

2024

The AIoT Products & Services of Major Korea Companies



Introductory Note

- This handbook is comprised of two chapters.
 - **Chapter 1 (AIoT Services and Products)** includes 46 products and services' major functions, characteristics, advantages, service diagrams, product photos, usage areas and major performances.
 - **Chapter 2 (Status of Companies)** provides general information on 32 companies including a business areas, Key Products and Services, location, president, sales, capital, homepage and contact

< Summary of the 2024 Handbook >

Areas	Sub-areas
AIoT Service (18)	Welfare(2), Energy Management(2) Manufacture(2), Smart Home(1), Smart Office(1), Agriculture and livestock(1), Vehicle(1), Aviation/Space(1), Construction/Facility, Management(1), Industrial Safty(1), Environment Disaster(5)
IoT Product (16)	Modules(3) : Communication(2), Complex(1) Terminal Equipment(5) : Biometrics(1), Video Surveillance(2), Warning/Alarm(2) Chipset(1), Gateway(4), Reader(2), ETC(1)
AI Product (2)	Application S/W(2)
Platform (8)	S/W Platform(7), Platform Equipment(H/W)(1)
Security (2)	Service(1), Device(1)

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Classification of AIoT Services and Products

AIoT Services Category

Category	Contents
Healthcare	o Momentum management service, sleeping management service, etc.
Medical Service	o Medicine, medical supplies, medical appliances management service, patient status monitoring service, remote examination service, etc.
Welfare	o Vulnerable social group (senior citizens who live alone, seniors with dementia, women, disabled people, etc.) service, social welfare facility(nursing home, etc.) service, missing child prevention service, personal safety service for female, etc.
Meter Reading	o Remote meter reading service for electricity, gas and water service, real-time charging service, etc.
Energy Management	o Energy monitoring service, building energy management service, power/power source monitoring and control service, new & renewable energy (solar photovoltaic energy, etc.) management service, etc.
Manufacture	o Production process management service, machine diagnosis service, plant automation service, real-time production facility monitoring service, etc.
Smart Home	o Remote home appliance & device control service, home CCTV service, smart door lock service, AI service (voice recognition secretary), etc.
Smart Office	o Smart desk, smart locker, access management system, variable seating system video conference system, document room management system, minutes recording system, etc.
Finance	o IoT-based movables security management service, Beacon-based financial product guide and customer service
Education	o Smart school service (attendance management, educational material management, etc.), smart library service, etc.
National Defense	o Trainees and reserve forces management service, battlefield surveillance and unit protection service, firearm and ammunition management service, terror detection service, fiber-optic military uniform, etc.
Agriculture and Livestock	o Growing condition monitoring and management service, breeding management service, auto feeding service, agricultural products distribution management service, production history management service, livestock history tracking service, livestock infectious diseases (foot-and-mouth disease, etc.) management service, etc.

Category	Contents
Fisheries	o Fish farm environment information collection service, marine products history management service, etc.
Vehicle	o Vehicle diagnosis service (DTG, OBD), connected car, unmanned autonomous driving service, etc.
Transportation / Infrastructure	o ITS, public transportation operation information management (bus commanding and control light) service, smart parking service, parking location information service, nearby parking space information service, vehicle access control and parking management service at apartment complex, railway facility management service, etc.
Aviation / Space	o Internal monitoring service for airplanes, real-time airplane remote inspection service, etc.
Shipbuilding / Ship	o Ship location monitoring, internal monitoring service for ship, remote ship inspection service, etc.
Tourism	o Tourist site position information service, tourism/cultural event information collection /provision service, IoT-based cultural property tourism guide service, etc.
Sports / Leisure / Entertainment	o Athlete management (momentum check, etc.) service, sports gear management service, stadium position information service, etc.
Retail	o Smart shopping customer management service, real-time inventory management service, delivery tracking service, Beacon-based O2O service, etc
Logistics / Distribution	o Product position information monitoring service, logistics warehouse management service, procurement management service, logistics tracking service, etc.
Construction / Facility management	o Structure safety management service, public facility control service, building management service, access control service, facility monitoring service, road and bridge status monitoring service, etc.
Industrial Safety	o Toxic chemicals management, disaster monitoring, hazardous material detection and alarm service, etc.
Environment / Disaster	o Water quality management, weather information collection and provision, food waste management, smart environment information provision, disaster monitoring (flood, earthquake) service

IoT Product Category

Category		Contents
Chipset for Smart Devices	RF	<ul style="list-style-type: none"> o Exclusive communication chipset developed and used for IoT ※ Form not combined with MCU ※ 5G or higher, 2.4G, 800~900MHz, 400MHz band, 13.56MHz, 134kHz or less
	MCU	<ul style="list-style-type: none"> o Microprocessor developed and used for IoT ※ 8bit core, 16bit core, 32bit core, 64bit core or higher
	SoC	<ul style="list-style-type: none"> o Chipset including the communication chip developed and used for IoT and MCU ※ RF+MCU, Sensor+RF+MCU
Modules for Smart Devices	Sensor Module	<ul style="list-style-type: none"> o Hardware including the sensing function (temperature, humidity, environment, pressure, etc.) which is used for IoT designed to be installed, replaced and used independently
	Communication Module	<ul style="list-style-type: none"> o Hardware including the communication function (BLE, Z-Wave, Zigbee, WiFi, LTE, LPWA, etc.) which is used for IoT designed to be installed, replaced and used independently
	Complex Module (sensor, communication)	<ul style="list-style-type: none"> o Hardware including the complex sensing and communication functions which is used for IoT designed to be installed, replaced and used independently
Smart card / Tag		<ul style="list-style-type: none"> o Product & device that supports object recognition at close range using NFC and RFID in the IoT service
Smart Terminal Equipment	Biometrics	<ul style="list-style-type: none"> o Pulse, body temperature, blood pressure and momentum measurement terminals, sleeping management terminal, patient status monitoring terminal, finger vein recognition terminal, face recognition apparatus, etc.
	Remote meter reading	<ul style="list-style-type: none"> o Electricity, gas, water AMI reading terminal, energy monitoring terminal, etc.
	Positioning	<ul style="list-style-type: none"> o Vehicle position control terminal, location finder terminal for patients with dementia and children, position tracking terminal for pets, product position finder terminal, etc.

Category		Contents
Smart Terminal Equipment	Environmental monitoring	o Temperature, humidity, Fine particles and harmful gas measuring terminal, disaster monitoring terminal, hazardous substance sensor terminal, etc.
	Equipment and facility monitoring	o Vehicle diagnosis (DTG,OBD) terminal, building safety diagnosis terminal, window open sensor terminal, etc.
	Video monitoring	o Home security camera, CCTV, etc.
	Warning/alarm	o Fire, theft, gas warning terminal, warning light, emergency bell, etc.
	Automatic (remote) control	o Smart door lock, gas valve, access control terminal, power circuit breaker, smart bulb, smart electrical outlet, smart streetlight, etc.
	Smart payment	o Card payment terminal, card reader terminal, automatic parking fee payment machine, automatic ticketing machine, etc.
	Smart home wall pad	o Wall pad used for smart home and home networking
	Other application	o Smart podium, etc.
Gateway	Wireless communication	o Network equipment connected to a smart terminal through wireless communication (BLE, Z-Wave, Zigbee, LoRa, UWB, etc.) that connects collected information to the communication network
	Wired communication	o Network equipment connected to a smart terminal through wired communication (PLC, RS-485, USB, etc.) which connects collected information to the communication network
	Voice recognition	o Network equipment connected with a user by voice that connects to the communication network based on collected information and provides service ※ NUGU, GIGA Genie, etc.
Education Equipment		o Open source hardware platforms (OSHW) such as Arduino and Raspberry Pi
Tag Printer		o NFC, RFID tag printer
Reader		o Product equipment connected to a smart card/tag that connects collected information to the communication network ※ RFID reader, NFC reader

AI Software

Category		Contents
Software	System Software	<ul style="list-style-type: none"> o Software that provides tools (engines, APIs, frameworks) to implement AI ※ Cloud/installable machine learning platform, etc.
	Application Software	<ul style="list-style-type: none"> o Software for solving problems arising in industries, or for increasing productivity and efficiency within an enterprise by applying AI technology ※ Interactive artificial intelligence, computer vision, emotional awareness, intelligent automation, recommendation engine, autonomous driving software, etc.

Platform

Category		Contents
S/W platform	Connection/Device management	<ul style="list-style-type: none"> o Management server S/W platform that carries out functions including connection and management between a sensor and a terminal for providing the IoT service ※ Management of connectivity and devices, etc.
	Application / Operation support	<ul style="list-style-type: none"> o Infrastructure server S/W platform for developing application SW for IoT service ※ Data analysis, application management, service development tool (DevOps, etc.), security, charging, etc.
Platform Equipment (H/W)		<ul style="list-style-type: none"> o H/W equipment required for providing the IoT platform (storage, server, etc.) and system S/W required for H/W equipment (DBMS, OS, server redundancy solution, synchronization solution, security solution, etc.)

Security

Category		Contents
Service		<ul style="list-style-type: none"> o IoT-related security products and services - Includes lightweight and low power encryption solutions, device forgery prevention solutions, Secure OS, security gateway, network encryption solutions, intrusion detection and response solutions, remote security management and control service, smart device authentication solutions, service security solution, privacy protection (contents security) solutions, IoT security consulting, IoT penetration testing and vulnerability diagnosis service, maintenance, etc.
Device		
Platform		

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AIoT Service

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IoT Product

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AI Product

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Security

Service

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AIoT Service

Welfare

1 Hyodol

Company name Hyodol Co., Ltd.

Main function

- * **Hyodol: A Socially Assistive Chat Robot that helps seniors in their daily lives, enhances their cognitive health and supports them emotionally.**
 - **Brings emotional support to the elderly throughout their day**
 - Hyodol replies with charming comments when the senior strokes its head, pats its back, or holds its hands such as "pat me more!";
"I love you grandma!",
 - When the senior comes back home, Hyodol welcomes them back by saying things like "Where were you? I missed you!".
 - Hyodol provides dementia prevention content (exercises, quizzes, songs, stories, etc.) when senior activates Hyodol's ear buttons.
 - **Supports a healthy lifestyle of the elderly by providing customized services for their daily tasks**
 - Personalized voice reminder from morning until bedtime for their everyday activities (meal, medication, ventilation times etc.)
 - Notification alerts for outside appointments (hospital, welfare center etc.) and weather events.
 - Hyodol Ver.2, the first ChatGPT AI companion robot with an 7-year-old persona, supports Emotional and casual conversations for the elderly.
 - **Provides health care services tailored to the specific diseases of each user**
 - Provides customized health information based on data collected on 11 major senile diseases including high blood pressure, hyperlipidemia, and diabetes.
 - Provides knee surgery patients with pain management before and after surgery.
 - Identifies the user's mood status and provides customized answers by applying behavioral activation techniques to alleviate depression.
 - **Provides safety management for the elderly through a smartphone app/PC web**

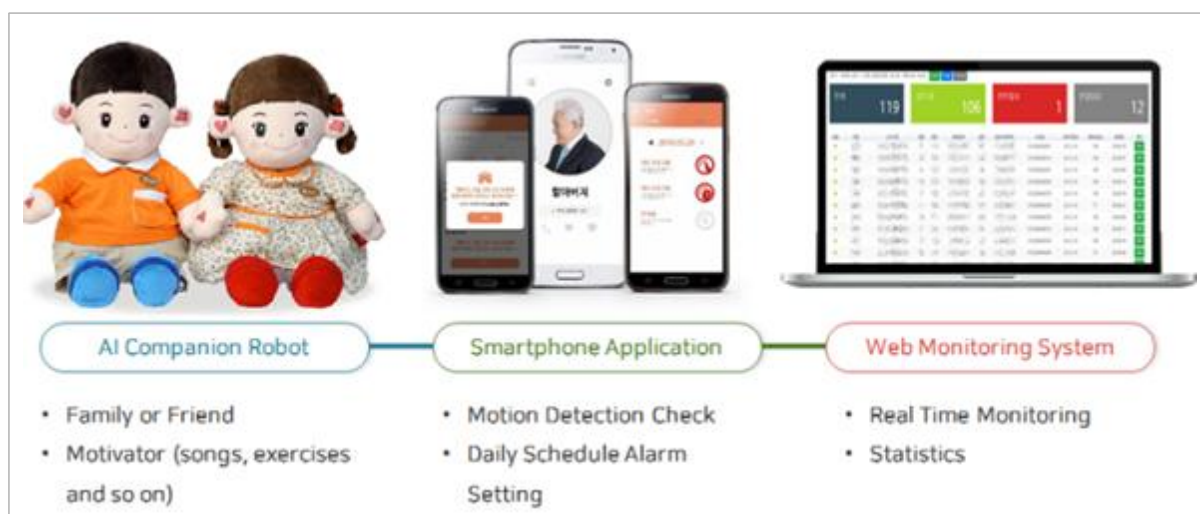
monitoring system used by their guardians

- Remote management functions in the app include: Hyodol's usage status, user information editing, and group/personal voice messages.
 - The app sends an alert to the guardian if Hyodol detects an absence of motion from the senior after a certain period of time.
 - When the user presses Hyodol's hand button, the guardian app provides a call request message.
- In the case of institutions such as nursing homes, the web monitoring system provide real-time statistical information on individual and group users, including a snapshot analysis dashboard. The raw data as well as edited graphic files can be easily downloaded.
- Hyodol Ver.2 features VoIP (Voice over Internet Protocol), enabling one-on-one conversations Between caregivers and seniors.

Characteristics and Advantages

- **A socially assistive chat robot in the form of a stuffed doll that is user-friendly for the elderly**
 - Hyodol has a familiar appearance to their user's grandchildren and responds naturally when it is touched.
 - Throughout the day, Hyodol acts as a real presence as it converses frequently with cute comments to relieve the senior's loneliness and depression.
 - The senior user does not need to activate anything; Hyodol seamlessly connects on its own without any further action required.
 - The menu structure is intuitive and easy to use for the senior. The senior simply needs to pat Hyodol, touch its head and hold its hands and ears.
- **Improvement of remote welfare services through a safety network between guardians and senior citizens**
 - Provides smart care services 24 hours a day close to the elderly through the smartphone app and the website.
 - Real-time activity detection and easy information editing, as well as insightful overview graphs such as program usage status.
Thanks to Hyodol, the number of conversations between the seniors and theircare managers, children, and acquaintances increases.

Service block Diagram



Utilization Field

- **Home-based welfare service for the elderly and the disabled elderly**
 - The elderly can manage their daily lives, their health and their safety by themselves and at home without needing to get admitted into a hospital or a nursing home, thanks to the efficiency of Hyodol's services.
- **Education programs in welfare institutions such as welfare centers and nursing homes**
 - Thanks to the education programs offered by Hyodol, it is possible to improve the cognitive Capacity of the elderly as well as their interpersonal relationships.
 - The various stimuli stemming from these programs can ultimately lengthen the life expectancy of the elderly.

Main Performance

- Hyodol has been widely used by local governments, welfare centers, public health centers, hospitals, residential center and rehabilitation engineering centers in South Korea (4,700 units in total over a 3-year period)

2 Hyodol smartpad

Company name Hyodol Co., Ltd.

Main function

- * **Hyodol smartpad: Senior SmartPad with Digital Learning/Customized Care/Healthcare Solutions**
 - **Mental health care chatbot service that recognizes and sympathizes with the feelings of the elderly**
 - From my school days to now, I've been able to remember the past and preserve my memory through old people's memory diaries "Memory Travel" service
 - A "memory trip" service that plays videos and songs you want on YouTube whenever you speak
 - A 'mind conversation' service that recognizes senior citizens' emotions and promotes empathy behavior
 - **Provide customized, non-face-to-face care solutions to meet the needs of the elderly and care institutions**
 - By installing additional apps that the elderly and institutions want, they can design customized non-face-to-face care solutions at the same time
 - By installing additional apps that the elderly and institutions want, they can design customized non-face-to-face care solutions at the same time
 - It is possible to transfer the maintenance content to smart pads, health centers, health centers, health centers and local governments
 - Real-time video call service with children and social welfare companies
 - Interworking with a web monitoring system that can check program usage status and mental health condition
 - **Continuous Hyodol Character-based Smart Education Content Upgrade**
 - Record and manage the health of the elderly every day by linking smart pads with healthcare devices (blood pressure, blood sugar meter, etc.)
 - About 2,000 subscribers are digitally implementing Hyodol Study Paper to prevent each subscription
 - Infinite provision of digital information service education contents such as kiosks

Characteristics and Advantages

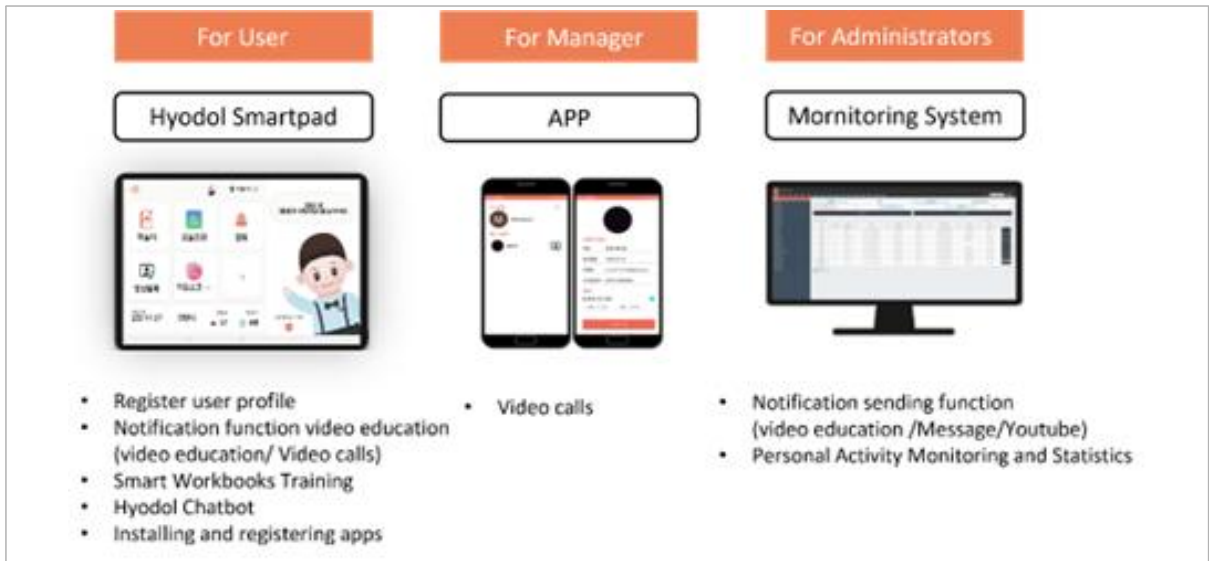
- **Access to digital content designed to be easy to use with priority on elderly use**
 - "Today's health" is linked to a blood pressure meter and a blood glucose meter to check health
 - Digital implementation of the 'Hyodol Study Paper for Dementia Prevention' which is a hot topic in the market
 - It can be used as digital information education content by adding various genres of apps such as kiosks
- **Personalized, non-face-to-face care solutions with care-to-adult safety networks**
 - Real-time video call function with children, guardians, and social workers (1:1)
 - Interworking with a web monitoring system that can check program usage status and mental health condition
 - Customized non-face-to-face care for the elderly and institutions at the same time by installing additional apps that the elderly and institutions Solution Design Capable
- **The smart class service function allows the elderly to participate in classes at home**
 - It is possible to send educational content to a smart pad or conduct online classes using Google Meet
 - Education contents and class schedules are sent to 'pop-up notification' to increase the elderly participation rate
 - You can see the past notifications again through the notification box
- **Hyodol Chatbot's function to understand and talk to the elderly**
 - The 'mind conversation' function that recognizes and sympathizes with the feelings of the elderly
 - A "memory trip" function that allows you to preserve your memory by recalling the past
 - "YouTube" function that allows you to play the video you want to watch
 - The "song" function can play the song you want to listen to

Utilization Field

- **Welfare services can be used in flexible situations for the socially disadvantaged, such as the elderly and the disabled**

- Even if the elderly do not go to facilities or institutions, they can receive sufficient learning, customized care, and health care efficiently at home
- **Education programs in welfare institutions, such as welfare centers and nursing homes, etc**
 - By conducting programs using Hyodol Smart Pad contents, other than social workers, it is possible to prevent the deterioration of cognitive functions of the elderly, enhance interpersonal relationships, and enhance vitality of life through various contents

Service block Diagram



Main Performance

- **2021**
 - One units were delivered by Hamyang Health Center
- **2022**
 - Four units were delivered by Seongnam Senior Industrial Innovation Center
 - Three units were delivered by Korea Home-based Welfare Association for the Elderly
 - Two units were delivered Gwangmyeong General Social Welfare Center
- **2023**
 - Three units were delivered by good heart Geumcheon Daycare Center
 - Two units were delivered by Gungdong Social Welfare Center

Energy Management

1 FireSens

Company name FS, Inc.

Main function



■ IoT sensor (Smart electricity status sensor)

- Integrated Control : Integrated control through an all-in-one system where remote electrical safety, a watt-hour meter, and SMPS built in.
- Space Efficiency : Overcome space limitations with an ultra-small sized device installed inside a panel board.
- Cost Reduction : Optimizing cost structure by reducing installation time through lowest price and function comparison.
- Strength of IoT : Zero communication error with private LoRa G/W and optimization of sensor network with middle-range communication(over 1km)
- Measurement level : The highest level of precise measurement in Korea about high-precision Current of Ground Resistance(Igr), Current of Ground Capacitance(Igc) and measurement on live wire condition.

- Compatibility for Installation place and Environmental changes : Installation in a three-phase panel board, making it superior to existing systems that are only compatible with single-phase panel boards and alternate technologies.
- **High-reliable LoRa network server : No communication cost and support for building a private communication network regardless of location. And ensuring data transfer between IoT platforms through private LoRa network.**
- **IoT platform of energy safety management**
 - Collect data measured in IoT fusion sensors from IoT network.
 - Provide common-ground for collecting, saving, and processing various IoT data.
- **Machine / Deep learning algorithms of energy safety management**
 - Transfer and collect data measured by fusion sensor.
 - Analyze electricity status and patterns using algorithms for energy safety management.
- **Mobile App and web service system of energy safety management**
 - Provide automatic alarm and instructions to managers and users when anomalies such as the electric leakage and over-current are detected.

Characteristics and Advantages

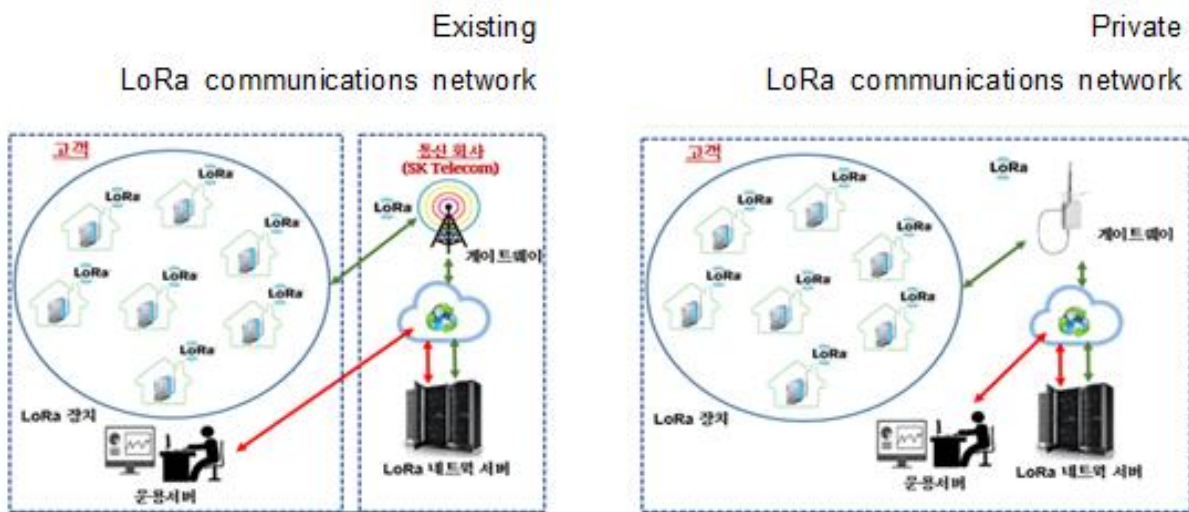
- **1) Ultra-small IoT fusion sensor**
 - (Integrated measurement) Provide integrated energy data with all-in-one system that include remote electrical safety, a watt-hour meter, and SMPS.
 - (High-integrated & Ultra-small sensor) Offer highly integrated and ultra-small sized sensor to minimize deformation of existing facility. And ensure simple installation without space limitations inside a panel board.
 - (High-precise measurement) Surpass existing and alternative technology with the highest level of precise measurement(0.2mA) in Korea on Current of Ground Resistance(Igr), Current of Ground Capacitance(Igc) and measurement on live wire condition.

Classification	Item		Unit	Effective Range	Error
Leakage current Measurement	Total Leakage Current (Igo)	Low Range	mA	0.2 ~ 6.0	0.1 mA
		High Range	mA	6.0 ~ 40.0	1.0 mA

	Current of Ground Resistance (I _{gr})	Low Range	mA	0.2 ~ 6.0	0.1 mA
		High Range	mA	6.0 ~ 40.0	1.0 mA
	Current of Ground Capacitance (I _{gc})	Low Range	mA	0.2 ~ 6.0	0.1 mA
		High Range	mA	6.0 ~ 40.0	1.0 mA

■ 2) Low-cost High-assurance IoT network operational support

- (Support configuration of optimal private IoT network) Operate IoT network without communication cost through application of a qualified private LoRa gateway rather than utilize public LoRa network service by mobile carriers.
- (Protect LoRa network traffic) To provide secure IoT service, all exchanged traffic is forwarded to a private LoRa network to ensure integrity.



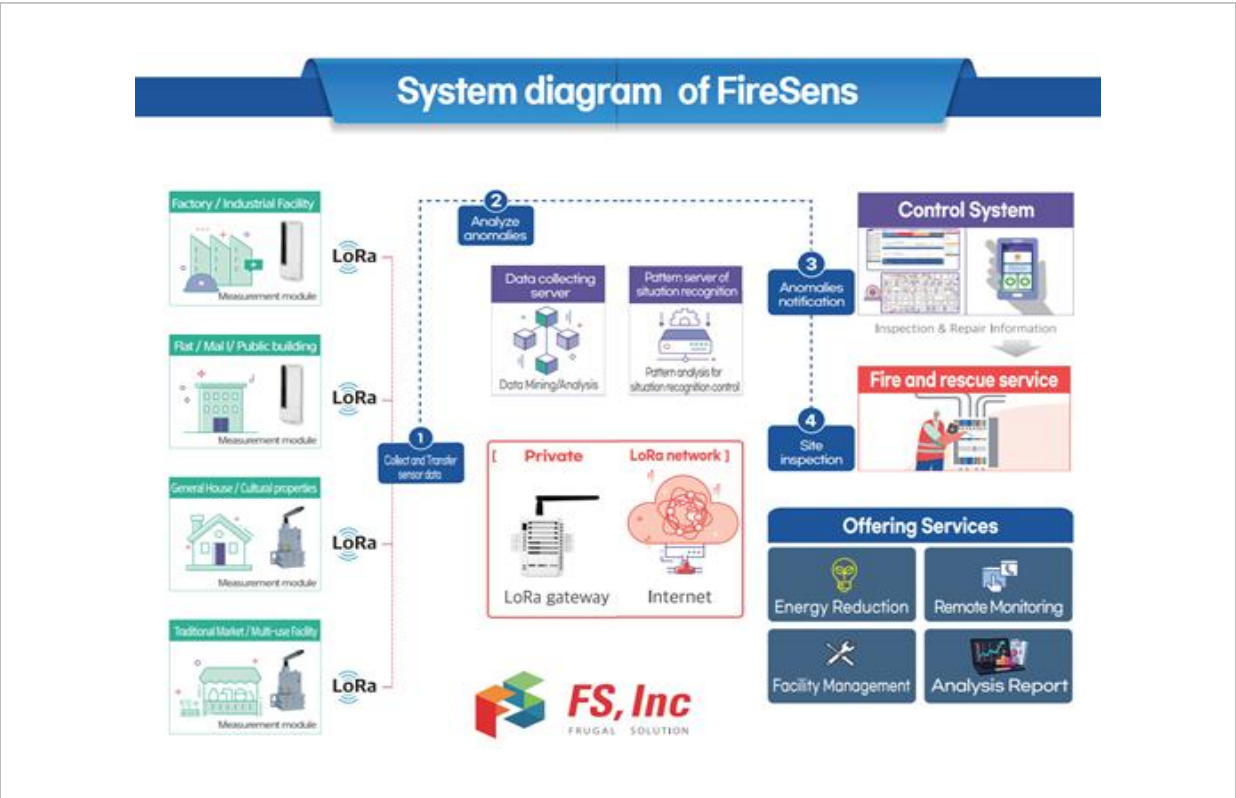
Existing LoRa communications network	Self-developed LoRa communications network by FS
Defects <ul style="list-style-type: none"> • Communication impossible environment • Underground Facilities / Internal panel board / communication range allowed by the base station • Communication costs (expenses of each device) • Concerns about external leaks compromising required secrecy (Using mobile carrier's internal network server) 	Solutions <ul style="list-style-type: none"> • Installation is possible at the military and enterprises for supplementary communication needed using self-developed gateway and network, regardless of location • Overcoming communication environment challenges is achieved because the base station(gateway) is possible to move.

- **AI-based energy safety management associated with an energy IoT system**

 - (Intellectual and smart energy safety management) Provide diagnosis, prediction, control and optimization measures for energy safety management through machine / deep learning algorithms related to energy IoT platform.
 - (Energy consumption management) Reduce energy expenses by real-time measuring and analyzing power consumption in conjunction with power usage and fare policy.
- **Automatic notification and control of Energy safety accidents**

 - (Real-time management of energy safety accident) Alerts to managers and users automatically through mobile app when anomalies such as over-current and leakage current detected by AI-based device. Take measures in golden time by providing proper instructions.
 - (Acquire GS Certification in the safety field) Control system in safety field and quality certification of software (Smart Electrical Fire Prevention System) supporting accidents prevention for the first time in Korea.

Service block Diagram



Utilization Field

■ Traditional Market

- Prevent fires with pre-detection and reduce electric bills through analysis of power consumption.
 - Instantiation case : Install and use in traditional markets in 5 districts of Daejeon. Prevention cases secured

■ Industrial Complex

- Monitoring system for fire prevention, energy management and equipment status through pre-monitoring analysis of electrical fires, power consumption, equipment usage and equipment status at industrial complex and factories.
 - Instantiation case: Plating Industrial Complex in Namdong National Industrial Complex in Incheon city(120 channels) & Smart Green Industrial Complex in Siheung City(191 channels)

■ Warehouse

- Electrical fire prevention and energy management through proactive monitoring of electrical fire and power consumption management under limited spaces such as a high-ceiling warehouse and studio.

