData platform that can utilize various kinds of data such as health, medical, shopping, and search terms.

The MyD service was launched on Google Play Market and recorded 60,157 downloads as of December 14, 2020, with a customer satisfaction survey of 8.8 points out of 10. It was exported to Japan in the form of a demo license last year, and it is scheduled to attract foreign investment within this year.

“Through this support project, SNPLab has welcomed a total of 12 new employees. They will become a strong force responsible for the growth of SNPLab in the future. We are implementing various educational programs and welfare systems in order to return the achievements we gain from them.”

As the amount of data is explosively increasing and the demand for meaningful and valuable data is increasing, there will be many opportunities for SNPLab in the future. We hope that meaningful achievements gained in a short period of time will serve as another stepping stone for the company’s continued growth.

## MINI INTERVIEW

## Lee Jae-young

CEO

**Q1. What did you achieve by participating in this project?**

As a MyData specialist firm, this support project allowed us the opportunity to examine the market response without an expensive outlay. In addition, we have been able to obtain a reference that could help the company grow and develop.

**Q2. What was the key to the successful achievements?**

We've been looking at products and markets in a new way and trying to approach them in a way different than ever before. I think this was an opportunity to catch the attention of users. I also think that another key to success has been to think about and implement how to market more efficiently under the same conditions.



## TIMELINE





# As a Digital Twin Anytime, Anywhere Safe World



## U&E Co., Ltd.

### General information

Detailed project name Spread of intelligent information service

Name of dedicated agency National Information Society Agency

### Company information

CEO Yeo Wook-hyun

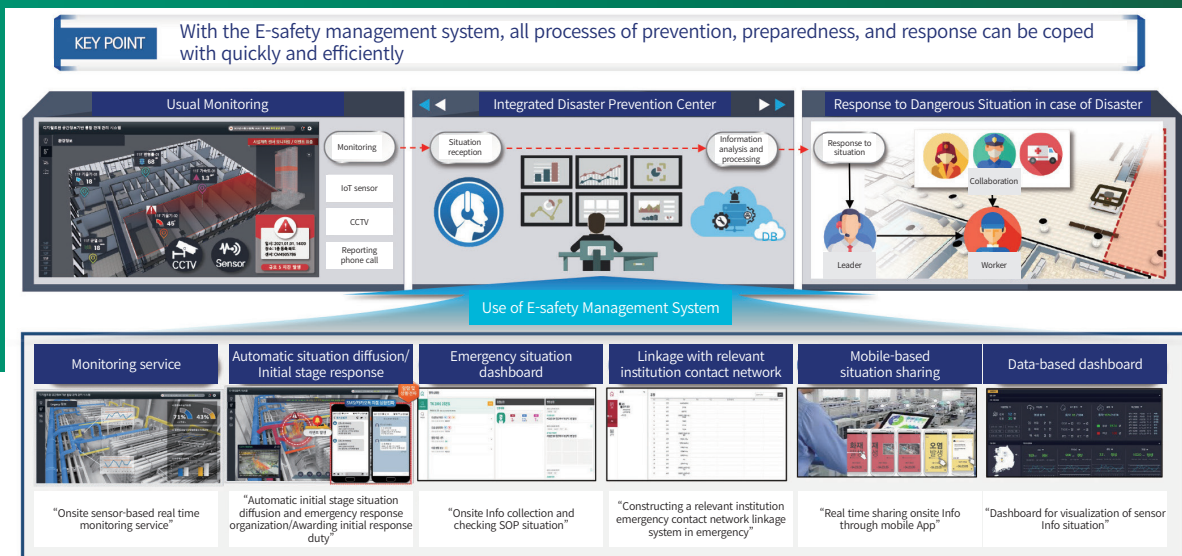
Type of business Digital twin, spatial information, disaster safety management

Year of establishment March 2011

Website [www.unes.co.kr](http://www.unes.co.kr)



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## Prologue

The ultimate goal of the Digital New Deal is a safe and convenient life for the people. The most obvious way to confirm this is the Social Overhead Capital (SOC) Digitalization project, which builds a digital management system in the national infrastructure that has previously been managed in an analog manner.

Currently, Korea has introduced a digital management system for roads, railroads, ports, and airports to build a safe and efficient transportation network, laying the foundation for new industries such as autonomous vehicles and drones, and actively working on a digital twin project targeting roads, underground spaces, and ports for safe land and facility management.

U&E (Ubiquitous & Environment) is a company specializing in research and development of digital twin control, spatial information management, and disaster safety management solutions that combine IT and a variety of cutting-edge hardware. Through this support project, U&E has been recognized for its high technological prowess as a company specializing in digital twin technologies.



## key achievements

- Providing easy safety management service by visualizing facility inspection centered on the digital twin system of optical measurement sensor information, rather than merely on the naked eye, which is limited in understanding the state of affairs. The ability to train in case of emergency by using predictive simulation based on the digital twin system.
- The ability to train in case of emergency by using predictive simulation based on the digital twin system.

## Digital Twin Technologies Leading the Future

Although the development of technology itself is important, technology can find its true value when it is used well in the fields required by society. U&E had secured indoor and outdoor spatial information construction technology and digital twin engine technology even before the company was founded. The founding goal was to pioneer a new service field based on this technology.

It wasn't an easy start. Although a lot of human resources and funds were invested in R&D technology development, the market response was slow. The initial development expense could be secured through government R&D, but at the end of the development, there were operational difficulties due to low market demands.

However, as national support for the Digital New Deal and social demand for disaster safety increased, U&E, which already had accumulated technology, was able to achieve rapid growth in the past five years.

U&E has spatial information construction technology for the BIM (building information modeling) geospatial information disaster response service, spatial information (CAD, image, BIM) conversion technology, and IndoorGML modeling construction technology (GLM = geographic markup language). Based on this, U&E has successfully carried out projects such as the establishment of a digital twin-based monitoring system, the establishment of various types of spatial information modeling, and the establishment of a smart disaster safety management system. We aim to be the number one company in the field.

## Smartly Changed Safety Disaster Management System

In 2018, there was an incident where the underground communication area of the Ahyeon branch of KT suffered a large-scale communication failure due to a fire. It took 7 hours and 27 minutes to extinguish the fire. What if there was a system that could prevent and manage disasters more quickly?

Through this incident, U&E decided to start developing a digital twin-based disaster management system that combines a fire spread simulation with a disaster management system. This was possible because U&E already has digital twin engine technology.

Participating in the National Infrastructure Intelligence Information Project accelerated research and development. First, U&E was able to secure its own technological prowess in the field while conducting business in the field of digital twin and underground joint utilities. In addition, based on the technology and field experience accumulated through project execution, it has become possible to expand its application to similar business fields.

"It was also a great achievement that we were able to retain excellent human resources by hiring new personnel through this support project."

One of the difficulties in U&E's operation was the problem of

professional manpower supply and demand. As the company grew, it was essential to secure excellent manpower, but it was difficult to find professional manpower with the capacity to develop digital twin and disaster safety source technologies together. However, through this support project, U&E was able to relieve one of its long-standing concerns by obtaining excellent manpower.

The achievements made through this project are expected to have a very positive ripple effect in the future. U&E will provide facility safety management services through a stable digital twin control system in the 3.3 km Andong-Yechon common underground sector. This is expected to significantly increase the operational efficiency by reducing operating management costs by more than 30% and reducing working hours by more than 50%.

Above all, by overcoming the limitations of identifying conditions through visual inspection of facilities, with a 24-hour, 365-day monitoring system, it has become possible to identify the actual safety condition of facilities and make predictions in advance, as well as make quick decisions in the event of a disaster.

## Prospecting the Future of Digital Twin

Now, a digital twin-based system using 3D spatial information is a major item of national research tasks and projects, and many projects are underway.

The key to building a digital twin is to predict various situations in a virtual space simulating reality, repeat tests and simulations, and derive results to enable prevention, preparation, and response in reality.

However, most of the digital twin-related projects that are currently being carried out in national research projects are only visible data related to 3D spatial information construction. Digital twin-related projects or research should be carried out after determining exactly why 3D spatial information is needed, what to predict, what to simulate, and what to prevent and respond to in reality.

In order to achieve this goal, institutional limitations related to data sharing with external organizations must be overcome, and data scalability and efficient simulation development to be linked in the future must be considered. If all these parts can fit together like a puzzle, a more complete digital twin technology will be possible.

U&E plans to expand its business areas to worker safety services and subscription-type safety management services in response to the newly established Major Disaster Act by expanding disaster safety services using existing digital twins. It is also planning to continuously try to combine spatial information with new fields that require digital twin technology. In addition, preparations are underway to list the technology on the stock market. We support the growth and development of U&E, which is running with endless enthusiasm for a bigger tomorrow.

## MINI INTERVIEW

## Yeo Wook-hyun

CEO

**Q1. What did you achieve by participating in this project?**

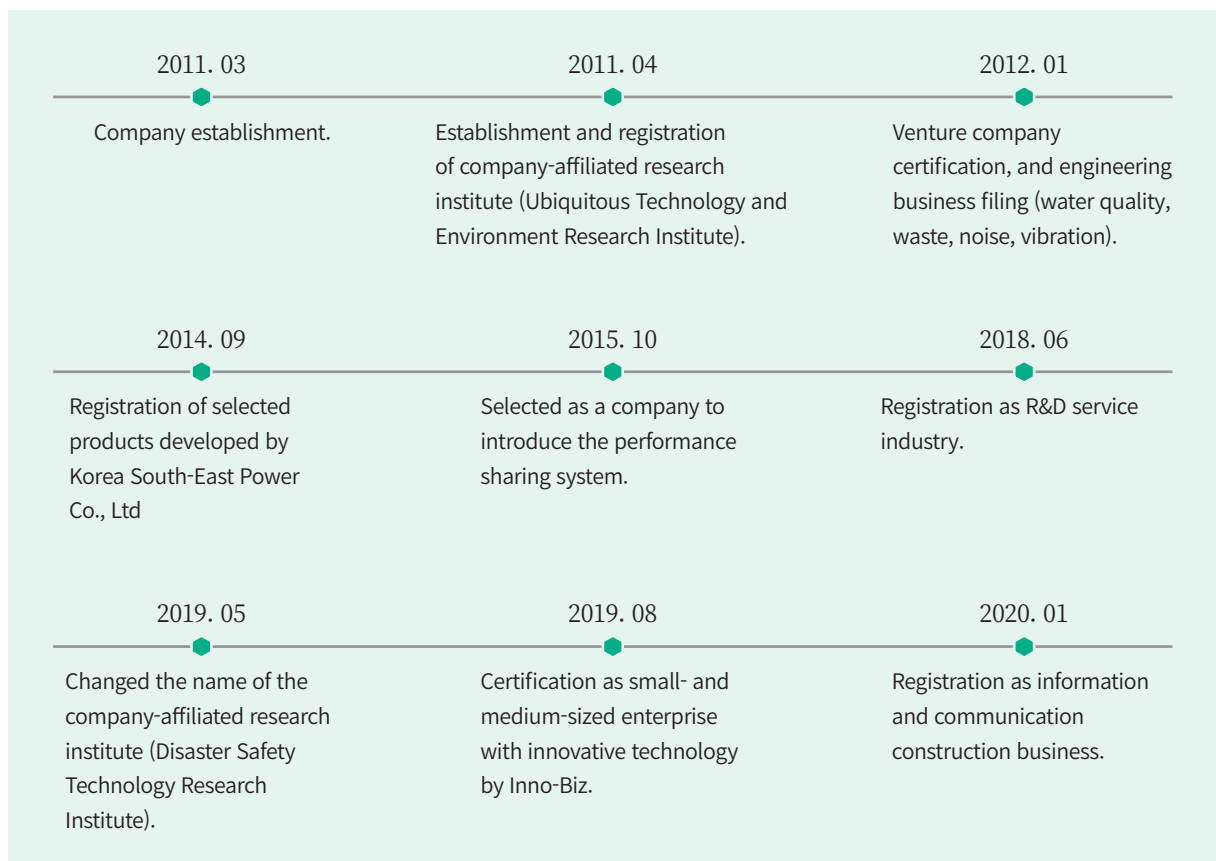
We have developed a simulation to check smoke spread (FDS) and fire spread in the event of a fire by selecting three points with a fire risk in a common underground area. Based on this, the location of the fire spread can be identified, and by considering the direction of the spread, the fire can be quickly extinguished.

**Q2. What was the key to the successful achievements?**

I think it is teamwork. We have held workshops every year since before COVID-19 to build unity. And I think we've been selected as an excellent company because we've been working in teams in a balanced way, leading to good research results.



## TIMELINE





# Directly Connected to People's Safety! The Power of Digital New Deal Protecting the Underground Culvert



## KI Co., Ltd.

### General information

Detailed project name	Intelligent Information Service Diffusion
Name of dedicated agency	National Information Society Agency (NIA)

### Company information

CEO	Jo Yeong-geun
Type of business	Computer system design and consulting, software development, industrial robot manufacturing
Year of establishment	October 1998
Website	<a href="http://www.kicompany.kr">www.kicompany.kr</a>



▲ Scan the QR code





### Prologue

Underground culvert is large scale underground structure installed by gathering major supply facilities including various power lines, telephone lines, cable TV cables, high speed optical communication network, water pipes, and hot water pipes for heating. The underground culvert is a key national facility directly connected to people's daily life safety.

Therefore, a thorough monitoring system is needed to prevent facility deterioration and blind spot of safety. The government is diversely supporting to consolidate the underground culvert management system through a SOC digitalization project of the Digital New Deal.

KI Co., Ltd. is a company offering IT service, AI service, content construction, AI, and ICT convergence technologies. Through this support project, the company obtained good results in the cutting-edge system development sector for accident prevention of the underground culvert in Sejong City.



### key achievements

- Proved the AI risk prediction program's effectiveness through vibration sensor by enhancing IoT vibration monitoring system operation rate and AI risk prediction accuracy.
- Developed a risk prediction system applying a state-of-the-art technology performing risk prediction judgment using AI for the existing real time vibration measurement system.



### Advanced Diagnosis and Thorough Prevention

The project of the support project in which KI participated was “Construction of AI risk prediction system.” Vibration detection device’s vibration and temperature and humidity data is collected, the normal and risk data by location, time, and season are analyzed, and learning data is constructed. Through AI nerve network creation and application of the AI risk prediction model, KI’s goal was to offer a risk prediction service on the real time vibration, temperature, and humidity data.

The AI service of underground culvert consists of a risk prediction service and a location prediction service. The risk prediction service is DNN-based vibration nerve network (D-VNN) developed in the first-phase project in 2019 and the location prediction service is CNN-based vibration nerve network (C-VNN) developed in the second-phase project in 2020.

The AI risk prediction service of Sejong City’s underground culvert collects vibration values measured in real time through the vibration detection device installed in the underground culvert. Through the AI risk prediction model’s learning, DNN-based vibration nerve network (D-VNN) is constructed. By delivering it to the AI service system, the risk situation of the vibration data transmitted in real time is predicted.

To execute the location prediction service, a vibration detection device embedded with a 3-axis sensor and a temperature and humidity sensor should be installed to detect vibration. The vibration detection device collects the 3-axis directional vibration values transmitted in real time in the unit of 10ms.

The status of risk of the vibration data values transmitted in real time is checked through risk prediction service. If predicted as risk data, the occurrence location, data type, temperature, and humidity can be provided to the administrator through the location prediction service.

### Digital New Deal Keeps Daily Life Safe

The risk prediction service was a technology applied to underground culvert for the first time. The company



faced difficulties in obtaining risk data generated to the underground culvert due to external shock and normal data generated normally. However the company succeeded in obtaining the risk data and normal data by performing precision analysis tests through obtaining the vibration data by location of the underground culvert, after listening to expert’s opinion.

The program’s result was also satisfactory. The objective value that checking 96% IoT vibration monitoring system operation rate and 95.9% achievement of AI risk prediction accuracy proved effectiveness of the AI risk prediction program by the vibration sensor of KI.

Digital twin-based 3D virtual inspection system goal achievement rate was 100%. The current project-related patent was registered, and the relevant product was launched, and it is currently propelled to be registered as an innovative prototype of the Nara Marketplace at the Public Procurement Service.

“If our product is registered, we plan to vigorously participate in the underground culvert safety management project and other SOC projects including bridges and tunnels ordered by the government. We will enter the private-sector’s building safety diagnosis market, and we are expected to achieve a bigger growth than now based on product reliability.” Korea’s facility safety maintenance and management (function retaining, restoration) technology level is just at 74.1% of the U.S. having the highest level technology; therefore, smart facility construction capabilities are insufficient. Technological gap from world’s top class, however, can be solved by obtaining cutting-edge technology for structure risk prediction, so the development in facility safety diagnosis and prevention industry can be expected. KI Co., Ltd. felt that underground culvert has different parts depending on individual environment, while performing this project, and so there is a need to diversify management methods. Namely, accurate technology is necessary on the basis of evidence so that proper application can be conducted according to mutually different environmental conditions. This is why ceaseless R&D is required to protect people’s valuable life and property and to shape their safe and convenient living environment.

### Dreaming of the Best In the ICT-Convergence Technology Field

KI has core technology such as information collection, processing, analyzing, and integrating service based on premier manpower, resources, and technological capabilities. The company is focusing on R&D today to develop optimal solutions (platform, App, etc.) in the ICT-convergence technology field.

The company has been leading the development of diverse innovative solutions. KI has been launching the following services for people's safety and convenience in everyday life: digital twin-based underground culvert fire disaster support integration platform, underground structure's internal / external vibration monitoring-based accident prevention system using AI, thermal image and environmental information-based intelligent disaster prevention system, ICT-based plant growth monitoring and arboretum guiding service, and general portal service using ZEUS equipment. KI Co., Ltd. plays a pivotal role in the core business field of digital new deal with its own differentiated technology and fervent ardor. The company is assured to achieve further growth based on the achievements in this support project.

#### MINI INTERVIEW

**Jo Yeong-geun**  
CEO



#### Q1. What did you achieve by participating in this project?

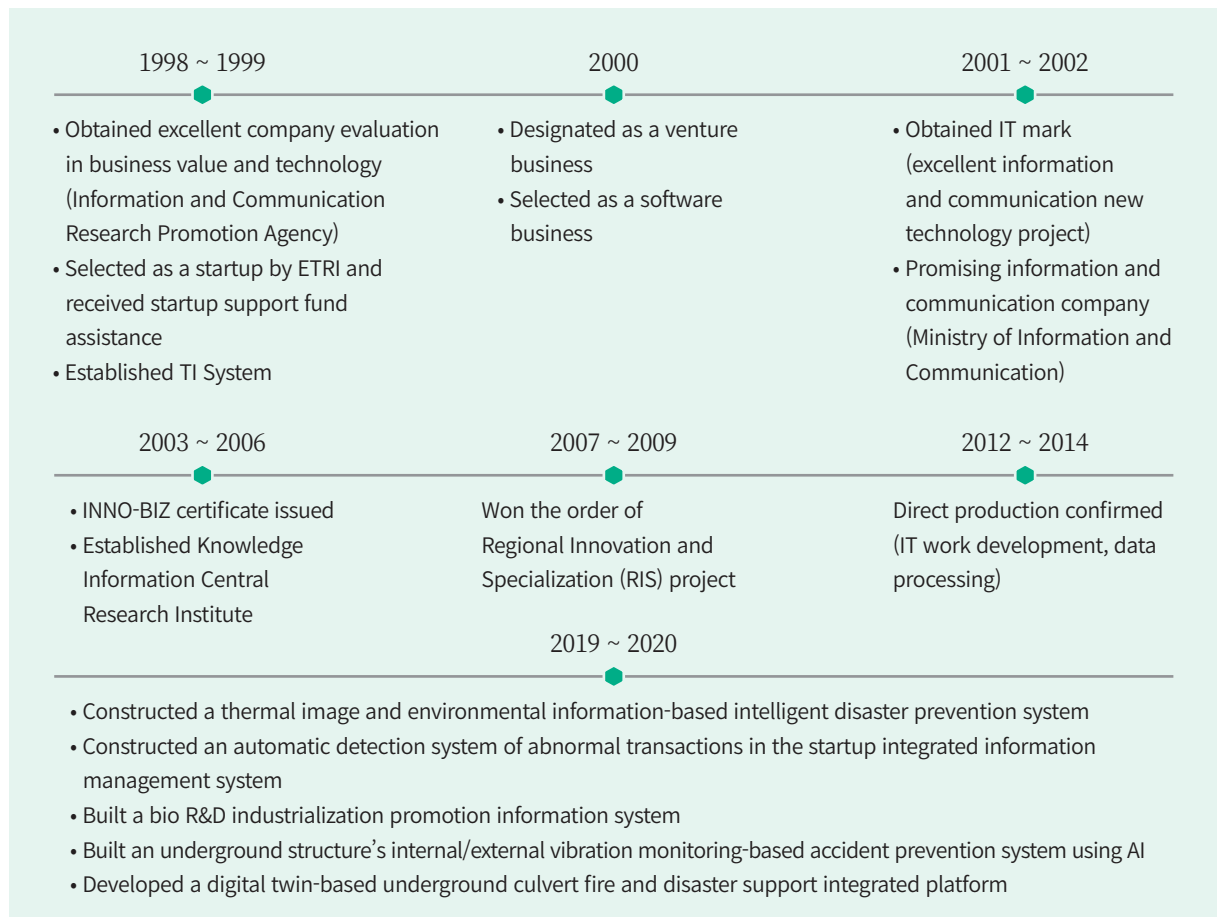
We succeeded in the development of a technology offering a risk prediction service using AI for underground culvert first-ever in Korea. We could expand the management domain that had been focusing on existing internal facilities to the entire culvert structure.

#### Q2. What was the key to the successful achievements?

In Korea, gap of technological and economic conditions is huge between large corporation and small and medium businesses (SMBs) and between large cities and provincial small and medium cities. Good achievements could be obtained, because SMBs' technological capability improvement, and companies and public institutions had cooperated and made efforts for win-win partnership for job creation and regional balanced development.



#### TIMELINE





# Disaster safety and energy efficiency at the forefront of SOC digitalization



## Enitt Co., Ltd.

### General information

Detailed project name IoT · AI-based new data dam construction (digitalization)

Name of dedicated agency National Information Society Agency

### Company information

CEO Gi Song-do

Type of business Electromagnetic measurement testing, analysis instrument manufacturing/software development and supply

Year of establishment February 2018

Website [www.enitt.co.kr](http://www.enitt.co.kr)



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### Prologue

The global market for optical-fiber distribution sensors is expected to grow to US\$ 6.76 billion in 2023, and the domestic market is expected to grow to 240 billion won. Ninety-nine percent of the domestic optical-fiber distribution-sensor market is currently occupied by foreign products.

However, as ENITT was the first in Korea to succeed in commercializing the DAS system, it is predicted that it will be able to gradually secure market share in the future, based on its superior technology and price competitiveness compared to foreign products.

ENITT's DAS system is expected to play a major role in the public-safety and disaster-prevention ICT and IoT sensor market, which will reach US\$600 billion in the global market and 70 trillion won in the domestic market by 2023.



### key achievements

- ENITT succeeded in commercializing the smart management system construction project for the underground utility conduits of Gwangju Metropolitan City, the first in Korea, and implemented the construction of the railroad safety monitoring system based on fiber optic sensors for the Korea Railroad Corporation.
- In recognition of its contribution to the commercialization of distributed acoustic sensing (DAS) technology for the first time, it was selected as the “2021 National Representative 1000 Program for Innovative Companies” with an average annual growth rate of 100% and employment expansion of more than 50%.



### **Korea's Only DAS System A Company That Succeeds in Localization and Commercialization**

One of the pillars of the Digital New Deal, which is part of the Korean version of the New Deal, is the digitization of social overhead capital (SOC), which will invest 15.8 trillion won as total project cost by 2025. The goal is to increase the competitiveness of related industries by digitizing the core infrastructure of SOC and making cities, industrial complexes, and logistics smart. Therefore, four core infrastructures were selected, and one of them is 'disaster response'.

ENITT is a company specializing in AI disaster safety solutions that has become the first in Korea to commercialize 'DAS(Distributed Acoustic Sensing)' with its own technology. The AI-based disaster safety management solution and platform developed by ENITT is based on optical fiber sensor technology and is an innovative monitoring technology that can detect and check abnormalities in facilities and structures by measuring vibration and temperature in long-distance and continuous sections.

"The e-DAS, e-DTS, e-OFDR, and e-FOAE technologies developed by ENITT, the first in Korea, are a single piece of optical fiber based on artificial intelligence that can measure at least 1,000 to 10,000 points simultaneously without a separate signal line, or communication or power supply. In addition, it can detect anomalies even in a long-distance continuous section compared to the point sensor, which has limitations when measuring a single point."

ENITT has been investing heavily in its technological capabilities in line with the coming of the 4th industrial revolution since 2018, the beginning of the company's establishment. As a result, by securing 17 patent registrations and applications, 2 IPC applications, 3 GS certifications, 5 program registrations, 4 KC certifications, and 1 KERI certification, AI-based disaster safety management solutions and platform technology capabilities were able to be developed. And based on these capabilities, the sales volume, which started with 600 million won in 2018, has grown to 5 billion won, more than eight fold in just two years.

### **With Proven Technology At the Forefront of SOC Digitization**

Major domestic and foreign infrastructures were built intensively in the 1960s and 1970s, and the risk of safety accidents is increasing due to rapid aging and deterioration in performance. The government is trying to secure public safety, such as by installing early warning systems for disaster response in high-risk areas by digitizing core infrastructure directly related to people's lives through the digitization of SOC. Accordingly, the public safety and disaster prevention ICT market and IoT sensor market are expanding significantly, and the need for a new solution, an AI-based

optical-fiber sensor safety-monitoring system, is emerging. However, all DAS systems installed in Korea use imported equipment, and there are many problems such as high purchase cost and difficulty in maintenance. In this situation, the localization and commercialization of ENITT's first 'DAS system' in Korea is expected to provide innovative solutions to related industries in the future.

The advantages of ENITT's AI-based disaster safety solution can be divided into four main categories.

First, long-distance measurement is possible. The e-DAS is the only product in Korea that can detect anomalies in real-time continuously in 1-meter increments up to 50 kilometers. Second, there is no need for separate communication and power lines. Therefore, the failure rate of the sensor is remarkably low, and the possibility of accidental fire that can occur, depending on the power state, is close to zero. Third, it has excellent price competitiveness. Currently, all DAS products used are imported, and each costs over 500 million won. ENITT's e-DAS product has 50% lower price competitiveness compared to foreign products, and it can reduce the construction cost by about 10 times compared to that of the existing electric sensor, on a 50-kilometer standard. Fourth, prompt maintenance is possible because there is a dedicated maintenance team.

### **Made Possible with Effort Super Fast Growth**

By participating in this support project, ENITT has laid the foundation for additional growth by securing domestic DAS source technology. In terms of technology, ENITT has been able to resolve the technological gap of Korea with advanced countries and barriers to secure the latest technology in the field of disaster-safety diagnosis and develop technologies related to similar industries.

From an economic point of view, it has laid the foundation for import substitution and reverse export for the DAS system, which has relied on imports. From a social point of view, it has created job opportunities by providing public safety and convenience through efficient safety management of various social infrastructures, and revitalizing the industry in the field of disaster-safety diagnosis. In a short period of time, one of the main goals of the Digital New Deal, which is to secure public safety and create jobs through the digitization of Korea's core infrastructure, has been reached. As it was the first project in Korea, there were trials and errors in the implementation process. Many hours went into designing the case and actually manufacturing it by arranging each company to manufacture the optical measuring instruments. In addition, since it is being built in a secure facility, there are access restrictions, so the construction schedule may have been disrupted.

To solve this problem, an underground joint task force was formed based on experienced personnel, and an action plan

was established step-by-step based on overseas DAS system analysis data to solve the problem.

### A Confident Ambition for the Future

“DAS technology is a technology that can be used in all areas of the railway, oil pipeline, bridge safety, airport runway monitoring, and external intrusion monitoring industries. Based on these technologies, ENITT will actively participate in the social overhead capital digitization business of the Digital New Deal and become the best company in the field of disaster-safety solutions.”

In order to implement the above goal, ENITT received an investment of 1 billion won from the Technology Guarantee Fund and, in the second half of 2021, plans to secure a land area of about 6,600 square meters in the Gwangju AI complex to build a new office building and factory for mass production. In 2022, after introducing the quality control (QC) processor, the product is to be registered as an excellent procurement item, and in 2023, ENITT plans to establish an overseas R&D center in an agreement with the University of Cambridge. Through this, the company aims to increase its size by securing not only the domestic market but also the overseas market, with a listing on the KOSDAQ in 2025 and on the NASDAQ in 2027.

### MINI INTERVIEW

**Gi Song-do**  
CEO



#### Q1. What did you achieve by participating in this project?

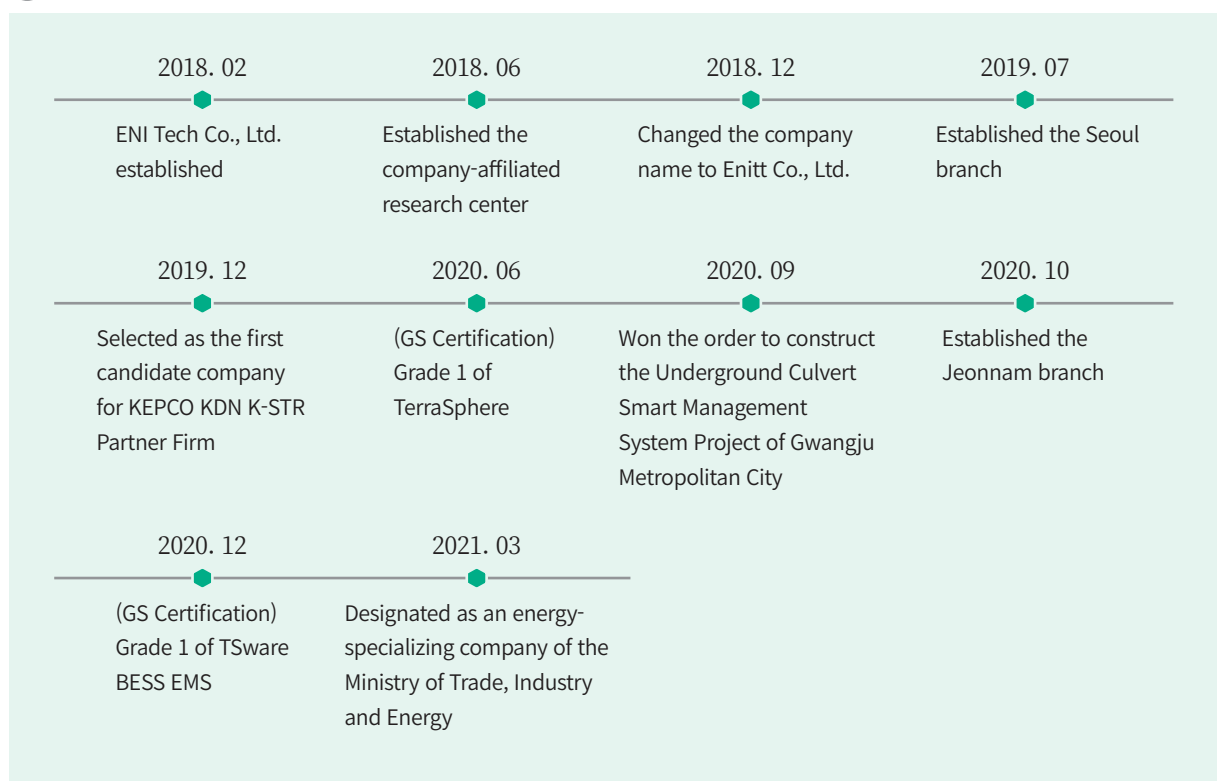
We succeeded in developing the first DAS system in Korea. We were able to be first to apply a domestic DAS system in the field through the smart management system project for Gwangju's underground utility conduits. In particular, the optical sensor-based DAS and DTS abnormality diagnosis technology enables real-time safety management specialization for utility conduits. It is possible to monitor real-time anomalies in utility conduits, such as structure collapse, temperature abnormality detection, intrusion detection, and fire in communication ducts, power ducts, and water supply ducts.

#### Q2. What was the key to the successful achievements?

I think it was the challenging execution. Is it not the first factor in success to challenge new possibilities without being complacent with reality and to achieve goals with the passion and creative thinking of 'we can do it'? Creating an atmosphere where employees can freely express their thoughts and opinions, and actively accepting them also helped a lot.