■ Vessel

- Reduce loss of life and property with precaution by installing device on vessel that operate in isolated environment. Captains can check real-time information about motor trouble and malfunctions on display.
 - Instantiation case : Conducting a pilot operation project on Jeju vessel by the Korea Coast Guard Region-Jeju

■ Multi-use Facility

- Provide electrical fire detection and safety management services in spaces used by random people such as multi-use facilities, during vulnerable time.
 - Installed in a music creation center in Daejeon and 20 senior centers.

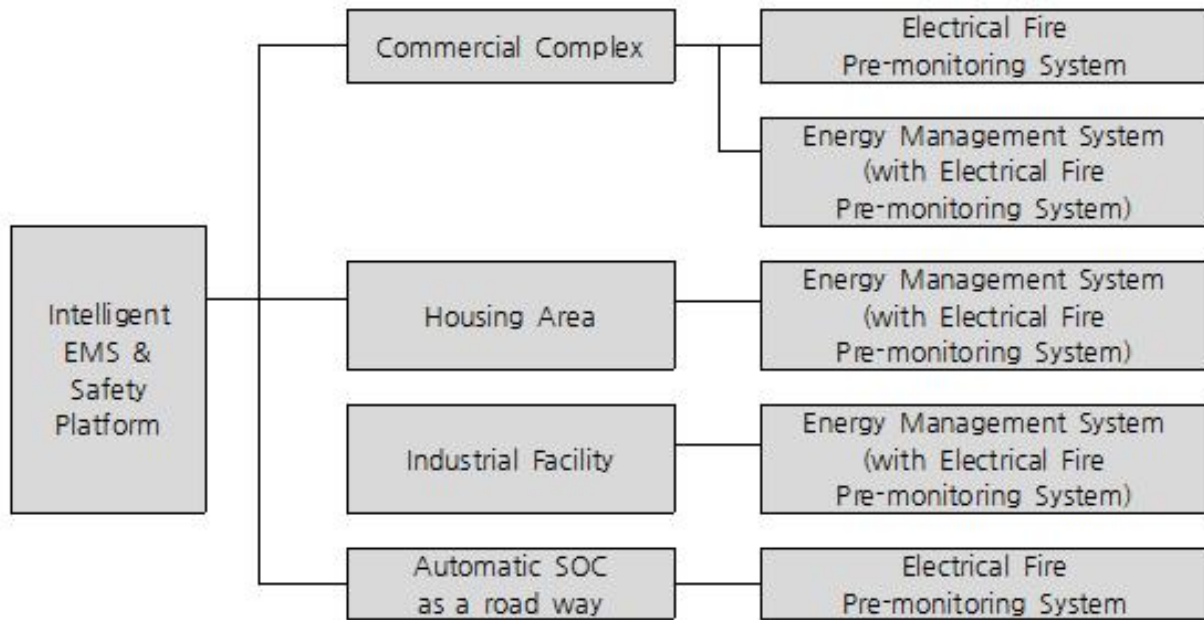
■ Skyscraper

- Offer building management services such as energy management and electrical fire detection for skyscraper as a response of industrialization and technological advancement.

■ Apartment House

- Provide a remote inspection service that inspects the safety condition of

electric equipment by collecting, analyzing and transferring data including the detection of overvoltage, over-current and leakage current.



Main Performance

- Daejeon Health Institute of Technology, Demo of the University Dormitory Electrical Safety Control System(2020.05)
- Daejeon Metropolitan City, Smart City Challenge Project - Construction of an Electrical Fire Prevention System(2020.06)
- Jeju Island, Modernization of Jeju Island Traditional Market - Construction of an Electrical Fire Prevention System(2020.12)
- National Information Society Agency, Establishing Big Data Platforms and Centers in Fire Safety Field(2022.01)
- Daejeon Techno Park, Electric Fire Prevention Service Using Metaverse Platform(2022.08)
- Yongin Special City, Establishment of a Smart Power Monitoring System for Yongin City's Smart City Urban Regeneration Project(2022.09)
- Namdong National Industrial Complex(Incheon Smart City), Establishment of Electric Fire Prevention System at Namdong Industrial Complex Industrial Site(2022.12)
- Daejeon Techno Park, Daejeon Smart Factory Supply Company Development Project(2023.01)
- Songdo Convensia(Incheon Tourism Organization), Trial Purchasing of Innovative Products, an Integrated Platform for Intelligent Energy Safety Management(2023.03)

-
- Senior Center(The Yuseong District Office), Delivering Energy-Saving and Safety Solutions to Senior Centers Using Data-Based Smart Innovative Technology(2023.03)
 - Music Creation Center(Daejeon Information & Culture Industry Promotion Agency), Introducing an IoT-Based Uninterrupted Energy Safety Management System in Multi-Use Facilities with Innovative Technology(2023.04)
 - Smart Green Industrial Complex(Siheung City), Establishment of Integrated Control Center in Smart Green Industrial Complex - Electrical fire Prevention(2023.05)

2 Thingplus® EMS

Company name Daliworks Co., Ltd.

Main function

- **Real-time monitoring**
 - EMS provide real-time monitoring of energy consumption and related parameters.
 - Users can reduce their energy demand during peak periods when electricity prices are high.
 - This feature enables users to have a continuous view of their energy usage patterns.
- **Energy dashboards**
 - Monitoring: Users can have a continuous view of their energy usage patterns.
 - Peak load management: Users can reduce their energy demand during peak periods when electricity prices are high.
 - Checking energy KPI: It tracks performance against energy targets.
- **Power usage trend analysis**
 - EMS provides valuable insights into energy consumption patterns, peak demand periods, and potential areas of energy waste.
 - EMS enables users to profile and benchmark their energy consumption against previous usage.
 - This feature helps identify areas for improvement and set realistic energy efficiency goals.
- **Alerts and notifications**
 - EMS keeps users informed about various aspects of energy consumption, system performance, and anomalies.

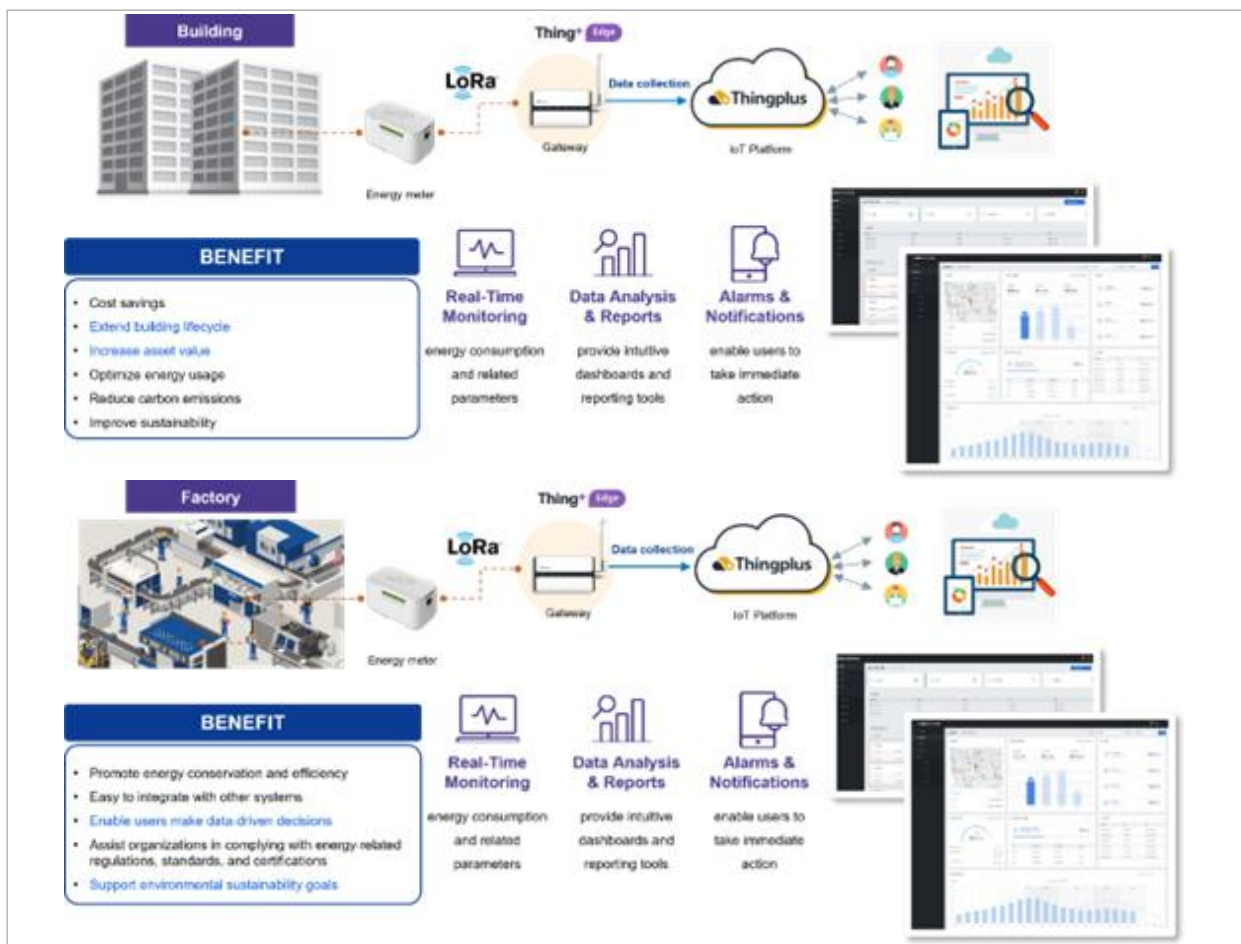
Characteristics and Advantages

- **Thingplus® EMS promotes energy efficiency by providing real-time data and insights on energy usage.**
 - EMS presents energy data and performance metrics in a visual format.
 - Real-time visibility into energy consumption patterns enables users to identify

energy-intensive areas, assess performance, and make data-driven decisions.

- By visualizing power usage trends through graphs, EMS enable users to easily interpret and understand their power usage patterns and make data-driven decisions for energy management and optimization.

Service block Diagram



Utilization Field

- **Building Energy Management System**
 - Energy management within buildings
 - Control HVAC, lighting, sensors.
 - Improve occupant comfort.
 - Reduce energy waste.

- **Factory Energy Management System**
 - Energy management in industrial settings
 - Manage energy consumption.
 - Identify inefficiencies.
 - Optimize energy usage.

Main Performance

- 2020.10 NTECH SYSTEM - Smart Energy Management System
- 2018.05 SFactory -Building Energy Monitoring Service

Manufacture

1

AIoT-based manufacturing site safety abnormality detection solution

Company name IDB Inc.

Main function

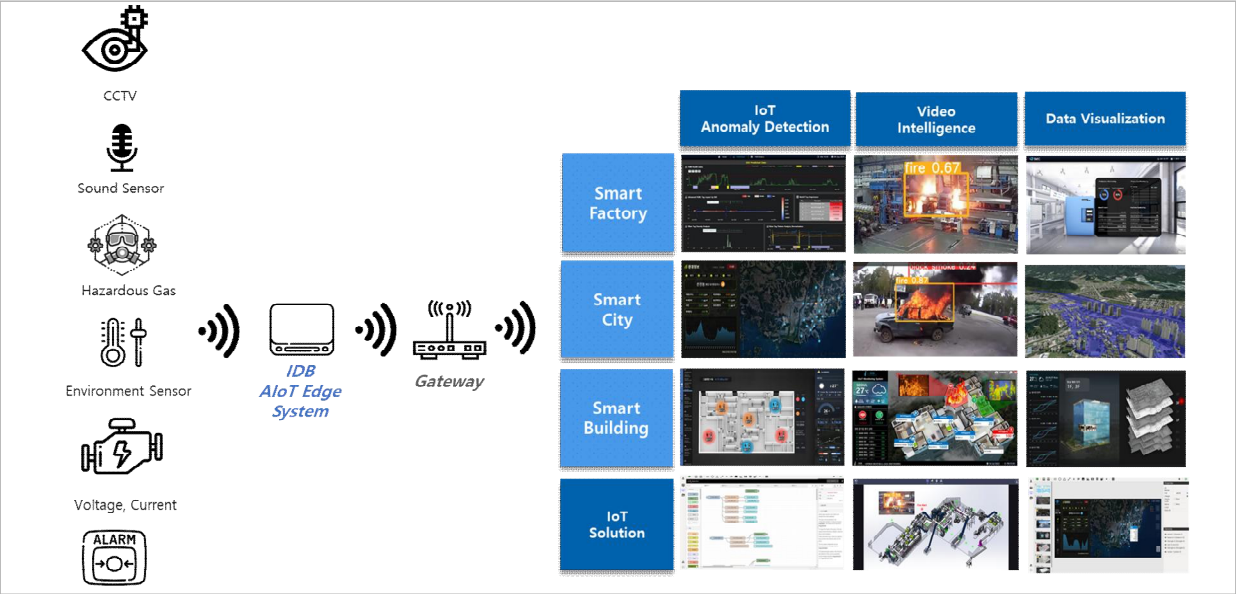
- **Video safety risk abnormality detection**
 - Video abnormality detection to detect industrial accidents in advance in manufacturing, logistics, construction sites, recycling sorting plants, etc.
 - Detection of things that occur at industrial sites, such as fire and smoke
 - Detection of safety regulation violations in the workplace (detection of workers, vehicles, equipment, safety equipment and dangerous behavior)
- **Sensor abnormality risk abnormality detection**
 - Detects and reports equipment abnormalities to intuit and take action on problems in manufacturing, buildings, infrastructure systems, etc.
 - Risk factors are removed by transfer of risk to workers due to equipment abnormalities and repairs by operators.
 - Preventive detection of workers' exposure to hazardous environments through sensors such as harmful gases, fine dust, and thermal imaging cameras

Characteristics and Advantages

- **Video safety risk abnormality detection**
 - Video abnormality detection to detect industrial accidents in advance in manufacturing, logistics, construction sites, recycling sorting plants, etc.
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Service block Diagram



Utilization Field

- **smart factory**
 - Violation of safety regulations (getting caught, tripping, tripping, falling, wearing safety equipment, hitting objects, etc.)
- **Smart city**
 - Video abnormality detection for citizen safety in urban parks, urban construction sites, and urban flooding
- **Smart Building**
 - Detection of fire, violence, collapse, and trespassing in building parking lot

Main Performance

- Deep learning-based video safety abnormality detection in manufacture, smart city ('23, '24)
- Sensitive class facility air quality digital twin ('22)
- Daegu auto parts company AI-based process quality, predictive maintenance ('22,'23)
- Petrochemical facility AI-based predictive maintenance system ('21,'22)
- Optimal process prediction and quality control for cosmetics manufacturing in Ochang, North Chungcheong Province ('21,'22)
- Manufacturing facility AI abnormality diagnosis and chatbot response system ('21)
- Thermal imaging-based AI energy anomaly management system ('21)
- Ceramic equipment and process predictive maintenance, process quality analysis and CPS ('21)
- Manufacturing Innovation Center integrated monitoring system ('20,'21)

2 Thingplus® PRIME Service

Company name Daliworks Co., Ltd.

Main function

- **Real-time monitoring**
 - PRIME service provides real-time monitoring of facility operations and energy consumption.
 - When users set a target time, your capacity utilization is automatically calculated.
- **Efficient facility management**
 - Users can check specifications and personnel information of facility.
 - Users can check the status of KPIs like uptime and capacity utilization.
 - Users can check the operation status and power pattern of each facility.
- **Energy dashboard**
 - Users can check power usage, electrical parameters, and electrical quality parameters by facility.
 - Users can check the day/month/year peak and active power peak trends.
- **Alerts / Reporting**
 - PRIME service sends alarms about facility status, electrical quality, and system status.
 - PRIME service provides facility operations analysis reports based on the data collected.
 - The report, tailored to production site needs, is automatically sent and can also be downloaded in Excel format.
- **Operation Management**
 - Users can set target time for your facilities and specify common holidays.

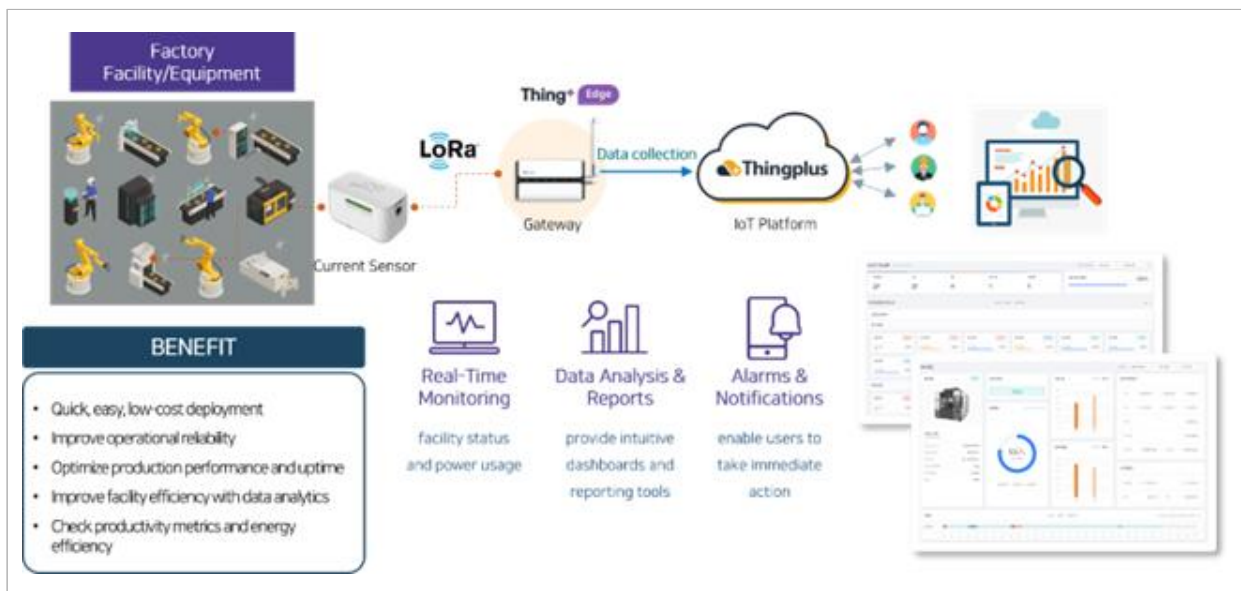
Characteristics and Advantages

- **PRIME service is a service that maximizes value creation for companies by collecting facility data and integrating information in real time to improve productivity and reduce costs through facility operation optimization.**
 - PRIME service aims to apply smart factory services simply by utilizing power sensors. The best feature is that the service is easy to apply, and the price is low.
 - PRIME service provides a variety of visualized dashboards and analytics including trends, charts, rankings, KPIs, and more to help you make objective,

data-driven decisions.

- Empower your facility management with a dashboard that gives you an at-a-glance view of your production floor and instant alerts when something goes wrong.
- Check the capacity utilization and seek efficient utilization efficiently. Create additional acquisition plans for high utilization facilities.
- PRIME service supports efficient use of energy by providing an energy management dashboard where you can check power usage and peak power.

Service block Diagram



Main Performance

- 2023.06 Mold Mecca - PRIME Service
- 2019.05 GREEN MOLD COMPANY - Smart Factory
- 2018.04 Volvo Construction Equipment - Manufacturing Environment Monitoring Service

Smart Home

1 Smart IoT Room Management System

Company name Mercury Corporation

Main function

- **Direct control and management of smart IoT terminal devices**
 - RS485 Device : thermostat, light switch, DND/MUR, emergency, car waiting.
 - Zigbee Device : smartdoorlock, keyholder, indicator, Occupancy sensor.
- **Remote control and management support for smart servers and platform services. aws IoT integration**
- **In-room information delivery and device control by interworking with existing installed RS-485-based devices**

Characteristics and Advantages

- **Keyless SYSTEM**
 - There is no risk of losing or copying the card key as the door can be opened and closed without the card key through SMS sent to the guest upon check-in.
 - You can share or retrieve the smart key with accompanying guests, so you can use the room with confidence.
- **Convenient room control anywhere and at any time via mobile**
 - You can control lighting, heating and cooling simply by clicking a button on your smartphone without installing a separate application through mobile.
 - Hotel guests can enjoy a more comfortable rest by creating the desired room condition at any time and any place, even while on the move.
- **Energy saving**
 - The occupancy sensor provided in the room detects the occupancy state of the customer, thereby reducing idle electricity consumption for heating and cooling and lighting.

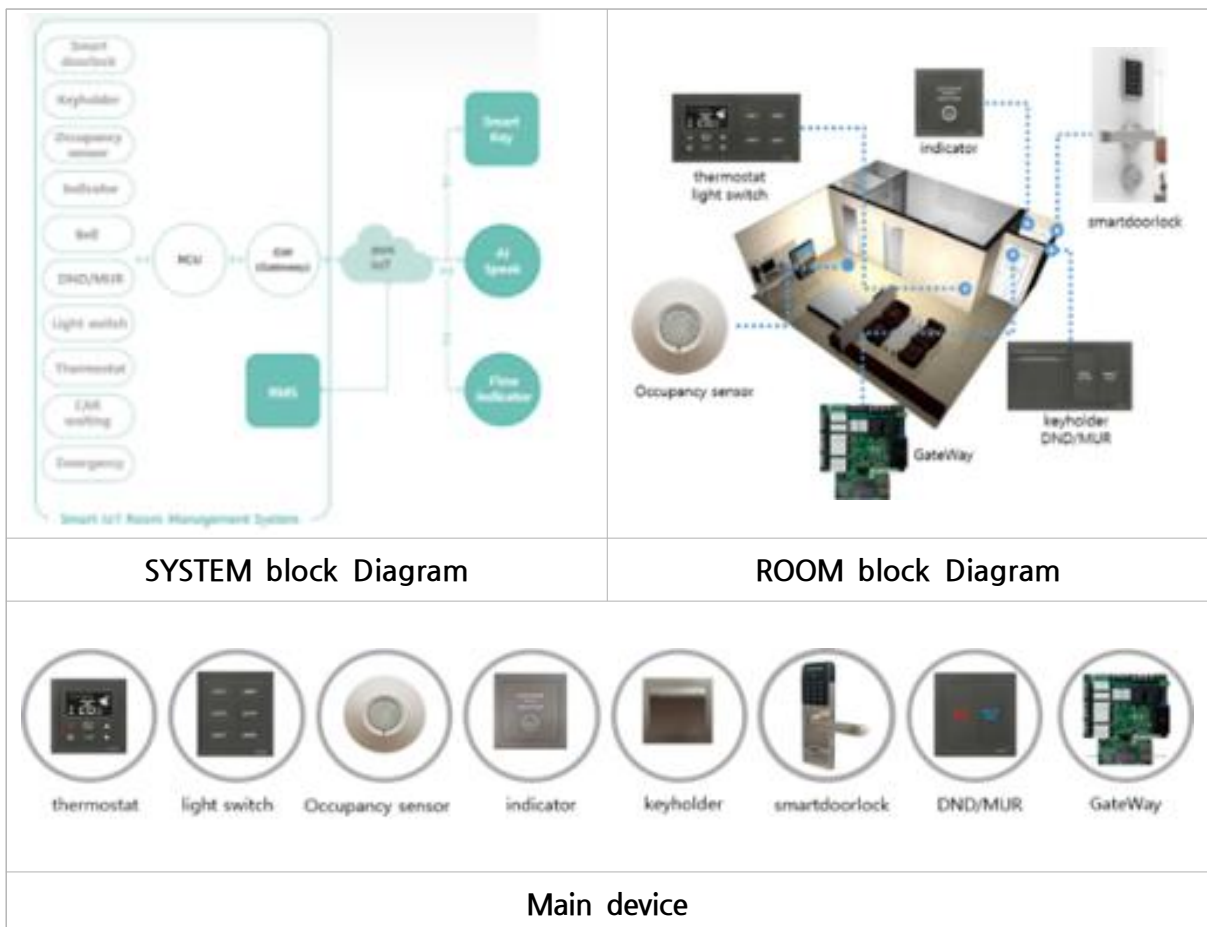
- **Convenient room function control with voice**

- GiGA Genie's voice recognition speaker is linked, allowing convenient room control with only voice.
- Providing more useful information to guests by providing information such as hotel announcements.

- **Support for quick and convenient room operation**

- At the front desk, you can quickly check and clean rooms that are needed maintenance through mobile and web, and you can check the rooms that have been repaired in real time to increase turnover.
- At the front desk, you can check and directly control the usage history of the equipment installed in the room, such as door lock lighting, air conditioning, etc. It is possible to provide convenience to the operation of the room.

Service block Diagram



Utilization Field

- **Smart IoT Room Management System**
 - Used in various accommodation facilities such as living accommodations, pensions, hotels, resorts, and motels.

Main Performance

- H1 Hotel in Gwangju : Completion in August 2021
- Sillim Red Thai Hotel : Completion in June 2021
- Ramada Plaza Jaeun Hotel & Resort : Completion in June 2022
- Jeju Robero Hotel : scheduled for 2023
- Jaeun Ramada Sea One Resort : scheduled for 2023

Smart Office

1 AIBWorks - Smart Attendance Management Service

Company name AIBLab Inc.

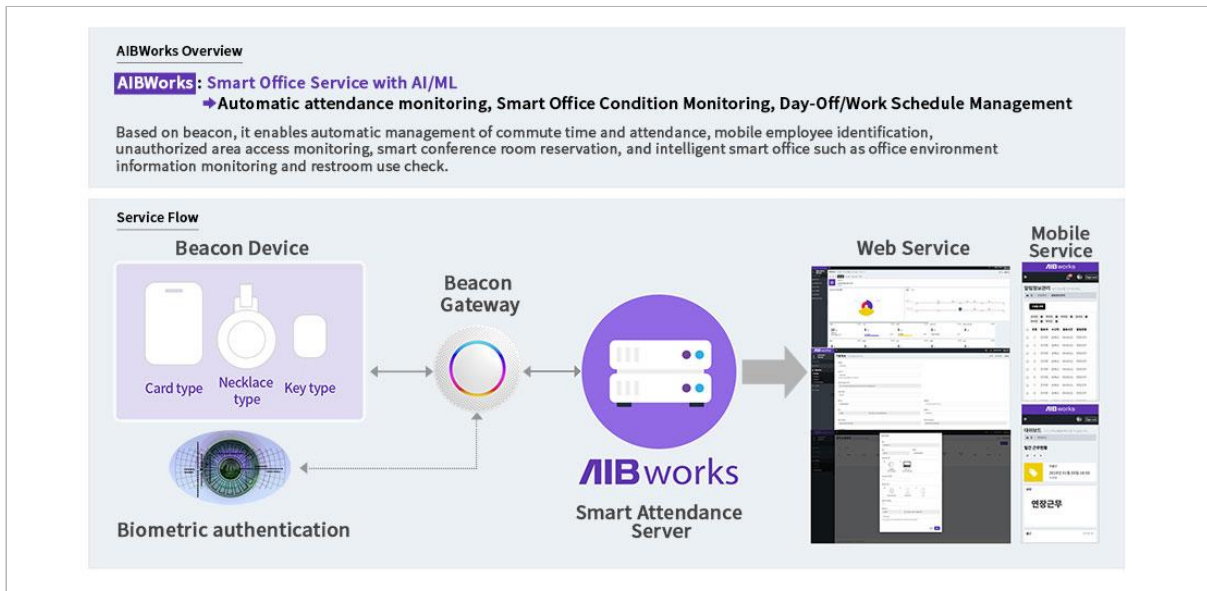
Main function

- **Automatic attendance management using beacon signal generator (employee card) and receiver (gateway)**
 - Automatically manage worker's attendance through installed beacon signal receiver
 - Work time monitoring / day-off, over-work approval / personal information management, work attendance notification etc.
- **Identify worker location / Smart room management / Smart toilet management**
 - Identify the worker's movement through the beacon signal receiver installed in the company
 - Meeting room management using beacon signal in meeting room / Automatic check of toilet usage
- **Supports 68 hours / 52 hours basic labor and flexible working mode**
 - Providing time attendance service for various types of work
 - Basic work mode (68 hours / 52 hours per week)
 - Flexible work mode

Characteristics and Advantages

- **Artificial intelligence based automatic attendance management**
 - 52 hour overtime work forecasting service through analysis of working hours (prediction of high risk workers)
 - Job type classification service according to working pattern
 - Provide efficient time attendance management service through forecasting of working hours
- **Optimal collaboration management within the organization using indoor positioning information**
 - "Collaborative Analysis System using Indoor Positioning Information" Providing smart work service based on patent

Service block Diagram



Utilization Field

- **Artificial intelligent automatic attendance management**
 - Automatic attendance management supporting various workplaces
 - Providing various supplementary services through artificial intelligence analysis of time and attendance information by type
 - Automatic scheduling based on time and attendance record information, connection service with payroll management system
- **Provide optimal collaborative support service using workers' movement information**
 - Provide optimal collaborative guidance service using workers' indoor positioning information
 - Provide information on the optimal display of products in stores using information of customers in stores

Main Performance



Agriculture and livestock

1

Integrated 3rd generation smart farm system(tomato/paprika AI-SaaS platform based yield prediction-pest disease diagnosis automatic cultivation greenhouse operational management AIoT solution 3rd generation smart farm system)

Company name

MaaSFarm Co., Ltd.

Main function

■ **Yield Improvement**

- Crop cultivation specification service with tomato yield prediction of 4-7kg/mxm weekly subject to production stage during 40weeks yearly.