### TIMELINE



# CHAPTER



INFORMATION AND COMMUNICATION TECHNOLOGY

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# Excellent Achievements In Materials, Parts, And Equipment

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**SCT Co., Ltd.**

Solving Social Issues with Customized Smart Safe  
Recuperation Service Development

**WIDEP Co., Ltd.**

Realization of Energy and Carbon Emissions Reduction  
ICT and Big Data Technology-based Optimal Process  
Recipe

**elTOV Co., Ltd.**

Convenient World for Both Disabled People and  
Normal People. Korea's First Barrier-free Kiosk

**M2Cloud Inc.**

Construction of Stable Nationwide Supply Chain  
Management System of COVID-19 Vaccine

**CA Protec Co., Ltd.**

Underground facility safety management based on  
IoT and AI

# Solving Social Issues with Customized Smart Safe Recuperation Service Development



## SCT Co., Ltd.

### General information

Detailed project name	Intelligent Information Service Diffusion
Name of dedicated agency	National Information Society Agency (NIA)

### Company information

CEO	Seo Chang-seong
Type of business	Service
Year of establishment	August 2011
Website	<a href="http://www.esct.co.kr">www.esct.co.kr</a>



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### Prologue

SCT applies the Fourth Industrial Revolution technology to nursing facilities that are increasing as our society approaches the super-aging society, providing healthcare-based smart safe recuperation services.

Through a contactless platform for elderly people's safety vulnerable to COVID-19, SCT gains attention with various services by which risks from infectious diseases can be blocked and conveniences are enhanced.

The company provides convenient smart healthcare service to nursing facilities personnel, elderly people, and their family for comfortable old age and safe and happy recuperation service operations.



### key achievements

- Smart recuperation service support within nursing homes including care workers' work reduction, nursing facility-residents' life support, and the guardians' resident status monitoring through smart healthcare platform development.
- Offering services such as contactless booking for visit and contactless video calls booking, and recuperation knowledge chatbot system development.

### Making the World Smarter with Smart Healthcare

Recuperation / nursing service needs are explosively required due to aging society and the demand and costs for recuperation, nursing, and care increase. Various social problems such as dementia appear and the need to reduce severe musculoskeletal disorder is on the rise. Recognition of healthcare is recently consolidated due to COVID-19 and expectation on the digital contactless smart healthcare industry is being expanded. According to the 2021 Government R&D investment direction and Standard Revision (Proposal), the government plans to intensively invest in promising fields such as digital-based contactless industry, medical and bio industry as national response strategy in the post-COVID era. Demand for face-to-face healthcare using IoT in the post COVID-19 is expected to increase.

### Solve Social Issues with Intelligent Information Service Dissemination

SCT is an expert company offering premier IT services with the best technological capabilities and solutions including solution-based SI business, ITO service business, and cloud service business. The company offers the smart healthcare environment using ICT technology and actualizes smart factory applying IoT and big data in the industrial sites. As the ratio of elderly people soars, social costs, as well as various physical and psychological burdens also have increased. To solve the social issues and support systematic elderly population's healthcare and their living, the company aims to provide life cycle care service by applying diverse IoT technologies and devices in daily life. SCT is very supportive for personnel's ability development. The company supports ability development such as support for personnel's tuition and self-development costs and offers regular education/training by job using on / offline education / training. With horizontal organizational relationships, SCT executes various company satisfaction improvement programs including improvement of work efficiency by shaping the free communication and comfortable working environment and promotion of SMB's self-reliance and workers' satisfaction. With all this, the company instills the will to work.

### Customized Smart Healthcare through AI

The company has participated in this support project in order to systematically aid elderly population's healthcare and their living with the following: Offers life cycle care service by applying diversities of IoT technologies and devices in everyday life, saves social medical service costs, and invigorates senior citizens healthcare culture through



health improvement of elderly population. SCT cuts care workers' work, assists nursing facility residents' recuperation life, and support smart recuperation service within nursing facilities by the facility resident guardians' monitoring of the residents' health status through smart healthcare platform development. SCT developed contactless booking service including contactless booking service of visit and contactless video call booking service, and also a recuperation knowledge library system using the machine reading engine and intelligent information technology. The company has achieved the following KCL test certification results: mobile App function test for guardians, nursing daily record mobile App function test, administrator's Web function test and basic healthcare data collection and maphis transmission accuracy and maphis portal sleeping data collection accuracy. The smart safe recuperation service business has ensured extendibility towards other chronic disease based on the effectiveness of the integrated platform model and has brought new occupation group and employment creation effects including intervention treatment expert fostering and digital treatment technology manager. The company has created a new community-based smart healthcare market by activating community health community including relevant institutions such as local governments and public health centers and village health centers through smart infrastructure. A social and economic cost reduction effect was obtained through cutting-edge healthcare service support for socially alienated and economically underprivileged classes.

### Beyond COVID-19 and Network Limitations, Expanding Cloud-based Service

SCT faced with the difficulties of COVID-19. AS visit to nursing facilities became difficult, the problem of communication severance occurred. Regular communication was carried out using video conference or e-document. In case of visiting the nursing facility inevitably, visit was performed after taking preventive action such as wearing protective clothes and using self-test kit. Virus prevention and control coating inside the nursing facilities was also assisted.

The service instability and shade area occurrence due to network problems have been normalized and the shade area was solved through network cable construction and wired network replacement.

SCT plans to shift into cloud-based service. The company is trying to obtain service certification including ISMP (Information Security Management Program) and personal information protection certification CSAP (Cloud Security Assurance Program), as well as hardware adoption and ISMP via application of new technologies such as air bag against hurt from a fall and emotion support robot. The company aims to expand nationwide service and for infrastructure expansion and development.

#### MINI INTERVIEW

**Seo Chang-seong**  
CEO



#### Q1. What did you achieve by participating in this project?

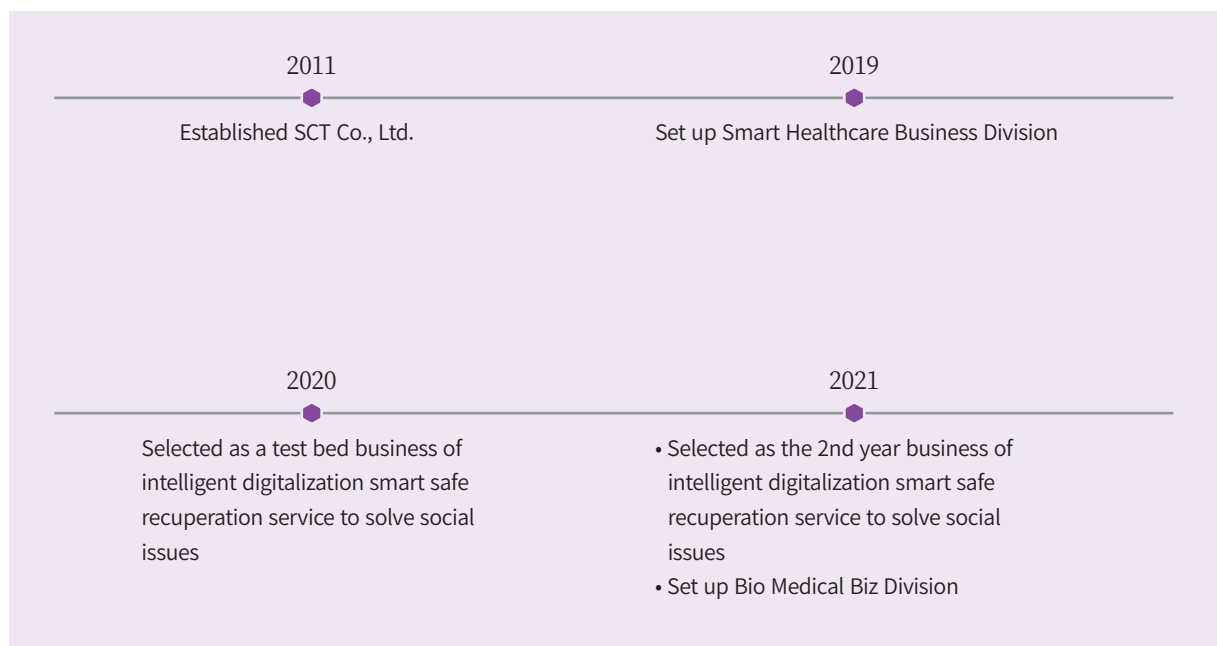
We could stably offer the following diverse nursing services: urine and feces monitoring service using smart diapers, heartbeat and sleep management service through smart band, nursing home indoor air quality monitoring and tilting mattress-based bed sore prevention service, hurt from a fall monitoring service, and tablet-based care worker using App service useful for patient management.

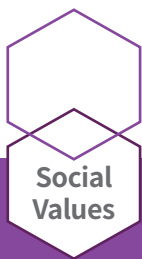
#### Q2. What was the key to the successful achievements?

I think the development of a mobile App for guardians "Smart Safe Nursing Home" and tablet App for guardians, diverse healthcare devices registration, air quality monitoring smart healthcare platform gateway, and efficient service operations can be the key to success.

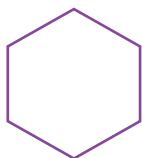


#### TIMELINE





# Realization of Energy and Carbon Emissions Reduction ICT and Big Data Technology-based Optimal Process Recipe



## WIDEP Co., Ltd.

### General information

Detailed project name	Intelligent Information Service Diffusion
Name of dedicated agency	National Information Society Agency (NIA)

### Company information

CEO	Gu Jeong-Yeon
Type of business	Software development and advice
Year of establishment	April 2012
Website	<a href="http://www.WIDEP.co.kr">www.WIDEP.co.kr</a>



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### Prologue

The power used for sewage / waste water treatment facilities takes up most in the power consumption. Energy cost spent for sewage treatment was almost KRW 1.5 trillion based on 2017 data; therefore the problem of energy and cost savings in the industry has been the biggest task to solve.

To solve this, WIDEP drew optimal operation recipe of sewage / waste water treatment facilities combining ICT technology, and developed a solution to cut energy consumption and cost, while maintaining existing water quality.

The solution that WIDEP had developed achieved more than 10% energy cut compared to the existing one, although all regarded it was impossible, by improving maintenance efficiency and facility operation rate, and effective management of durability year.



### key achievements

- Realization of energy and carbon emissions cut in all processes with AI/big data platform Smart E3I, for the first time in the sewage / waste water treatment field.
- Facility resource management capability consolidation according to various water quality models with solution reinforcement through winning KRW 450 million order of a project of KIAT.



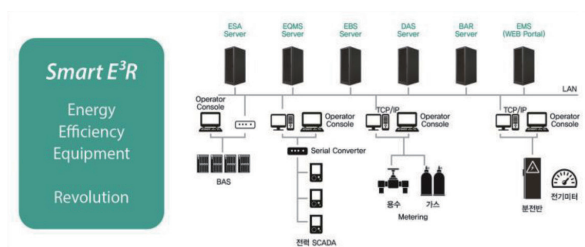
## Reduce Immense Energy Consumption and Costs.

Korea's annual sewage treatment cost in 2017 was KRW 1.4683 trillion, and this shows an increasing trend every year, due to increase in small and medium treatment facilities and the facilities enhancement. Of power consumption in the environmental industry field, the ratio of sewage / waste water treatment facilities was 94.3% and so the energy and cost saving issue through facility efficiency improvement has been a long time agony in the industry.

As a solution to this, WIDEP made a solution Smart E3I that can save energy by collecting and storing real time data on all energy sources (WAGES: water, air, gas, electricity, steam) through various IoT sensors, building the big data environment, and identifying various waste factors.

"In the initial stage, nobody believed us. People even did not think of reducing energy at the production sites. They were not interested in energy, as they recognized that output was important most. However, we started to let them know about our methodology, carrying out various consulting, and we began to be recognized gradually with meaningful outcomes."

WIDEP's Smart E3I Platform meaning Energy, Efficiency, and Equipment was completed with technology built up through energy management consulting for the 63 Building energy management consulting, LG Display energy management POC, and Daehan Solution (tier-1 vendor of Hyundai / Kia Motor).

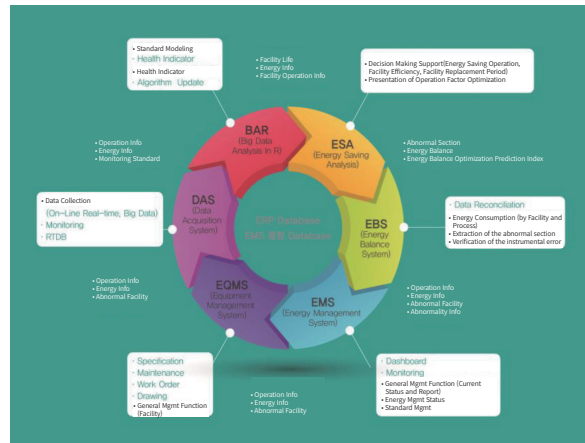


## Top ICT company Fulfilled Empirical Achievement for State Infrastructure Intelligent Digitalization Project

WIDEP achieved 10.6% energy savings, recorded 97.6% service satisfaction, and 96.7% sensor measurement operation rate year on year through Chunyang Public Sewage Treatment Facilities Intelligent System Construction project in Bonghwa, Gyeongbuk. Through this, the company proved its capabilities. WIDEP was recognized as an excellent ICT company in the environmental industry field as the only Korean company fulfilling empirical achievement with the matchless intelligent technology.

"Energy used in factories accounts for most, and we made a method to save the energy. Our goal is to make people recognize that all factories can efficiently produce, although they use energy less."

While performing Korea Environment Corporation's project,



WIDEP's system maturity improved. The company extended additional technology scope with opportunities newly found during its carrying out big projects, which has become good foundation for growth.

## Aiming for Automation Solution to Cut Energy Use and Costs

"We put high priority on making solutions to help industrial sites, and making automation software not giving burden to users in terms of work."

WIDEP's goal is constructing autonomously operated factory facilities, although users do not operate, and realizing an energy and cost cutting system. The company thinks that teamwork between skillful factory environment experts drawing efficient processes based on long experiences, and young generation good at recent program development without inharmony as an important asset.

As a company actualizing a solution optimized to a recent trend, "low carbon, green growth," WIDEP is repeating bold challenges based on pride contributing to the earth environment and our society. Bigger growth is expected, in view of the company's ceaseless efforts to make sustainable industry and environment and its persistent challenges.

## MINI INTERVIEW

Gu Jeong-Yeon

CEO

**Q1. What did you achieve by participating in this project?**

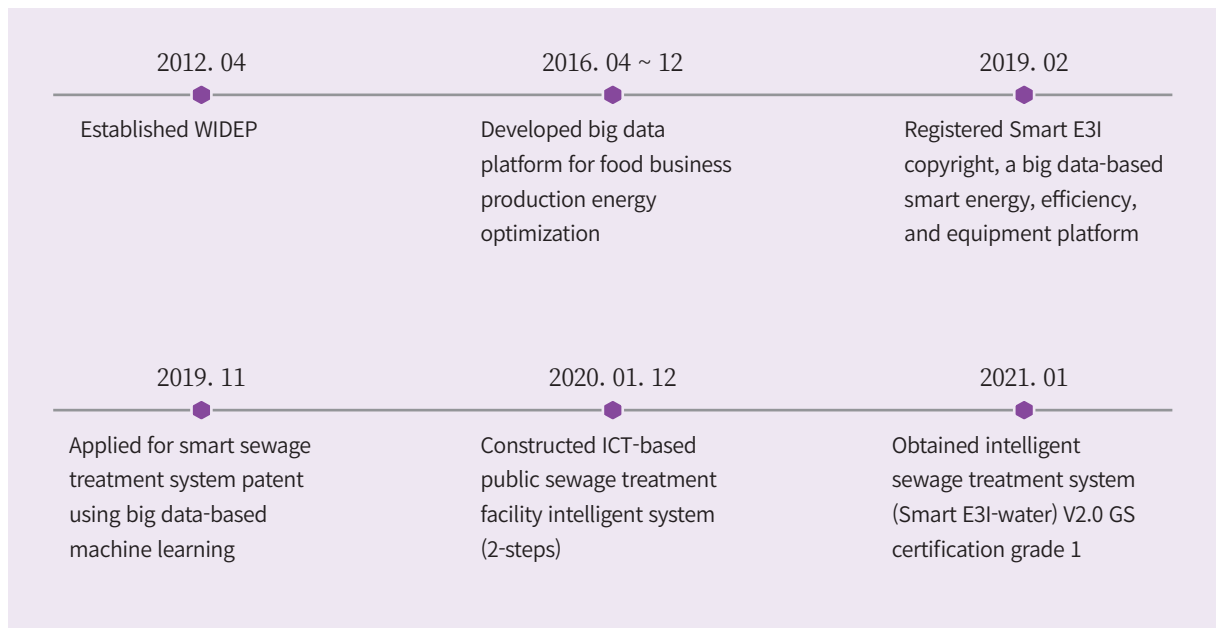
We have proved energy savings by applying the method by combining the intelligent software for the sewage / waste water system, and could obtain a valuable track record that may be applied to other facilities and processes. Especially the Smart E3I Platform received GS certification grade 1 and obtained an opportunity to register as an excellent procurement product, and we applied for the relevant patent.