■ **Crop-Specification Service**

- Supplying intelligent UI service with architectural prediction solution including sugar contents prediction etc on AI-SaaS platform based greenhouse hydroponics tomato/paprika yield-prediction and pest-disease diagnosis and environment control automatic cultivation logic, IoT-gateway-sensor node box, IoT-gateway-actuator motor node box, specified sensor box(temperature, humidity,CO2, insolation, ec salt concentration density, ph concentration density, daily watering number, one-time water supply),optional actuator motor box(top-roof window, side window, floating fan, ventilator)

■ **Pest-Disease Diagnosis Service**

- Supplying real time pest-disease diagnosis with image detection on AI-SaaS platform web-based solution

Characteristics and Advantages

■ **Linked to AIoT System**

- AI Cloud Platform Crop Activity Analysis Solution + IoT Gateway / LTE Internet Router + Sensor IoT / Driver IoT and Composite Driver IoT
- Database applied solution(MAAS UI Solution) server + Wired and wireless

gateway + App-based database applied solution(MAAS UI Solution)

■ **KS Standard Based Driver Control**

- Modbus format data conversion controller using daemon server to convert controller key value from server to controller after Json app service information
- Main control UI + Json-to-Controller PLC-Driver Modbus Converter + Sub Control UI

■ **UI Platform and DB Applications**

- System configuration that adds application server for real-time data collection and processing by reflecting IoT driver control on smart protected horticulture farm platform
- Real-time sensor data collection, Judgment of environment control standards Farm/Crop/Season/Environment control mapping Produce driver control information + Environment monitoring, Environment control, Farm/crop/season/ environment control mapping + Open API, UI Items, Business Logic

■ **MAAS(Market-as-a-Service) MAASFARM(Private Cloud Platform)**

- Collected environment-growth data, Nutrition/reproduction growth and development data + Growth monitoring through prediction of nutrition/reproduction growth and development monitoring + Driver Control Data
- Prediction result posting on smart phone application from table by calling Rest-API(<http://MaaSFarm Cloud Server/api/publisher>)

Utilization Field

■ **horticulture AI cloud platform smart farm environment control standards and yield prediction analysis complex controller solution for optimized mature tomato production**

- environment control standards and yield prediction analysis supply using collected environment-growth data, nutrition/reproduction growth and development data
- environment control for optimized production by gateway interlocking with sensor-IoT and actuator-IoT control box

■ **horticulture AI platform smart farm environment control standards and yield prediction analysis complex controller solution for optimized mature tomato/paprika/strawberry production**

- environment control standards and yield prediction analysis supply using collected environment-growth data, nutrition/reproduction growth and development data
- environment control for optimized production by gateway interlocking with sensor-IoT and actuator-IoT control box

Service block Diagram



Main Performance

- New crowding fund U\$250,000 investment attraction success as well as Korea-Venture U\$50,000 angel investment attraction success
- New MOU with Zolvojn Denmark for tomato growers
- After trial during 2022.09-2023.07, yield confirmation subject to yield prediction specification will be made, and paid tomato farm cultivation trial in Denmark-Norway will be processed at the same time.

The collage consists of three main parts:

- Top Left:** A screenshot of the Audacity Ventures website. The header reads "영국 투자사 Audacityventures 하반기 실증 결과 대기 중" (UK investment firm Audacityventures H2 results confirmation in progress) with the URL <http://audacityventures.com>. Below is a banner with the text "Driving sustainable investing in Asia" and the Audacity Ventures logo.
- Top Right:** A screenshot of a Crowdfunder crowdfunding campaign. The title is "중액원료 | 소독공제 | 삼성전자 반도체 연구원 출신의 스마트팜 혁신" (High-value raw materials | Disinfection exemption | Innovation by Samsung Electronics semiconductor researcher). The campaign goal is 270,740,000 KRW, with 57% of the goal raised.
- Bottom:** A screenshot of a "Mutual Non-Disclosure Agreement" document. It includes the title, a table of parties (Audacity Ventures and a Korean partner), and the text of the agreement.

Vehicle

1 AiNet

Company name **AiCAR Inc.**

Main function

- **Vehicle remote control** : door, trunk, emergency light
 - Vehicle status remote monitoring
- **Automatic Trip report**
 - Trip path monitoring
 - Vehicle reservations
- **AI analysis** : wasted fuel amount eith cause / personal usage detection

Characteristics and Advantages

- Physical car key is no longer required to be exchanged for using corporate cars
- **24x7 vehicle service and monitoring**
 - Fuel expense saving and safe drive guide through the ai analyses

Utilization Field

- It is based on cloud based connected car platform with leading-edge cloud technologies : microservice architecture, distributed computing, big data capacity.
- Through LTE enabled smart IoT devices, it enables real-time vehicle control and telematics data accumulation.
- It provides AI analysis on the accumulated telematics data for wasted fuel analysis and personal purpose trips

Service block Diagram



Main Performance

- Target market: corporate market 600,000 / municipal organization 50,000
- As of 2022.07, more than 30 corporate and 2 local governments are being served
- Municipal organization: leveraging the cases of 2 local government, 10,000 vehicle are targeted by 2025
- Corporate: untact management demand initiated by covid-19 keeps on being increased. 10,000 vehicles are targeted by 2025

┃ 국내 센터카 100만대 / 기업 고객 60만대 ┃ 지자체 230개 / 보유 차량 5만대 ┃ 서비스 목표 매출 (25) 2만대, 72억 / 년



Aviation / Space

1 USN based AI autonomous UAM R&D services

Company name LITTLE PRINCE3 Inc.

Main Function

- **USN based AI autonomous UAM and new Erator convergence R&D services.**
 - Development of an innovative transportation system evolved into a high efficiency energy system through the convergence of USN based AI autonomous UAM and new Erator.
 - Increased mileage by installing a new Erator, greatly reduced battery size and extended lifespan, saved charging time and reduced carbon dioxide, etc.
- **Smart AI event/marketing promotion platform R&D services**
 - Creating promotional opportunities for any areas or products and enhancing promotional efficiency.
 - Synergy maximization function through global IPR based OSMU contents convergence.
- **USN based AI Smart u-communication services**
 - Innovative communication concept applied to minimize global internet shading area.
 - Adware system of appropriate processing optimization ubiquitous communication function with AI data mining technology and Big Data linked GPS.

Characteristics and Advantages

- **USN based Smart AI autonomous Car/Ship/UAM with New-Erator convergence R&D services.**
 - Improved transportation speed through the fusion of optimized new energy supply system and autonomous technology, etc.
 - Muscle/healing exercises and an appropriate advanced manual pedal or wheel system can be selected depending on the number of passengers.
 - Body/Medical Big-Data Smart Healthcare Services with AI&IoT by GPS linkage based for every each passenger.

- **Create a synergy effect of n multiplier when fused with a smart AI marketing promotion platform**
 - Creating global mega-marketing opportunities when OSMU content such as 'Santawedding UCC...' Contents is converged with AI&IoT based BM platform.
 - The 'Santa Wedding UCC Relay Contest' content has the function of facilitating ESG and maximizing publicity opportunities in the process of selecting 1,004 pairs for each longitude through an event fused with meta marketing BM.
- **Smart USN Based AI u-Communication Services**
 - Support a truly global Internet communications environment that can be communicated anytime, anywhere, anybody.
 - Creating a Sustainable virtuous circle Global Community Environment Based on the Self-Creating growth strategy.

Service block Diagram



Construction / Facility Management

1

Artificial intelligence (AI) image analysis service that replaces the human eye

Company name Technonia Co., Ltd.

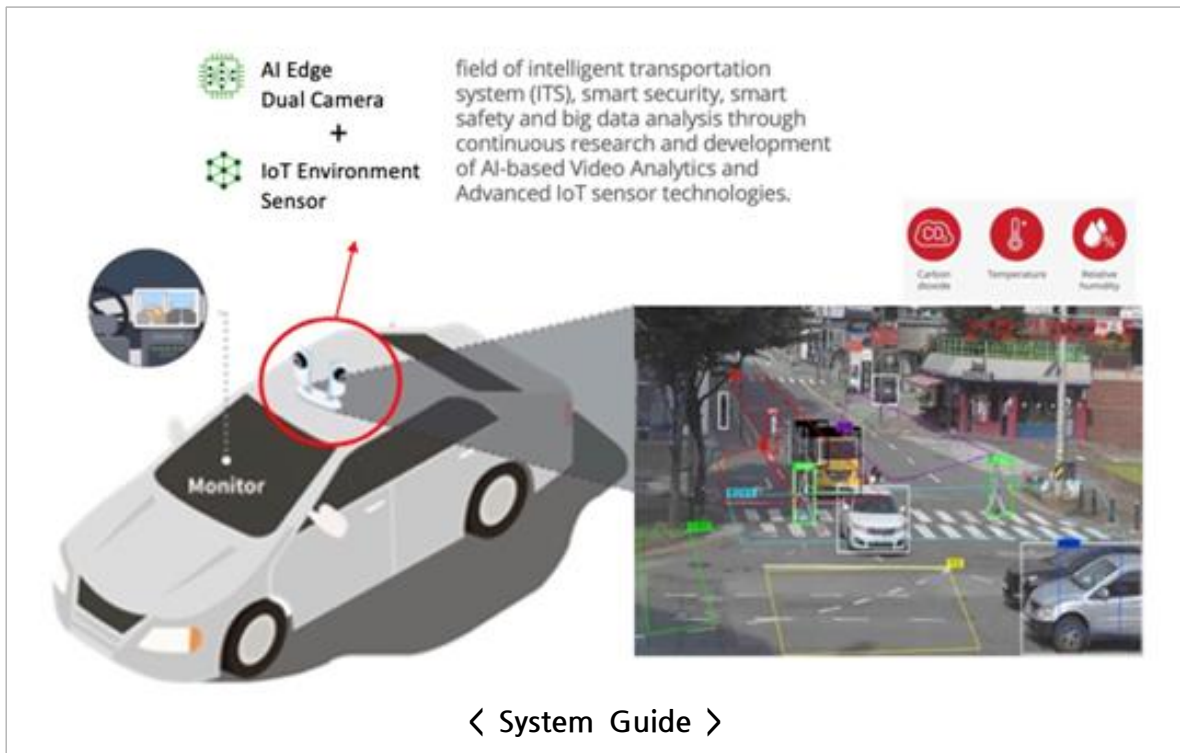
Main function

- **Edge AI Camera-based object recognition system**
 - Real-time video analysis Edge AI technology is used to support situational judgment and processing according to conditions, and artificial intelligence learns variables and patterns about the situation to increase the accuracy of analysis and predict results.
 - Real-time monitoring of roads and surrounding facilities by combining with deep learning artificial intelligence (AI) cameras of autonomous vehicles
- **AI-based dashboard system**
 - Provides various search and report functions for detection results by object
 - Visual expression of event status by period, statistical data by increase/decrease rate/time period, etc. in various graphs/charts
- **Various external camera interlocking systems such as fixed/movable type**
 - It can be applied to various environments depending on the hardware installation type such as fixed/mobile type, day/night, installation angle, number of channels, etc., and it is linked with the existing CMS

Characteristics and Advantages

- **Edge-based video analysis system**
- **Supports various application environments such as fixed type, vehicle installation type, and mobile type**
- **Classification by object type to respond to learning and recognition**
- **High object recognition rate and low false recognition rate by using deep learning**
- **Optimized video analysis by field-specific customization**
- **Support field data analysis by combining various environmental sensors**

Service block Diagram



Utilization Field

- **Specified object recognition, learning detection**
 - Fork crane, heavy equipment recognition
 - People, strollers, wheelchairs, cars, motorcycles, etc.
- **Abnormal behavior detection through behavior recognition**
 - Detection of conditions such as wandering, intrusion, fighting, falling, abandonment, neglect, etc.
 - Danger zone intrusion detection, dangerous situation detection
- **Recognize and respond to specific situations for safety**
 - Helmet, safety hook not worn, dangerous equipment approach detection
 - Fire, smoke detection

Main Performance

- **K Corporation - Establishment of object recognition system for vehicles**

Industrial Safety

1 Wireless IoT Sensor Monitoring Solution

Company name Monnit Korea Co., Ltd.

Main function

- **Monnit Wireless Sensors**
 - Our sensor includes technologies capable of measuring most physical characteristics, including pressure, position, temperature, vibration, humidity and etc. With Monnit solutions monitoring of equipment, infrastructure and environments simplifies management, enables proactive maintenance, and can reduce workplace injuries and loss of valuable assets.
- **Monnit Gateway (Ethernet, Cellular, Modbus)**
 - Monnit Gateway allows your Monnit Wireless Sensors to communicate with the iMonnit™ System without the need for a PC. Simply provide power and plug the gateway into an open Ethernet network port with an internet connection. It will then automatically connect with our online servers, providing the perfect solution for commercial locations where there is an active internet connection.
- **iMonnit Software Platform**
 - iMonnit monitoring software allows you to view and control the sensors in your network and receive alerts from them so you can take action. iMonnit comes in different options to meet the needs of any business. From the turnkey cloud-based approach to extremely configurable on-prem options—allowing for air gap and other security requirements—iMonnit IoT software solutions accommodate firms around the globe.

Characteristics and Advantages

- **Commercial AA battery type sensors**
 - Monnit sensors are the highest performing low power long range sensors among the existing worldwide with 10~12 years battery life and 300m signal coverage. Integrated on-board data storage allows ALTA sensors to store data messages if communication to a wireless gateway is disrupted.

- **Industrial type sensors**

- The industrial sensor is the strongest and most robust type of MONNIT sensor. It is weather resistant that can withstand climate change such as wind. The sensor is sealed in a waterproof dustproof case rated IP65, NEMA 4X, CE. Powered by replaceable 3.6V (1800mAH) AA batteries. Industrial sensors can last for more than 10 years when the heartbeat is set to 10 minutes.

Product Specification

	Wireless range	Signal Frequency	Battery life
80+ sensor types	300m / 10walls penetration	940, 900, 868, 433 MHz	8 - 10 years (AA battery x 2)

Product Picture



Utilization Field

- Smart, city, smart factory, smart building, smart farm, logistics, construction , etc.

Main Performance

- 2019~2022 : sales to ADT Caps, SK Gas, E-mart, 3M, Veolia. Samsung Exporting to Thailand, Indonesia, Singapore, Europe.
- 2022~2023: POC in London Olympic Park

Environment / Disaster

1 Disaster Decision Support Solution

Company name Lamilab.inc.

Main Function

Service Introduction Video ▶



■ Earthquake Solution

- Real-time Situation Analysis
 - Display earthquake information map for the last 1 month (Korea Meteorological Administration API linkage)
- Scenario-based analysis
 - Visualization of Building Damage, Simulation of Ground Motion

■ Flooding Solution

- Real-time Situation Analysis
 - Weather report API real-time call, flood forecast information, radar status image provided
 - Interworking with response manuals and establishing response manuals for each department
- Scenario-based analysis
 - Domestic flooding, optimal evacuation routes (multiple departures, multiple arrivals)

■ GIS Data Management

- Enables input of various spatial information functions
- Markers, SHPs, graphs, tables, heat maps

Characteristics and Advantages

■ Leverage open-source GIS libraries

- Utilize open sources of unrestricted spatial information such as GDAL, Openlayers, and three.js
 - Cloud-based software portability advantages with web-based solution configurations

- **3D Map Visualization**

- Convenient and effective visualization of cesium-based spatial data in three dimensions

- LOD (Level of Detail) based building updates to realize map information

- **Open (public) data mashup**

- Mash up public data on a three-dimensional map to analyze different topics

- Investment costs are reduced based on association with existing public data

Service block Diagram


재난 솔루션 (침수/지진)



실시간 상황 분석

- 기상 특보 현황
- 기상 특보 API 실시간 호출

GIS 데이터 관리



히트맵

좌표에 해당하는 숫자 값을 구간별 레이어 설정을 통해 히트맵의 형태로 시각화 하는 기능입니다.

[Overview of 3D-based disaster information visualization services]

Utilization Field

- **Enable government/local governments to respond to web-based disasters**

- Response manual-based communication between personnel in each disaster stage (checklist function) is possible

- Cooperation in site placement through real-time prediction and monitoring due to weather disasters such as flooding and earthquakes

- **Can be used for forecasting local disaster broadcasts such as KBS nationwide**

- Forecasts can be guided through real-time weather information

- Exposing pre-stored information by utilizing bookmark (On Air) function
- Provide a route to nearby safety shelters based on detour in disaster risk areas
- **Construction (BIM). GIS functions can be expanded for digital twin companies such as CCTV**
- Link GIS capabilities through source linkage between existing solutions
 - Mashup of map and spatial information

Main Performance

- **Busan Metropolitan City Hall Disaster Safety Division Target Research Area Demonstration (October 2023)**
 - Development of Inundation and Earthquake Solution in Busan Metropolitan City
- **KBS Busan Broadcasting Bureau News 7 News Briefing Demonstration (July 2022, April 2023)**
 - Buke Bucca YouTube Channel Viewable

2 LaLaloop AIoT Smart Resource Circulation Infrastructure

Company name Oysterable Co., Ltd.

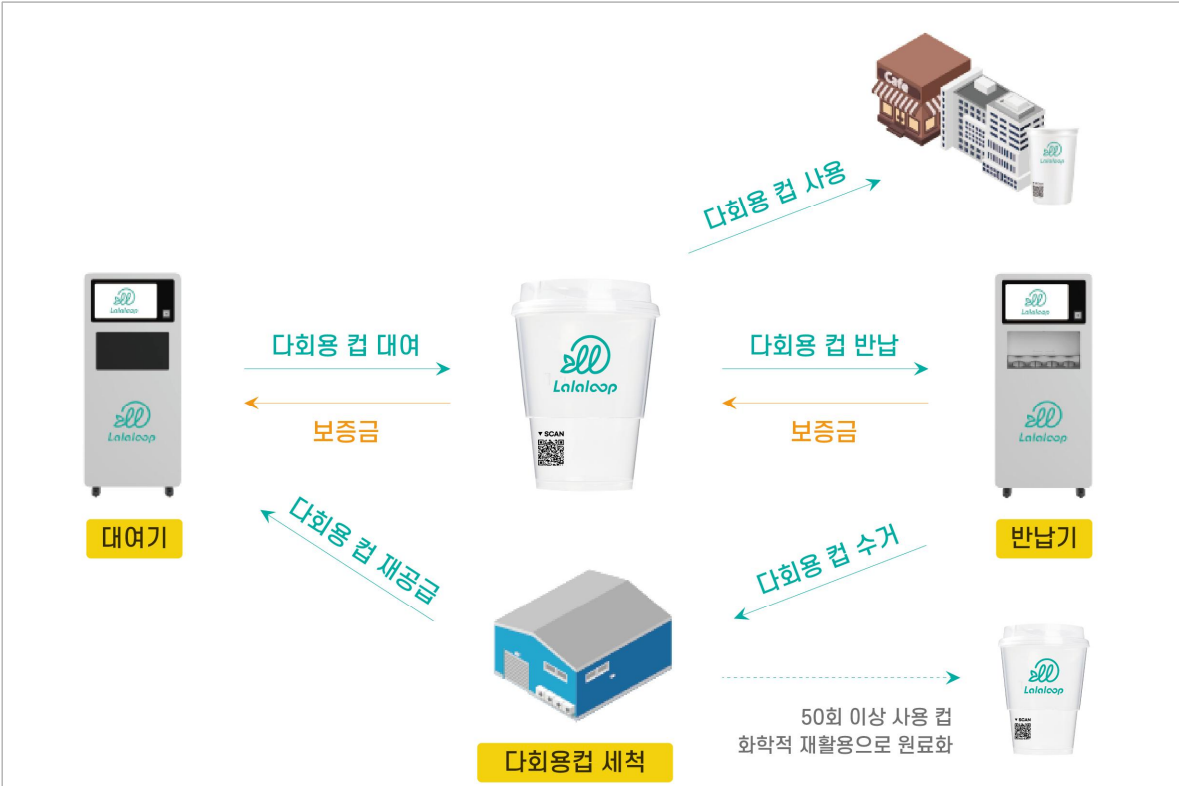
Main Function

- Create a full circle and track the entire lifecycle of reusables from rental to consumption to return
- Allow users to rent and retrieve reusables 24 hours a day, anywhere, and without assistance.
- Pay a multi-use deposit when renting reusables
- Deposits and incentives for returning reusables can be refunded in the form of cash, bank transfers, corporate partnership points, local currency, etc.
- Track the lifecycle of reusables through a standardized code embedded in the product
- Insert various types of standard codes such as QR, Barcode, RFID, and digital watermark into reusables
- Check information on the entire cycle of reusables such as the number of times reusables are rented, returned, and cleaned to quantitatively measure carbon savings through reusables
- Through the inserted standard code, you can check the information of reusables rental and return machines, deposit validity period, etc.

Characteristics and Advantages

- Dramatically reduce single-use waste by making it easy for users to rent reusables and drop them off at any business location, even if they didn't bring them with them
- When renting and returning reusables, real-time deposit control and refund are possible, increasing the recovery rate of reusables and increasing user convenience
- Creating a virtuous cycle by making citizen participation, which is essential for carbon neutrality and resource recycling, convenient with innovative technology and rewarding citizens for their participation

Service block Diagram



Lalaloop AIoT Smart Resource Circulation Infrastructure



Lalaloop AIoT Smart Reusables Self-Serve Rental/Return Machine

Utilization Field

- Building a Resource Recycling Infrastructure for Governments and Local Authorities to Address Waste and Reduce Single-Use Disposables
 - Build AIoT resource recycling infrastructure for corporate ESG management practices

Main Performance

- '23.04-12 Operated and promoted the establishment of a reusable cup circulation and ID system in Seoul, Korea
- '23.02 Participated in MWC 2023 (Barcelona, Spain)
- '22.03 Received a special award at the Korea Digital Innovation Award
- '22.01 Participated in CES 2022 (Las Vegas, USA)
- '22.01-12 Conducted a project to build a reusable cup system for Seoul, Incheon, and Jeju Island in 2022
- '21.12-22'12 Executed Jeju Smart Green City Project
- '21.11-23.3 Established AIoT infrastructure utilizing reusable containers for Ministry of Science and ICT
- '21.11 Selected for the Ministry of SMEs and Startups and Startups TIPS program
- '21.8-12 Pilot project for reusable cups in Seoul in 2021
- '21.09 Infobank Pre-A investment attraction
- '21.06 Selected as CJ OVENTURES 4th cycle
- '21.04 Selected as the 11th LG Social Fellow
- '21.01 Selected as Social Venture Hub Accelerating Project
- '20.05 Selected as the 5th IBK Changgong Mapo
- '19.11 Awarded the Software Industry Protection Awards by the Ministry of Public Administration and Security
- '19.05 Attracted seed investment from Sopoong Ventures
- '19.05 Established Oysterable corporation

3 Safe Route Solution

Company name Lamilab.inc.

Main Function

Service Introduction Video ▶



- **Flooding and earthquake simulation data visualization in a map**
 - Visualization and ON/OFF of flooding predictions, signs of flooding, earthquake risk, and disaster risk zones
- **Mark nearby safety shelters and emergency shelters**
 - Provides the safest route to the selected shelter from the current location based on GPS/IP
 - Free DB update through Excel (xls) file update
- **Provides a real-time detour route**
 - Providing Safe routes that bypass dangerous areas based on simulated data
 - Users can directly specify an evacuation route by clicking on each node

Characteristics and Advantages

- **Providing safe evacuation for each type of disaster**
 - Guide to optimal shelters for each earthquake and flooding scenario
 - Earthquakes (areas at risk of building collapse),
flooding (past signs of flooding and predicted areas of flooding)
- **Responsive safety evacuation app**
 - Chrome PWA (Progressive Web Application) app
 - Can be accessed via URL or QR code without a separate installation
- **Heterogeneous road network integration**
 - Traffic data combining street addresses from the Ministry of Administration and Security and standard node links from the Ministry of Land, Infrastructure, Transport and Tourism
 - New routes can be created compared to existing ones by mixing data

Service block Diagram



[Picture. Safe Route Summary Image]

Utilization Field

- **National utilization service**
 - Access to local festivals via QR codes
 - Search various safety information such as safety shelters (disasters/earthquake /civil defense), AED, and hospitals near me
- **DX solutions for big data/HW companies**
 - Providing Safe routes based on dangerous content (securing GIS and risk data)
 - Visualization of indicators in GIS by linking dashboard data

Main Performance

- **Development and operation of the Daejeon Safety Jung-gu Platform (May 2023 to present)**
 - Securing users by piloting a safety service for Daejeon Oshi Festival
 - Data voucher business cooperation (2023 data voucher supplier)
- **Invention Award (October 2023)**
 - Taiwan Innotech Expo Invention Award, Thailand Patent Office Special Award
 - Invented technology (patent) award for safety evacuation

4 Manhole Remote Monitoring System

Company name CUE Tech Korea Inc.

Main Function

- **Easy mounting inside manholes**
 - Complete installation by removing the existing manhole inner lid and inserting it into the manhole.
- **Lid opening/closing, water level, and temperature/humidity detection required for manhole management**
 - Real-time confirmation and transmission of whether the outer and inner lids are open or closed
 - Detection of water level inside manhole
 - Detection of temperature/humidity inside manhole
- **Detection of harmful gases in manholes in accordance with Korean government occupational safety and health standards**
 - Detection of carbon monoxide (CO), carbon dioxide (CO₂), methane (CH₄), and hydrogen sulfide (H₂S)
 - Remote display and alarm generation with levels such as safety, danger, warning, etc.

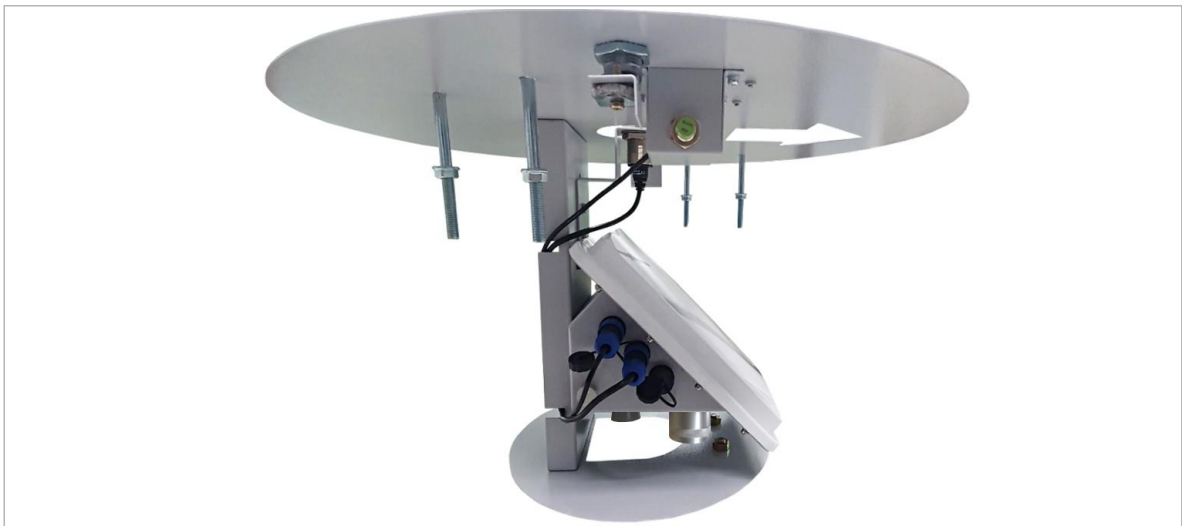
Characteristics and Advantages

- **Wireless transmission inside underground manholes**
 - Transmission over at least 550m
- **No need to modify manhole cover, no need to connect external antenna**
- **Implementation of dustproof/waterproof function (IP67) and ventilation function for gas detection**
- **Overcome condensation and condensation phenomenon and ensure durability**
- **No external power supply required**
 - Internal battery operates for more than 5 years
- **Enhanced security and no communication costs by utilizing local/own networks**
- **Equipped with dedicated bracket and user-friendly platform**

Product Specifications

Classification			
Product composition	Antenna, communication/control board integrated chamber	Communication	LoRa (923MHz)
	Sensors and sensor modules	Power	3.6V (Internal battery)
	Inner lid and bracket	Waterproof/Dustproof	IP67
	Gateway		
	Network Server		
	Platform (HMI)		
Size	300 x 330mm Inner lid 590 \varnothing		

Product Picture



Utilization Field

- **Remote monitoring of military base communication manholes**
 - Lid opening/closing, water level detection, fire detection
- **Industrial complex underground pipe management (valve) manhole remote monitoring**
 - Lid opening/closing, water level detection, harmful gas detection
- **Other sewage and water manhole management**

Main Performance

- **Air Force Power Support System Project Group (Air Force 11th, 15th, 19th Units)**
 - Applied product: Manhole monitoring system
 - Completion in November 2021 / Construction of a total of 190 units completed
- **Navy Unit 9911**
 - Applied product: Manhole monitoring system
 - Completed in November 2022 / Completed construction of a total of 55 units
- **Ulsan, Changwon Industrial Complex**
 - Applied product: Manhole monitoring system
 - Completed in December 2022 / Completed construction of a total of 62 units

5 TREEBRING of air purifier using microalgae

Company name JOINTREE Co., Ltd.

Main Function

- **AI-based automatic control and air purification system for customized living environment**
 - Customized air purification function for optimal operation through analysis of ambient air environment
- **Systems customized microalgae culture optimization technology,**
microalgae-based small clean-ventilation devices, products and systems that supply oxygen through small automatic circulation culture facilities
 - Simultaneously performing wet cleaning function through water and ventilation function through microalgae photosynthesis
- **Automatic filtration and monitoring technology of extinct microalgae**
 - Production of ultraviolet sterilization and drying devices to prevent contamination by microalgae of death
- **Development of Microalgae Growth Monitoring System**
 - Communication protocol definition and controller development for microalgae culture environment control and monitoring
 - Development of illumination (light volume), stirring speed, temperature, culture water level control, and data collection module
- **Three product lines: outdoor, indoor, and home**

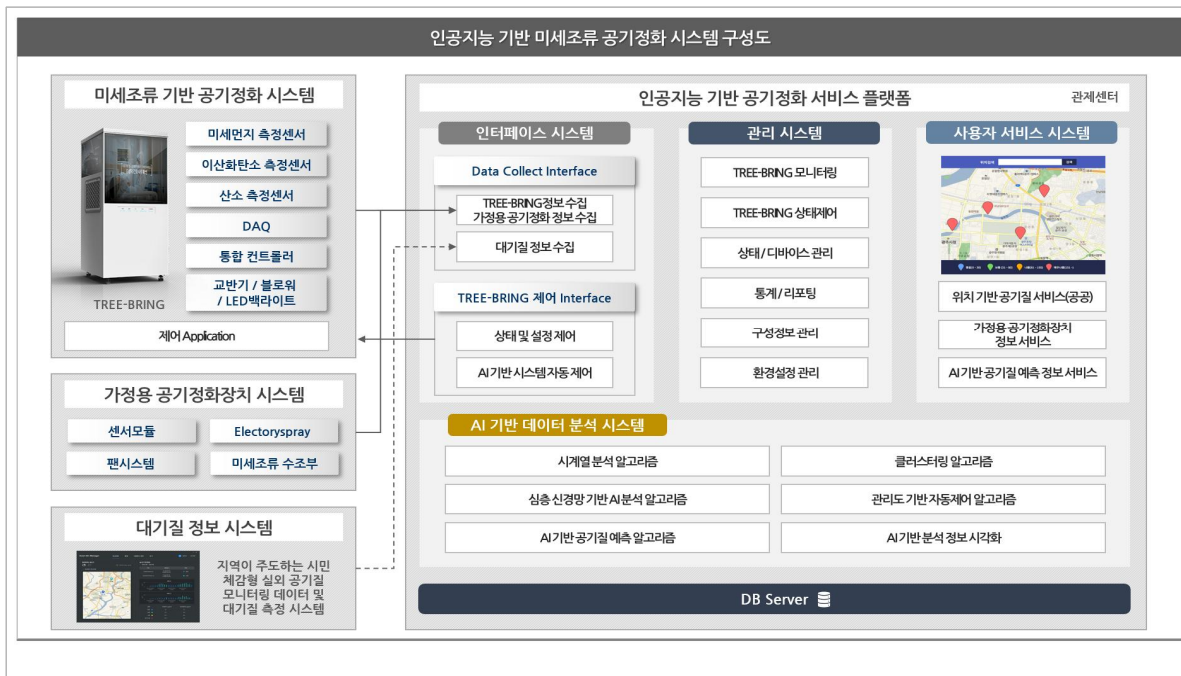
Characteristics and Advantages

- **Improve indoor air quality by removing carbon dioxide and generating oxygen by utilizing it for indoor/home use even in difficult ventilation environments**
 - Improvement of indoor air quality through optimization of microalgae culture
- **Environment-customized product operation through the application of artificial intelligence-based outdoor air quality prediction**
 - Automatic control based on indoor carbon dioxide concentration and user

usage patterns

- Adjust the intensity of the light source and fan speed of the photoreactor according to the indoor carbon dioxide concentration reference (no more than 1000 ppm, no more than 1000-1400 ppm, no more than 2000 ppm)

Service block Diagram



Utilization Field

- Air purification and urban landscape construction in the four seasons of the replacement of street trees
 - 100 leaf trees per product can be used as a substitute for street trees
- Highly utilized in institutions such as schools, libraries, and companies by removing carbon dioxide and supplying oxygen
- Carbon dioxide fixation through photosynthetic microalgae enables carbon emission linkage

Main Performance

- **Demonstration of outdoor air purifier**
 - Gwangju Innobiz Center (2023.05.~)
 - Gwangju Techno Park (2023.06.~)
 - Innopolis Foundation (2023.08.~)
 - Gwangju Songjeong Station, Gwangju Hyoryeong Senior Welfare Town (2023.10.05.~)
 - Gwangju Jangdeok Library (2023.10.19~)
- **Procurement Service Innovation Prototype**
 - 2023 Signs Contract for Innovative Product Pilot Purchase Goods
 - Gwangju Dong-gu Office, Gwangju Nam-gu Office, Korea Credit Guarantee Fund, National Pension Service, Uijeongbu Protection Inspection Office (Ilsan) to be delivered



IoT Product

Chipset For Smart Devices

SoC

1 RAIN RFID Reader/Writer Chip: PR9200, PR7

Company name PHYCHIPS Inc

Main function

- Function to read and write RFID tags

Characteristics and Advantages

- **PR9200**
 - Provides reader total solutions optimized for a wide variety of applications
 - Provides optimized solutions that reflect various recognition distance requirements, hardware specifications, and customer requirements
 - Tag custom function support
 - Support for almost all commands presented in the EPC Gen2v2 standard and custom commands created by each tag company
 - Support for NXP and Impinj's custom command, as well as various features of the Axon sensor tag
 - Reliable technical support
 - Provides solutions to various problems that may arise during the development process, deliver software customization as necessary
- **PR7**
 - True SoC
 - It is a true SoC with 256kB Flash memory and 128kB SRAM built-in based on ARM Cortex-M3
 - It has various serial interfaces including USB, enabling user application development without an external MCU
 - Superior sensitivity
 - Excellent sensitivity enables longer read range and better multi-tag performance

- It helps customer to achieve the best performance in various applications
- Proprietary DDLC technology
 - DDLC(Dual Digital Leakage Cancellation) technology removes Tx leakage quickly and accurately in various environments to provide optimal sensitivity
- Multi-Standard Multi-Protocol
 - Supports various encoding and decoding methods
 - It possible to support not only the EPC Gen2v2 protocol but also similar protocols based on ISO-18000-6

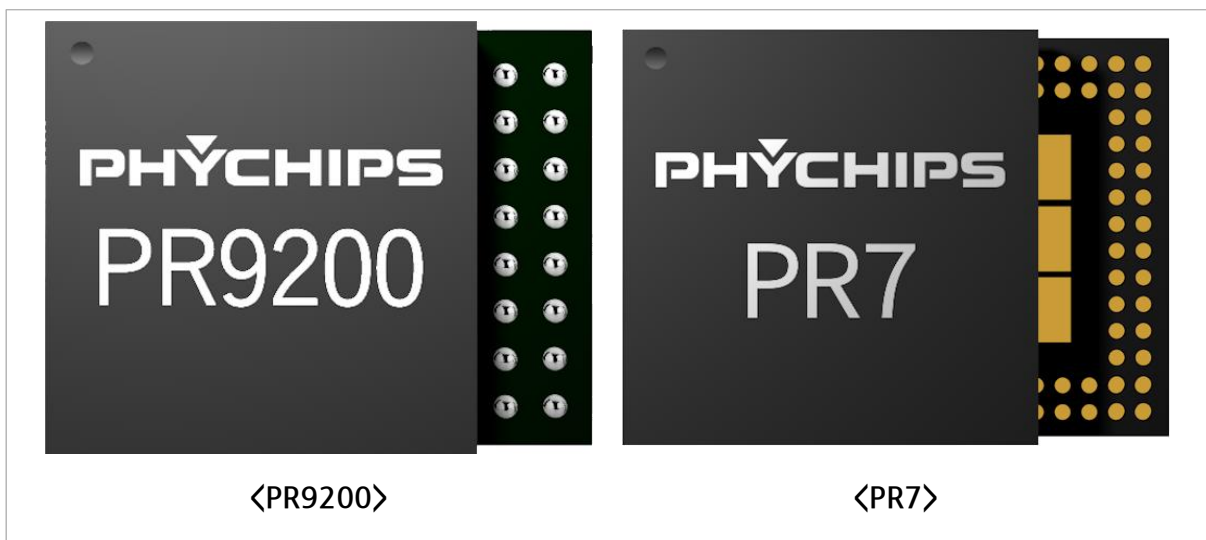
Product Specifications

Item		PR7	PR9200
PHYCHIPS' Generation		3rd	2nd
Air Protocol		EPC Gen2v2 GBT AAR ISO18000-62, 63, 64	EPC Gen2v2
Receiver Sensitivity ¹ [dBm]	Max. Sensitivity Mode	-86(M8, 250kHz)	-
	M4, 250kHz	-84	-65
Max. Read Rate ² [tags/sec]	M4, 250kHz	193	164
	FM0, 640kHz	1000	-
Package		8x8 96pin LGA	6x6 64pin BGA
MCU Integration	Core	ARM Cortex-M3	ARM Cortex-M0
	Clock Speed	128MHz	19.2MHz
Flash Memory		256kB	64kB
SRAM		128kB	16kB
Peripheral	UART	O	O
	I2C	O	O
	SPI	O	O
	QSPI	O	X
	USB	O	X
	GPIO	24	16
Rx Balun		Included	Required External Components

POR/BOD	Included	Required External Components
Tx Leakage Cancellation	Included	Required External Components
User Application Programming	O	O
Reader Modes	12+	1+ Customized
Worldwide Region Support	O	O
Reader Protocol	WINE	RED
Internal PA	20dBm	20dBm
Recommended Tx Power(External PA)	Max. 33dBm	Max. 27dBm

1. Measurement Env. : Antenna port, included 10dB directional coupler, 10% Error rate, CISC RFID Xplorer, 30dBm(for PR7)/27dBm(for 9200)
2. Measurement Env. : 6dBi Antenna, 30dBm Tx output, 400 tags

Product Picture



Utilization Field

- RFID Reader: It is be used in various applications including mobile, handheld and fixed readers.

Modules For Smart Devices

Communication Module

1 eLR100-UL-00 (LoRa Module)

Company name eWBM Co., Ltd.

Main function

- **Various Regional LoRaWAN® Certified**
 - eLR100 LoRaWAN® module is certified in four different regions such as North America, Asia/Japan, Europe, and Korea.
 - With LoRaWAN® regional certification, eLR100 is one of a few products to cover world. As a result, eWBM eLR100 has interoperability with already deployed LoRa WAN® modules in these different regions.
- **PKI Over LoRa**
 - eLR100 can ensure device authentication, data integrity using Public Key Infrastructure (PKI) and increase confidentiality of data by using real-time key exchange mechanisms.
- **Enhanced Security & Fast Encryption Processing Speed**
 - eLR100 uses a hardware-based security engine to securely store sensitive user data and keys used by LoRa in secure storage inside the MCU. eLR100 has hardware-based encryption architecture that has processing speed is over 16,000 times faster than other software-based encryption architecture.

Characteristics and Advantages

- **Large Capacity Flash Memory**
 - eLR100 has 4MB of flash memory that can accommodate large size applications and software. eLR100 can also store user data in flash memory.
- **Easy Implementation and Control**
 - eLR100 provides AT commands where user can easily control the module.
 - The developer can easily implement eLR100 without changing the existing development environment such as PC or MCU.

Product Specifications

Item	Specification
Frequency	860 ~ 930 MHz
Operating Temp. Range	-40 ~ 85 °C
Chipset	SX1276 (Semtech) + MS500 (eWBM)
Modulation	FSK, LoRa Modulation
Antenna	External
Transmit Power	Up to +14.0 dBm
Dimension	15.3 x 22.15 x 2.5 mm
Supply Voltage (Vdc)	3.3 Vdc
Receiver Sensitivity	-135.5 dBm @1% PER, 125KHz BW, SF=12
Transmit Mode Current	47mA @14dBm Setting
Receive Mode Current	18mA @125kHz BW
Sleep Mode Current	5.2 µA
Host Interface	I ² C, UART, SPI, GPIO
RF Certification	KC, CE, CB, FCC
LoRaWAN [®] Certification	EU 863-870MHz, US902-928MHz, KR920-923MHz, AS923MHz
RoHS Compliant	Yes

Product Picture



Utilization Field

- **Smart Metering**

- LoRa Technology is used in smart sensor infrastructures such as smart water metering, gas monitoring and wireless leak detection to reduce operating costs.
- The worker can check device status in the office, and it is not necessary to dispatch workers to the site to find the problem.

- **Supply Chain and Logistics**

- LoRa technology makes it easy and economical to track your goods.
- Easily monitored in harsh and extensive areas without GPS, it can be an effective solution to reduce operating costs and prevent product damage in the sea cargo tracking, air cargo tracking, and vehicle rental industries.

Main Performance

- **Smart Modular (Brazil):** completed the delivery (2019)
- **Point Blank (Germany):** completed the delivery (2020)
- **WYSE (India):** completed the delivery (2020)
- **Electronic source (Thailand):** completed the delivery (2020)

2 WiFi Module(MCR-WMS(D)BE-CWP)

Company name Mercury Corporation

Main function

- Perform Wi-Fi and Bluetooth functions
- WiFi 2.4G (5G), Bluetooth 4.2 (LE)
- Built-in protocol for interworking with IoT server(3MP, OneM2M etc.)
- Provide Wi-Fi communication interworking between devices

Characteristics and Advantages

- **WiFi and Bluetooth enabled (combo)**
 - Single Combo Module (2.4GHz/BLE 4.2)
 - Dual Combo Module (2.4GHz/5GHz/BLE 4.2)
- **Connectivity with home appliances using connectors**
- **Development support at customer request**
- **Wi-Fi communication at a low cost**

Product Specifications

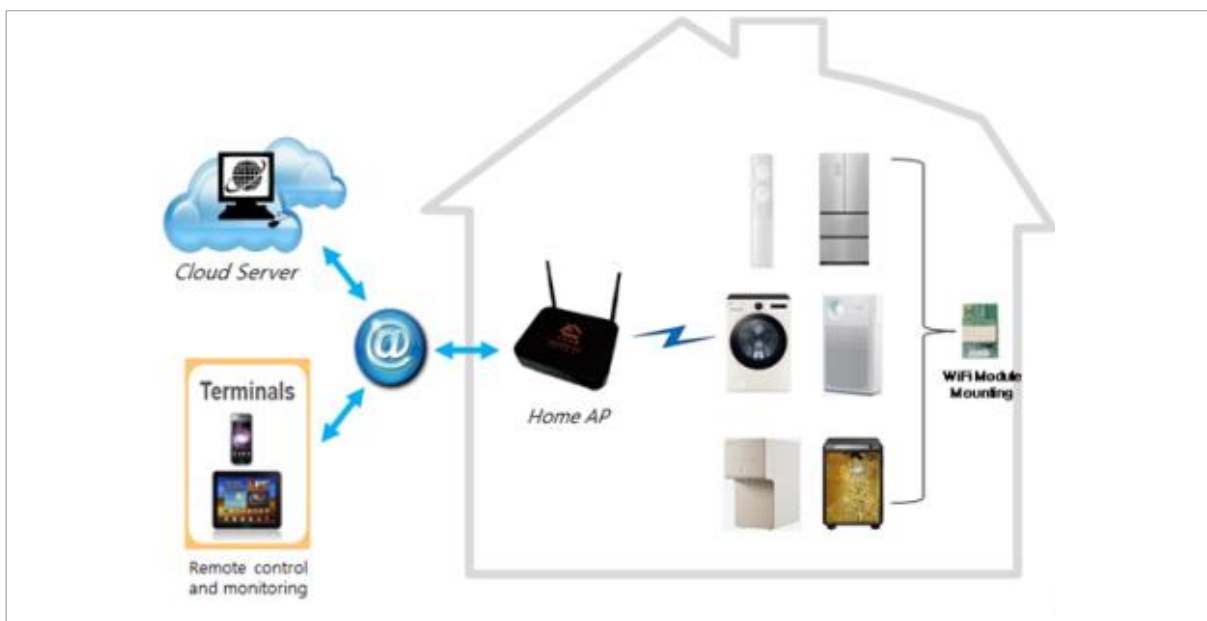
구분	Specifications
CPU	ARM Cortex-M4 (192[MHz])
WLAN	<ul style="list-style-type: none"> - IEEE 802.11 b/g/n Compliant - Supports 20MHz, 40MHz bandwidth in 2.4GHz band - Single-band 1T1R mode with data rate up to 150Mbps - Greenfield, mixed mode, legacy modes support
Bluetooth	<ul style="list-style-type: none"> - Bluetooth 4.2 Low Energy (LE) - Supports SCO AND Esco link with re-transmission - Channel assessment for AFH
Dimension	45.0 x 25.0 x 12.0 mm
Certificate	Dual combo module : KC,CE,UKCA,NCC,TELEC,IN,FCC,IC Single combo module : KC,TELEC

Product Picture



Utilization Field

- Mercury WiFi Module is equipped in household electronics in order to help the electronics connect to wireless networks.



Main Performance

- SUN SAFES MFG. CO. (2017.05 ~)
- COWAY CO., Ltd (2021.04 ~)
- iOBED INC. (2022.07 ~)

Complex Module

1 RAIN RFID Reader/Writer Module: RED2, RED4S, WINE7

Company name PHYCHIPS Inc

Main function

- Function to read and write RFID tags

Characteristics and Advantages

- **RED2, RED4S**
 - Tag Reading
 - Superior multi-tag reading
 - Support secure tag / sensor tag
 - Protocol S/W
 - Built-in multi protocol S/W
 - Free API
 - Applications
 - Applicable to many applications such as Retail, IoT, Health care etc
 - Developer Kit
 - User friendly developer kit
 - EPC Gen2v2
 - Support EPC Gen2v2
- **WINE7**
 - Superior Sensitivity
 - Excellent sensitivity enables longer read range
 - Increase multi-tag performance
 - Multi-Standard Multi-Protocol
 - Supports various encoding and decoding methods
 - It possible to support not only the EPC Gen2v2 protocol but also similar protocols based on ISO-18000-6
 - Dual Host Interface
 - 15pin 1.25mm pitch connector
 - 40pin 0.5mm pitch FPC

- WINE Protocol
 - PHYCHIPS' new reader-to-host protocol
- Free API
- Applications
 - Applicable to many applications such as Retail, IoT, Health care etc
- Protocol S/W
 - Built-in multi protocol S/W
- Antenna Matching
 - No antenna matching required
- RFID Band
 - Support global RFID band

Product Specifications

Item	RED2	RED4S	WINE7
Reader Chip	PR9200	PR9200	PR7
Air Protocol	EPC Gen2v2	EPC Gen2v2	EPC Gen2v2 ISO18000-62, 63, 64
Interface	UART(default), SPI	UART(default)	UART, USB
Antenna Port	1(U.FL)	1(U.FL)	1(U.FL)
Mount Type	SMD	SMD	Screw Assembly
Pin Count	28pin	36pin	15pin(1.25mm Pitch) 40pin(0.5mm Pitch)
Supply Voltage	3.3V	3.6V	5V
Output Power Range	9~16dBm	13~27dBm (Japan: 13~23dBm)	0~30dBm
Power Consumption	210mA@16dBm CW	550mA@27dBm CW	1A@30dBm CW
Size(W x L x H)	14.0 x 13.0 x 2.5 mm ³	24.0 x 24.0 x 3.0 mm ³	40.0 x 36.0 x 6.0 mm ³
Reader Protocol	RED RCP	RED RCP	WINE RCP RED RCP compatible

Product Picture



Utilization Field

- RFID Reader: It is be used in various applications including mobile, handheld and fixed readers.

Smart Terminal Equipment

Biometrics

1 iT100-THM

Company name Iris ID, Inc.

Main function

- iT100-THM is Iris ID's newest non-contact biometric offering that features both iris and facial recognition technology. Automatic recognition of iris and/or face is possible. A large capture volume allows for increased flexibility, speed and convenience. Enhanced security through Secure Boot and an open Android Platform provides an opportunity for third-party application development.

Characteristics and Advantages

- **IRIS / FACE Fusion Recognition:**
 - Operates in Iris only / Face only / and, or, fusion mode. Select and use according to the biometric security environment.
- **Countermeasures:**
 - A proven set of anti-spoof measures that continues to set the standard for the industry is included.
- **Large Capture Volume:**
 - Quickly and easily authenticates just by looking at the screen with wide recognition range of Iris 30~60cm(12~24") & Face 30~80cm(12~32").
- **Thermal sensor for iT100:**
 - Real-time thermal imaging temperature detection is possible and entry of people with abnormally high temperatures can be blocked in advance.

Product Specifications

Dimensions (W x H x D)	18cm x 14cm x 3cm (7.1" x 5.4" x 1.2")
Weight	1.2lbs (543g)
Type	Walk-up
Power Input / Consumption	12 - 24 VDC (auto - +/- 500 mv ripple voltage industry standard) / Max. 30watt
OS	Android OS 7.1
User Interface	Self-guidance with displayed images on LCD
Operation	Iris and or Face, Face + Iris Fusion
User Capacity	iT100 : Up to 10,000 users / iT100S : Up to 100,000 users
Transactions	Number of transaction logs on device DB: 1M (when log only) / 100,000 (with audit face images)
Encryption	User DB / AES256
Matching Speed	Less than 1 sec
Languages	Support multiple languages and characters simultaneously
	IrisCapture / DualEyeInfo™ / Countermeasure / Face Matching
Operating Range	Iris Camera: 30 ~ 60cm (12~24") / Face Camera: 30~80cm max (12~32")
CPU	Cortex A-53 Octa Core
Memory	16GB
Tamper	Supported
Algorithm	IrisCapture / DualEyeInfo™ / Countermeasure & Lens detection

Product Picture



Utilization Field

- Time & Attendance, Entry Access Control for Laboratory, Buildings, Healthcare, Manufacturing, Construction site access

Main Performance

- **Attendance management**
 - Daehan Shipbuilding & Marine Engineering: Applied to partner company employee attendance management system (March 2023)
- **Access control**
 - POSCO Gwangyang Steelworks: Remove RFID CARD and apply to visitor access control system (December 2022)
 - Applied to access control systems at community centers, gyms, golf driving ranges, etc. in multiple apartment complexes(Starting in 2022)
 - Agency for Defense Development (ADD): Applied to employee access control system (2021)
 - Homeplus: Applied to the access control system for employee-only entrances (2021)
- **Overseas_PAYCHEX: Applied to attendance management system (Starting in 2022, www.paychex.com)**

Video Surveillance

1 Doorcam3

Company name Olive&Dove Co., Ltd.

Main function

- An IoT camera that protects vulnerable entrance security with a battery-type wireless LAN camera hung on the door.
- It is a unique form factor product that is mounted on the front door. It uses wireless LAN technology and batteries for easy installation, making it suitable for the recent vitalization of non-face-to-face industries.
- When movement is detected in front of the door, camera video is recorded within a short period of less than 1 second and transmitted to the cloud server, and at the same time, a notification is sent to the smartphone.

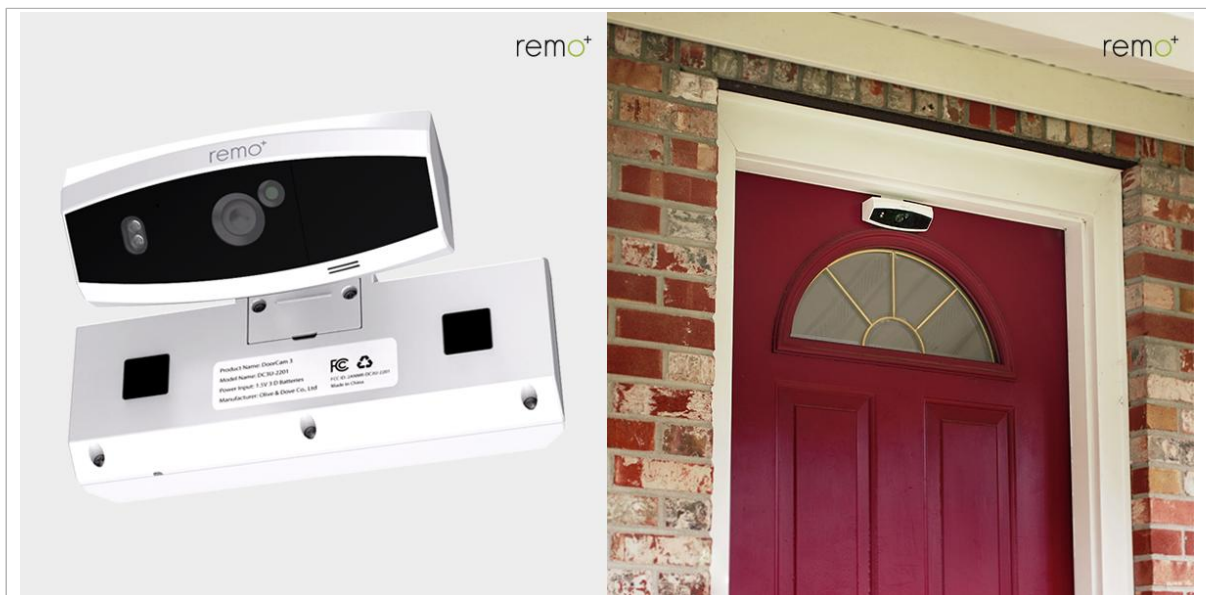
Characteristics and Advantages

- Everything from product design to mechanism, circuit, firmware, server, and mobile app development is an in-house solution.
- Filmed with a wide angle of view and Full HD clear high-definition quality so that you can monitor the entire situation in front of the front door.
- Can be viewed externally through a smartphone app in real time and recorded on a cloud server at the same time. Even when you are away, you can check the situation in front of the door in real time and provide security guard.
- By applying human detection artificial intelligence, video is recorded only when people are present, significantly improving battery usage time.
- Can be installed in a variety of door opening methods

Product Specifications

Division	Detail	Note
Power	3 D-Cell Alkaline Batteries	
Dimensions	Body 8.39 x 3.18 x 1.65 in Camera 5.9 x 2.17 x 2.15 in	
Weight	1.2lbs. without batteries	
Color	White / Black	
Video Compression	H.264	
Resolution	Full HD, HD, VGA	
Wireless	IEEE 802.11 b/g/n 2.4GHz	
Image Sensor	1/2.8 Color CMOS Sensor	
Audio Input/Output	Built-in mic & speaker	
Night Vision	IR LED, Night visibility up to 3 meters	
Operating Temperature	-18° to 50°C	
Weather Resistance Rating	IPX5	

Product Picture



Utilization Field

- **Check children's entry and exit at the front door.**
 - Recently, due to COVID-19, the amount of time children spend at home is increasing. Especially for dual-income couples, leaving their children alone is an uneasy reality. To this end, there is increasing interest in door cameras that can check the entrance and exit of the front door in real time, allowing you to check your child's entry and exit in real time. In particular, it has the advantage of being able to check that your child is safe going out and returning home anytime, anywhere

- **Checking the situation and visitors in front of single people's houses**
 - Single people who live alone are very afraid of visits from strangers when they stay at home. Additionally, many people feel anxious when strangers wander around in front of their homes. You can check the situation at your door at any time with your smartphone, and visitors can also check it in real time. If necessary, two-way voice conversation is possible with visitors anywhere.

Main Performance

- **DoorCam 3 : US B2C launch (May 2022)**
- **DoorGuard 2 : Launched by SK Shielders in Korea (May 2021)**

2 EdgeEye

Company name CoXlab Inc.

Main function

Service Introduction Video ▶



- **The camera device is designed to record still images and collect them with** LoRa long-distance wireless communication technology. It works only with battery based on LoRa's long-distance wireless communication and low power requirement and therefore may be installed even in places where ordinary types of CCTV are not easily to be installed.
- **It is embedded with features to detect objects based on internal AI and** transmit images just in case depending on inference outcome. The device may keep operating with low power, not necessitating separate stand-by power for more than a year. No wonder the device may be used to monitor every sort of facility even in terrain being left free of power supply (enclosed terrain such as island and mountain, military barracks and unmanned vehicle road system)
- **LoRa characteristically may not transmit videos because of its low transmission** speed but nevertheless is expected to be put to diverse uses in various fields even though transmissible image is limited to still image.

Characteristics and Advantages

- **Long Range Low-Power AI Still Shot Camera**
 - Still shot camera not requiring constant power supply and still available even for area not enabling network configuration
 - Installation to be made regardless of place with LoRaWAN-based low-power long-distance wireless technology
 - Support resolution: As many as 640×480(able to transmit about one sheet every 8 minute)
 - Able to be installed outdoors by supporting rainproof feature based on separate housing

- Support Night vision
- Possible to mount deep learning-presumed model of its own based on edgy computer
- Support light-weight deep learning inference through acceleration of matrix multiplication
- Possible to detect objects, classify images, recognize letters, gauge depth and mount other customized deep learning model
- Possible to set the status of delivering image wirelessly depending on inference outcome

Product Specifications

Classification	Data Communications	power	size(mm)
EdgeEye	LoRaWAN(KR920)	LI-ION battery (with 1S, housing) or DC 5V	54X36X83

Product Picture



Utilization Field

- Utilization Field
 - Detection of unexpected situations such as flooding of small rivers, falling rocks, falling objects, etc.

- Landslide prevention slope warning system
 - Management of traffic safety facilities such as smart streetlights and guardrails
 - Management of road assets such as snow removal bins and trash cans
 - Roadside Unit (RSU) Enclosure Management for ITS
 - Monitoring as to overflowing with leachate from abandoned mine, facility collapse
 - Monitoring as to mudslide caused by heavy rainfall and collapse of steep slope land
 - Monitoring to curb environmental pollution such as algal bloom and red tide
 - Determination of thermal burn-based facility status
 - Determination of status of exit door designed to prevent admission into transmission tower, wire entanglement and transmission line
 - Determination of various conditions such as complementation of manhole switch sensor to prevent accident caused by falling and manhole overflowing status
 - Military unit IoT: sensor of security gate switch such as powder magazine, Detection of intrusion into telecommunication manhole
 - Smart factory & smart port: Decoding of dashboard gauge of conventional facility, alert system against danger to workers, autonomous robot telecommunication radio shadow area
-
- **As EdgeEye may be installed even in hostile environment and provide intuitive imaging data for physical phenomenon that is hard to quantify, the Company plans to aggressively make inroads into areas being found inaccessible only with existing IoT sensor and complicating effort to install CCTVs.**
 - Area complicating effort to secure power and telecommunication service infra
 - Area complicating on-site visit by personnel
 - Monitoring area requiring transmission of one imaging data every minutes
 - Areas lacking other proper sensor than image or complementary version of existing sensor

Main Performance

- **Construction of a test bed for monitoring abandoned mine acupuncture water overflow (2023)**

-
- Signed MOU for R&D collaboration to determine equipment abnormalities based on thermal imaging (2023)
 - Signed MOU for Roadside Unit (RSU) enclosure management project for ITS (2023)

Warning / Alarm

1 IoT smart emergency bell system

Company name D&SHINE Co., Ltd.

Main function

- **Emergency alert and Rescue requests**
 - Operation of the system through direct touch of the emergency bell or detection of abnormal sounds in an emergency situation, such as a crime
 - Alarm is triggered(operating of the bell's own alarm and warning light) and emergency situations are automatically received when the system is operating.
 - Automatic connection of emergency call(call between the caller and the control center / the person in charge) via emergency bell
- **Monitoring and Controlling the system/status via the interworking with the control solution**
 - Real-time remote monitoring and support(reporting, dispatch / remote release of system in operation, etc.) of emergency situations
 - Real-time remote monitoring and control of condition of systems

Characteristics and Advantages

- **The application of Advanced IoT technology and Wireless communication**
 - Intelligent emergency bell with IoT technology(The application of interactive communication)
 - Remote control of system devices(emergency bell and Intelligent abnormal sound detector, etc.) via the interworking with the control solution
 - Emergency call through wireless communication(emergency call available when the emergency bell is activated.)
 - Applicable to areas where communication line can not be accessed and criminally vulnerable areas where surveillance equipments such as CCTVs cannot be installed

- **Abnormal sound detection function**

- Automatic activation of emergency bells by detecting abnormal sound sources excluding the activation of the emergency bell by direct touch

- **Self-diagnosis function(Features for system reliability)**

- The function to keep the system running at all times(automatic transmission of abnormal status information of system to the control)
- IoT emergency bell equipment can monitor status of the system on its own and take immediate actions in control center such as check and control in case of an event such as disconnection of a power line.

- **Utilization of Capacitive type touch switch**

- Improves operability and minimizes failures by using the touch-panel type switch with (electrostatic) capacitive method
- LED light applied to switch for easy access and use even in dark

- **Operations without power supply / Waterproof and Dustproof**

- Operations of the system possible for 10 hours(standby time) without power supply(Application of internal batteries)
- Preventing failures due to flooding and dust, etc. by means of application of waterproof and dustproof design(IP66)

Product Specifications

Classification	IoT emergency bell (Main bell)	Wireless emergency bell (Auxiliary bell)	Abnormal sound detector
Communication method	WCDMA/LTE (Frequency 1.9~2.2GHz)	RF (Communication with IoT emergency bell)	RS232
Power supply	DC 14V	Internal batteries(3.6V)	DC 5V
Product size	(160 × 210 × 46)mm	(100 × 130 × 35)mm	(145 × 105 × 55)mm

※ Other Product Configuration : Warning light, Power cable(Waterproof connector included), Adapter

Product Picture



Utilization Field

- The field of public safety and crime prevention / The field of Crime Prevention Through Environmental Design(CPTED) (Preventive solutions for violent crimes)
 - The effects of strengthening public safety and crime response in crime-ridden districts, blind spots of crime, various public and interpersonal service areas, etc.
 - The effects of crime prevention through CPTED
 - Major locations of application : Public places and facilities such as Public restrooms, Public parks, Emergency Rooms, Public service centers, Counseling centers, Kindergartens/Daycare Center, School facilities, Subway stations, Terminals, Shopping malls, Main streets, etc.