**Q2. What was the key to the successful achievements?**

Communication seems to be most important. We have tried to persuade the other parties with patience and have responded to requested data or explanations. With this mindset, we have treated our customers. I suppose that anxiety on an unfamiliar thing needs to be solved through expert's presentation, and that it is important to clearly show the results.



## TIMELINE



# Convenient World for Both Disabled People and Normal People Korea's First Barrier-Free Kiosk



## eTOV Co., Ltd.

### General information

Detailed project name	Intelligent Information Service Diffusion
Name of dedicated agency	National Information Society Agency (NIA)

### Company information

CEO	Kim Ji-Seong
Type of business	Applied software development
Year of establishment	November 2018
Website	<a href="http://www.eTOV.com">www.eTOV.com</a>



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### Prologue

Kiosk is emerging as a core role in the contactless era. Consideration of socially underprivileged people, however, is still lacking.

The rapidly increasing kiosk market due to digitalization according to the Fourth Industrial Revolution and recent COVID-19 is greatly growing each year. But discrimination and exclusion still remain in terms of accessibility for disabled people and information-vulnerable class compared to fast growth.

eITOV developed barrier-free kiosk that even socially underprivileged people can easily use to solve digital information divide and is opening up a world where anybody can enjoy information without being discriminated.



### key achievements

- Development of barrier-free kiosk equipped with voice guidance for visually impaired people and height adjustable function for wheelchair users first-ever in the world.
- Offering upgraded kiosk service by additionally applying various technologies including contactless air touches and screen sterilization due to COVID-19.



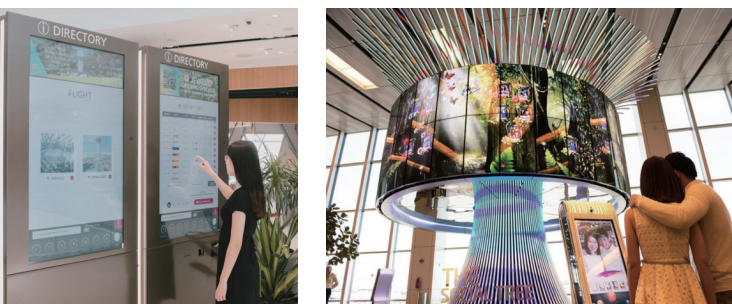
## Ethical Company Considering Socially Underprivileged People

eTOV that has built fame for nearly 20 years in the kiosk development field has been constructing a guide system within leading distributor groups including Korea's three major distributors (Lotte, Shinsegae, Hyundai) and Singaporean Capital Land and F&O, starting from the development of the first-ever shopping mall guide kiosk for Korea (Time Square) and Japan (AEON Mall).

eTOV, taking up 90% of the Korean and Singaporean markets, is operating branches in Singapore and Hong Kong, and is gradually expanding into the global market including China, Hong Kong, and Malaysia.

The company is recently developing AI technology-applied upgrade technology. The company successfully launched the commercial service of shopping mall first-ever in Korea by installing voice recognition guide kiosk in Yeouido Hyundai Department Store this year.

Based on the technological capabilities, eTOV participated in the social issue solving business to solve digital divide propelled by the government, so contributing to hearty technology diffusion considering socially underprivileged People.



## Developed World's First Barrier-Free Kiosk

The barrier-free kiosk developed by eTOV has reflected various state-of-the-art functions for convenience improvement of various socially underprivileged people including elderly people and disabled people.

A voice guide system by which information is inputted with voice and guided with voice for visually impaired people and elderly people with bad eyesight was applied. By recognizing user's height and automatically adjusting the height of kiosk, an automatic height control function considering accessibility of disabled people and children was added.

The environment in which not only a guide service explaining with sign language for the deaf, but also blind people can also conveniently use is shaped.

Any disabled people feeling difficulties in use can receive help through images (video) from a remote counselor by pressing the call button. So a service giving help for anybody to conveniently use through remote control of a counselor was applied.

If you are worried about giving a burden to others who are queuing, because you are not familiar with the use of the kiosk, a mobile linkage service with which several people can use one kiosk is also provided by taking a photograph of the QR code.

## Social Consideration Dissemination and Efforts for Infectious Disease Prevention

"We want to be helpful for making the world without discrimination and exclusion through the kiosk that disabled and normal people can conveniently use. In the COVID-19 era, we will endeavor to make a system that everyone can safely use without anxiety on the use of kiosk by touching the screen."

eTOV is also developing an upgraded barrier-free kiosk by additionally applying various technologies such as contactless air touch and kiosk screen sterilization to cope with the COVID-19 situation.

eTOV plans to install upgraded kiosks in Suwon City Screening Station and Chonnam National University Hospital. The company is contributing to digital embracement policy diffusion for socially underprivileged people by installing a barrier-free kiosk in Siheung, Gyeonggi-do. Especially, eTOV plans to disseminate the barrier-free kiosk for disabled people and elderly people to easily access by presenting standard plan and enhancement of hardware through spot inspection and supplementation of various functions through test bed in the second year, namely this year.

The company plans to actively promote global market entry of the barrier-free kiosk: It will participate in the 2021 CES (Oct. 5 - Oct. 7) held in Las Vegas in October, and plans to disseminate Korea's hearty technology considering socially underprivileged people.





## MINI INTERVIEW

**Kim Ji-seong**  
CEO



**Q1. What did you achieve by participating in this project?**

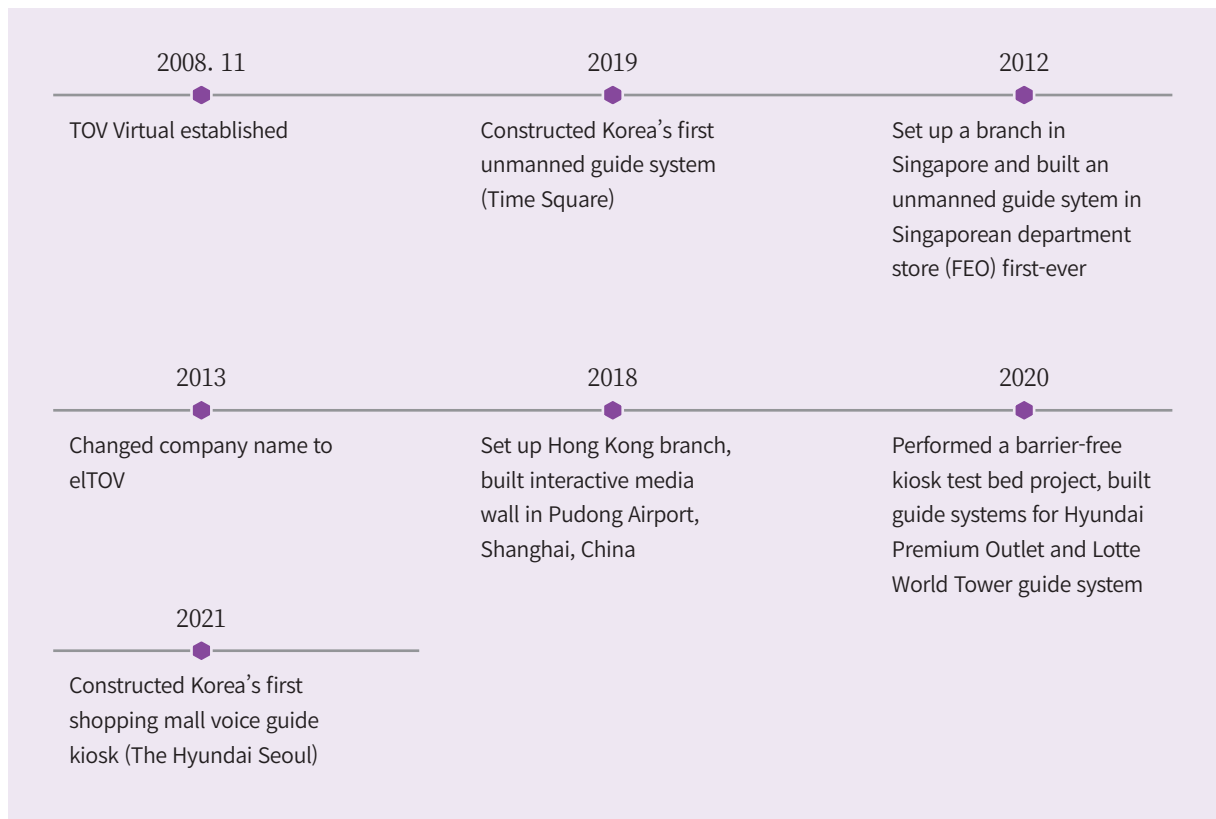
The kiosk has been developed for socially underprivileged people who have been alienated from digitalization. I think the shaping of service diffusion base by developing and verifying the barrier-free kiosk first-ever in Korea as the biggest achievement. The kiosk can be conveniently used by anybody through various technologies application of voice recognition, sign language guide, and braille service.

**Q2. What was the key to the successful achievements?**

Technological capabilities and experiences by leading the Korean and Singaporean guide kiosk market became a key driving force. Timely support of the government making efforts to solve digital divide with AI convergence service development knowledge on voice and face recognition created synergy and good results.



## TIMELINE

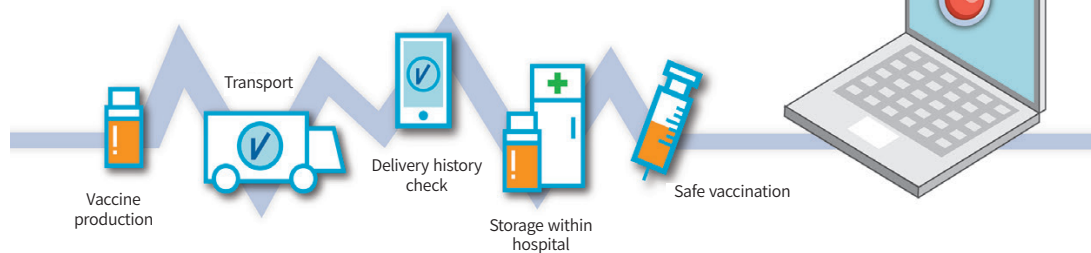


# Construction of Stable Nationwide Supply Chain Management System of COVID-19 Vaccine



## “Get Vaccinated Safely!”

Temperature monitoring is essential from production to vaccination to check vaccine quality. Perfect quality control is carried out through VSK smart temperature monitoring from production to vaccination to patients.



We practice **safe vaccination** with a vaccine quality control system by adopting **smart IoT technology**.

## M2Cloud Inc.

### General information

Detailed project name	Next Generation Internet Business Competitiveness Consolidation
Name of dedicated agency	Korea Internet & Security Agency

### Company information

CEO	Moon Jin-soo
Type of business	lot software development
Year of establishment	July 2015
Website	<a href="http://www.m2cloud.co.kr">www.m2cloud.co.kr</a>



▲ Scan the QR code



### Prologue

Storage and distribution of vaccines is important, not to mention the development of COVID-19 vaccines. The reason is that valuable vaccines are not administered but must be disposed, if they are confirmed not to be properly handled in the process of storing and transporting vaccines sensitive to temperature.

In numerous countries as well as in Korea, huge losses have occurred due to improper management of vaccine storage and transport. To enhance the efficiency of vaccine storage and distribution, M2Cloud has developed the IoT technology-combined supply chain management system.

The company prepared a turning point in distribution and supply of all medicines as well as vaccines, by ceaseless monitoring in all processes of medicine distribution.



### key achievements

- Realization of medicine distribution field digitalization with the launch of digital biological medicine shipment certificate service to ensure medicine safety.
- Selected as a COVID-19 vaccine supply chain system builder with the cloud-based nationwide COVID-19 vaccine supply chain management system.

## Real-Time Monitoring of Medicine Storage and Delivery

Vaccines sensitive to temperature cannot be checked with smelling or the naked eye, although they are transformed. The effectiveness of vaccine, however, can be identified with temperature management record.

Many variables may occur in the process of production of vaccines to vaccination. The safety of vaccine can be ensured through ceaseless monitoring for quality control in all the processes of medicine supply chain from production to distribution, storage, and vaccination.

M2Cloud guarantees transparency with the IoT security-certified technology evaluating the data security, integrity, and stability, the company provides temperature history that can be trusted by both suppliers and consumers in all the distribution and storage processes of vaccines. The company also offers non-interrupted real time monitoring service in all distribution processes. With all this, M2Cloud offers supply chain service optimized for temperature sensitivity that can manage risks by checking problems in the medicine transport/storage process in advance.

With cloud-based service offering, the company contributes to logistics service digitalization, and has led productivity and efficiency improvement by offering various procedural documents in e-documents rather than paper documents.

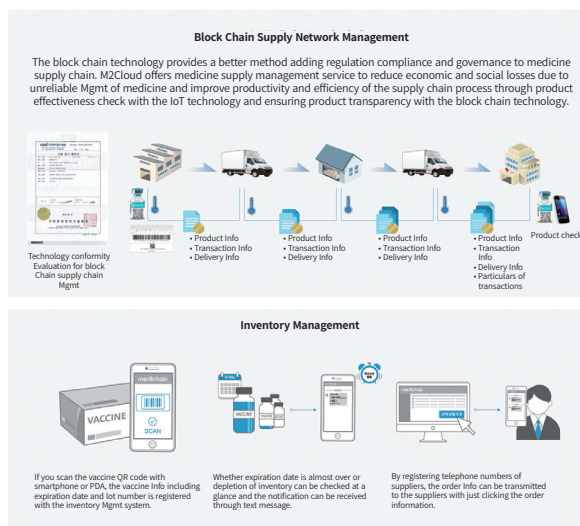
## Vaccine Safety Keeper Campaign

An accident in which many vaccines had to be disposed occurred, because they were exposed to room temperature in September 2020. Because of this, distrust towards vaccine sharply rose, and vaccination refusal and unused vaccine inventories were accumulated. Therefore huge social and economic losses occurred including the delay of herd immunity.

M2Cloud is waging a VSK (Vaccine Safety Keeper) campaign jointly with Korea Children's Hospital Association to recover people's trust towards vaccine by letting them know about the company's scrupulously checking vaccine status in all vaccine distribution processes, as well as vaccine's safe management by adopting a security technology-embedded IoT device.

## Key Company of Cloud-Based Medical Data Control

M2Cloud has a meaning that medical data is managed on Cloud was established in July 2015. The company consists of technical personnel having diverse experiences in global corporations such as Motorola, Oracle, Sun Microsystems, IBM Watson and medical experts.



M2Cloud has product line specialized in non-interrupted monitoring of bio medicine distribution process. The company realized integrity service without data loss due to end-to-end communication between servers by embedding the Internet Protocol (IP) on the low power Bluetooth device. Without battery replacement. M2Cloud is offering the IoT service combining the merits of Bluetooth technology and Internet communication technology.

With Korea's No. 1 IoT security-certified system meeting the IoT security standard organized by the Korea Internet & Security Agency, the company has experience and technology through which the Korea's largest COVID-19 vaccine supply chain system has been successfully built. M2Cloud, recognized as a reliable supply chain service company connecting hospitals, clinics, and distributors nationwide, aims to place itself as a world top-notch company through fulfilment platform construction and service offering connecting suppliers, customers, and patients (consumers).

## Efforts to Diffuse Social Consideration and Prevent Infectious Disease

"We want to be helpful for making the world without discrimination and exclusion through the kiosk that both disabled and normal people can conveniently use. In the COVID-19 era, we will endeavor to make a system that everyone can safely use without anxiety on the use of kiosk by touching the screen."

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"eTOV plans to install upgraded kiosks in Suwon City Screening Station and Chonnam National University Hospital. The company is contributing to digital embracement policy

diffusion for socially underprivileged people by installing a barrier-free kiosk in Siheung, Gyeonggi-do. It plans to disseminate the barrier-free kiosk for more disabled people and elderly people to easily access by presenting standard plan and enhancement of hardware through spot inspection and supplementation of various functions through test bed in the second year, namely this year.”

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### MINI INTERVIEW

**Moon Jin-Soo**  
CEO



#### Q1. What did you achieve by participating in this project?

We have constructed a cloud-based supply chain system in all processes from vaccine production to delivery to hospitals and clinics nationwide by being selected as a key achievement vaccine supply chain management system builder.

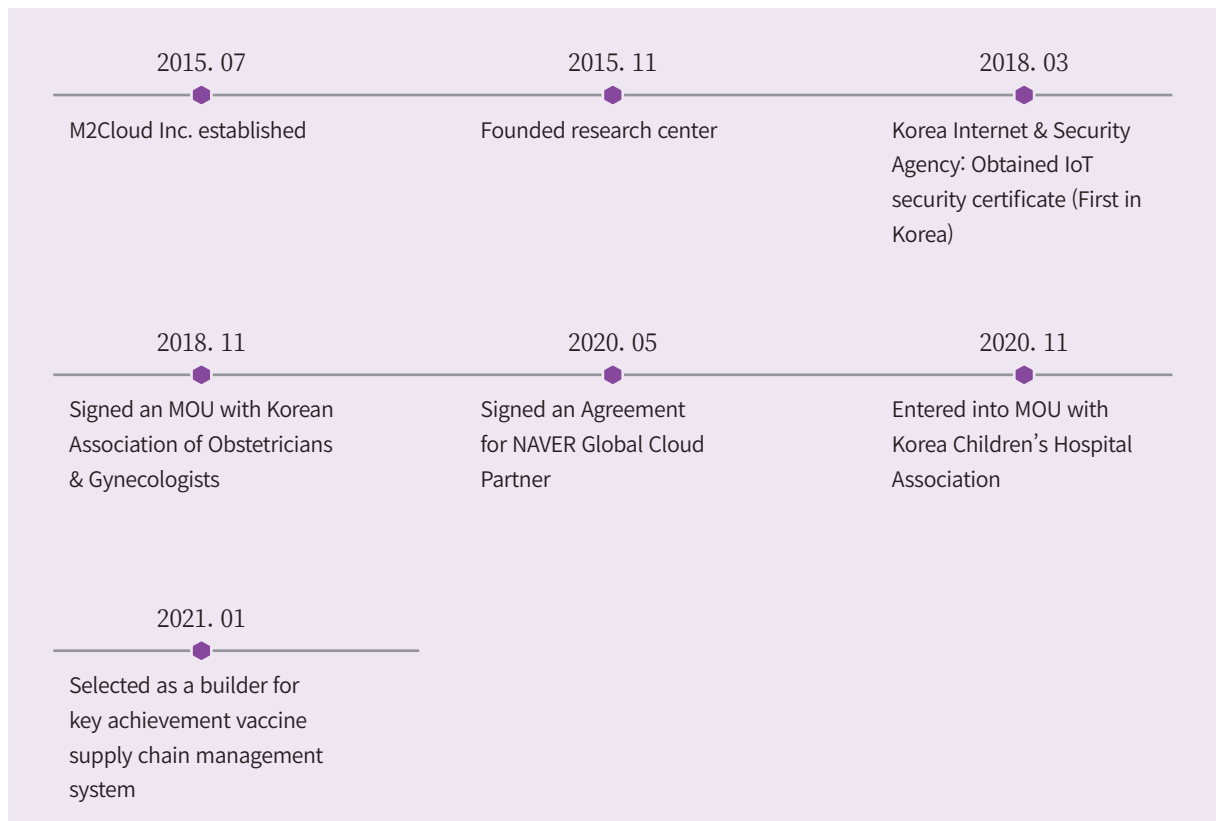
Experiences accumulated in the construction and operation process of Korea's largest vaccine cold chain system can be another huge achievement. We are performing product enhancement work on the basis of accumulated experiences.

#### Q2. What was the key to the successful achievements?

We could continuously perform R&D in the medicine management field and could gain ground as a medicine cold chain expert company.



### TIMELINE





# Underground facility safety management based on IoT and AI



## CA Protec Co., Ltd.

### General information

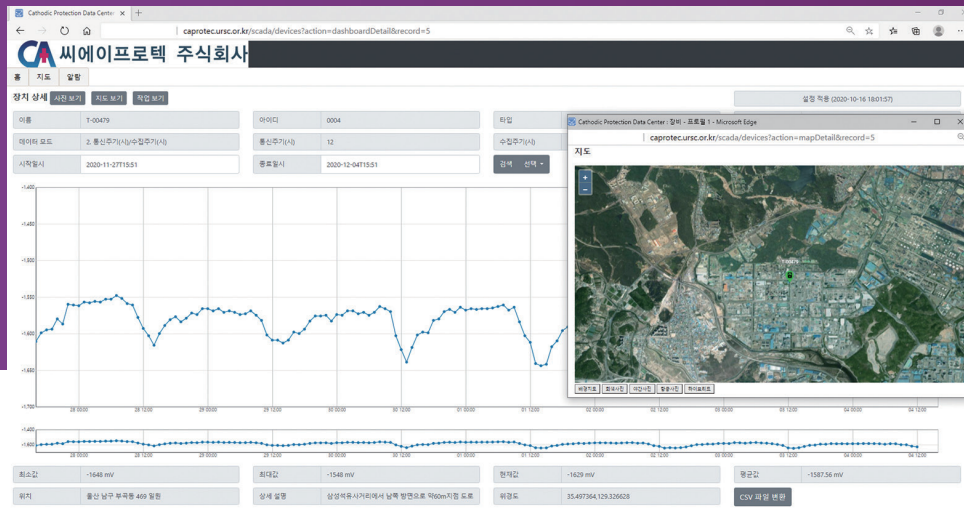
Detailed project name	Intelligent Information Service Diffusion
Name of dedicated agency	National Information Society Agency (NIA)

### Company information

CEO	Hwang Gwang-yong
Type of business	Specialized science, technological service and electrical construction
Year of establishment	April 10, 2012
Website	<a href="http://www.caprotec.co.kr">www.caprotec.co.kr</a>



▲ Scan the QR code



### Prologue

The underground communication tunnel fire that broke out in Seodaemun-gu, Seoul, in November 2018 caused the paralysis of communication and banking services. The fire aroused attention to safety management of underground-buried pipes within Korea.

CA Protec has diverse technologies and patents through which buried pipes can be automatically managed remotely in terms of safety and risk. The company strives to make technology powerhouse Korea in line with the Fourth Industrial Revolution era.

CA Protec is recording 100% performance vs target in all items related to the buried pipe management including direct / indirect diagnosis inspection of underground pipes and IoT-based monitoring system construction.

The company plans to grow into Korea's top industrial safety technology firm.



### key achievements

- 100% achieved AI algorithm-based direct/indirect diagnosis inspection and risk evaluation with IoT monitoring system installation and operation.
- Sales rose with installation of the IoT-based monitoring system for petrochemical companies in Ulsan City and registered the patent of Buried Pipe Remote Control Means Construction system.

### Recognized Expert on Safety of Buried Pipes

CA Protec was selected as an excellent company through 100% performance of the Ulsan High Risk National Industrial Complex Underground Pipe Safety Management Intelligent Project. Based on advanced diagnosis technology service, the company strives to realize social values through new safety culture creation, total service offering, and ensuring industrial facility safety.

Corrosion risks of all facilities are prevented in advance with varieties of experiences, rich onsite data, and Korea's best diagnosis technology, and the company focuses on ensuring safety of industrial facilities.

CA Protec has the following technologies: electric type system diagnosis of buried structures, problem solving technology (buried pipe / duct exterior corrosion direct evaluation), and sacrificial anode method and impressed current method technologies on buried pipes and underwater structures. CA Protec has the following experiences related to its business: maintaining IoT-based monitoring system including test box and rectifier and offering data analysis and solution, or survey of underground facilities according to public survey work regulations, and GIS DB construction service including underground facility map making and structuration editing (registration of Busan Underground Pipe Integrated Management System <UIS>).



### Safety Company for National Infrastructure Industry Equipped with Technology and Patents

The company has the following patents: Underground-Buried Pipe Damaged Area Exploration Method (Patent No. 10-1949768), Buried Pipe Remote Management Means Construction System (Patent No. 10-2218788). Recently the company has carried out more than 120 cases of the resident companies' underground pipe safety diagnosis in the Ulsan National Industrial Complex for recent five years.



With the IoT-based underground pipe diagnosis solution, the company has carried out safety diagnosis of city gas companies including Busan City Gas, Incheon City Gas, Chungcheong Energy Service, and Chonnam City Gas. CA Protec was awarded the Man of Merit Citation for Gas Safety Management by the Commerce, Industry and Energy Minister in the 27th Korea Gas Safety Awards thanks to its achievements. Although CA Protec suffered from the biggest difficulty in securing expert personnel, the company could employ new personnel with business exchange with Korea Maritime & Ocean University Link+ and Ulsan National Institute of Science and Technology Link+. The company also has focused on continuous fostering existing specialized personnel on its own.

CA Protec plans to continuously grow through securing ICT expert personnel and education / training, while strengthening underground buried pipes' AC voltage monitoring and thinned pipe monitoring technologies.

### Wisdom Overcoming Difficulties with Cooperation for Intelligent Information Service

Despite lack of understanding on the regulations and relevant business handling in the support project process, the company could smoothly finished the project with help of NIA (supporting organization) and the consortium (Ulsan City, Ulsan ICT Promotion Agency, University of Ulsan Link+, and Kyungdong City Gas).

The company clearly sets goal from the business plan establishing stage, and its continuous opinion exchange with the supporting organization has become the foundation to successfully fulfill its goal.

Efforts to actively promote business, not being afraid of failure with a firm belief and commitment! Culture shaping to fulfill achievement with collaboration with colleagues, respecting diversity! CA Protec is sweating a lot today for companies striving for capability developing personnel's growth and organizational development.



## MINI INTERVIEW

## Hwang Gwang-yong

CEO

**Q1. What did you achieve by participating in this project?**

We have achieved 100% vs target in each item including underground pipe direct / indirect diagnosis inspection, IoT-based monitoring system construction which we set as goals and indicators. As we perform this support project, we could employ three new employees, and we received huge help for sales increase by installing IoT based monitoring system for numerous petrochemical companies in Ulsan.

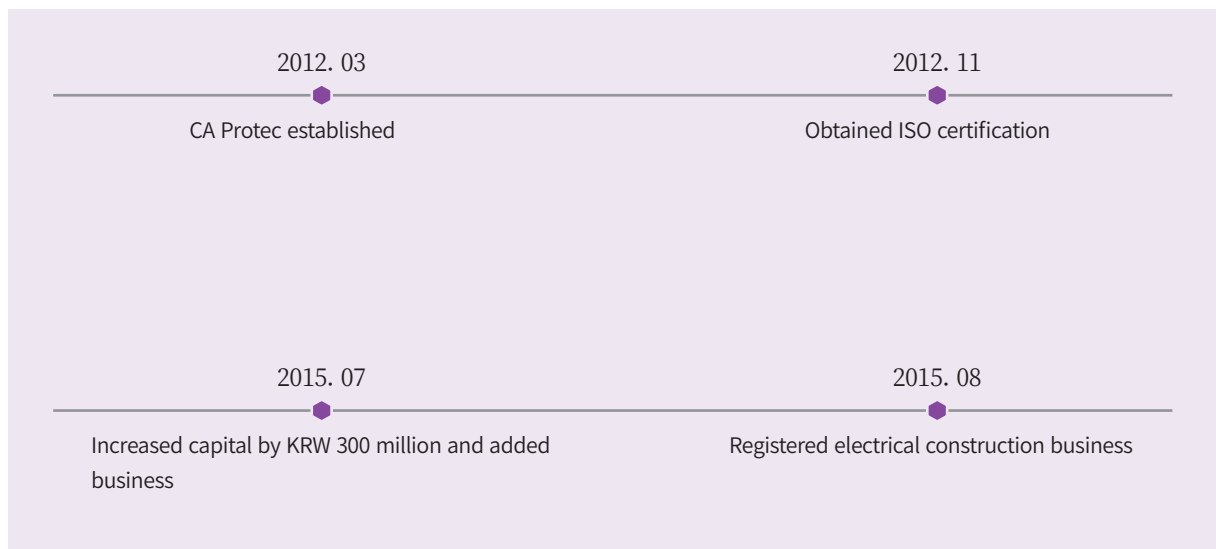
**Q2. What was the key to the successful achievements?**

We could smoothly finish the project with active support of NIA and the help of consortium (Ulsan City, Ulsan ICT Promotion Agency, University of Ulsan Link+, and Kyungdong City Gas).

I think we could accomplish excellent achievements through our continuous opinion exchange with the supporting organization and regular inspection of our goals.



## TIMELINE



# CHAPTER



INFORMATION AND COMMUNICATION TECHNOLOGY

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# Excellent Achievements In Social Value

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**Younglimwon  
Soft Lab Co., Ltd.**

Cloud ERP service for SMEs in Japan. Ranking no. 1 in ERP market share in the domestic SMB market.

**Cloudike Co., Ltd.**

Safe and Convenient Cloud File Sharing Service that Global Users Recognized First

**Cloud Silo Co., Ltd.**

Pursue the Vietnamese Market with Cargo Mobility Platform

**O PENEDGES  
Technology Co., Ltd.**

An ICT unicorn company that entered the global market with AI-based edge computing technology

**ABC Labs Co., Ltd.**

Exporting domestic smart farm technology based on ICT convergence to Malaysia

# Cloud ERP service for SMEs in Japan. Ranking no. 1 in ERP market share in the domestic SMB market.



## Younglimwon Soft Lab Co., Ltd.

### General information

Detailed project name	Overseas IT Support Center Operation
Name of dedicated agency	Korea Trade Investment Promotion Agency (KOTRA)

### Company information

CEO	Gwon Yeong-beom
Type of business	Software development and supply
Year of establishment	May 1993
Website	<a href="http://www.ksystem.co.kr">www.ksystem.co.kr</a>



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## Prologue

Providing services to small and medium businesses in Korea and Asia with ERP system development for 28 years, YoungLim Won Soft Lab ranks first in the Korean SMB market.

The perfect SaaS cloud ERP SystemEver provided by the company is an ERP system through which work can be handled anytime, anywhere with Internet connection environment and Web browser. Cost savings can be an advantage because companies feeling the price burden in adopting an ERP system can select and use only the modules they need.

With ERP getting the limelight in Japan, the company, which takes great pride as an IT firm, plans to accelerate aggressive marketing in the Japanese market with cloud ERP. It plans to accelerate entry into the Southeast Asian market as well including Indonesia and Thailand where many Japanese companies have entered.



## key achievements

- Prepared to provide ERP service that Japanese SMBs can flexibly adopt without burden as their recognition on the importance of digital transformation increases.
- Completed contracts with 11 Japanese IT partner firms, currently servicing the cloud ERP system to SMBs including large corporations.

## Korea's Top ERP Firm Getting More Limelight in Japan

Due to the advent of the Fourth Industrial Revolution (Digital Transformation) age, demand for ERP as a pivotal information system integrating all corporate information is becoming more diversified and complex in the digital shift environment of the corporate information. It is connected to the demand for an enhanced ERP system that can effectively support each company's high-level business process, fuse ERP information and corporate internal/external ecosystem information, and provide high-quality decision-making information.

Data accumulated to ERP, a core solution of a firm handling all processes within firms in the digitalization age, is massive. It

is clear that demand for analyzing such massive data from a corporate management perspective will increase. This is why ERP is expected to play the role of core infrastructure to actualize AI (artificial intelligence) for the analyses of firms through big data or machine learning.

Younglim Won Soft Lab has been developing the ERP system, a knowledge management solution, for 28 years and providing it to small and medium businesses in Korea and Asia. Since its establishment in 1993, the company has ranked No. 1 in ERP market share in the Korean SMB market through system development and sales activities. The company developed a customized ERP, K-System Ace, by industry to meet market needs. Since industry-specific process and best practices are embedded, customers can improve business and carry out efficient work. With detachable-type necessary industry process like a block, customers can stably use it without burden thanks to the additional development minimization and construction period reduction as the product is provided as a package. The cloud ERP “SystemEver” has reduced the initial adoption cost, and it is a cloud SaaS-based monthly billing ERP. Customers can select the necessary processes suitable for the firm’s management environment and growth stage. It supports multicurrency and multilanguage functions befitting the globalized management model, and global level security and backup are guaranteed. The company supports customers in performing management better by providing more meaningful insight in management with multidimensional analysis beyond the fragmented visualization information level through “K-System Management Analysis.” In addition, it offers the cloud ERP “SystemEver Non-Profit” for nonprofit corporations, the cloud-based pay outsourcing service “Ever Payroll,” and “Ever Absenteeism and Tardiness Solution” that enables conveniently managing attendance and absence. The company endeavors to create synergy through continuous partnerships on various related corporate solutions required for corporate management.

### **Company Endeavoring to Fulfill Social Responsibility Above All**

Younglim Won Soft Lab is implementing staggered office hours, work from home, and various types of leave (leave for 1/4 day) to cope with COVID-19. Staff cafeteria and café are operated by the company’s staff.