Main Performance

- Delivery performance of IoT smart emergency bell system
 - Approximately 10,000 sets of products have been delivered as of October 2023.
 - Installing the system at approximately 10,000 sites(Public restrooms, Emergency rooms, Public service centers, Counseling rooms, School, etc.) in about 500 local governments and agencies

2 Street light-form IoT emergency bell system

Company name D&SHINE Co., Ltd.

Main function

- **Emergency alert and Rescue requests**
 - Operation of the system through direct push of the emergency bell in an emergency situation, such as a crime
 - Alarm is triggered(operating of the bell's own alarm and warning light) and emergency situations are automatically received when the system is operating.
 - Automatic connection of emergency call(call between the caller and the control center / the person in charge) via emergency bell
- **Monitoring and Controlling the system/status via the interworking with the control solution**
 - Real-time remote monitoring and support(reporting, dispatch / remote release of system in operation, etc.) of emergency situations
 - Real-time remote monitoring and control of condition of systems

Characteristics and Advantages

- **The application of Advanced IoT technology and Wireless communication**
 - Intelligent emergency bell with IoT technology(The application of interactive communication)
 - Remote control of system devices(emergency bell and relevant devices, etc.) via the interworking with the control solution
 - Emergency call through wireless communication(emergency call available when the emergency bell is activated.)
 - Applicable to communication line inaccessible areas, etc.
- **Self-diagnosis function(Features for system reliability)**
 - The function to keep the system running at all times(automatic transmission of abnormal status information of system to the control)
 - IoT emergency bell equipment can monitor status of the system on its own

and take immediate actions in control center such as check and control in case of an event such as disconnection of a power line.

- **Utilization of large push switch / Application of LED panel and LED light for guidance of emergency bell**
 - The large area of the button (switch) makes it easier to operate.
 - Apply LED light to button / Apply LED light for the recognition of button (for easy access and use even at night)
 - Increase awareness and visibility of the emergency bell with LED panel and LED lights for guidance
- **Operations without power supply / Waterproof and Dustproof**
 - Operations of the system possible for 72 hours (standby time) without power supply (Application of internal batteries)
 - Preventing failures due to flooding and dust, etc. by means of application of waterproof and dustproof design

Product Specifications

Classification	Wireless IoT emergency bell	Auxiliary Wireless emergency bell
Communication method	WCDMA/LTE (Frequency 1.9~2.2GHz)	RF (Communication with IoT emergency bell)
Power supply	DC 12V	Internal batteries(3.6V)
Product size	(370 × 1,140 × 380)mm	(100 × 130 × 35)mm

Product Picture



Utilization Field

- **The field of public safety and crime prevention / The field of Crime Prevention Through Environmental Design(CPTED) (Preventive solutions for violent crimes)**
 - The effects of strengthening public safety and crime response in crime-ridden districts, blind spots of crime, various public areas, etc.
 - The effects of crime prevention through CPTED
 - Major locations of application : Walking trails(Dulle-gil trails), Arboretums, Waterfront park, Vacation spots, Campgrounds, Amusement parks, Playgrounds, Water amusement facilities, Apartment complexes, Village alleys, Outdoor parking lots, Bus stops, School facilities, Main streets, etc.

Main Performance

- **Delivery performance of Street light-form IoT emergency bell system**
 - 89 sets of products have been delivered as of October 2023.
 - Installing the system at 89 sites(Trails, School, Waterfront parks, Village alleys, etc.) in 10 local governments and agencies

Gateway

1 Multi-port transceiver that can reduce IoT installation costs(MPoE)

Company name N-ark Technology Co., Ltd.

Main function

Service Introduction Video ▶



- **Scalability and convenience.**
 - It is easy to install by applying various IoT products with one LAN line.
 - Install additional IoT products using existing installed tracks.
- **Cost reduction.**
 - It is possible to install several IoT products with one LAN line, reducing construction costs (20-50%).
- **Environment**
 - When MPoE system is applied compared to PoE system, it reduces the number of adapters and cables to reduce industrial waste and treatment costs.

Characteristics and Advantages

- **NRK-P6405**
 - Install multiple IoT products on one line and transmit power(32W) and Ethernet(10/100 Mbps) without communication errors.
- **NRK-GP6494**
 - Install multiple IoT products on one line and transmit power(60W) and Ethernet(10/100/1000 Mbps) without communication errors.
- **NRK-MR100, NRK-FR500, NRK-FR501**
 - NRK-MR100 is installed in a direct parallel manner. NRK-FR501 installs up to four IoT products at each branch, NRK-FR500 installs up to three IoT products at each branch, and up to three IoT products at the next branch.

Utilization Field

- **Public institutions and public enterprises (CCTV, Wi-Fi, IoT sensors)**
 - Areas related to public Wi-Fi projects or CCTV installation of local governments

and public institutions

- Telecom companies, dispatch security companies, home network companies
 - Installation of multiple access control systems and IoT sensors through a single LAN line

Product Specifications

구분	NRK-P6405	NRK-GP6494	NRK-MR100	NRK-FR500	NRK-FR501
Data Rate	10/100Mbps	100/1000Mbps	10/100Mbps	10/100Mbps	10/100Mbps
Wattage	32W	60W	60W	60W	60W
Port	2	2	3	5	5
Transmission distance	100m	100m	100m </td <td>100m</td> <td>100m</td>	100m	100m
Size	181x50x36	130x61x27	65x70x31	135x70x29	135x70x29

Product Picture



Main Performance

- SK Shielders Product Delivery in June 2020
- Selection of Outstanding R&D Innovative Products Service (January 21)
- Japan and Turkiye sign a contract (December 22)

2 NEXPOMer

Company name WIZCORE Co., Ltd.

Main function

- **Smart Edge Gateway**
 - Efficient industrial data collection and preprocessing
 - Open interface configured to support various protocol conversions, allowing heterogeneous equipment data to be directly transmitted to upper-level monitoring solutions and databases
 - Equipped with PLC communication protocol drives and conversion libraries to support real-time data collection and standardization of data collection
- **Diverse product portfolio tailored to on-site requirements**
 - NEXPOMer Standard, IoT, and ADi for industrial data collection
 - (Standard) Model supporting Ethernet wired connection, allowing direct connection with various PLCs and database integration
 - (IoT) Model supporting Wi-Fi wireless connection, with simultaneous support for 2.4G and 5G
 - (ADi) Wired connection model, supporting sensor and other analog data collection through wired connections
 - NEXPOMer Safely for secure data collection and AI application
 - (AI Algorithm Processing) AI-based automatic safety detection object recognition device equipped with an AI model
 - (Safety Solution Integration) Data integration with industrial safety solutions
- **Private 5G Exclusive Wireless IoT Terminal (Upcoming Release)**
 - Wireless gateway capable of communicating within the Private 5G network
 - Supports Private 5G communication network while simultaneously supporting the OPC UA-based communication module

Characteristics and Advantages

- **Heterogeneous Equipment Data Collection and Integration**
 - Equipped with various conversion libraries for direct attachment to equipment,

enabling easy data collection

- Direct real-time data collection by connecting with temperature, humidity, vibration sensors, etc.
- Provides a data processing and storage management platform tailored to user requirements
- **Data Consistency Verification**
 - Application of optimized data collection and preprocessing technology with upper systems to reduce time and cost for data consistency verification
- **Seamless Integration with Upper Systems such as MES, Monitoring Solutions**
 - Implementation of an open interface platform that allows flexible integration with upper systems applied for smart manufacturing site construction
 - Capable of interfacing with various database systems such as MS-SQL, MySQL, Oracle, etc.

Product Specification

■ NEXPOMer - Standard

Classification	Specification
Chipset	1.5GHz Quad-core Cortex-A72 (ARM v8) 64-bit
I/O	Ethernet 10 to 100 : 1 port Ethernet Giga : 1 port RS-232 : 2 port / RJ45 USB A : 3 port HDMI 1 port Micro SD Card : 1 port M.2 slot : 1 port (Option) Antenna : 2 port (Option)
Memory	16GB-eMMC / 2 GB DDR3L RAM
Power	5VDC / 5A
Dimension(mm)	140(h) x 100(w) x 20(t)
Operating Systems	Linux

■ NEXPOMer - Private 5G

Classification	Specification
Chipset	1.5GHz Quad-core Cortex-A72 (ARM v8) 64-bit Qualcomm® Hexagon™ DSP processor at up to 1.5 GHz
I/O	Ethernet 10 to 100 : 1 port Ethernet Giga : 1 port POE : 1 port

	RS-232 : 2 port / RJ45 USB A : 2 port Micro SD Card : 1 port SIM(Micro USIM) : 1 port
Memory	32GB-eMMC / 2GB DDR3L RAM
Power	5VDC / 3A
Operating Systems	Linux

Product Picture



Utilization Field

- Applicable to all manufacturing plants regardless of industry
 - Production Process Management : Integration with equipment or existing

systems in the production site to synchronize data essential for production process management, such as production counters, operating time, downtime (Integration with MES data).

- Quality Control : Integration of quality data from 3D measuring devices, frequent inspections, CT scans, etc., enabling SPC analysis, CP, and CPK evaluations.
- Energy Management : Real-time collection of temperature, humidity, pressure, and vibration data, allowing integration and analysis with EMS (Energy Management System).
- Equipment Management : Real-time collection of data necessary for equipment management, such as equipment operation/non-operation, temperature, and humidity, facilitating equipment status management.

Main Performance

- **Possessing a track record of approximately 100 deliveries, including major achievements**
 - Domestic and global (China, USA, Mexico, etc.) factories of M Company, an automobile parts manufacturer (December 2021, August 2022, July 2023, among others)
 - Domestic factory of D Company, a medical device manufacturer (January 2023)
 - Domestic factory of S Company, an electronic parts manufacturer (January 2022)
 - Utility integrated control and energy management system construction project (November 2021)

3 sHaLow/all, CS-428i V2.0

Company name SystemBase Co., Ltd.

Main function

- **sHaLow/all: Industrial Serial to WiFi-HaLow Converter**
 - Wireless control converter implemented with IEEE 802.11 ah (WiFi-HaLow)
 - Can be used without interference with 2.4GHz/5GHz, operating in the 926.5~929 MHz (USN5) band
 - Communication distance: up to ~1.5km (LOS: Line Of Sight, based on a straight path without obstacles)
 - Low power consumption wireless converter: Max. 1.25W/ Operating 0.75W/ Standby 0.33W
 - Provides a basic 2.5dBi SMA Reverse Polarity Plug dipole antenna
 - Supports WPA2-PSK wireless security features
 - Provides RS232/RS422/RS485 serial communication port (selectable via utility)
 - Supports a maximum serial communication speed of 921.6kbps
 - Supports auto toggling for RS422/RS485 communication
 - Supports TCP Server/Client, UDP socket connection
 - Operation and TX/RX communication status can be checked through LEDs
 - IEC 61000-4-2 (ESD): Provides ±15kV ESD protection for ports
 - IEC 61000-4-3 (EFT): Provides port protection
 - IEC 61000-4-4 (Surge): Provides 500W protection for ports
 - Supports industrial operating temperatures of -40~85℃
 - Provides a configuration utility called HaLowConfig

- **CS-428i V2.0: Industrial high-performance isolation Converter**
 - Convert RS232 signal to RS422/RS485 signal
 - Convert RS422/RS485 signal to RS232 signal
 - Supports a maximum communication speed of 921.6 Kbps
 - Communication distance: 1.2 km
 - Support for auto toggling in RS422/RS485 mode through hardware

-
- Capable of connecting up to 32 devices in RS422/RS485 mode
 - Support for Modbus RTU/ASCII
 - Provides data filtering functionality through ID configuration/registration /unregistration
 - LED indicators for operation status and TX/RX communication monitoring
 - Maximum $\pm 5\text{KV}$ digital isolation
 - IEC 61000-4-2 (ESD): $\pm 15\text{KV}$ ESD port protection
 - IEC 61000-4-3 (EFT): Port protection
 - IEC 61000-4-4(Surge): 500W port protection
 - GDT: Port protection ranging from 20,000A (8/20 μs) to 200A (10/700 μs)
 - PPTC: Utilizes resettable fuses (resettable PTC fuses) that can be reused after overcurrent conditions are removed
 - Supports industrial operating temperature range of -40 to 85 $^{\circ}\text{C}$

Characteristics and Advantages

■ sHaLow/all: Industrial Serial to WiFi-HaLow Converter

- This is an industrial Serial to WiFi-HaLow converter in the 900MHz band, supporting a maximum distance of 1.5km and a top speed of 2Mbps. It allows for easy communication, control, and monitoring of remote serial equipment connected through the WiFi-HaLow network, facilitating the simple construction of various M2M networks such as smart grids and sensor networks.

■ CS-428i V2.0: Industrial high-performance isolation Converter

- This is an industrial-grade high-performance isolation converter that provides stable operation and excellent protection against noise and surges that occur in harsh industrial environments. It offers the function of converting RS232 signals into RS422 or RS485 signals. It also provides the ability to register, set, and cancel IDs without a separate protocol, dramatically increasing the flexibility of device interconnections. Additionally, it supports a filtering function that allows for selective transmission and reception of data on communication lines.

Product Specification

■ sHaLow/all: Industrial Serial to WiFi-HaLow Converter

Item		Specification
WiFi-HaLow	Frequency	926.5~929 MHz (USN5)
	Standard	IEEE 802.11 ah
	Speed	Max 2 Mbps
	Communication distance	Up to 1.5 kilometer (in Open Area)
	ANT	Dipole Antenna / Avg 2.5dBi/800MHz~960MHz
	Mode	Peer to Peer
Serial	Port	1 Port DB9 (Female), RS232/RS422/RS485
	Speed	Max 921.6 Kbps (Recommended delay of 60m/sec for 100byte data communication)
	Data bit	8
	Stop bit	1
	Parity bit	None, Even, Odd
	Flow Control	RTS/CTS
	Signals(RS232)	TXD, RXD, RTS, CTS
	Signals(RS422)	TXD+, TXD-, RXD+, RXD-
	Signals(RS485)	TRXD+, TRXD-
Hardware	Power Requirement	5V~12V 1A DC Input Power Consumption: Max,1.25W / Operating: 0.75W / Standby: 0.33W
	Serial Port Protection	± 15kV ESD Protection
	Size (W) x (L) x (H)	54.5(W) x 102.5(L) x 24.5(H)mm
	Weight	Gross weight: 79g, product weight: 156g
	Operating Temperature	-40 ~ 85℃
	Humidity	Max 90% R.H
	LED	RDY(Yellow), TXD(Green), RXD(Red),

■ CS-428i V2.0: Industrial high-performance isolation Converter

Item		Specification	
Serial	RS232	Mode	DTE, DCE
		Signals	TXD, RXD
		Connector	DB9 Female
	RS422/485	Mode	RS422 (4 Wire)

			RS485 (2 Wire) None Echo, Echo
		Signals	RS422: TXD+, TXD-, RXD+, RXD- RS485: TRXD+, TRXD-
		Connector	Terminal Block (5.08mm Pitch)
		Data bit	8
		Stop bit	1, 2
		Parity bit	None, Even, Odd
		Speed	921.6kbps
		Communication distance	1.2km
Hard ware	Protection	Protection(ESD)	Max. ±15V ESD
		Protection Standard(IEC)	IEC 61000-4.2(ESD): ±15V IEC 61000-4.3(EFT) IEC 61000-4.4(Surge): 500W
		Impulse Discharge current (UL 497B)	20,000A, 8/20μs, 1 operation minimum 10,000A, 8/20μs, 10 operations 200A, 10/1000μs, 300 operations 2,000A, 10/350μs, 1 operation 200A, 10/700μs, 500 operations
		LED	RDY (Green), TXD(Green), RXD(Yellow)
		Switch	Configuration and Termination On/Off Switch
		Size (W) x (L) x (H)	101.8(W) x 82.6(L) x 26.7(H)mm (Without T.B)
		Weight	Gross weight: 192g, product weight: 658g
		Operating Temperature	-40 ~ 85℃
		Power Requirement	DC 12V ~ 48V / Operating: 1.2W
	Power Adapter	DC 12V 1A	

Product Picture



Utilization Field

- **sHaLow/all: Industrial Serial to WiFi-HaLow Converter**
 - Various industrial fields that require sensor data and industrial equipment control, such as smart homes, smart cities, the energy sector, building management, smart factories, and smart farms.

- **CS-428i V2.0: Industrial high-performance isolation Converter**
 - Various industrial fields that require stable serial communication, such as PLC, measurement equipment, electronic signboards, and solar power systems.

Main Performance

- Supplied large numbers to large companies and other enterprises

4 Zone Environment Controller

Company name SYStoUS Inc.

Main function

- **Comprehensive control and monitoring of zone environment**
 - Display indoor and outdoor environment sensor value
 - Control indoor environment value goals
 - Monitor environment elements such as temperature, humidity, fine dust, CO, CO₂, NO_x, SO_x, illuminance, noise, vibration, ...
- **Find and control the optimal method suitable for the current conditions**
 - Automatic control for setting the indoor environment
 - Recommended control for outdoor environment and energy consumption
- **I/O and IoT function to communicate with users**
 - Monitor and control environment value by touch UI
 - IoT terminal app to control, monitor and recommend
- **Easy integration with other systems**
 - BACnet support for integration in building automation system(BAS)
 - Effective indoor environment management using support of BAS
 - Interworking with other systems such as various sensors and equipment

Characteristics and Advantages

- Applicable control system for each zone for energy management
- Easy integration of building automatic control systems
- Communicate with occupants by built-in IoT function connectionless to BAS
- Optimal environment control by built-in intelligence control function
- Able to build a comprehensive environmental management for each zone
- Convenient and intuitive user interface

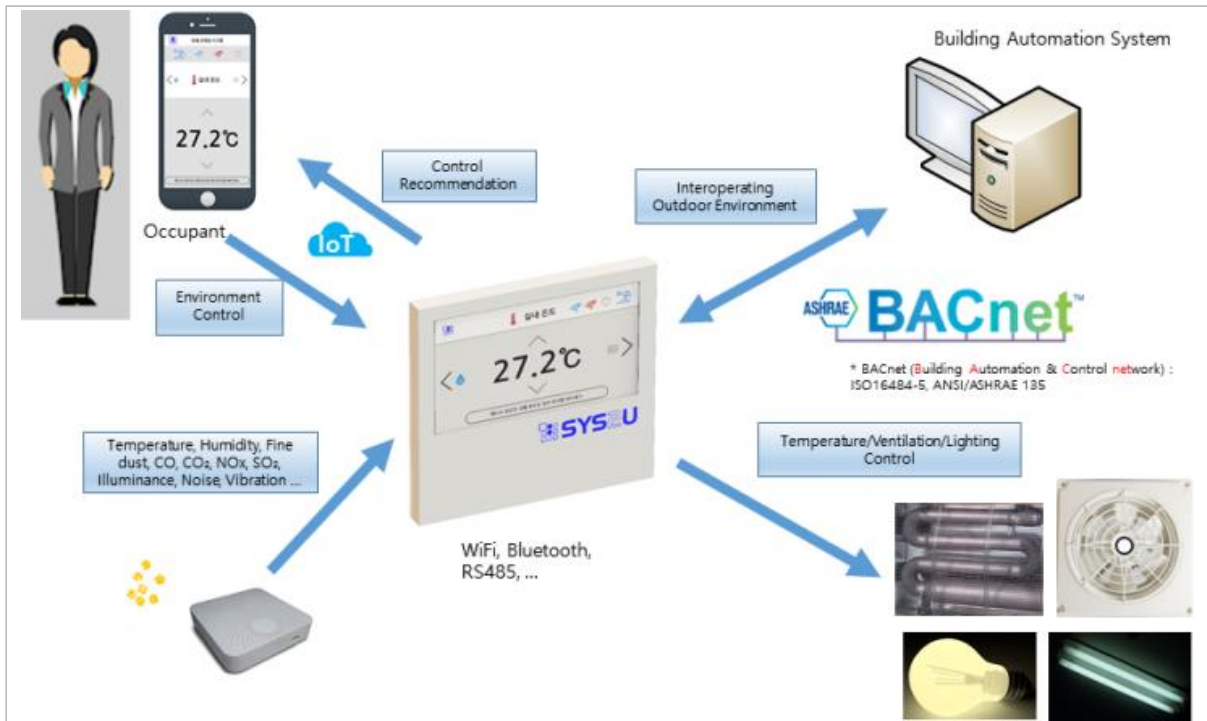
Utilization Field

- Commercial buildings with BAS such as buildings, hotels, schools, hospitals
- Existing building indoor environment control to add low-cost IoT function
- Space in a building requiring a stand-alone indoor environment control system
- Zone requiring comprehensive environmental control and energy saving

Product Specification

Classification	Content	Classification	Content
Wireless Communications	WiFi, BLE, IR	Integrated Protocol	BACnet (ISO16484-5, ANSI/ASHRAE 135)
Wired Communications	usb, rs485, rs232c	IoT Protocol	oneM2M, Matter
User Interface	touch LCD	Input Sensor	Temperature, Humidity, Fine dust, CO, CO ₂ , NO _x , SO _x , Illuminance, Noise, Vibration
I/O Connection	GPIO, wired/wireless	Output Control	
Size	W × H × T (mm)	Entire Front Rear	126 × 144 × 64 126 × 144 × 23.5 92 × 72 × 40.5

Product Picture



Main Performance

- In 2024, scheduled of release

Reader

1 AT907 (UHF RFID / Barcode Handheld Reader)

Company name ATID Co., Ltd.

Main function

- UHF RFID (900MHz / 880MHz) tag information collection
- Collection of 1D / 2D barcode information

Characteristics and Advantages

- Impinj's UHF RFID chip enables high-speed and accurate tag recognition.
- Equipped with Android OS. Using the SDK provided by ATID is convenient for developing user applications.
- Equipped with a 4 dBi High Gain Circulatory antenna, it makes AT907 can recognize tags in a wide area.
- A large capacity battery (9,000mAh) allows for long-term use. Batteries are replaceable.
- 1.5m drop resistant and IP65 certified, so AT907 can be used in any industrial environment.
- AT907 has got certified in Korea (KC), USA (FCC), Europe (CE) and Japan (TELEC). Recently Mexico (NOM), Canada (IC) also certified additionally. AT907 is sold worldwide.

Product Specifications

Item	Specification
OS	Android 10
Battery	9,000 mAh Lithum-Ion
Protocol	EPC Class 1 Gen2, ISO 18000-6C
RF Output	1W (Max)
Frequency	KC : 917MHz ~ 921MHz

	CE : 865MHz ~ 868MHz FCC : 902MHz ~ 928MHz TELEC : 916MHz ~ 921MHz (1W)
RFID Antenna	Circulatory Antenna / 4 dBi
Drop	1.5m
IP Rate	IP65

Product Picture



Utilization Field

- Supply chain & logistics distribution field
- Retail store inventory management
- Production process management
- Medical services
- Aviation industry & airport logistics management

Main Performance

- Exporting to more than 40 countries in addition to domestic customers (Y2022 to present)

2 AT200 (SLED Type UHF RFID / Barcode Bluetooth Reader)

Company name ATID Co., Ltd.

Main function

- UHF RFID (900MHz / 880MHz) tag information collection
- Collection of 1D / 2D barcode information
- Send collected information to host device (Android, iOS, Windows)

Characteristics and Advantages

- Impinj's UHF RFID chip enables high-speed and accurate tag recognition.
- The host device can be attached to the top of the AT200 in a variety of ways.
- Collected data can be transmitted to the host device through various methods such as Class Bluetooth, BLE, and USB.
- ATID provides SDKs for each Android, iOS, and Windows platform to facilitate the development of user applications according to the host device platform selected by the user.
- Equipped with a 1 dBi Circulatory antenna, it makes AT200 can recognize tags in a wide area.
- 5,200mAh battery is applied to the Gun Handle type including trigger button and Gun Handle Battery Module is replaceable. The Gun Handle Battery Module can be charged independently via the included cradle.
- 1.5m drop resistant and IP65 certified, so AT200 can be used in any industrial environment.
- AT200 has got certified in Korea (KC), USA (FCC), Europe (CE) and Japan (TELEC). AT200 is sold worldwide.

Product Specifications

Item	Specification
SDK Support Platform	Android, iOS, Windows
Battery	5,200 mAh Lithum-Ion

Protocol	EPC Class 1 Gen2, ISO 18000-6C
RF Output	1W (Max)
Frequency	KC : 917MHz ~ 921MHz CE : 865MHz ~ 868MHz FCC : 902MHz ~ 928MHz TELEC : 916MHz ~ 921MHz (1W)
RFID Antenna	Circulatory Antenna / 1 dBi
Drop	1.5m
IP Rate	IP65

Product Picture



Utilization Field

- Supply chain & logistics distribution field
- Retail store inventory management
- Production process management
- Medical services
- Aviation industry & airport logistics management

Main Performance

- Exporting to more than 40 countries in addition to domestic customers (Y2022 to present)

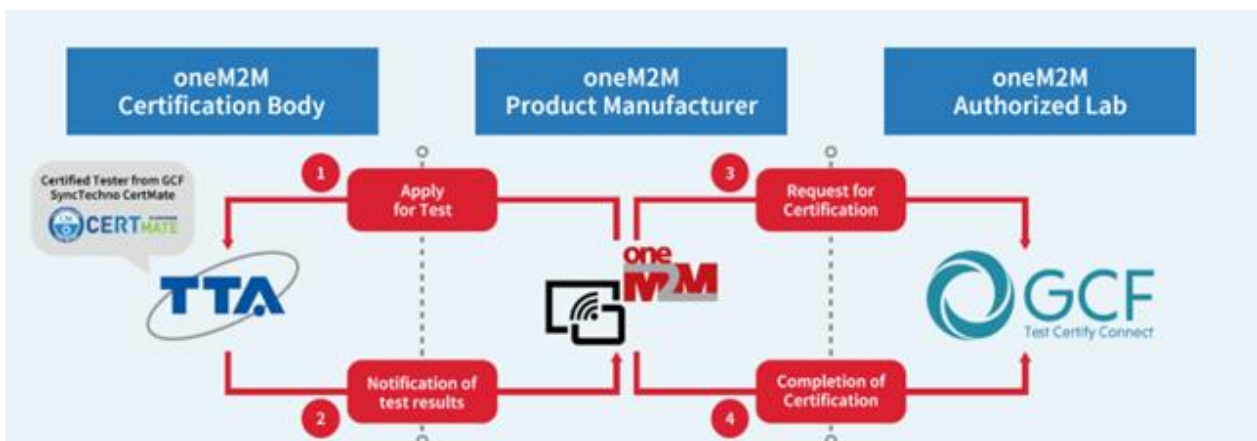
ETC.

1 Authorized oneM2M Testing Platform, CertMate

Company name SyncTechno Inc.

Main function

- **World's first and only designated oneM2M Release 2 testing platform**
 - OneM2M is a global IoT standard for various smart city projects around the world and provides a wide range of interoperability features.
 - GCF has proved itself a highly reliable information and communication certification body and it has been providing certification programs related to 4G & 5G mobile networks for many years.
 - TTA is one of the authorized testing laboratories and the only one in Korea that can conduct official oneM2M conformance tests.
 - For oneM2M products test, TTA use SyncTechno's oneM2M Rel-2 testing platform, named CertMate.
 - SyncTechno's CertMate is world's first and only oneM2M Rel-2 testing platform, used by TTA.

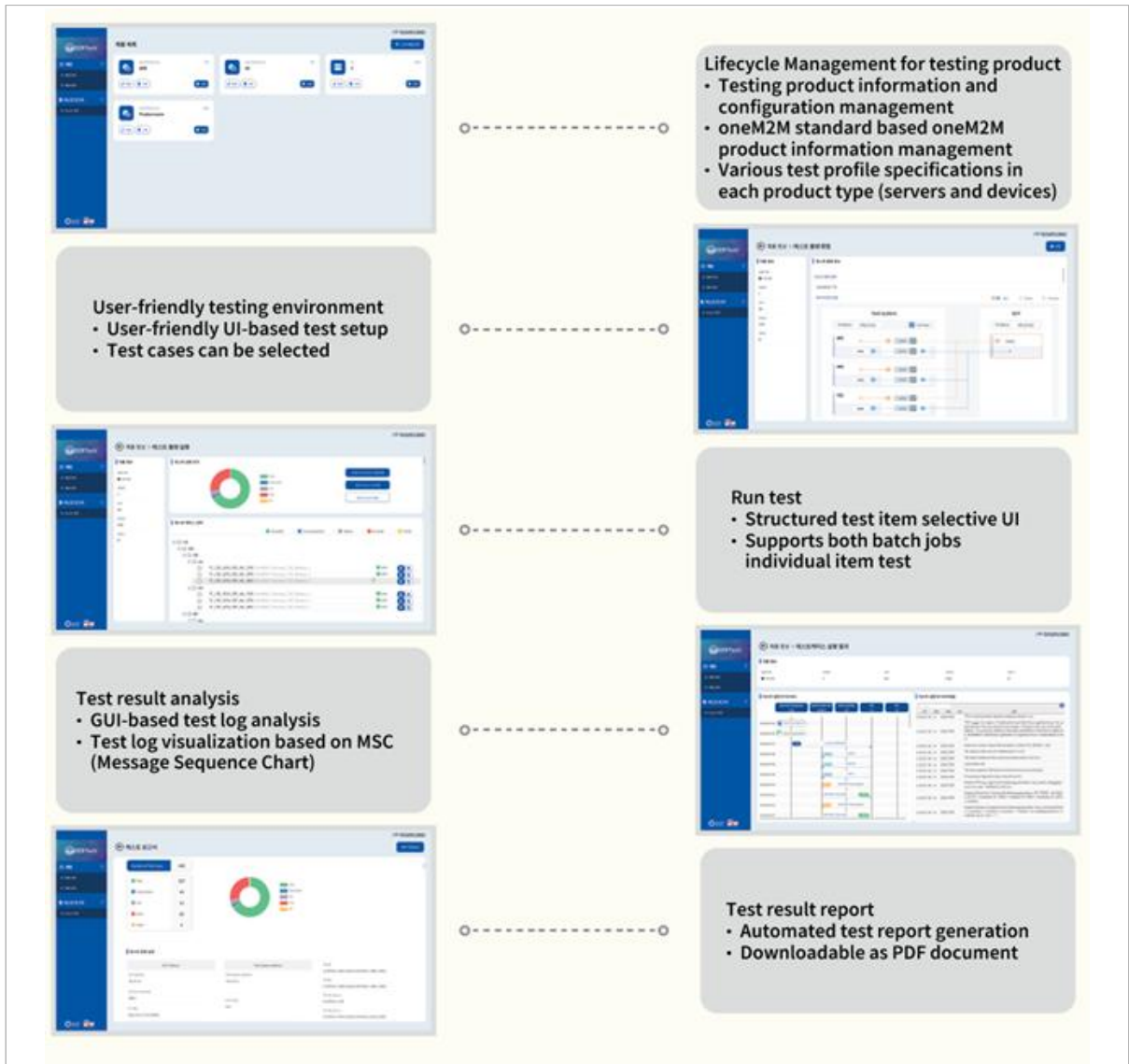


Characteristics and Advantages

- **Integrated management with one time registration**
 - All Information such as environmental settings, test performance logs, and testing result reports can be managed together with one time registration.