Internal and external education required for ceaseless self-development and books are supported. The company pays allowances when staff acquires the relevant certificates/licenses and gives an opportunity to enter graduate school and receive overseas training. A system offering various fringe benefits is in place, and the company makes efforts to create the optimal working environment.

The CEO forum and leader forum are operated to offer values to customers in addition to the ERP service. Younglim Won Soft Lab has offered lectures and opportunities to form human network for customer companies’ CEOs and executives. For middle managers of customer companies, the company holds next-generation leader forums featuring lectures by leadership instructors.

As part of its social contribution activities, the company has paid scholarships to adolescents by accumulating 1% of employees’ pay and 1% contribution from the company. As a scholarship club playing a mentor role as a guardian of adolescents, “Younglim Won One Percent Club” has been operated.

SystemEver is a perfect SaaS cloud ERP. It can be used on Azure, a Microsoft Cloud service, and work can be handled regardless of device, anytime, anywhere with Internet connection environment and Web browser.

Since advanced work process is constructed based on SOA (service-oriented architecture) technology, the ERP system can be organized by selecting only the necessary module(s). Therefore, Younglim Won’s ERP system has an advantage, i.e., firms feeling the burden in prices in terms of adopting an ERP system can select the minimum necessary module(s) (partial optimization) and then gradually add modules to promote total optimization.

SystemEver can support multicurrency and multilanguage suitable for a globalized management model; it also has a BI function that can visualize and show the process menu and management information data intuitively, expressing work flow according to time. It has a monthly use fee payment subscription style to avoid burdening small and medium businesses.

### **Performing Localization Support Business Boosted by Overseas IT Support Center**

Japan needs to document meeting-related details in meetings with customers. However, they could not properly express the good technology and knowledge they had, and they could not be adequately evaluated.

To overcome this, the company appointed a local person as CEO of its Japanese subsidiary, so he could explain for Japanese customers to understand easily through detailed documentation of various strengths of the system.

The Japanese market is the most difficult market in terms of quality control. From the development stage, standard specifications should be carried out through consent, and thorough system tests need to be performed repeatedly so that no problem occurs upon delivery. The company realizes customer satisfaction with quick response if an unexpected problem occurs.

The most difficult thing was the absence of marketing using the personal connection of Japanese locals. To consolidate

sales ability, consultants or advisers with outstanding personal connection cannot be left out, but the company ignored this in the initial stage. Later, the company realized that there will be no customers who would be interested in foreign products without any track record of adoption in Japan. Thus, the company contacted several coordinators in each specialized field, centered on retirees from Japanese large corporations boasting of extensive experience and knowledge. The company signed contracts for business consignment with them to take advantage of their connections with Japanese businesses.

### Ambition to Enter the Global Market

Younglim Won Soft Lab is steadily developing technologies to obtain AI and big data technologies. By setting up the organization “Digital Transformation on Cloud,” the company established a strategy to experience digital transformation on cloud and deliver the experience to customers.

The company plans to accelerate marketing in the Japanese market with cloud ERP. It has secured influential partners across Japan in the Japanese market where the company put efforts, and it is increasing various types of business customers including affiliates of large corporations and Korea-Japan joint companies. By concentrating its capabilities on this, the company plans to give an impetus for the expansion of market share in Japan.

With the quality and commercialization of its products recognized in Korea and Japan, the company is slated to enter the Southeast Asian market actively including Indonesia and Thailand where many Japanese companies have entered.

### MINI INTERVIEW

**Kwon Yeong-beom**  
CEO



#### Q1. What did you achieve by participating in this project?

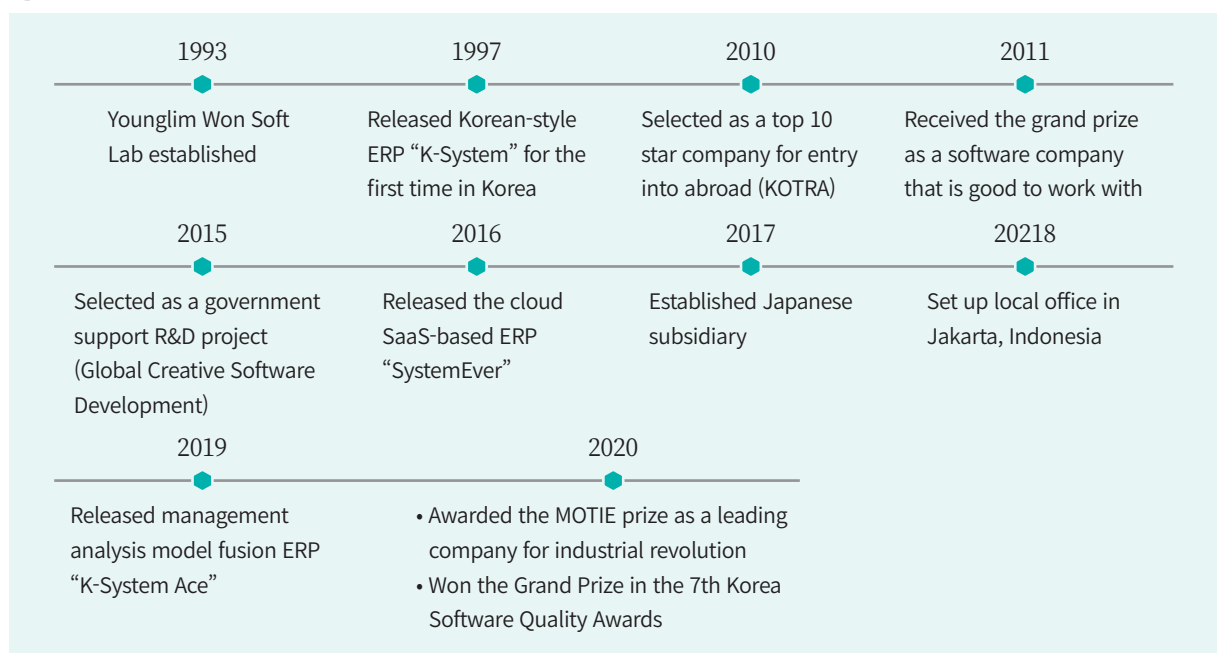
The major achievement that we accomplished while carrying out the localization support business in Japan—where the Korean ERP system was not adopted—was that we have completed ERP system suitable for the commercial habit of Japanese, who are notorious for being picky. We got to have an opportunity to provide our ERP system that can respond to multilanguage/multicurrency for Japanese large corporations’ subsidiaries and those that entered Southeast Asia through contracts with Japanese large corporations. By securing partner firms with high recognition in major provincial cities including Tokyo, I believe we have laid the foundation for the expansion of our business to all of Japan, which can be said to be a major achievement.

#### Q2. What was the key to the successful achievements?

We have recognized the Japanese ERP market’s limitations of not overcoming the on-premise environment, a server construction type, in advance, and we have completed and supplied the cloud ERP system using state-of-the-art IT technology. Our ERP system is regarded as a system that can flexibly respond to social change and ‘working-style innovation’ of the Japanese government.



### TIMELINE





# Safe and Convenient Cloud File Sharing Service that Global Users Recognized First



## Cloudike Co., Ltd.

### General information

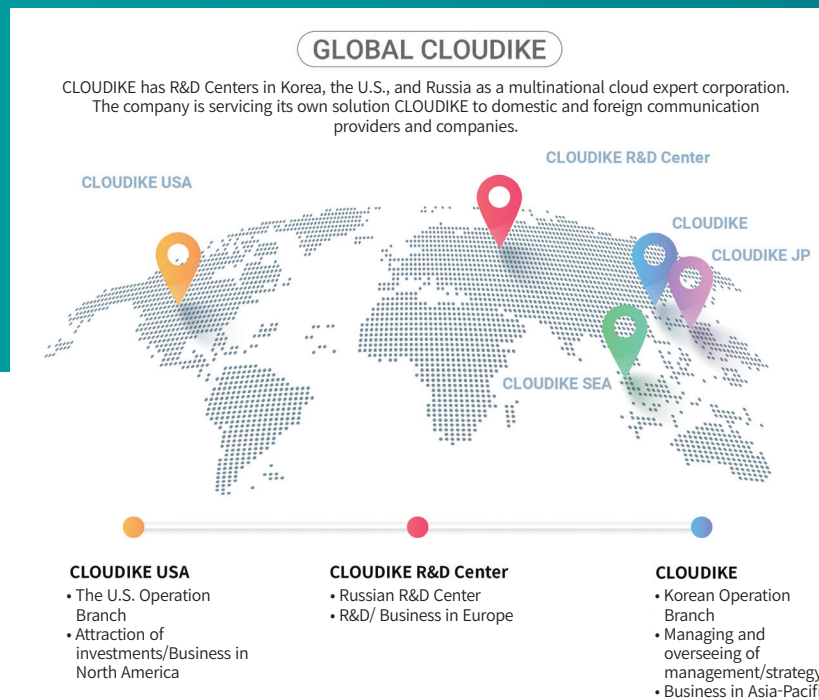
Detailed project name	Overseas IT Support Center Operation
Name of dedicated agency	National IT Industry Promotion Agency (NIPA)

### Company information

CEO	Lee Sun-ung
Type of business	Software development and supply
Year of establishment	July 1, 2013
Website	<a href="http://www.cloudike.co.kr">www.cloudike.co.kr</a>



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### Prologue

The cloud file sharing service gaining more attention in the COVID-19 era is becoming an essential item for sustainable operations of Korean and foreign institutions and companies.

The cloud file sharing service is an essential system for stable and quick exchange of high capacity data; however reliability towards its security and maintenance should be high, so attraction of customers is not easy.

The ICT Development Fund Project “Sales Representative Program” has opened a new horizon to enter the global market for Cloudike having more than 600 references from Korean companies and institutions by developing a cloud file sharing solution. Let’s hear about the ambition of Cloudike taking a leap forward in the extensive market that nobody has ever explored.



### key achievements

- Use of local reseller Telogic having local market information and buyer network as a partner for marketing and sales through Singapore IT Support Center.
- Achievement of brand image improvement, enterprise customer attraction, and sales boost within Southeast Asia through cloud development using local personnel in Southeast Asia and solution export references (track record).

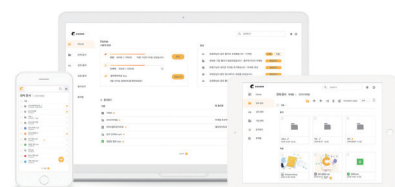
### Powerhouse in the Cloud File Sharing Service

Cloudike offering the cloud file sharing service, an essential factor in the COVID-19 era is a multinational expert cloud company with eight years of history in business. The company has references from 600 Korean companies and institutions including Nexon Korea, CJ, HK Inno.N, Tera Funding, media industry, conventional manufacturing industry, construction companies, and hospitals. The Cloudike was recently selected as an Innovative Major National Companies 1000 by the Financial Services Commission.

The selection has become a starting point of being recognized as a Korea's major startup of the cloud technology domestically and internationally.

Through this, Cloudike got an opportunity to take off as a future core company via national policy financial institution's support.

The company was appointed as a supplier company for Contactless Service Voucher Support Project of the Ministry of SMEs and Startups in March 2012 for two consecutive years. Many small and medium-sized enterprises that built homeworking environment by receiving 90% government subsidies are using the service of Cloudike at cheaper prices.



### Journey to Overseas Market based on the Assistance from Overseas IT Centers

In overseas markets, Cloudike is providing the SaaS (software as a service) for local companies in Southeast Asia including Malaysia, Singapore, and Indonesia by employing local personnel. Local companies in Singapore can use Cloudike service in fast speed through the NAVER server in Singapore. The local languages are supported including Malaysian and Indonesian for customers abroad to collaborate quickly and conveniently through the localization of the service. Based on the effort, Cloudike achieved a desired result of attracting renowned global companies such as Gong Cha Global. The company succeeded in signing an export contract with Indonesian largest telecom company, Telkom Sigma and accomplished splendid achievement in that Cloudike was introduced to "Global Research Emerging Companies' first-ever as a Korean cloud service company. Cloudike is recently preparing to enter the Japanese market and is striving for Korea's economic development and becoming a company endeavoring to improve a national brand image.

### Distinguished Technological Capabilities Recognized through Various Patents

Cloudike, established in 2013, is focusing on enterprise cloud with which companies can efficiently share and carry out business.

As a multinational expert cloud company, having branches in Russia and the U.S. as well as Korea, the patented real time synchronization technology and ransomware blocking technology received attention. Consequently, Cloudike is greatly contributing to firms in the world to carry on safe and efficient business. Currently approximately 600 companies in 170 business types are collaborating in business using the Cloudike service.

In addition to patent registration of the cloud synchronization technology in Korea and the U.S., the company has four relevant patents, and one patent is slated to be registered. The company boasts a perfectly working system without any obstacles in many operating system environments including the Windows, iPhone, Android, and Mac. The sale of Cloudike has been rapidly increasing every year since its launching in July 2013.

The company is propelling the expansion of the Southeast Asian market by employing local personnel in Malaysia and Singapore. Cloudike is accelerating the development of a collaboration solution, VDR (virtual data room), with which secret data can be exchanged in diverse fields including law firms, accounting firms, and bio industry. The company is making efforts to enter the relevant domestic and foreign markets.

It is difficult for a startup to input large scale resources in overseas business development. The related budget of a good program helping startups' overseas business development such as Sales Representative Program is hopefully to continue.

## MINI INTERVIEW

**Lee Sun-ung**  
CEO



**Q1. What did you achieve by participating in this project?**

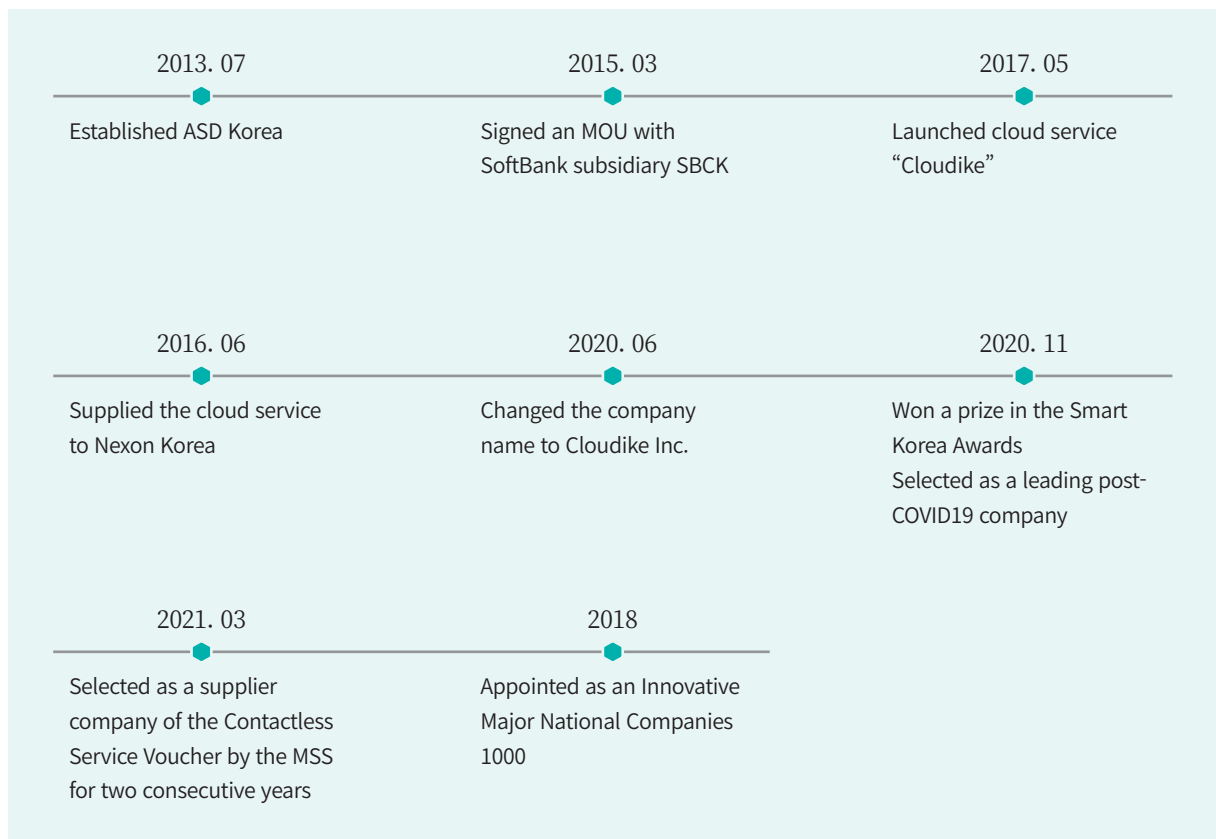
We could use the local reseller Telogic having local market information and buyer network as a partner for marketing and sales through the Sales Representative Program of Singapore IT Support Center.