- **Easy to use**
 - Visualized UI for configuring the environment settings.
 - Test cases will be automatically selected according to the product type under test profile.
 - Both batch jobs and individual job can be executed in test profile.
- **Automatic aggregation and documentation of test results**
 - Test results are immediately compiled into statistics.
 - Test reports can be prepared at the end of the test or at intermediate stages.
 - The test report is generated as a PDF file and is also available for download, and it's possible to request certification from GCF.

Service block Diagram



Utilization Field

- Certified testing platform in domestic and international certification bodies
- IoT automation test tool

Main Performance

- TTA oneM2M Rel-2 certified conformity test platform (December 2022)
- TTA IoT convergence service data platform (Ministry of Land, Infrastructure and Transport Smart City Data Hub) test platform (August 2021)
- TA KEPCO eIoT interoperability test platform (October 2020)



AI Product

Application S/W

1 AI Convergence Intelligent Search Solution_T3Q.search

Company name T3Q Co., Ltd.

Main function

- **AI-based Automatic Data Conversion Process**
 - Automatically performs extraction of text, images, audio and more.
- **Metadata Automatic Generation**
 - Automatically generates and stores metadata used for search.
- **Data Fabric Configuration**
 - Enables unified data management, regardless of data location.
- **Utilizing Inverted Index for Express and High-Performance Search**
 - Rapidly provides results through keyword extraction and indexing.
- **Search Pipeline Configuration by Data Type**
 - Enables specialized system configuration for video, audio, images and more.

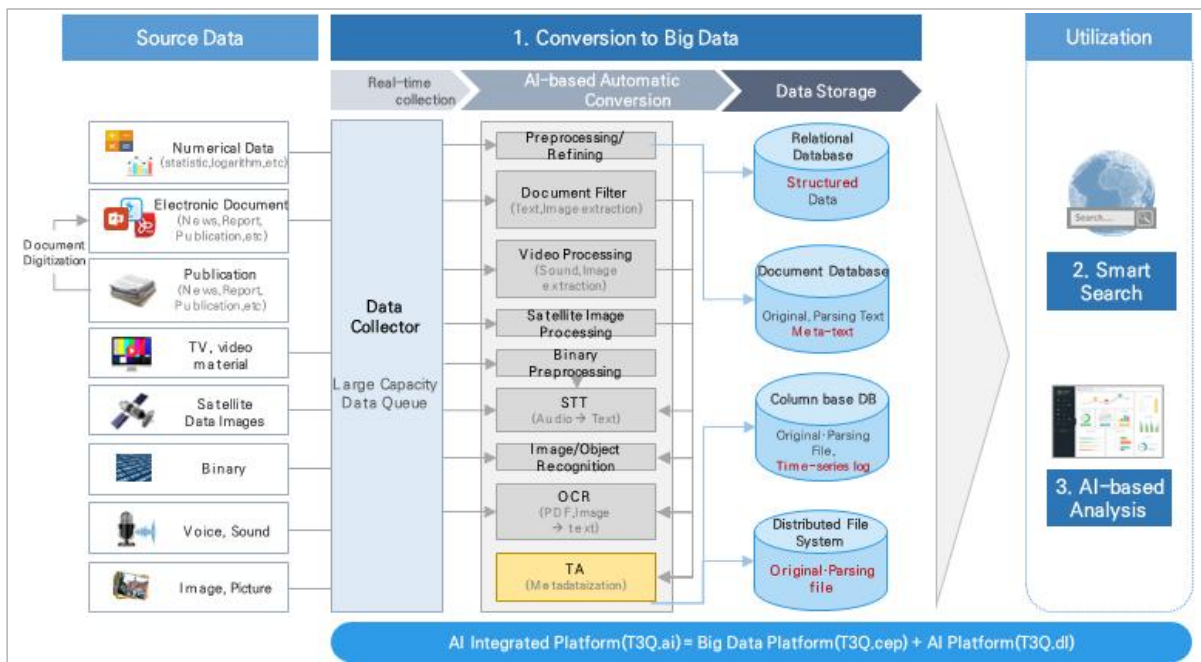
Characteristics and Advantages

- **Processing Various Types of Data**
 - Capable of processing structured and unstructured data types, including text, audio, images, video, satellite, numerical/logs, binary and more.
- **Real-Time Data Collection and Analysis**
 - Provides up-to-date information by real-time collection and analysis of all data.
- **Advanced Search Functionality**
 - Enables data retrieval quickly through keyword, multi-keyword, semantic, and sentence-based search.
- **Utilizing AI Technology**
 - Actively utilize AI technology to build search engine and describe original & derivative content through metatext generation.

Product Specifications

Main Functions	H/W specification
<ul style="list-style-type: none"> - Management function : Dashboard, Data Collection, Data Processing, AI Services, etc. - User Management : Registration, etc. - Intelligent Search : Text, Video, Audio, etc. - Platform Management : Resources, etc. 	<p>(higher recommended)</p> <ul style="list-style-type: none"> - CPU : 144 Core - RAM : 1TB - SSD : 500GB (OS) - HDD : 10TB - GPU : NVIDIA A5000 2EA

Product Picture



Utilization Field

- T3Q AI engine digitally transform organizations, companies, schools' various data used for search and analysis.

Main Performance

- Establishment of the Ministry of Unification's North Korea Information AI Big Data Analysis System (October 2023)

-
- Establishment of the National Institute of Forest Science's Research Data Archive and Intelligent Search (December 2023)
 - Establishment of Converged Data AI Analysis Platform for Korea Electric Power Technology (April 2024)
 - LG Energy Solutions Core Information Identification/Classification Automation PoC (November 2023)

2 AIoT data-based digital twin solution, RapidTWIN

Company name MDS Intelligence Inc.

Main function

- **3D Modeling (Mirroring)**
 - Fast and accurate 3D modeling based on self-developed live-action 3D solutions (Auto-i3D)
 - Customized optimization with CS and web-based services
- **IoT-based real-time data collection and representation (Monitoring)**
 - Reflects the current state of the object to the modeling data through IoT
 - Stable aggregation/operation of large amounts of data collected from different types of sensors is important
 - Comprehensively visualize data analysis values and information
- **Predict/analysis/simulation (Big data, AI)**
 - Big data analysis using data collected based on IoT
 - Real-time monitoring and status through big data AI analysis
 - Predict and simulate the future with accumulated data

Characteristics and Advantages

- **All-cycle technology know-how for building digital twin virtual spaces**
 - Electromagnetic technology know-how to create digital twin virtual spaces, such as data creation, authoring, collecting, and analysis, enables real-world sage environments and systems to be identical to virtual spaces
 - 3D automatic generation and authoring technology, IoT data collection technology, digital twin integrated visualization technology, and big data AI analysis technology
- **Fast and light 3D model creation tool_ Auto-i3D**
 - Automatically create realistic 3D objects and support lightweight authoring by extracting feature points based on AI analysis
 - Conveniently and smartly create high-quality 3D objects with 2D photo or

video input from small objects to large buildings

■ **International Standard IoT Solution_NeoIDM**

- IoT device management platform for data collection, control, firmware update, and monitoring of IoT devices
- Developed based on LwM2M(OMA), CoAP, an international standard protocol for IoT
- Supporting the necessary toolkit to technical support services depending on the customer's business model

■ **Digital Twin Integrated Data Simulation_ AWAS-DT**

- Build the real world into a 3D digital twin environment and provide visualization to help you intuitively understand complex data
- Enables efficient operation management by customizing and visualizing field data such as sensor values and 3D spatial information by type

■ **AI-based image data analysis solution_ AWAS-Insight**

- Real-time analysis of vast amounts of video data collected in the field to provide alerts
- Provides insight to automatically detect and respond quickly to a variety of situations in environments that require real-time management

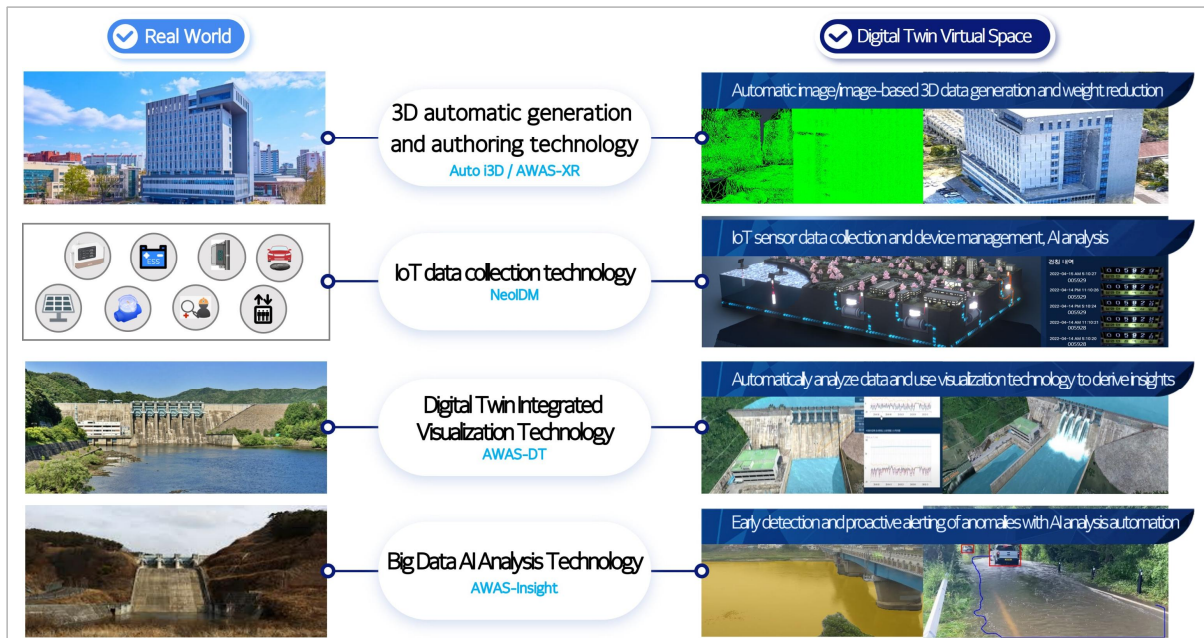
■ **AR/VR/MR authoring tool produced by the user himself_ AWAS-XR**

- Provides user arbitrary authoring capabilities for content and scenarios
- Supports AR/VR/MR content differentiated from off-the-shelf and implementation of field-specific training scenarios

Product Specifications

Classification	Technology	Application
3D space construction	Photogrammetry	Photo-based texture expression and 3D model technology, LOD 4
3D Engine	Unity, Unreal	Digital twin visualization engine
IoT Data	LwM2M	International Standard IoT Device Management Policy

Product Picture



Utilization Field

- **Smart Factory**
 - Supports all functions necessary for plant operations, including production facility management, manufacturing process operation, and worker management
 - Process performance XR education and training contents, QC inspection, real-time inventory status ERP linkage, MES solution linkage
 - Analysis and visualization of output by process, analysis of indoor environment, and visualization
 - Facility failure prediction, worker safety management, energy management
- **Smart City/Station**
 - Creating a people-centered smart city with various functions to lead a safe and pleasant urban life
 - Streetlight management, road construction management, assembly management
 - Traffic analysis, water resource analysis and visualization, regional power analysis and visualization
 - Fire/disaster simulation, dam basin water level and fog simulation
- **Smart Retail**

-
- Support additional functions for efficient store management, including distribution stores such as convenience stores, clothing, and home appliances, and restaurant businesses
 - Cold/hot storage temperature and humidity management monitoring, inventory management
 - Analysis of customer inflow and movement lines, and analysis of purchase conversion rate by store layout
 - Store layout and simulation, order forecasting, and automation

Main Performance

- **Pilot Construction of Digital Twin Daecheong Dam Step 1**
 - Create a 3D model of Daecheong Dam site and build a specialized digital twin platform
 - Support for information collection, analysis, prediction, simulation, etc. for dam management
- **Integrated Control of the Working Environment in Chemical Factories**
 - Safety Management System for Workers in Chemical Factories
 - Establishment of Safety Management System for Workers Based on Integrated Monitoring of Gas Sensors, Leakage Sensors, and Air Quality Sensors
- **A Study on the Improvement of the Old Age Monitoring System on Subway Line 8**
 - Establishment of an intelligent image analysis monitoring system with user convenience settings
 - Support for automatic situation analysis and analysis of environment setting functions such as falling, illegal riding, and recognition of vulnerable traffic
- **Remote meter reading of local government capital of the local government**
 - Construction of a digital image-based non-face-to-face water telemetry system
 - Receipt of image information from metering instructions, elimination of communication shaded areas, and support for image data analysis through AI deep learning
- **Jeonjucheon (Jeonju stream) Water Quality Monitoring**
 - Establishment of two water quality monitoring sites for Jeonju Stream water quality management
 - Monitoring changes in real-time water quality, identifying inflow routes of pollutants, and predicting river flooding through multi-item water quality sensors

The background features several abstract geometric elements: large overlapping teal circles in the top-left, a cluster of yellow triangles in the top-left, a teal hand-like shape with a striped oval in the top-right, a cluster of green triangles in the middle-right, a teal hand-like shape in the bottom-left, and a teal triangle with a white dot pattern in the bottom-right.

Platform

S/W Platform

1 AIBLab AI Platform

Company name AIBLab Inc.

Main function

- **Data processing**
 - IoT real-time data pipeline processing, stream processing, distributed parallel-based mass processing
- **Analytics (DevAI)**
 - Data de-identification/preprocessing, machine learning/deep learning, automatic machine learning (AutoML)
- **AI Serving**
 - Machine learning/deep learning model stream serving, deep learning model on-demand serving
 - Ontology-based knowledge base linked serving
- **AI service deployment and monitoring (DevOps)**
 - Workflow pipeline function, workflow/engine unit monitoring and control function, workflow/engine scheduling function, service registration function, runtime execution framework version synchronization
- **AI/SW Assets**
 - Data and model storage function, model automatic version management, periodic build of models for distribution, new registration/update/version management of SW components, and UI component version management/update functions
- **WebToolkit**
 - Web-based authoring tool/visualization

Characteristics and Advantages

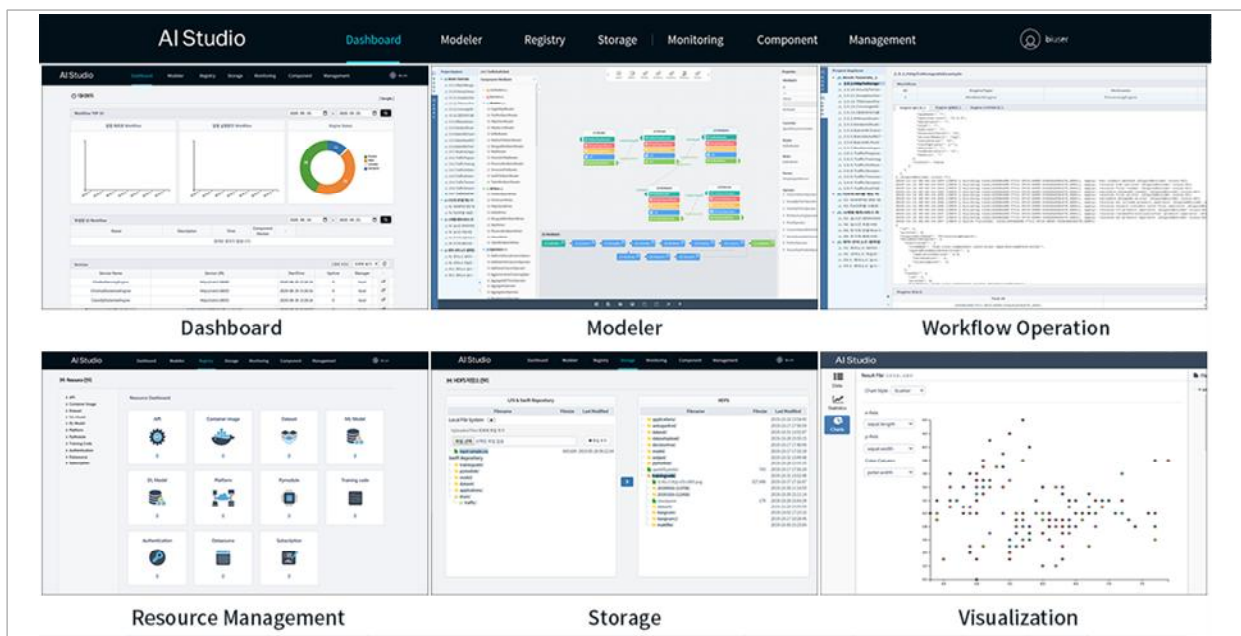
- **Sustainability** : Internalization of artificial intelligence technology using corporate data such as SW/Data/Analytics/Experience
- **Variety** : Various application service system composition by combination of SW components
- **Recyclability** : Workflow recycling and sharing function

- **Scalability** : Provides 3rd party component development and registration interface using developer API
- **Convenience** : Web-based DIY workflow authoring tool and monitoring/execution/control interface provided
 - Container-based toolbox including stand-alone execution environment and web toolkit authoring environment

Product Specifications

Classification	Service Configuration	Remark
Framework Core	<ul style="list-style-type: none"> ▪ Workflow orchestration (execution/end) and scheduling ▪ AI/SW Assets 	
Collection/Loading/Processing	<ul style="list-style-type: none"> ▪ Real-time data collection and loading of various Internet of Things ▪ Pre-processing such as data extraction/purification/transformation/reduction for machine learning 	Data de-identification (16 types)
Learning/Analysis/Prediction	<ul style="list-style-type: none"> ▪ Machine learning/deep learning model loading and analysis ▪ Automatic generation of optimal machine learning models through AutoML 	LwM2M(Lightweight M2M)
Serving/knowledge connection	<ul style="list-style-type: none"> ▪ Deep Learning Model On-Demand and Stream Serving ▪ Real-time prediction by machine learning model by inputting sensor stream 	Multi-model fusion Serving/knowledge connection

Service block Diagram



Utilization Field

- **AI information collection/analysis/processing**
 - Collect information through edge server by interlocking various IoT devices
 - Standardization/normalization of collected information in various ways
- **Monitoring/diagnosis/prediction/management**
 - Various monitoring application services/diagnostic prediction services/management services using AI technology

Main Performance

- Provide AI platform for data infrastructure construction project in Gimhae City(Ministry of SMEs and Startups)
- Provide AI platform for intelligent water management construction project in Daejeon(National Information Society Agency)
- Provides AI platform for big data-based system and algorithm construction business to Incheon Namdong Industrial Complex

2 AIBLab Logistics

Company name AIBLab Inc.

Main function

- **Dashboard**
 - Display the status information of the delivery product on the dashboard to maintain the proper temperature of the product.
 - Support for maintenance monitoring of delivery status (delivery/normal/abnormal/battery shortage)
- **Delivery list management**
 - Manage product information to help you check information from start to finish
- **Details by device**
 - Helps check log records by device.
- **Map-based delivery route monitoring**
- **Monitoring location/temperature/humidity/impact/illuminance/battery condition by unit time**
- **Project management**
 - Managing the information of the producer of the delivery product.
- **Product management.**
 - Producer product information registration management.
- **Device management**
 - Manage the connection between delivery products and BLE thermometers
- **User Management**
 - Delivery Representative Management

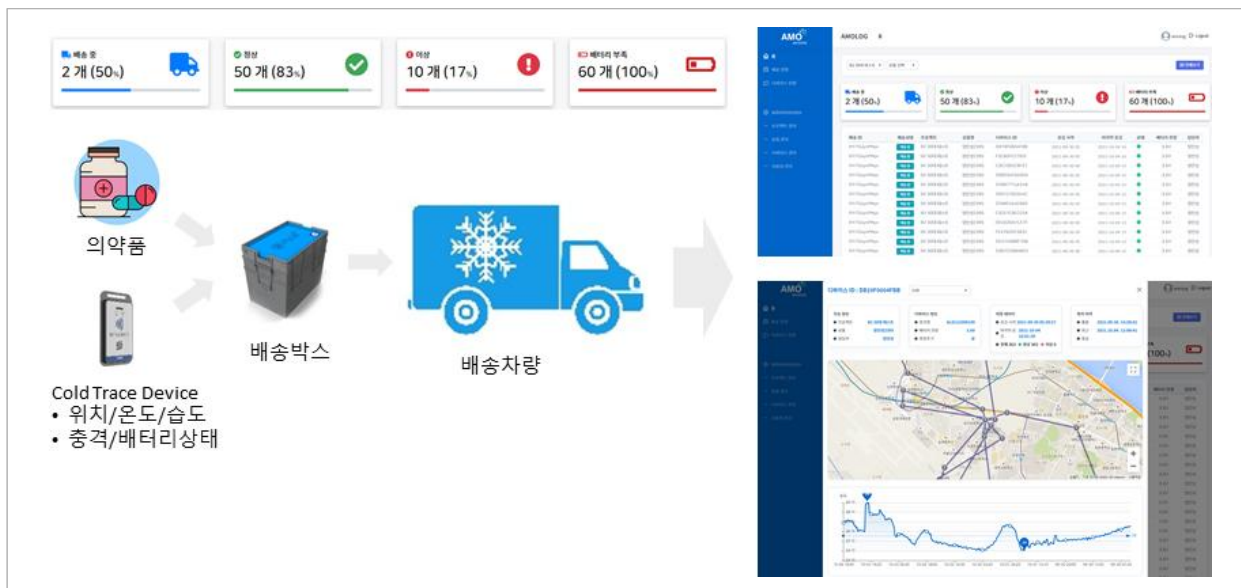
Characteristics and Advantages

- A platform that uses the BLE gateway, which includes GPS receivers and BLE receivers, to help maintain the temperature of each product delivered after installation of a frozen transport vehicle and to manage the delivery status more easily through location verification.
- Shipping products are a platform that supports securing product freshness and reliability by connecting a temperature meter that can transmit BLE transmission per product packaging box to the platform at regular intervals.

Product Specifications

Classification	Service Configuration	Remark
Platform service	<ul style="list-style-type: none"> Utilizing Cloud Services 	
BLE Gateway	<ul style="list-style-type: none"> GPS, BLE, MQTT service support products 	BLE(Bluetooth Low Energy)
BLE thermometer	<ul style="list-style-type: none"> Temperature sensor, BLE transmission support product 	

Service block Diagram



Utilization Field

- Track and manage the delivery status of temperature-sensitive medicines and fresh foods in real time

Main Performance

- Based on ICT technology, continuous service development and construction are underway through convergence with the logistics industry and various fields such as distribution, food, and manufacturing.

3 Digital twin IoT environment sensor monitoring service

Company name Technonia Co., Ltd.

Main function

- **Implementation of IoT environment sensor and detection sensor grafting system**
 - It is possible to build an IoT system by using environmental sensors that can measure various surrounding environments, and supports the creation of various business services by linking with existing legacy systems.
- **Provides facility management, data visualization, and defect notification**
 - Monitoring the safety of facilities such as buildings and bridges and the normal operation of devices and facilities by building various IoT management systems using monitoring sensors such as vibration, current, illumination, and flooding

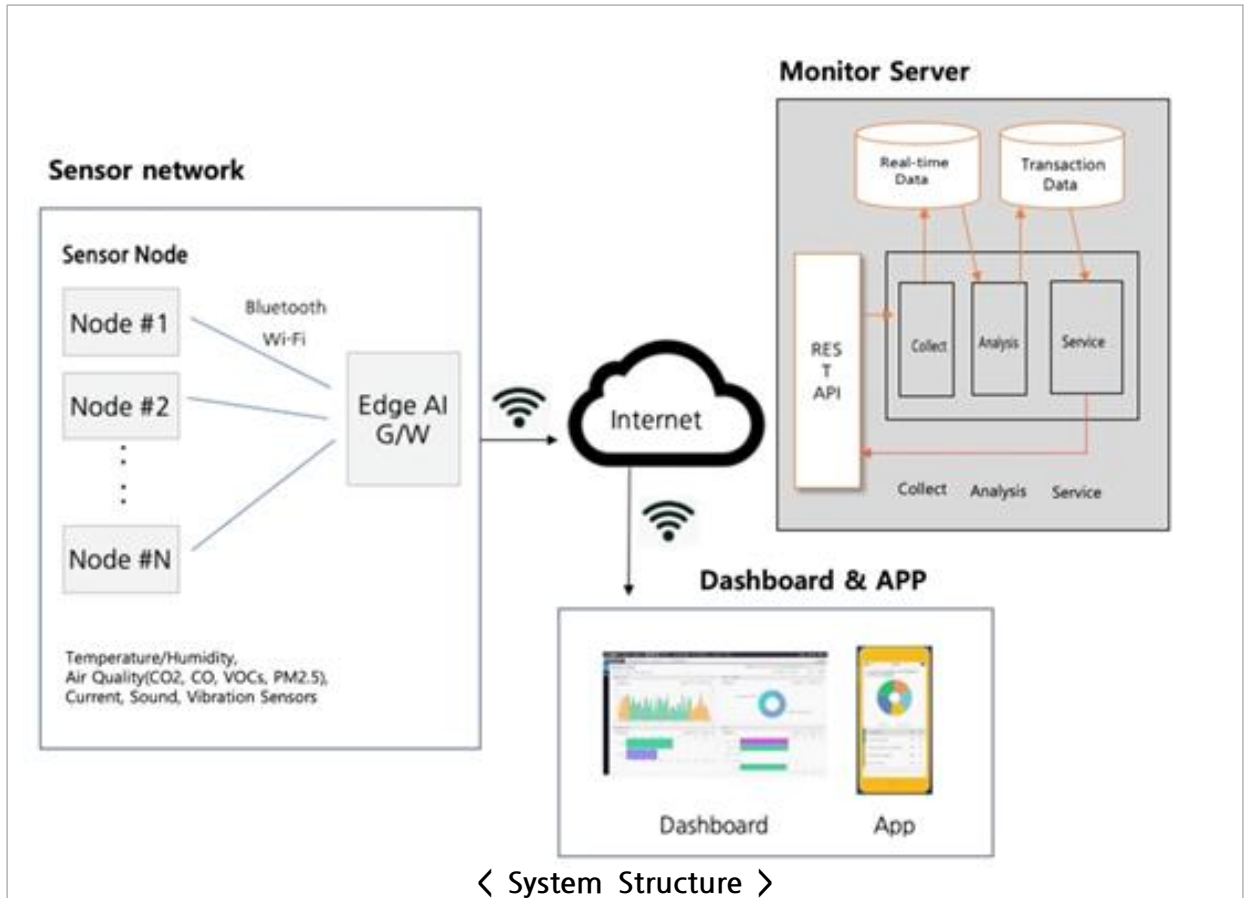
Characteristics and Advantages

- Support for grafting various environments and detection sensors required for digital twin technology
- Data collection, analysis, and visualization support for smart city and smart factory configuration
- Real-time environmental sensor data transmission supports fast and reliable information analysis and utilization
- Provides user-friendly integrated management and operation interface

Utilization Field

- Provides core data base for simulation of digital twin technology
- Smart sensor management service (Smart Energy management, EMS) grafted
- Remote management, IoT sensor monitoring service (Remote Control Service, RCS)
- Development of various connectable environment and measurement sensor device products

Product Picture



Main Performance

- Wireless Radiation(Geiger Counter) and UV(Ultra Violet) meter device (2020)
- Mart EBMS solution development (2021)
- Smart farm automatic water supply system application development (2022)

4 AIoT-based remote meter reading solution, HY-CHECK

Company name MDS Intelligence Inc.

Main function

- **Remote management of meter reader and Monitoring of all meter statuses**
 - Monitoring the status of the meter reader, overall usage, and flow rate of water through its' own dashboard.
 - Checking the intuitive meter reading status by marking the location of the meter on the map.
 - Providing real-time graphs for managing the water supply station's overall usage and flow rate.
 - Monitoring the status of the terminal, battery status, communication status, etc.
- **Check meter image data by each consumer and link the data to water billing system**
 - Checking the used history during the specific period by each consumer.
 - Indexing metered images by each consumer and checking AI analysis data.
 - Checking monthly usage by each consumer and estimating the trend through the graph.
 - Providing an API for interworking with the fare information system.
- **Interworking with social safety net through the biotic indicators**
 - Providing the information to enable the vulnerable groups to be managed according to the amount of water usage.
 - Setting alarms according to water usage conditions. (optional)

Characteristics and Advantages

- **IoT Platform with International IoT Standard**
 - IoT Platform based on LwM2M, an IoT International standard, is designed to build a remote meter reading system with excellent scalability and heterogeneous interworking.
- **AI Analysis of all meter data images and database of history management**
 - Using all actual meter images as evidence of water costs through history management.
 - Resolving water bill-related civil complaints with the actual meter image in the water bill. (Optional)

- **Installing without having to replace the existing analog measuring instrument**
 - No need to cut off the water supply when installing and replacing the meter reader and management is also easy.
 - Regardless of diameter, all sizes can be applied to the same model without cost increase.

Product Specifications

Category	Item	Description
Protocol	LwM2M	International Standard IoT Device Management Policy
	CoAP	lightened messaging protocol
	LTE	mobile communication applicable to various environments

Product Picture



Utilization Field

- **Linkage to Public welfare service and Social safety net**
 - Providing the information to enable the vulnerable groups to be managed according to the amount of water usage.
- **Smart Metering business as part of the government's New Deal**
 - Improving work efficiency to solve the difficulty of the poor meter reading environment of the existing analog style preventing false and missing meter readings, accidents related to the inspection, etc., and resolving civil complaints by disclosure of transparent information.

Main Performance

- **Performance of NeolDM**
 - ▷ **Good Software Certification Grade 1(2018)**
 - Certification No.: 18-0117 / Product Name: NeolDM v1.0
 - ▷ **Won the best brand-new Software Award in 2018**
 - ▷ **Best Evaluation of Interoperability Test(TestFest) hosted by OMA, an International Standardized Organization of IoT Specifications**
 - The best prize / Client section (2016)
 - The best prize / Server section (2017)
 - ▷ **Won the Minister of Science and ICT Award at the IoT Award (2021)**
- **Awarded Merit Award Winner at WISTA Global ICT Awards 2021 (2021)**
- **Awarded Honoree in Smart Cities Category at CES 2022 Innovation Awards**
- **Reference**
 - Yangsan-Si, Guri-Si, Daejeon-Si, Suncheon-Si, Gyeryong-Si, Buyeo-Gun, Cheongju-Si, Yaecheon-Gun, Incheon-Si, Paju-Si, Hwasun-Gun, Korea Rural Community Corporation, etc.

5 IoT Device Management Solution, NeoIDM

Company name MDS Intelligence Inc.

Main function

- **IoT device health monitoring, fault detection, and data batch transmission capabilities**
 - IoT Device Management Solution Based on International Standard OMA LwM2M Protocol
 - Manage permissions and device groups by user organization
 - Provide Rest API for external system integration
- **End-to-end support by providing SDKs in each area for sensor, gateway development, and server interworking**
 - Customer scenarios range from commercial OS environments such as Windows and Linux to Firmware
- **Enhance the security of IoT devices**
 - Strengthen the security of IoT devices through CoAP-based DTLS encryption communication

Characteristics and Advantages

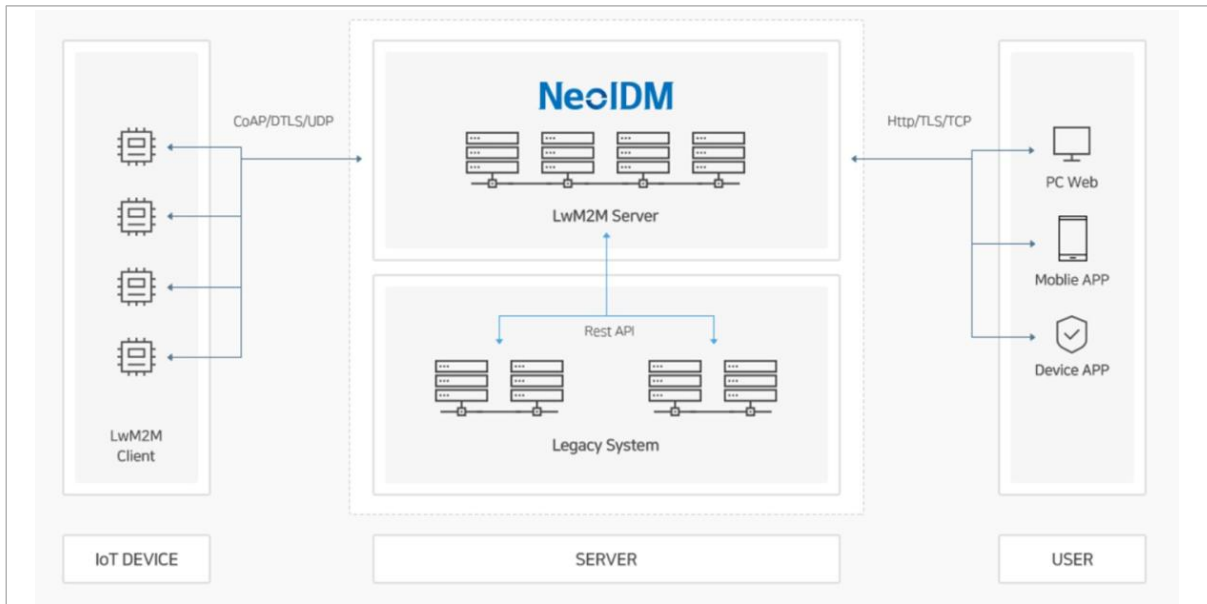
- **LwM2M (international standard)**
 - Adopted the LwM2M protocol, an international standard for managing IoT devices, for managing small-sized devices. It can be easily applied to an IoT environment consisting of low-power and low-specification devices.
- **Expansion of application services**
 - With the use of RESTful API, different kinds of dashboards can be developed. You can send alarms via SMS, e-mail, or messenger, and provide user functions with voice commands by connecting to AI speakers.
- **Excellent security and compatibility**
 - Applied with encryption module certified with CMVP (Cryptographic Module Validation Program) (ARIA 256, AES 256)
 - Applied with security method using DTLS

- Compatibility for different kinds of IoT devices secured by complying with international standards (e.g., LwM2M)
- Interworking with NeoKeyManager developed by MDS INTELLIGENCE to prevent forgery/modulation and hacking of IoT
- Enhancing security based on various encryption algorithms and authentication of IoT terminals through PUF (Physical Unclonable Function) chips

Product Specifications

Item		Spec
Protocol	LwM2M	A device management protocol designed for sensor networks and the demands of a machine-to-machine(M2M) environment
	CoAP	A protocol that specifies how low-power compute-constrained devices can operate on the Internet of Things (IoT)
	MQTT	A protocol designed as an extremely lightweight, publish/subscribe messaging transport between many devices.

Product Picture



Utilization Field

Can be applied to all areas of IoT

Not only data collection, but also IoT areas that require management of various two-way communication devices such as monitoring, control, and remote update are available.

- **Environmental Monitoring**
 - Factory Environmental Monitoring
 - On-Campus Fine Dust Monitoring
- **Retail**
 - Smart Point-of-Sale Data Management
 - Monitoring In-Store Floating Population
- **Smart Home**
 - Home IoT Service
 - Smart Door-lock Management
- **Facility Safety Management**
 - Building Safety Monitoring
 - Real-time alarm for Abnormal Signs
- **Public Service**
 - Smart Streetlight Management
 - Parking Space Monitoring

Main Performance

- **Good Software(GS) Certified (No. 18-0117)**
- **Won the best brand-new Software award in 2018**
- **Recognized by the International Organization for Standardization 'OMA' in 2017, 2018**
 - Recognized as an excellent platform that complies with the LwM2M standard for being highly rated in interoperability testing (TestFest) hosted by the Open Mobile Alliance (OMA), the International Organization for Standardization of wireless Internet solutions and services
- **Received a commendation from the Minister of Science and ICT at the 2021**

"IoT Award"

■ Reference

- Sharing e-bike management system
- Unmanned laundry management system
- Overseas retail equipment management system
- ESH monitoring system based on IoT Sensors
- Smart air purifier management system
- Overseas smart door-lock management system
- Scrubber monitoring system in a chemical plant
- Delta update system in a mobile service company
- Monitoring of fire accidents in the factory
- Smart Store Management in Japan
- Remote inspection of the water facilities
- Launched 'Hi-DAL', a facial recognition-based access control and indoor air quality management service
- Developed 'HY-Check', an IoT-based water meter remote meter reading service
- Developed 'Hi-Aqua', a water quality monitoring system
- Managing a rental service of POS system exporting to the US
- Monitoring of ESH system-based IoT sensors

6 IOTTOWN

Company name CoXlab Inc.

Main function

Service Introduction Video ▶



- **CoXlab's IOTTOWN features LoRaWAN network**
server, enabling anyone to configure LoRaWAN according to his or her own needs. Any IOTTOWN user may hold his or her own IoT network and IoT data without the need for subscription to mobile communication provider and without the burden to pay regular fee on monthly basis. IOTTOWN supports dashboard system capable of interacting with a variety of wireless sensors and actuators that are part of IoT network.
- **The utilization of AI is nowadays required to transform incoming real-time IoT data into information of value.** IOTTOWN supports easy-to-use interface being linked with AI-based inference system. Such interface enables immediate inference simultaneously with data gathering, not requiring data gathering for subsequent once-and-for-all inference
- **IOTTOWN delivers RESTful open API enabling linkage with other ICT system.** Such feature enables the system to receive data from sensor and to transmit order to actuator as well as control of device and gateway.

Characteristics and Advantages

- **IOTTOWN v4.0 - Certificate of Software Quality**
 - LoRaWAN End-Device v1.0/1.1, KR920(S.Korea)/AS923(Japan and Indonesia) bandwidth support
 - IoT device/gateway control
 - Support data gathering and dashboard-based data visualization
 - Uplink data view, notice and Downlink data transmission feature
 - Simultaneously support RESTful API for linkage between Web interface and 3rd-party ICT system
 - Support scalability (distributed system) for configuration of massive scale of network

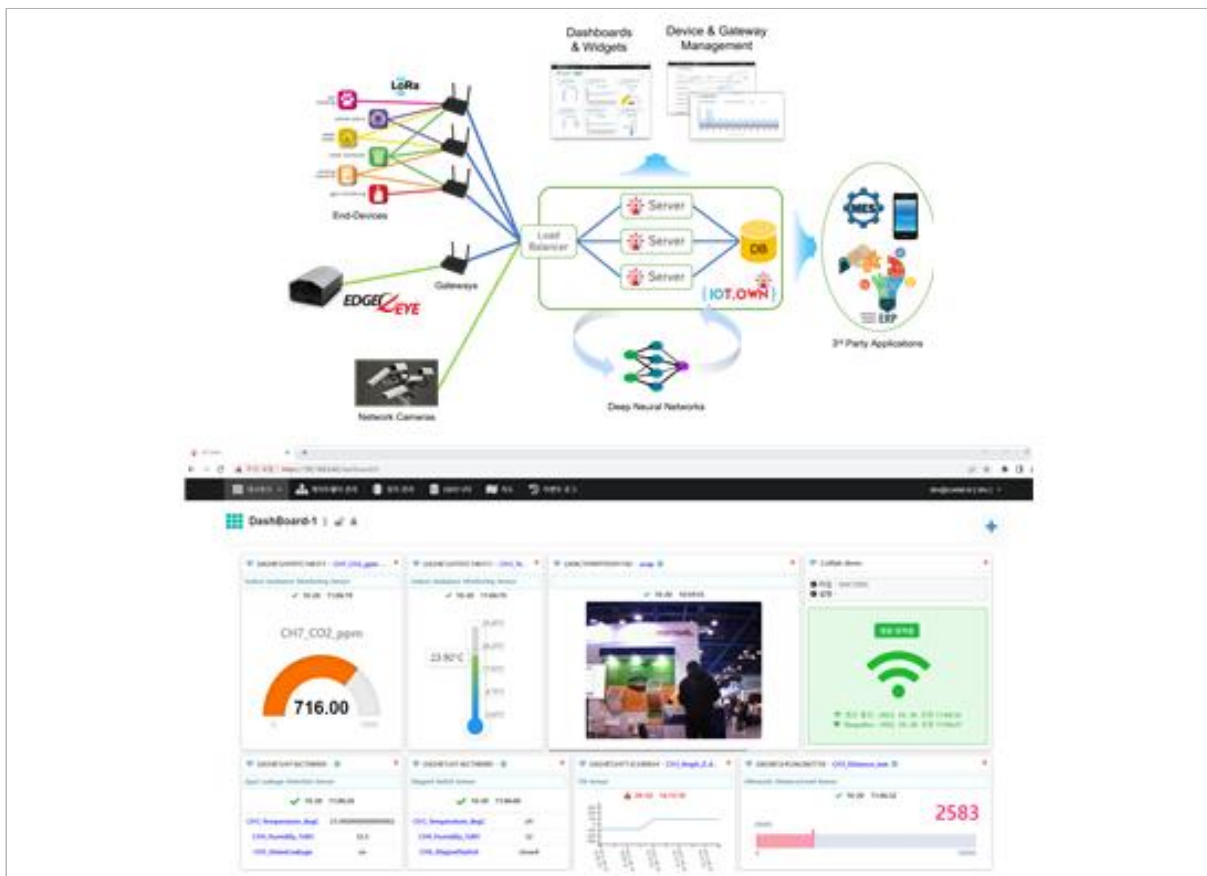
2024 The AIoT Services & Products of Major Korea Companies

- Support real-time AI inference interface for IoT data
- Support real-time neural network computation for data gathered through IoT network
- Support remote update of device firmware

Product Specifications

Classification	Max Gateway	Max Device	Max User
IOTOWN-Standalone	500	100~10,000	100
IOTOWN-Mini	10	200	100
IOTOWN-Scalable	Unlimited	Unlimited	Unlimited
IOTOWN-Edge	Server Integrated	200	100

Product Picture



Utilization Field

- **Private LoRaWAN Network** : As a LoRaWAN network to be built only in certain areas which stands in contrast with LoRaWAN-based global IoT network being delivered by mobile communication providers, it brings initial investment cost for server and gateway required to configure the network but causes no regular fee burden and enables users to keep data intact without the need to expose data to other servers. Such property motivates companies, local governments and military units to introduce the network.
 - Smart city: designed to regularly gather sensing information detected from state detector mounted in dilapidated stone walls and retaining walls
 - Smart grid: designed to regularly gather information detected from status detector mounted in poles, transformer and gas opener
 - Solar power: designed to monitor solar heat, geothermal heat, solar power amount and failure status
 - AMI system: designed to remotely gauge water use and identify water leakage status of dilapidated tap on regular basis
 - Safety management for construction workers and vessel crew members: designed to transmit emergency signals and identify worker's indoor and outdoor location via LoRa Tracker by receiving BLE Beacon signals and gauging indoor location and outdoor location through GPS in the event of emergency
 - Care service for the marginalized: delivery of LoRa key holder enabling location of the elderly living alone to be identified, measurement of exercise status and voice alarm
 - Smart factory: Real-time monitoring of temperature and flux at work, alert system being activated in the event of detecting severe vibration and hazardous gas
 - Smart farm and urban trees: real-time monitoring being performed through combination of sensor and LoRa modem enabling growth and state of the stocks and plants to be identified
 - Wireless blast and self-driving: LoRaWAN-based network RTK system (GNSS-based high-precision measurement)

Main Performance

- The Project requested the Company to develop and deliver abandoned mine monitoring server and wireless flux sensor. (2023)
- CoXlab Inc. has developed remote controller system for maintenance service of solar power station. (2023)

7 Thingplus IoT Cloud Platform

Company name Daliworks Co., Ltd.

Main function

- **Thingplus Provides Various Types of Customized Dashboards**
 - We provide customized dashboards optimized for customer service content.
- **Thingplus Sends the Alarm in Any Way You Want**
 - Through the chain structure, complicated rules can be set, and alarms can be sent to various channels such as email, SMS, and Slack, etc.
 - Multiple Rule Setting
 - Error event alarm occurred in system operation
 - Event alarm according to the threshold
 - Gateway/device network error event alarm
 - Alarm Event List
 - Alarm classification and alarm message can be set
 - Support management of alarm occurrence/confirmation time, processing time, etc.
- **Thingplus Supports Automatic System Operation According to the schedule**
 - It supports automatic system operation according to the schedule, and automatically generates daily, weekly, and monthly reports by email.
 - Setting Schedules
 - Remote device configuration and control
 - Daily/weekly/monthly report generation and email sending
 - System setting initialization support
 - Remote System Operation
 - System remote setting and control
 - Remote device update
 - System operation automation support

Characteristics and Advantages

- **Modular and Customizable IoT Platform**
 - It supports the connection of various types of IoT devices and systems and equipment

and provides real-time system monitoring and operation through data collection, integration, and analysis.

■ **Thingplus Provides Stable and Scalable IoT Services**

- Thingplus guarantees reliability with HAProxy-based load balancing and has a system structure that can be horizontally scaled based on microservices and provides system stability by applying multiple message queue methods.
 - Load balancer is applied when individual modules are called to distribute the load
 - Individual modules are configured based on microservices to ensure scalability
 - Reliable message handling through multiple message queues
 - Thingplus Provide customized service through white labeling

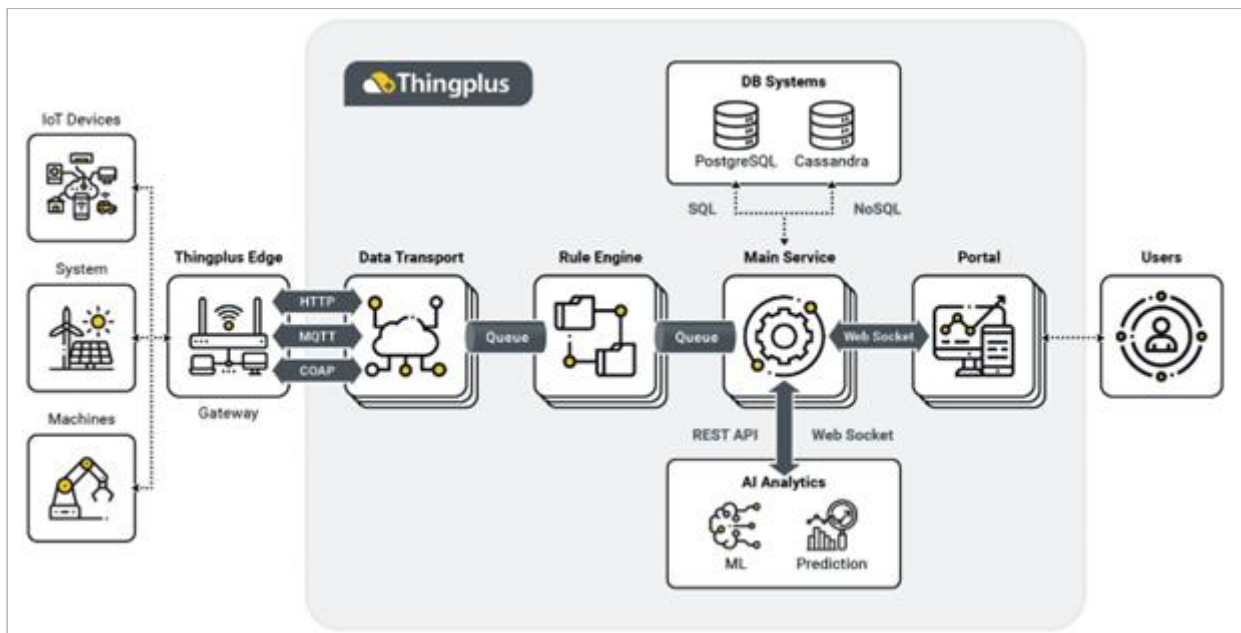
■ **Thingplus Provides Anomaly Detection and Prediction through Bigdata and AI Analysis**

- It detects abnormal situations through ML (Machine Learning) algorithm and provides a predictive model through LSTM (Long Short-Term Memory) technique.

■ **Managed through the basic components for IoT services**

- Thingplus provides IoT services through asset, device, and user management, and visualizes data through the dashboard, and remotely controls and sends alarms through the rule engine (Email, SMS, Slack, etc.), provides report, and more.

Service block Diagram



Utilization Field

■ Thingplus Platform is Applied to Various IoT Service Areas

- It is possible to provide IoT services that combine two or more areas to meet customer needs.



Main Performance

■ Industry

- 2023.06 Mold Mecca - Facility Monitoring Service
- 2020.09 NTECH SYSTEM - Motor System Maintenance Service
- 2019.05 GREEN MOLD COMPANY - Smart Factory
- 2018.04 Volvo Construction Equipment - Manufacturing Environment Monitoring Service

■ Environment

- 2021.06 DW Union - Toilet Use Analysis Service
- 2020.10 NTECH SYSTEM - Smart Energy Management System
- 2019.03 Neopis - PV System Monitoring Service

■ Safety

- 2021.01 NAMSUNG INFRANET - Worker Body Temperature Monitoring Service
- 2019.05 Pohang City - Building Safety Diagnostics Service

■ Farming

- 2020.03 Gyeonggi-do - Smart Farm for Shrimp Farm
- 2018.10 Japan Kumamoto - Smart Farm for Watermelon Farm

■ Asset

- 2022.01 Neuromeka - Robot Remote Management Service
- 2021.05 FIREKIM - Fire Detection & Extinguishing Service
- 2020.09 Botam - (Samsung Electronics) Offline Store Visitor Monitoring Service
- 2019.10 Land Road - Road Drainage Monitoring Service
- 2018.12 Seah Engineering - Compressor/Bloar Monitoring Service

Platform Equipment(H/W)

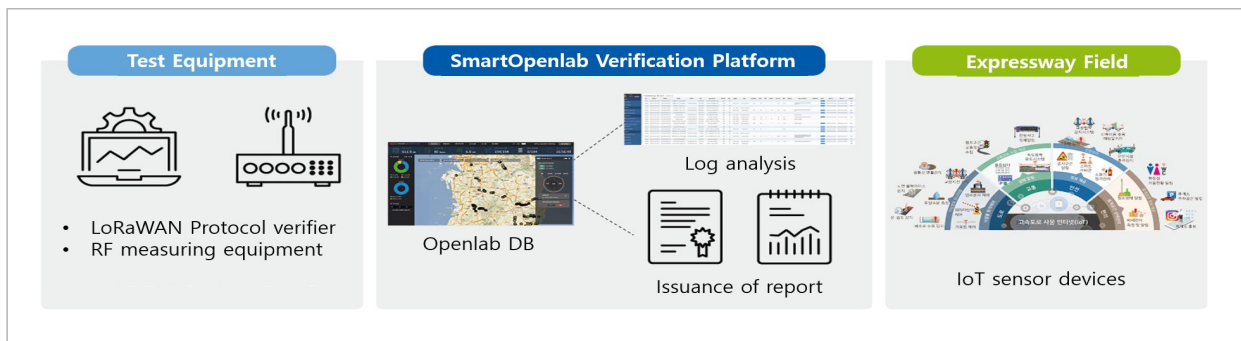
1 Ex-IoT Test·Verification Testbed - Smart Openlab

Company name Korea Expressway Co.

Main function

- **Infrastructure and technical support related to Ex-IoT service development**
 - Ex-IoT technical standards consulting for new IoT service development
 - Providing a verification environment such as Ex-IoT network platform, gateway
 - Support for development infra such as LoRaWAN protocol verifier, RF instrument(chamber, signal analyzer, etc.)
- **Testing and verification services for introduction of Ex-IoT service**
 - Ex-IoT service function verification, LoRaWAN protocol and current consumption testing

Product Picture



Utilization Field

- Acquired qualifications for new Ex-IoT service development and field application

Main Performance

- Pilot deployment of road facility condition monitoring and data collection services to expressway nationwide
 - 1,088 IoT gateways, 790 IoT sensor devices of 30 types in operation



Scurity

Service

1 Z-IoT

Company name ZIEN, Inc.

Main function

- **Password Security Analysis**
 - Weak password detection (Brute force Attack, Dictionary)
 - Default & hard-coded password identification

- **Authentication Security Analysis**
 - Extraction of authentication files (crt, cer, csr, pem, der, pfx, p12, p7b, jks, key) from firmware
 - Analysis of authenticated encryption algorithms and settings

- **Executable File Security Analysis**
 - Determining whether to compile with security options when compiling an executable file
 - Inspecting the use of functions vulnerable to attacks such as OS Command Injection and Buffer Overflow

- **Open Source Software Security Analysis**
 - Examination of kernel and open source software version details in firmware
 - Providing identified vulnerabilities (1-DAY) that correspond to the extracted version information
 - Providing SBOM(Software Bill of Materials) management functionality

- **Zero-Dy Security Analysis**
 - Detecting undisclosed vulnerabilities in key executable files within the firmware
 - Promptly identifying exploitable attack pathways used by hackers in a TREE structure

- Identifying the actual potential for exploitation of the identified attack pathways through memory analysis

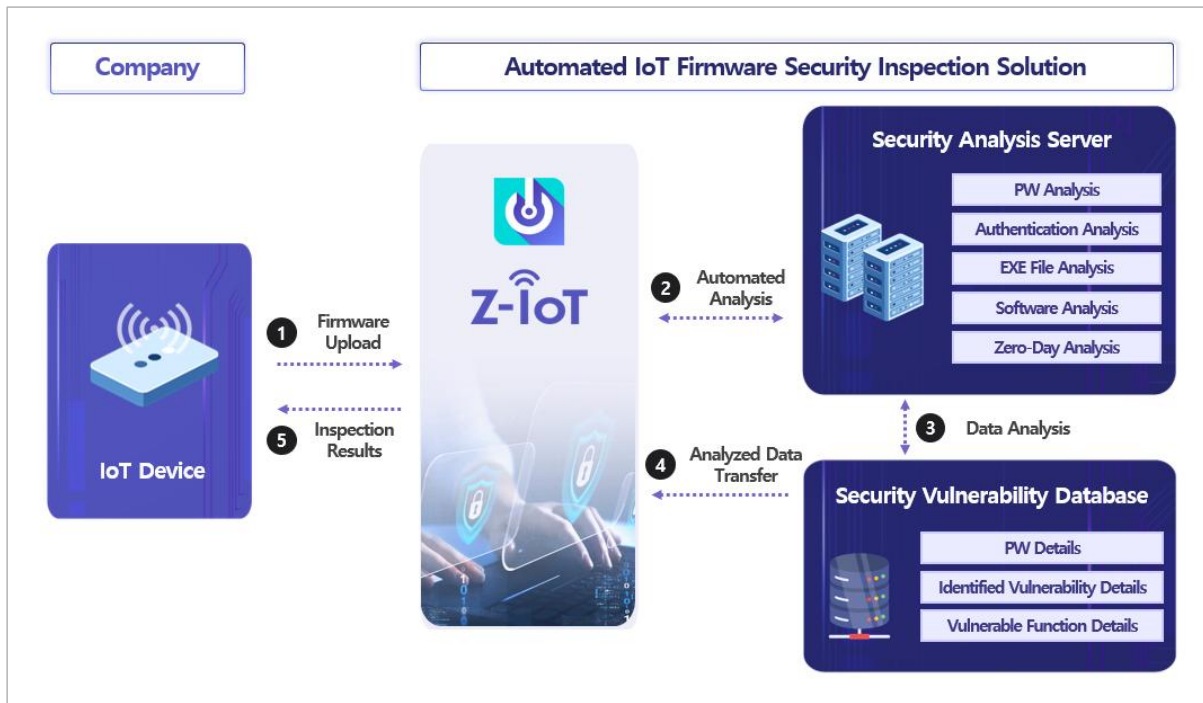
Characteristics and Advantages

- Operational Data Analysis**
 - Proficiency in analyzing firmware encryption and obfuscation techniques
 - Real-time security analysis for IoT devices
 - ※ Patented Technology : IoT Device Analysis Method and Device
- Zero-Day Vulnerability Analysis**
 - Identification of undisclosed vulnerabilities by reverse engineering the executable files
 - Enhancing accuracy through Taint Analysis and Symbolic Execution
 - ※ Patented Technology : System and Method for Software Vulnerability Analysis Installed on IoT Devices
- Compliance with Applicable Laws and Regulations**
 - Support for IoT security regulations and certifications, both domestically (such as IoT Security Certification and the Ministry of Food and Drug Safety) and internationally (including the USA, EU, Singapore, etc)
 - SBOM (Software Bill Of Materials) issue handling and management

Product Specifications

Classification	Key Function
Password Security Analysis	Weak password and default & hard-coded password identification
Authentication Security Analysis	Analysis of authenticated encryption algorithms and settings
Executable File Security Analysis	Security compilation options and vulnerable function identification
Open Source Software Security Analysis	Open source software version and identified vulnerability identification
Zero-Day Security Analysis	Detecting undisclosed vulnerabilities

Product Picture



Utilization Field

- Smart Home : IoT devices such as wallpad, door lock, air conditioner, washing machine, vacuum cleaner, etc
- Smart Healthcare : wearable devices, smart healthcare gateways, smart medical sensors, etc
- Smart Mobility : smart car infotainment, drones, parking management devices, etc
- Smart Grid : Smart meters, power network detection devices, intelligent distribution panels, etc
- Smart Factory : smart sensors, PLC, RFID tags and readers, smart cameras, etc

Main Performance

- **IoT Device Security Inspection**
 - LG U+ IoT device inspection PoC (expected for November 2023)
 - Security inspection for manufacturing members of Korea Electronics Association(KEA)
(Cuchen, Youngone Corporation, Share & Share, Sisoul, Rotonix, Deepscnt, Anssil, Friends Coffe, etc)

Device

1 Trustkey B210H/B220H (FIDO2 Authenticator)

Company name eWBM Co., Ltd.

Main function

- **FIDO2 authenticator**
 - TrustKey Authenticator are USB hardware token made for FIDO authentication. Certified with the new FIDO2 standard, Keys provide the benefit of fast login and a strong protection against phishing, account takeover as well as many other online attacks.
 - Security Keys are compatible with all the major web browsers where WebAuthn is implemented, and works seamlessly on many online services like Google, Dropbox, Facebook, Twitter, GitHub and many more.

Characteristics and Advantages

- **FIDO2 Security Level 2 certified**
 - World's first and only FIDO2 Level 2 certified security key.
 - TrustKey G-Series are the world's first authentication device to achieve FIDO2 Level 2 security certification by satisfying secure operating environment requirement by the FIDO Alliance.
- **Fast login without password**
 - TrustKey allow users to login easily and securely without a password.
- **No more fingerprint data breach**
 - TrustKey G-Series store the scanned fingerprint data encrypted in the secure storage area. The stored data can never leave the key, even during registration or authentication.
- **Multi-protocol support for user protection**
 - TrustKey T-Series Security Keys support multi-protocol authentication methods including FIDO2, FIDO U2F, HOTP/TOTP (One Time Passcode) to protect users

from phishing and credential takeover from MITM (Man-in-the-Middle) attacks.

- **Multiple client devices supported**

- TrustKey's are roaming authenticator. It can be used in conjunction with more than one user device.

Product Specifications

Product	B210H / B220H
USB Type	Type A / Type C
Authentication Method	FIDO, Fingerprint
FIDO Standard	FIDO2, U2F
FIDO Level	Level 2
HOTP, TOTP	App. (op)
Supporting ResidentKey	150 Max.
Fingerprint Algorithm	Precise Biometrics™
Product Dimension (in mm)	45.8 x 20.1 x 5.4
Weight	4.0g
Status Indicator	3 Color LED
Compliance Certification	KC, CE, FCC, RoHS, UKCA
Material	Polycarbonate
Windows Hello	Support
Supported OS	Windows, macOS, Linux, Android, Chrome, etc.
Supported Browsers	Chrome, Edge, Firefox, Safari, Brave, etc.

Utilization Field

- **Strengthening employee authentication**

- Government, Healthcare, Banking, Education, Commercial Security, etc.