**Q2. What was the key to the successful achievements?**

We are making contributions to companies' safe and efficient business with the service Cloudike that uses our own specialized security technology such as patented real time synchronization technology and ransomware blocking versioning. We have registered patents for cloud synchronization technology in Korea and the U.S.. I think stable service is the biggest strength because our cloud service is perfectly working in various operating system environments including the Windows, iPhone, Android, and Mac.



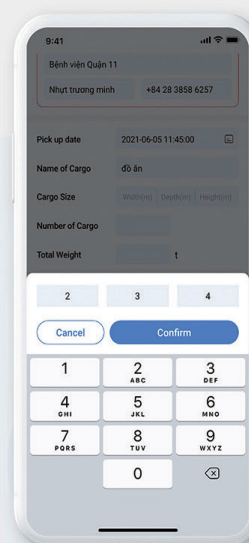
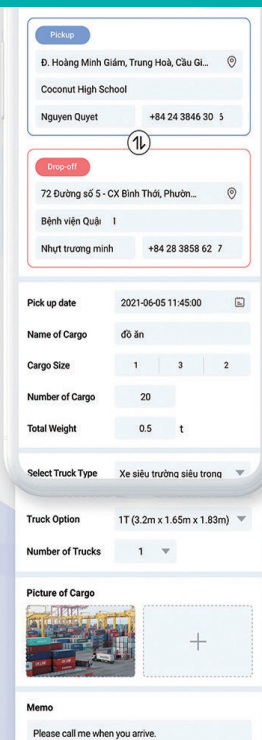
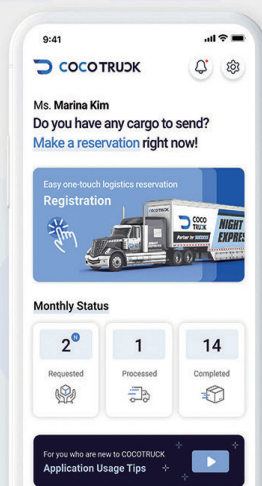
## TIMELINE





# Pursue the Vietnamese Market with Cargo Mobility Platform

Earn more money,  
Move more cargoes,  
Drive eco-friendly!



## Coconut Silo Co., Ltd.

### General information

Detailed project name	ICT Creative Company Fostering
Name of dedicated agency	National IT Industry Promotion Agency (NIPA)

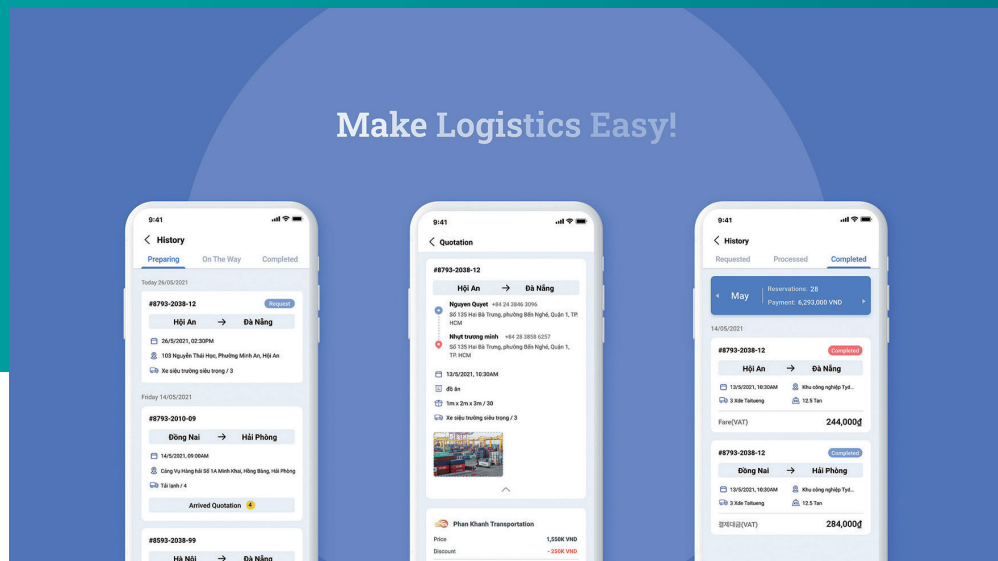
### Company information

CEO	Kim Seung-yong
Type of business	Applied software supply
Year of establishment	March 9, 2020
Website	www.coconutsilo.com



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## Prologue

Various types of mobility business that help people and cargoes circulate is coming to a head with a combination of diverse technologies in the Fourth Industrial Revolution era.

Ironically, however, cargo trucks spending the most time on the road remain in the most inefficient analog culture.

If a truck full of cargoes arrives at a destination, it comes back to its garage empty in many cases, and it was taken for granted that finding a reliable car repair shop to repair the truck in case of breakdown is difficult.

Coconut Silo is an excellent company expanding its business area to Vietnam beyond the Korean market by presenting one convenient platform in the cargo truck business area, which has been operated under the outdated system.

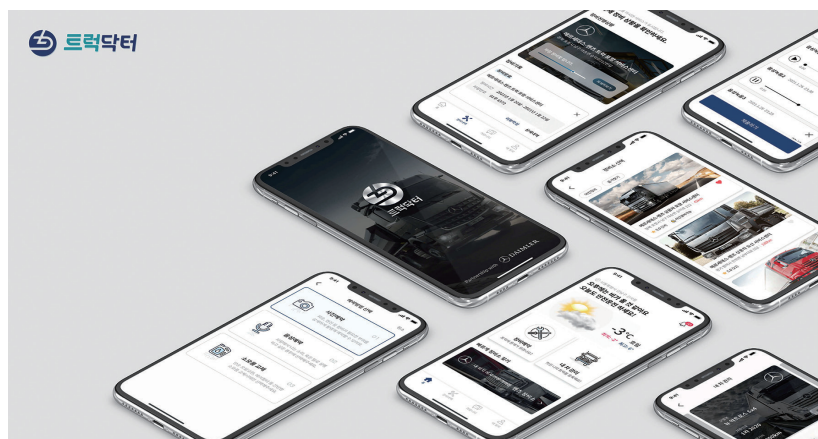


## key achievements

- Growing into a major intermediary platform for cargo trucks with the operation of cargo truck-centered maintenance platform “Truck Doctor” (Korea) and cargo intermediary platform “Coco Truck” (Vietnam).
- The potential and achievements of the company have been recognized with its selection as a 2021 KOTRA Startup Global Jump 300 and designation as one of the Innovative Major National Companies 1000.

## The Most Powerful Cargo Truck Mobility Platform in Vietnam

Coconut Silo is a company operating cargo truck-based mobility platforms in Korea and Vietnam. The company shows high growth by applying good platforms in the cargo truck logistics field whose digital utilization is slow. Coco Truck is the company's big data-based cargo intermediary platform. Efficiency has been enhanced by connecting cargo owners, truck owners, and transport companies in one platform. Cargo owners (manufacturers) can transport their cargo without a truck, and transport companies and truck owners can transport more cargoes with more efficient analysis based on big data technology.



## Smart Assistants, Coco Truck, and Truck Doctor

Multiple-cargo transport is possible with one of the big data functions—smart mixed loading system—and optimal route exploration can be carried out easily. This is called a matching algorithm, which increases efficiency in the cargo transport process. With the automatic price suggestion function, proper prices are set including standard prices through the big data analysis of 27 factors affecting cargo transport prices.

The cargo truck maintenance platform “Truck Doctor” connects truck drivers and repair shops, which enhances maintenance efficiency. Considering the cargo truck's characteristics, i.e., truck drivers' work performance may be disrupted due to cargo truck breakdown, and given the fact that there are few repair shops in the city center; the platform provides information on timely truck maintenance. Coconut Silo is doing its best to be reborn as the only vehicle maintenance platform for Korea's 3.3 million truck drivers.

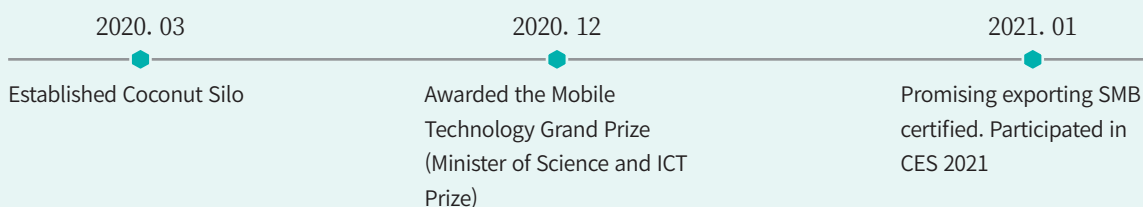
## Company with Powerful Global Entry Capabilities through Outstanding Personnel Proficient in Multiple Languages

Equipped with an excellent research organization, the company, which started out as a startup of the Hyundai Motor Group, is a spin-off launched in 2020. The company has an advantage of smooth communication to enter the global market with personnel proficient in English, Chinese, and Japanese.

Coconut Silo has formed partnerships with leading companies such as Mercedes-Benz Korea, Daimler Truck Korea, and Fujitsu as well as Hyundai Motor and Kia Motors. The company founded overseas subsidiaries in Vietnam, and it is expanding its business.



### TIMELINE



MINI INTERVIEW

Kim Seung-yong

CEO

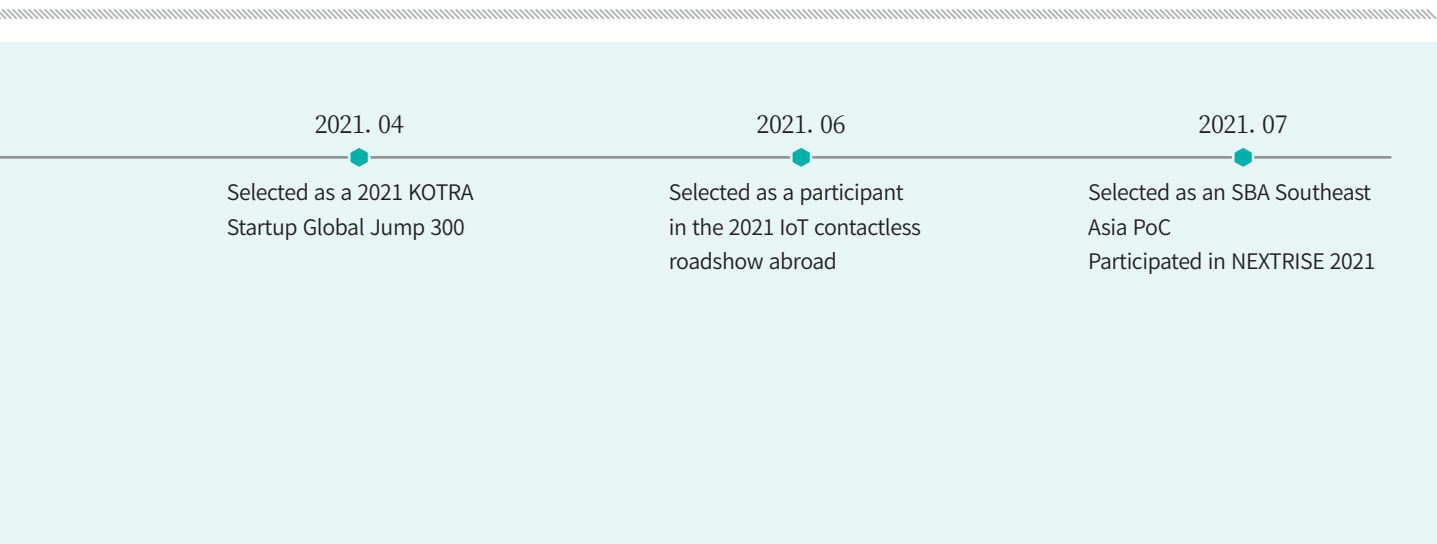


**Q1. What did you achieve by participating in this project?**

We could internalize our knowledge and expertise, as we could perform various tests through cloud-based service.

**Q2. What was the key to the successful achievements?**

I suppose the supporting organization’s active cooperation and our employees’ information utilization efforts can be considered the major grounds for the creation of success.



# Future ICT Unicorn Entering the Global Market with AI-based Edge Computing Technology



## OPENEDGES Technology Co., Ltd.

### General information

Detailed project name	ICT Creative Company Fostering
Name of dedicated agency	National IT Industry Promotion Agency (NIPA)

### Company information

CEO	Lee Seong-hyeon
Type of business	Software manufacturing, sales, semiconductor IC, and electronics design service and development
Year of establishment	December 6, 2017
Website	openedges.com



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### Prologue

Drawing attention as a unicorn prospect showing matchless technological capabilities in the AI edge computing field, OPENEDGES Technology is Korea's only AI computing IP provider. As a semiconductor IP design startup established by non-memory semiconductor experts from Samsung Electronics, it challenges itself in exploring all creative possibilities.

The company that started with 5 people in 2017 has 60 employees in Korea and Canada as of June 2021. The 14 employees who joined the company last year are those who could work together thanks to the company's selection as an ICT future Unicorn.

With two technologies—AI accelerator and high-performance memory system— OPENEDGES Technology is making all-out efforts to take off as a global leader.



### key achievements

- Succeeded in developing commercial AI semiconductor chips through Korea's fabless customer by supplying Korea's first AI accelerator (NPU) semiconductor design IP.
- Posted KRW 1.198 billion (based on invoice issuance) in exports in 2020; the company's product is finally applied to the US semiconductor tier-1 vendor M Company through a contract to supply next-generation high-performance IP licensing with Taiwan's A Company.



## Unicorn Prospect Rising with Matchless Edge Computing Technology

Edge computing refers to a distributed computing model wherein computing is performed close to the physical location where data is collected and analyzed, not centralized server or cloud. Edge computing is a technology that has been taking center stage recently in the cost saving aspect. According to Schneider Electric's report, 72% of the respondents who adopted edge computing said it was effective in an ICT cost saving aspect. Let's meet OPENEDGES Technology, which is drawing attention as a unicorn prospect boasting of matchless edge computing technology among the companies selected for excellent achievements.

### Korea's Only AI Computing IP Provider

OPENEDGES Technology is an AI semiconductor IP company developing AI edge computing technology. Edge computing can be classified into two major technologies: AI accelerator and high-performance memory system. NPU (neural processing unit), a low-power, high-efficiency AI accelerator, is a computation device for the efficient acceleration of modern in-depth neural network. NPU needs vast amounts of data in view of the characteristics of neural network, and a high-performance memory system is essential for smoothly providing data to the high-efficiency NPU. The company is a matchless global technology company boasting of low-power AI accelerator (NPU) and next-generation memory subsystem IP technologies. It is growing into a future unicorn in the AI IP market. The company develops memory system while supplying data from Dram alongside the NPU technology. OPENEDGES Technology has a mission of universalizing AI edge computing technology as a company of AI edge computing and an expert company in semiconductor IP design, a core field of the fourth industry. It aims to enter the global market by supplying its own technology to leading foreign semiconductor companies.

OPENEDGES Technology is a semiconductor IP design startup established by people from Samsung Electronics along with Korea's non-memory semiconductor experts. When the CEO was asked about the motivation for the company's establishment, he said, "When I saw people around me, it was regrettable that many worked in a set narrow area within a large corporation's standardized system, not exerting their capabilities. I wanted to show them that they can do bigger and more interesting things if they leave large corporations. So I established OPENEDGES Technology with colleagues who had worked with me."

Starting with 5 people in 2017, a total of 60 people are working as of June 2021: 45 in Korea and 15 in Canada. The most difficult thing in the initial stage of startup is obtaining the first customer, although there are many aspects such as organization of a suitable team, technology development,

funding, etc. Because the company's developed technology and product are excellent, there should be customers in the market. Fortunately, they succeeded in obtaining the first customer with the help of several mentors. The company has been growing quickly with more customers since then.

### Selected as a Future Unicorn Through ICT Creative Company Fostering

OPENEDGES Technology's selection as a future ICT unicorn became an opportunity to let many people know about the company, which has helped recruit new employees, with 14 people joining the company in 2020. "We are currently looking for talent who can lead the performance of work, communicate, and grow. We have shaped an atmosphere that assures employees' autonomy and use of working hours and annual leave suitable for the individual employee's schedule. We welcome people who want to take off as global talents through the expansion of various global businesses, while offering opportunities to work and grow together with excellent manpower possessing Korea's top semiconductor IP design experience. To take a leap forward as an AI semiconductor IP market's key player, we set the encouragement and support of individual growth as OPENEDGES Technology's most important corporate culture. The reason is that we believe each employee's capability development and growth are most important. To this end, we shape an atmosphere for quickly communicating, practicing, and empowering employees with more rights while trusting their capabilities."

### Global Leader Heading Toward the World Alongside Silicon Valley R&D Center

Funding was necessary to recruit excellent design personnel in order to secure design capabilities with which the company can compete with global firms. In this situation, the company learned about the future global ICT unicorn fostering project of NIPA at investors' recommendation, and the AI computing IP development business that supports ICT intelligent semiconductor was supported.

The company's aim of growing into a global company through entry into overseas markets beyond the Korean market from the initial stage was in line with the purpose of this project. The company planned to carry out the overseas entry support program in the customer countries due to the COVID-19 environment, but suffered from difficulties due to the contactless environment caused by COVID-19; however, it received considerable support in building an R&D Center during the planning in the US Silicon Valley in the second half 2021 through the overseas entry support program. According to the CEO, any company that wants to grow into

a global company needs to participate in a program suitable for its goals among the programs supporting firms to enter the global markets.

Through entry into a foreign market, the company posted KRW 1.189 billion (based on invoice issuance) in exports. Based on a contract to supply next-generation high-performance memory IP licensing with A Company in Taiwan, the company's product was finally applied to the US semiconductor tier-1 vendor M Company, so royalty is expected. With low-interest rate loan of KRW 5 billion, OPENEDGES Technology stably received support when it lacked funds as a startup. The company attracted excellent manpower in 2020, which greatly helped its growth into a future unicorn. Based on the achievement, the company received the Minister of Science and ICT citation for contribution to the AI semiconductor industry development in December 2020.

The competition in the AI edge semiconductor IP market is fierce worldwide, and no company has yet to dominate the market. OPENEDGES Technology is probably the only company with both AI accelerator (NPU) and high-performance memory system technologies. Based on this, the company tries to take off as a global company and a global leader in the market. As the first step, it acquired a PHY IP design startup in Toronto, Canada. OPENEDGES Technology is endeavoring to become a firm expanding the edge, the point of contact where technology meets the world, so that more people can get benefits from the AI technology.

## MINI INTERVIEW

**Lee Seong-hyeon**  
CEO



### Q1. What did you achieve by participating in this project?

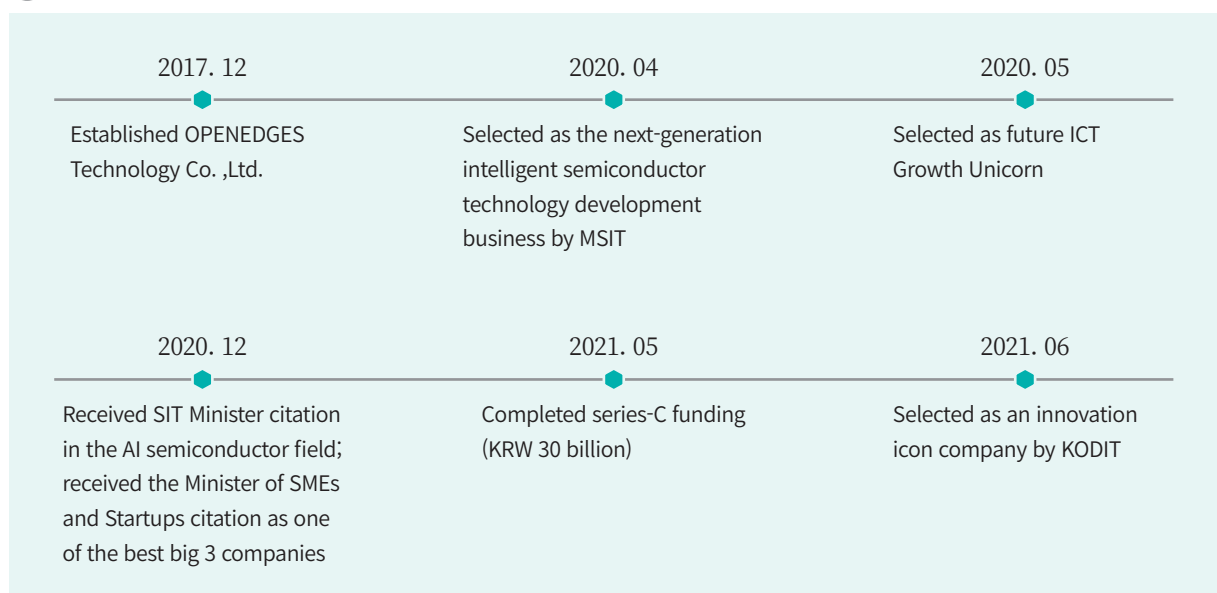
We needed massive funding to recruit excellent design personnel in order to secure global competitiveness. This project was introduced to us at the right time, so we received lots of help. Through this project, we could receive support for the core IP development business of ICT intelligent semiconductor-supporting AI computing.

### Q2. What was the key to the successful achievements?

With matchless capabilities of having both AI accelerator and high-performance memory system technologies, we posted KRW 1.198 billion in exports in 2020. Through the guarantee support of KRW 5 billion at a low interest rate, we could receive funding support stably; therefore, we could recruit excellent manpower, which was the biggest help.



## TIMELINE



# Exporting domestic smart farm technology based on ICT convergence to Malaysia



## ABC Labs Co., Ltd.

### General information

Detailed project name International IT Cooperation Center Construction and Operation (Digitalization, ODA)

Name of dedicated agency National Information Society Agency (NIA)

### Company information

CEO Park Jung-hwan

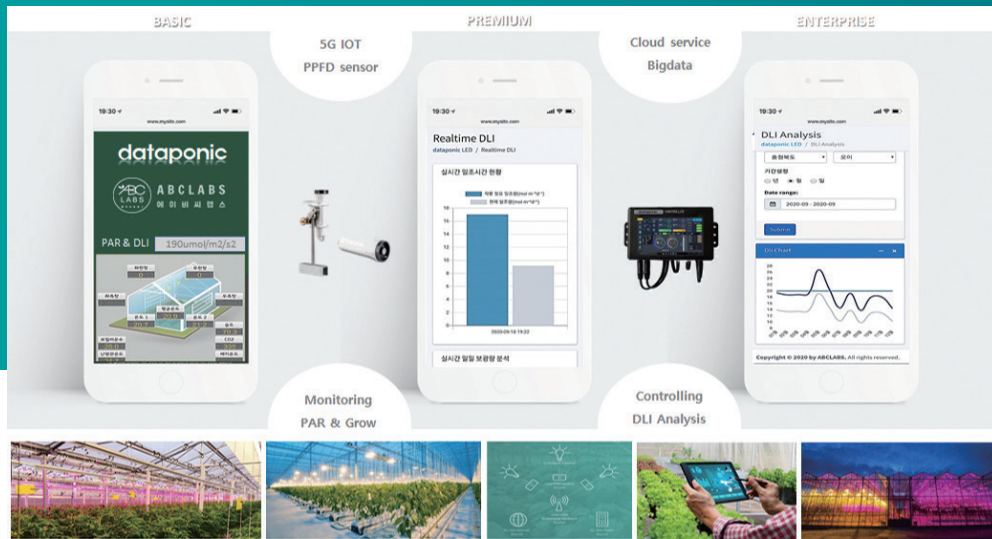
Type of business Information and communication, smart farm

Year of establishment June 14, 2019

Website [www.abclabs.kr](http://www.abclabs.kr)



▲ Scan the QR code



[AIOT-based Artificial Photosynthetic Cloud Service Platform for Artificial Light Source-using Farming]

### Prologue

For food problems that the world is worrying about due to rapid climate change, measures to solve them with various technologies through the Fourth Industrial Revolution are carried out incessantly.

The smart farm technology combining AI, IoT, and big data technologies is drawing attention. Paying attention to the future possibility of smart farm, ABC Labs is rated highly in foreign countries including Malaysia as well as in Korea.

ABC LABS is drawing attention for posting remarkable sales every year through the service “Dataponic” that realized 100% its slogan of “We provide the optimal crop growth solutions using data.”

The potential of ABS LABS, which is trying to grow into a true main player advancing the future agriculture by disseminating advanced farming technology, is drawing attention.



### key achievements

- In a Malaysian public officials' satisfaction survey (MDEC: Malaysia Digital Economy Corporation) in terms of education and consulting, over 90% showed satisfaction.
- With the development of two smart farm models for implementation of 2- and 3-phase projects and establishment of action plans, output increase and high pest prevention effect have been confirmed. Achieved KRW 33.0 billion in cumulative sales thanks to the commercialization of Dataponic service (2020~2021).



## Smart Farm Technology Solving the Future Food Shortage

Smart farms are drawing attention as an alternative to cope with the projected food shortage along with the climate problem, which is becoming a bigger problem globally. Global research company Markets and Markets predicts that the indoor farm technology market will grow from USD 23.75 billion in 2016 to USD 40.5 billion in 2022. Nowadays, many startups supplying agriculture and ICT-convergent smart farm solutions are springing up.

The biggest characteristic of the smart farm is to optimize the labor force and energy necessary for agriculture with IT technology and maximize productivity. Through this, global smart farm markets are expected to grow quickly. According to the “Smart Farm Technology and Market Trend” issued by the Commercialization Promotion Agency for R&D Outcomes in 2019, the global smart farm market size is showing an average annual growth rate of 16.4%. Based on the growth trend, the market is expected to be valued at USD 408.0 billion by 2022 (KRW 491 trillion). Korea, where the farming population is decreasing due to its entry into the super aging society, is showing an annual average growth rate of 5%.



## Innovative Technology based on the Fourth Industrial Revolution

ABC LABS was established in June 2019 as a startup providing service to improve farming productivity through cutting-edge ICT technology including AI and big data. By developing Dataponic on its own, the company posted KRW 3 billion in cumulative sales by the first half of 2020. Last year, ABC LABS supplied Korea's first artificial photosynthetic solution-based farming production facilities (1.5ha) and won



a KRW 2.2 billion order in Chungcheongnam-do in July. The company expects its sales to grow to KRW 5 billion this year. In the Pangyo Techno Valley AI Idea Contest hosted by Gyeonggi-do and Gyeonggido Business & Science Accelerator in January, ABC LABS was awarded the grand prize for “Big Data AI-based Artificial Photosynthetic Control Service for Precision Farming Productivity Improvement.”

ABC LABS believes that the key technology of smart farm environmental control through AI is shifting to light control technology of water, temperature, and humidity, and it has carried out technical development connecting Dataponic service with production. Dataponic is an artificial light source control service controlling the plant's growth speed and enhancing nutrients. Through Dataponic, the plant growth big data that can be analyzed with AI and deep learning, a recipe that can control the light amount of each crop can be made.

To this end, the company forged a business alliance with Philips, the world's largest lighting bulb company, and signed an agreement to share plant growth big data specialized to the domestic situation for three years. Based on the Google cloud platform, ABC LABS plans to launch the Dataponic Enterprise service that enables global service offering. According to ABC LABS, farming has stayed in the concept of selling farm produce harvested by farmers, but such concept will change to one of supplying to companies requiring them. The company is confident that Dataponic service enabling company-customized production will be a main player of the smart farm market.

Specialized personnel are concentrating on R&D in the head office and research center located in Pangyo Innovation Valley. The company plans to propel the smart factory business in full swing by constructing directly operated production facilities in Yangpyeong (Gyeonggi-do) and Jeju Island.

## Dataponic to Extend toward the World by Leading Global Farming Technology

Dataponic is a compound word combining “data” and “ponic,” meaning providing optical crop growth solutions using data. ABC LABS conducted profiling by purpose by



collecting 10 years of climate big data centered on 96 areas to build the Dataponic service.

As sunlight, the most important factor in farming, gradually becomes insufficient, this affects the shipment amount. Thus, the company entered the market through the 5G AI light quantum control system using Dataponic, which can supplement the lacking sunlight.

ABC LABS has supplied POC (proof of concept) for large farms such as pineapple farms, specifically a Malaysian outdoor smart farm solution developed by funding from this project. The company plans to provide consulting and mentoring services with cloud technology as well as growth monitoring and pest control through AI technology. Following the project's successful result, some inquiries on future innovative technology including global advanced technology seminars from the UN and World Bank are being received. Marketing activities through Google and Philips are carried out globally.

ABC LABS will continuously implement R&D to make Dataponic a major brand of the artificial photosynthetic solution and smart factory service. It aims to breach the KRW 10 billion mark in sales in 2024 by recording more than KRW 5.0 billion in cumulative sales in 2022.

### MINI INTERVIEW

**Park Jung-hwan**  
CEO



#### Q1. What did you achieve by participating in this project?

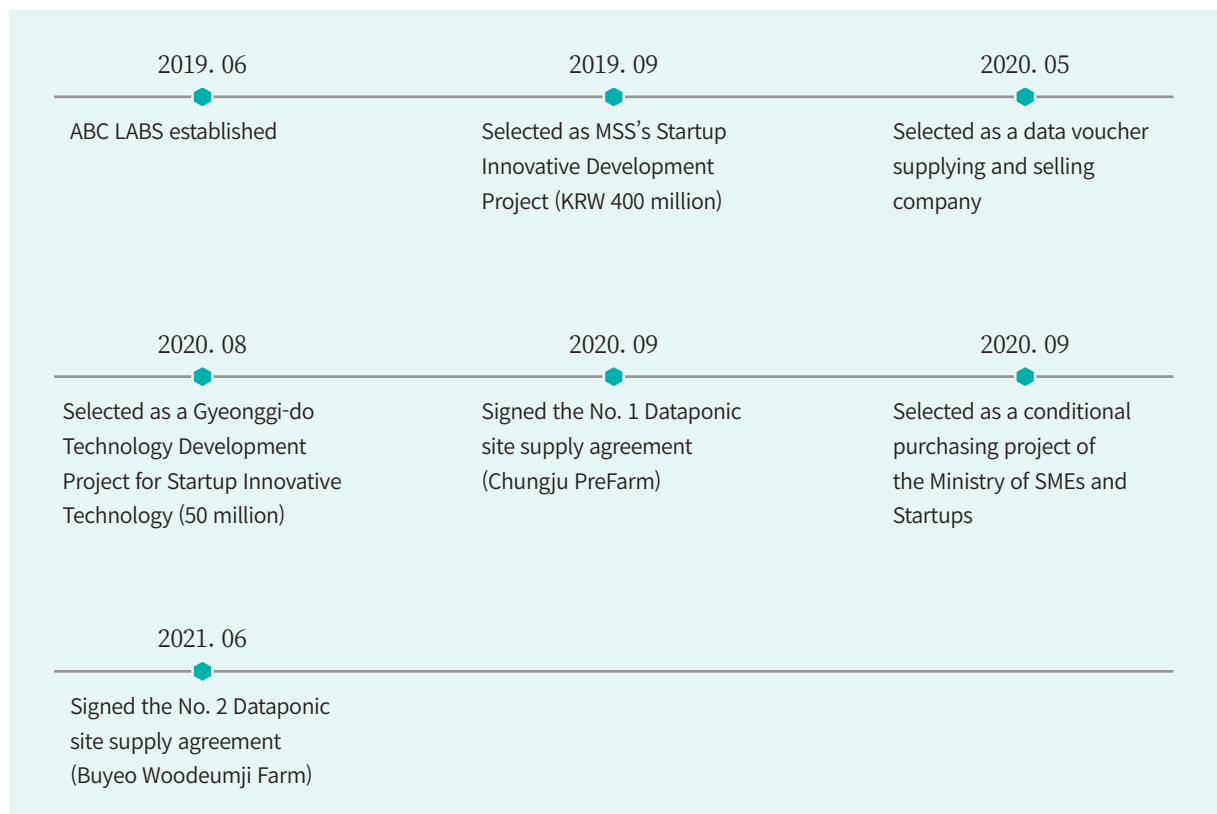
We could expect to enter Malaysia, which has a high farming ratio, and win a pilot project through which win-win situation may be realized based on the country's cooperation. We plan and implement the POC (proof of concept) project at the government level. Through this experience, we got a valuable opportunity to advance further for the realization to make our various farming solutions and services enter the global market.

#### Q2. What was the key to the successful achievements?

Our ultimate goal is space farm. We focus on high-quality data procurement with a realistic approach to the future and bring forth success by continuing the basic direction to expand investment in data engineers. Based on a win-win development model through active collaboration, we endeavor to realize our belief that we will create many employment opportunities and build a sustainable company development model.



### TIMELINE



Collection of success stories in the fields of information,  
communication, and broadcasting (non-R&D) in 2020

## **OUTSTANDING CASES ACHIEVED THROUGH GOVERNMENT GRANT FOR ICT**

INFORMATION AND COMMUNICATION TECHNOLOGY

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