- **Strengthening personal authentication in financial and banking**

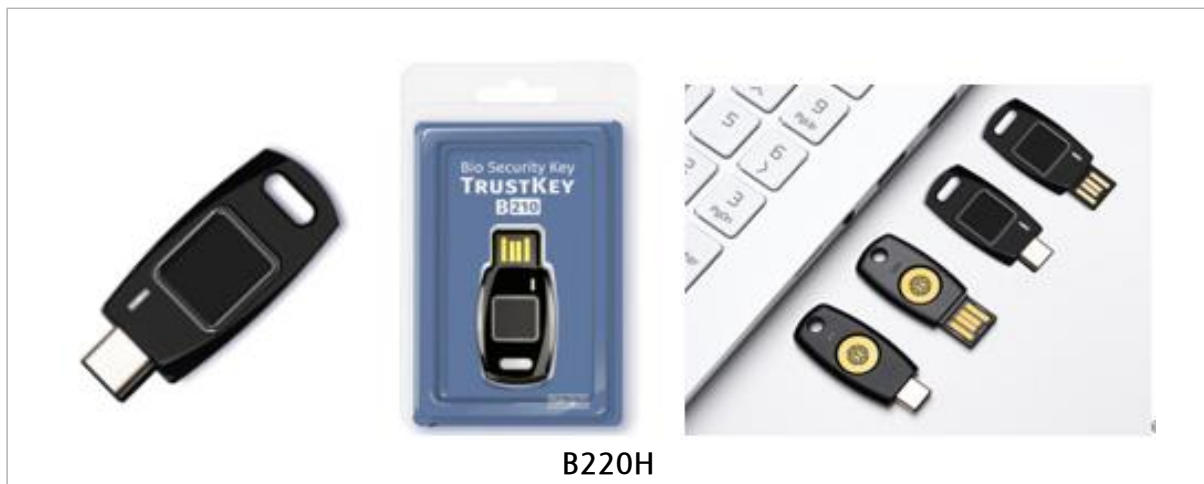
- Personal authentication when sending money in On-line banking

- **Microsoft Azure AD Support**

- TrustKey fully support Microsoft Azure AD.

- It can be used to sign into Azure joined Windows PC whether you are online or offline/airplane mode
- **Web service / Cloud service user authentication enhancement**
 - AWS, MS, Google, Dropbox, Facebook, Twitter, GitHub and many more.

Product Picture



Main Performance

- Smart Modular (Brazil): completed the delivery (2020)
- Point Blank (Germany), Greenrocket(USA): completed the delivery (2021)
- Korean government agency (Rep. of Korea): completed the delivery (2021)
- AWS(Amazon Web Services, USA), G-Research(UK): completed the delivery (2022)
- Dai-ichi Life(Japan), Accenture(Germany, USA, China, more): completed the delivery (2022)
- Capital One(USA), Littler Mendelson(USA), SiKa AG(Swiss): completed the delivery (2023)
- IBK capital (Rep. of Korea): completed the delivery (2023)



Status of Companies



1 Information

Name of CEO	Youngju Seo, Yongwoo Kim	Date of Establishment	2018. 12. 31
Tel	070-8892-7160	Homepage	www.aiblab.co.kr
Address	#A701~A702, 43, Changeop-ro, Sujeong-gu, Seongnam-si, Gyeonggi-do, 13449, Republic of Korea		
Number of employees	25	Capital	US\$ 266K
Sales (Based on 2022)	US\$ 1,870K	Net Profit (Based on 2022)	US\$ 654K
Business Field	AI Platform, IoT Platform, Smart Works/Smart Health Service		

2 Company overview

AIBLab is an AI / Big Data-based IoT solution and service company that develops IoT platform based on oneM2M international standard. Through this, we provide services that are essential to life by utilizing various convergence service building technologies and experiences such as smart office, smart health, smart home, smart city, and smart factory.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
AIBLab AI Platform	Artificial intelligence service development/operation platform
AIBLab IoT Platform	oneM2M standard and TTA GS quality certified IoT platform
AIBWorks	Artificial intelligence smart office service based on IoT platform
AIBCare	Non-face-to-face body temperature change management /analysis service

o Contact

Name	Department	Tel	E-mail
Aaron Shim (Director)	ICT Research Center	070-8892-7163	aaron.shim@aiblab.co.kr

AiCAR Inc.



1 Information

Name of CEO	Kyujin Cho	Date of Establishment	2016. 07. 01
Tel	+82-070-7010-1133	Homepage	http://ai-car.co.kr
Address	Seongnam-si Sujeong-gu Daewangpangyo-ro 815, 8F Office No. 862/825.		
Number of employees	16	Capital	500,000,000 KRW
Sales (Based on 2022)	1,338,289,240 KRW	Net Profit (Based on 2022)	34,000,000 KRW
Business Field	Connected Car.		

2 Company overview

AiCAR is Based on cloud- based connected car platform and smart IoT device with LTE / BLE capability, a digital- key enabled fleet management service is introduced that provides features such as door open/close using mobile phone without original car key and remote monitoring of vehicle statues. It also provides wasted fuel analysis and personal usage of company cars based on AI analysis on the cumulated vehicle data..

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Ainet-S	Vehicle reservations - Vehicle remote control : door, trunk, emergency light - Automatic Trip report - Trip path monitoring - Vehicle tatus remote monitoring - AI analysis : wasted fuel amount eith cause / personal usage detection
myEVLOG	EV BMS data reading, charging history, charging fee management. EV data monitoring, Cell Voltage monitoring, EV Usage Statistics. Alarm Service.

o Contact

Name	Department	Tel	E-mail
Jaewook Byun	Product Management	+82-10-8568-6977	jwb@ai-car.co.kr



1 Information

Name of CEO	DAWEI CHENG	Date of Establishment	2003.05.27
Tel	+82-2-544-1436	Homepage	http://atid1.com
Address	1402, 82, Gasan digital 1-ro, Geumcheon-gu, Seoul, Republic of Korea		
Number of employees	-	Capital	-
Sales (Based on 2022)	-	Net Profit (Based on 2022)	-
Business Field	UHF RFID Reader		

2 Company overview

ATID provides products to customers around the world based on differentiated expertise in industrial PDAs and UHF RFID handheld readers. Our UHF RFID reader product know-how, based on our experience developing and supplying products tailored to market requirements over the past 20 years, has earned us a reputation as the most reliable product company.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
AT907	Android based high-performance All-In-One UHF RFID / Barcode Handheld Reader
ATS200	SLED Type UHF RFID / Barcode Handheld Reader

o Contact

Name	Department	Tel	E-mail
Kim Myungbong	Sales Team	+82-10-6556-3572	myungbong.kim@atid1.com

CoXlab Inc.



1 Information

Name of CEO	Jongsoo Jeong	Date of Establishment	2015. 01. 14.
Tel	+82-070-8892-8099	Homepage	www.coxlab.kr
Address	409, Industrial-Academic-Research Cluster Center 3, Jiphyeonjungang 7-ro, Sejong, Korea		
Number of employees	5	Capital	135million won
Sales (Based on 2022)	454million won	Net Profit (Based on 2022)	10million won
Business Field	Long Range Low-Power Wireless AI Still Shot Camera		

2 Company overview

The CoXlab Inc. is an IoT software expert company. We develop and provide IOTOWN, and Nol.A. IOTOWN is an AIoT platform that can organize private LoRaWAN and integrate with other ICT systems easily. And Nol.A is an IoT device firmware development tool. We also provide a development service of various server softwares, mobile softwares, and firmwares for IoT devices. Starting in 2020, we are expanding sales of Lightweight Deep Learning based LoRa AI Still Shot Camera'EdgeEye' as we expand our business from IoT to AIoT (AI + IoT).

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
IOTOWN	An AIoT Platform to Build Up Private LoRaWAN Networks
EdgeEye	Long Range Low-Power Wireless AI Still Shot Camera

o Contact

Name	Department	Tel	E-mail
Yoonsoo Jeong	Management	+82-070-8892-8099	yunsoo@coxlab.kr



1 Information

Name of CEO	AHN TAE WOONG	Date of Establishment	2020. 08. 20
Tel	+82-70-4667-0825	Homepage	www.cuetechkorea.com
Address	119, Songdomunhwa-ro, Yeonsu-gu, Incheon, Korea		
Number of employees	6	Capital	KRW 200,000,000
Sales (Based on 2022)	KRW 590,000,000	Net Profit (Based on 2022)	KRW 100,000,000
Business Field	IoT integrated monitoring system development/manufacturing, Wireless communication terminal development/manufacturing		

2 Company overview

CUETech Korea Inc. is a company that develops and manufactures AIoT-based remote wireless monitoring systems. It implements IoT wireless solutions such as Sigfox, LoRa, NBIoT, LTE-Cat.M1, and sensors, sensor boards, and systems equipped with AI. We are developing a system that can remotely monitor sensing information in each application field in real time. Through this, we minimize disasters and safety accidents, enable immediate response to situations, and provide products that help users live more comfortable and improve public convenience by analyzing sensing data and providing prediction functions through AI.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Manhole monitoring system	Mounted inside the manhole to remotely monitor the condition inside the manhole in real time - Harmful gas detection (CO, CO2, CH4, H2S) - Lid open detection - Detection of water level inside manhole
Underground gas pipeline leak detection and leak point capture system	Mounted on an underground gas pipe to remotely monitor the status of the gas pipe in real time - Gas leak detection - Detection of gas leak points
Ammunition depot/warehouse monitoring system	Installed in ammunition depots and warehouses to remotely monitor internal conditions in real time - Temperature/humidity detection - Door opening/closing detection - Fire detection

<p>Water volume monitoring system</p>	<p>Remote monitoring of water volume to measure leachate from abandoned mines, water volume in valleys, etc.</p>
<p>Water cycle management monitoring system</p>	<p>Real-time information remote monitoring for a virtuous cycle of water</p> <ul style="list-style-type: none"> - Equipped with Soil moisture meter, Pressure water level meter, Temperature and Humidity meter, Road surface thermometer, Integrated meteorological meter, Solar radiation meter, and Flow meter. - Big DATA of various sensing values - Providing a smooth virtuous cycle solution through water cycle simulation

o Contact

Name	Department	Tel	E-mail
<p>AHN TAE WOONG</p>	<p>Sales Team</p>	<p>+82-10-8004-9790</p>	<p>twa0305@cuetechkorea.com</p>



1 Information

Name of CEO	Hee Jae, Oh	Date of Establishment	2010. 06. 07
Tel	+82-2-3159-8872	Homepage	http://www.dnshine.co.kr
Address	Samsung Techno Valley B-B134, 140, Tongil-ro, Deogyang-gu, Goyang-si, Gyeonggi-do, Republic of Korea		
Number of employees	27	Capital	150,000,000 won
Sales (Based on 2022)	2,805,000,000 won	Net Profit (Based on 2022)	259,000,000 won
Business Field	Development and consulting of IoT integrated operations management solutions, modules/modems		

2 Company overview

As a company specializing in IoT-related solution development, D&Shine develops diverse intelligent sensor and device products using LTE/WCDMA modules and various sensing modules, and thus provides customized integrated solution services for various industrial fields, including public security, crime prevention, physical security, safety and environmental fields.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Crime prevention solution	- Total solution for criminal rescue request and crime prevention using IoT technology - Real-time crime surveillance integrated control solution
IoT smart emergency bell system / Street light-form IoT emergency bell system	- Advanced intelligent emergency bell system with IoT technology - Intelligent emergency detection/Emergency alerting and Rescue requests / Self-diagnosis, Remote monitoring and control of the system
IoT emergency bell system for CCTV	- IoT Emergency Bell System with CCTV network interworking function - Emergency alerting and Rescue requests / Self-diagnosis, Remote monitoring and control of the system

o Contact

Name	Department	Tel	E-mail
Dong Soo, Choi	General Management	+82-2-3159-8872	cds@dnshine.co.kr

Daliworks co., Ltd.

daliworks



1 Information

Name of CEO	Lee Soonho	Date of Establishment	2013. 03. 04
Tel	+82-2-2274-3254	Homepage	https://www.thingplus.net
Address	6th FL., Yeonghan Bldg., 12, Supyo-ro, Jung-gu, Seoul, Republic of Korea		
Number of employees	17	Capital	KRW 354 million
Sales (Based on 2022)	KRW 1 billion won	Net Profit (Based on 2022)	KRW 1 million won
Business Field	IoT Platform for IoT services		

2 Company overview

Global Leading IoT Platform Company, Daliworks

Daliworks is a total IoT solution company that covers all areas of digital transformation technology. We provide a reliable and scalable IoT cloud platform, Thingplus, which enables customers to create competitive IoT services quickly and easily.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Thingplus Platform	Thingplus is a stable and scalable IoT cloud platform which enables customers to create differentiated IoT services quickly and easily.
Facility Monitoring Solution	A real-time facility status monitoring solution based on power data, enabling efficient facility operation and energy management.
EMS Solution	EMS offers comprehensive energy monitoring and management solutions to optimize resource efficiency and reduce operational costs.

o Contact

Name	Department	Tel	E-mail
Joohun Park	HQ	+82-2-2274-3254	contact@daliworks.net



1 Information

Name of CEO	Jang Dong Hoon	Date of Establishment	April 24th, 2020
Tel	+82-070-4300-2470	Homepage	http://datacentric.kr
Address	315 / 16, Heungan-daero 427 beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, Republic of Korea		
Number of employees	10	Capital	1.12 billion (KRW)
Sales (Based on 2021)	3.5 billion (KRW)	Net Profit (Based on 2021)	1 billion (KRW)]
Business Field	AIoT Application Development, AI&Bigdata Application Development		

2 Company overview

DataCentric specializes in AI & Big Data softwares and aims for open source SW. By interpreting data dam as data sea, we are running a solution brand, WhaleShark, and are expanding our business areas through the advancement of industries such as aviation, manufacturing, medical care, and shipbuilding and marine. DataCentric is a startup that consists of professional developers with more than 5 to 20 years of experience in AI & big data platform development, and has received various awards and experience as a planning committee member of public institutions.

WhaleShark LiteAI - AI & Big Data analysis platform for non-majors

WhaleShark AIoT - Edge computing-based real-time AI & big data analysis system

WhaleShark IIoT - IIoT data collection platform

WhaleShark MES - SaaS-based production management system

WhaleShark CMS - Spatial content integrated control system that systematically and consistently manages multiple contents

WhaleShark mLMS - Mini learning management system capable of data analysis training

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
WhaleShark-AIoT	Edge AI&BigData Platform Edge AI&BigData MicroPlatform
WhaleShark-IIoT	IIoT Device Platform (IIoT Device Data Gathering System)

o Contact

Name	Department	Tel	E-mail
Kim Tae-Kyun	DT Biz Dept.	070-4300-2470 010-1234-5678	dc@datacentric.kr

eWBM Co., Ltd



1 Information

Name of CEO	Oh Stephen Sang Geun	Date of Establishment	Oct. 15. 2009
Tel	+82-2-556-7878	Homepage	https://www.ewbm.com
Address	4F #405, 134-16, Jungnicheon-ro, Incheon-si, gyeonggi-do, Republic of Korea(17373)		
Number of employees	15	Capital	\$3,061,877
Sales (Based on 2021)	\$1,200,000	Net Profit (Based on 2021)	\$50,000
Business Field	Semiconductor Design, IOT module, FIDO Authentication		

2 Company overview

eWBM is a fabless SoC company which provides security microcontrollers and modules for FIDO2 Security Keys and variety of IoT applications such as Secure LoRa Module, Secure Sensor to Ethernet module, Secure NB-IoT module, and Secure IP Cameras. The next generation security SoC chip, MS1200, will be introduced_ in 2019. Designed with a complete root-of-trust HSM, security SoC chip will provide industry's highest security. eWBM strives to continuously improve and deliver more secure, more efficient, and highly reliable products working collaboratively with companies in IT and security industries to seamlessly transition into password-less login environment.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
eLR100-UL-00	the ultra-low power secure LoRa Module
B210H / B220H	USB Type Security Key for FIDO2 authentication

o Contact

Name	Department	Tel	E-mail
David Jeon	Sales and Marketing	+82-10-7585-2530 +82-2-556-7878	david@ewbm.com



1 Information

Name of CEO	Kim Youngjin	Date of Establishment	2008. 12. 31
Tel	+82-42-471-5215	Homepage	http://www.fscom.kr/main.do
Address	#307 CT Center, 20, Daedeok-daero 512beon-gil, Yuseong-gu, Daejeon, Korea		
Number of employees	33	Capital	90,000,000 won
Sales (Based on 2022)	3.9 billion won	Net Profit (Based on 2022)	250 million won
Business Field	IoT-based smart electrical fire prevention solution		

2 Company overview

FS, Inc. is a high-tech corporation specializing in IoT technology. We offer electrical fire prevention system, FireSens, for infrastructure such as buildings, industrial complexes, hospitals, warehouses, traditional markets, vessels, and multi-use facilities by collecting, analyzing, predicting, alarming and controlling electrical data through patented smart electrical measuring sensor.

The FS Co., Ltd leads the field of a disaster-safety technology in urban regeneration by introducing high-tech smart system with FireSens.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
FireSens	AI-based smart electrical fire prevention system (electrical safety monitoring)

o Contact

Name	Department	Tel	E-mail
Jung Gwangmin	General Business Department	+82-42-471-5215 +82-10-2725-0842	info@fscom.kr

Hyodol co., Ltd.



1 Information

Name of CEO	JEE HEE KIM	Date of Establishment	2009.11.13
Tel	+82-2-562-8055	Homepage	www.hyodol.com
Address	#1715, 282, Hagui-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Republic of Korea		
Number of employees	18	Capital	200 Million
Sales (Based on 2023 3Q)	989 Million	Net Profit (Based on 2022)	170 Million
Business Field	S/W development and supply business		

2 Company overview

Hyodol Co., Ltd. has operated the Senior Design Research Institute, which researches services, policies, and solutions necessary for the aging society since its establishment in 2009. Now, we provide a Socially Assistive Chat Robot ‘Hyodol’ and its services for seniors.

‘Hyodol’ supports the elderly especially those who live alone and disabled to relieve loneliness/depression. It also supports their daily lives, physical health, and the improvement of their cognitive functions. We help improve seniors' quality of life and get happiness in old age.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Hyodol	A Socially Assistive Chat Robot that helps seniors in their daily lives, enhances their cognitive health and supports them emotionally
Hyodol SmartPad	Smart Pad for elders equipped with digital learning/ customized care/healthcare solution

o Contact

Name	Department	Tel	E-mail
HUNYI ROH	Marketing Team	+82-2-6218-8058	realhyun2@hyodol.com



1 Information

Name of CEO	Bo Kyoung Min	Date of Establishment	2020. 03. 23
Tel	+82-10-7255-7030	Homepage	http://idb.ai
Address	2th Fl. Felix Bld., 55Gil 35, Teheranro, Gangnam-gu, Seoul, Korea		
Number of employees	13	Capital	150 milion won
Sales (Based on 2023)	890milion won	Net Profit (Based on 2023)	259,000,000 won
Business Field	AI, IoT, Software		

2 Company overview

IDB is a software company that uses AI and IoT convergence technology to solve various field of the problems in manufacturing, cities and buildings.

IDB have solutions that link IoT data collection, processing, web editor based visualization and AI-based manufacturing analysis , video anomaly detection technologies are applied to predictive maintenance, process analysis, quality prediction and safety anomaly detection.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Protect Go AI box	CCTV safety detection, IoT sensor abnormal detection
Baro Go AI Box	IoT sensor abnormal detection
T2V Box	Web editor based data visualizaiotn and data engine

o Contact

Name	Department	Tel	E-mail
Bo kyoung Min	AI team	+82-10-7255-7030	bkmin@idb.ai

Iris ID, Inc.



1 Information

Name of CEO	Chales Koo	Date of Establishment	2004. 06. 09
Tel	+82-2-3289-5300	Homepage	http://www.irisid.co.kr
Address	Daerung Post Tower 1, Suite 512, 288, Digital-ro, Guro-gu, Seoul, 08390, Korea		
Number of employees	37	Capital	3.25 billion won
Sales (Based on 2023)	9.8 billion won	Net Profit (Based on 2023)	1 billion won
Business Field	Computer input/output devices and other peripheral devices, software advisory		

2 Company overview

IDB is a software company that uses AI and IoT convergence technology to solve various field of the problems in manufacturing, cities and buildings.

IDB have solutions that link IoT data collection, processing, web editor based visualization and AI-based manufacturing analysis , video anomaly detection technologies are applied to predictive maintenance, process analysis, quality prediction and safety anomaly detection.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Protect Go AI box	CCTV safety detection, IoT sensor abnormal detection
Baro Go AI Box	IoT sensor abnormal detection
T2V Box	Web editor based data visualizaiotn and data engine

o Contact

Name	Department	Tel	E-mail
Bo kyoung Min	AI team	+82-10-7255-7030	bkmin@idb.ai



1 Information

Name of CEO	Kim HeungJoong	Date of Establishment	2000.12.07
Tel	+82-62-230-2500	Homepage	http://www.jointree.co.kr/
Address	28-1, Maruk-ro, Seo-gu, Gwangju, Republic of Korea		
Number of employees	327	Capital	19.7 billion
Sales (Based on 2022)	72.7 billion	Net Profit (Based on 2022)	4.9 billion
Business Field	Smart Platform, S/W Development, Information and Communication Corporation		

2 Company overview

Jointree Co., Ltd. is a representative "Smart Platform solution company" in Gwangju Metropolitan City that is promoting projects in various fields of the fourth industry based on ICT business. By combining sensors and NW as core technologies of the 4th Industrial Revolution, it has J-SMART Platform™ and its own development solutions, 'Tree-US', 'Large-scale All-in-One Cloud Service Parthenon', and 'Metaverse Image Conference Platform Fiesta', and is a company that practices new technologies and knowledge sharing.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

제품/서비스명		내용
J-SMART Platform™	Smart Air	Outdoor air purification system using AI-based microalgae
	Smart Health	Cloud-based medical information linkage and utilization platform that connects hospitals and clinics
	Smart Energy	Energy Information Platform - Collecting and processing energy data held by demand companies and saving energy through convergence with AI technology
	Smart Fish(Farm)	Integrated monitoring system for solar power generation using IoT-based reclaimed land and fish farms

	Smart Mobility	Autonomous Vehicle Collecting Unmanned Public Information - Collecting various sensor data, providing public information services for road and atmospheric environment
	Smart Safety	Underground Community Integrated Big Data Platform
	Smart Factory	Process management through self-developed programs, import/delivery management, purchase/sales management, etc
	Smart Home	Home appliance IoT integrated service platform

o Contact

Name	Department	Tel	E-mail
Jung Changhwan	Strategic Research Institute	+82-62-230-2543	chjung@jointree.co.kr
Lee Minjeong	Strategic Research Institute	+82-62-230-2545	mjlee@jointree.co.kr



1 Information

Name of CEO	Ham JinKyu	Date of Establishment	1969. 2. 15
Tel	+82-1588-2504	Homepage	http://www.ex.co.kr
Address	77, Hyeoksin 8-ro, Gimcheon-si, Gyeongsangbuk-do, Korea		
Number of employees	9,166	Capital	(KRW) 42,478B
Sales (Based on 2022)	(KRW) 10,779B	Net Profit (Based on 2022)	(KRW) 63B
Business Field	Expressway Construction, Maintenance and R&D		

2 Company overview

KEC is an expressway-based public enterprise and the purpose of the establishment is to promote the development of the national road network and contribute to the advancement of road transportation. We aim to become a 'future transport platform company', we're conducting R&D to apply various ICT technologies to roads like as IoT, CAV, UAM.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Smart Openlap	Free provision of infra and technical consulting support for Ex-IoT services development
Ex-IoT Certification	Ex-IoT services specifications, LoRaWAN Protocol Test

o Contact

Name	Department	Tel	E-mail
Ma Jahee	ITS Accreditation Evaluation Center	+82-31-8098-6226	jhma@ex.co.kr

Lamilab.inc.



1 Information

Name of CEO	Park Byeong Yong	Date of Establishment	2016.05.13.
Tel	+82-10-5529-0514	Homepage	http://www.lamilab.xyz
Address	99, Daehak-ro, Yuseong-gu, Daejeon, Republic of Korea		
Number of employees	10	Capital	0.3 million Won
Sales (Based on 2022)	3.63 million Won	Net Profit (Based on 2022)	-1 million Won
Business Field	S/W development and supply business, software development business		

2 Company overview

Lamilab.inc. is a spatial information knowledge service development company that develops webGIS application software using open source libraries.

The core technology is digital twin urban disaster visualization technology, and the main product is a 3D GIS-based disaster decision support solution and safety evacuation service.

The mission is to support decision-making in the process of responding to disasters and to provide disaster safety services that citizens can feel.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Disaster Decision-Making Support Solution	GIS-based urban disaster prevention and prediction solutions for national disaster broadcasting and local government/government disaster response officers
Safety Evacuation Solution	A disaster safety evacuation solution based on Chrome Progressive Web App Service (PWA) available to all citizens

o Contact

Name	Department	Tel	E-mail
Joo Seung Hoon	Planning and Management Team	+82-10-5529-0514	teetee33@lamilab.xyz



1 Information

Name of CEO	Hong, Gye-Hyun	Date of Establishment	1987. 01. 03
Tel	+82-2-2208-3822	Homepage	http://www.LITTLEPRINCE.kr
Address	#3303, 33F., WTC, 159-1, Samsung-dong, Gangnam-gu, Seoul, Korea		
Number of employees	-	Capital	us\$153M(est.)
Sales (Based on 2023)	stg £ 1.53B(est.)	Net Profit (Based on 2023)	stg £ 153M(est.)
Business Field	AI & IoT Based, Contents, BM Convergence R&D, Consulting Service		

2 Company overview

LITTLE PRINCE3 is a company specializing in R&D services and strategy consulting that converges contents with BM on AI&USN based. In preparation for changes in the current mobile communication environment and coming of a future ubiquitous environment, we provide R&D services to facilitate ICT convergence and collaboration and build various platforms that contribute to creating a sustainable ecosystem.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
u-AIAU R&D Svc.	- USN based AI Autonomous UAM R&D Services
AI Marketing Platform	- Smart AI Event/Marketing Promotion Platform R&D Services
AI Smart u-Message Svc.	- USN Based AI Smart u-Communication Services, etc.

o Contact

Name	Department	Tel	E-mail
Kim, Jae-In	R&D Team	+82-10-3207-8858	sbasbc@daum.net

MaaS Farm Co., Ltd.



1 Information

Name of CEO	Hyun Lee	Date of Establishment	2018.05.28
Tel	82-10-5201-2257	Homepage	http://www.maasfarm.com
Address	311, Eco Business Center, KETI, 111, Ballyong-ro, Deokjin-gu, Jeonju-si, Jeollabuk-do, Republic of Korea		
Number of employees	1	Capital	KRW 150,000,000
Sales (Based on 2021)	-	Net Profit (Based on 2021)	-
Business Field	Integrated 3rd generation smart farm system(tomato/paprika AI-SaaS platform based yield prediction-pest disease diagnosis automatic cultivation greenhouse operational management AIoT solution 3rd generation smart farm system)		

2 Company overview

MaasFarm Co., Ltd. is a company specializing in provision of environment, growth, farm control, and management data to smart protected horticulture farms optimized through database application solution with yield-prediction, pest disease diagnosis as well as automatic control solution based on Postgresql-DB WAS cloud AI platform subject to ML/DL yield prediction and environment control basis model in connection with internet router and sensor/actuator internet of-things(IoT) as well as gateway for optimization of smart farms.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Integrtd 3rd generation smart farm system	Yield Improvement Crop-Specification Service Pest-Disease Diagnosis Service

o Contact

Name	Department	Tel	E-mail
hyun lee	planning and R&D and marketing department	82-10-5201-2257	hlee0212@gmail.com/ hlee@maasfarm.com



1 Information

Name of CEO	Changgun, Ji, Jungsung Lee	Date of Establishment	2020. 07. 01
Tel	+82-31-601-4006	Homepage	https://www.mdsit.co.kr
Address	9Fl. 17, Pangyo-ro 228beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea		
Number of employees	81	Capital	USD 1.48M
Sales (Based on 2022)	USD 2.45M	Net Profit (Based on 2022)	USD -7K
Business Field	Intelligent IoT Platform 'NeoIDM', AIoT-based Digital twin integrated solution 'RapidTWIN', KMIP-compliant Cryptographic key and certificate management Solution 'NeoFSM', Development Quality and Productivity Improvement Solutions, etc.		

2 Company overview

MDS Intelligence is a digital convergence intelligence company that develops solutions for connectivity, such as IoT, image analysis, and cryptographic key management, and leads the best customer satisfaction through new customer value.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
NeoIDM	IoT Device management Solution
HY-CHECK	AIoT-based remote meter reading Solution
RapidTWIN	AIoT-based Digital twin integrated Solution

o Contact

Name	Department	Tel	E-mail
[Sales] Jonghyun PARK	Digital Twin Biz Team	+82-31-601-4285	dt@mdsit.co.kr
[Marketing] Jihyun LEE	Marketing Part	+82-31-601-4405	marketing@mdsit.co.kr

Mercury Corporation



1 Information

Name of CEO	Hayoung Hwang	Date of Establishment	2000. 08. 21
Tel	+82-32-580-3114	Homepage	http://www.mercury.co.kr
Address	90, Gajaeul-ro, Seo-gu, Incheon, Republic of Korea		
Number of employees	200 Persons	Capital	5.4M USD
Sales (Based on 2021)	105M USD	Net Profit (Based on 2021)	4.9M USD
Business Field	Various IT devices like WiFi AP, LTE/5G Router, IoT, AI speaker and etc (AI Speaker, IR Hub, IoT G/W, Beacon G/W, WiFi Module, 5G Module, Smart IoT Room Management System, WiFi AP, VoIP Modem, FTTH ONT, LTE Router, 5G Router, optical cable)		

2 Company overview

Mercury is the specialized company in providing IT devices to Top 3 Korean Telcos as well as overseas with financial strength, technology, quality and productivity leadership. Starting from Daewoo Telecom established in 1983 for IT business, Mercury is providing home type Network devices for Top 3 Korean Telcos with WIFI AP (M/S 65%), ONT Modem (No.1 supplier for KT), VoIP, IOT and AI speakers in addition to Switching, Satellite, Transmission System and Fiber Optic Cable. Especially, based on Technology leadership such as optimal S/W integration Technology in WiFi AP and IoT industry, Mercury is expanding the biz not only Korea but also global market.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
GiGA Genie mini (MCG-100, AI Speaker)	MCG-100 provides indoor mobility with a compact design and size. If there is WiFi network it can be used regardless of ISP(Carrier). With the speaker of Haman Kardon, world-class acoustic company, MCG-100 is an AI speaker to enjoy high quality sound.
IR HUB (IRHM-01)	IR Hub(IRHM-01) works in conjunction with LG U+ home AI/IoT service, enabling customers to use voice or smart phones to control Z-Wave and IR device.

GiGA IoT Home Manager IoT Z-wave HUB	MC01-507L is a product for KT IoT service and an IoT Z-wave hub product that enables remote control of Z-wave devices in the home.
WiFi Module	WiFi module is a product that enables IoT service through WiFi communication by being installed in general home appliances.
Smart IoT Room Management System	The smart room management system builds the basis of an efficient reservation management system by making the room management elements into IoT, and provides effects such as energy saving and room automation.

o Contact

Name	Department	Tel	E-mail
DJ Kang (VP/Head of Global business Division)	Global business Division	+82-10-6383-7369	djkang@mercury.or.kr

Monnit Korea Co., Ltd.



1 Information

Name of CEO	Youm Jong Hun	Date of Establishment	2018.08.07
Tel	+82-2-20881454	Homepage	http://monnit.co.kr
Address	2F 13, Songji-ro 30gil, Songpa-gu, Seoul, Korea		
Number of employees	10	Capital	\$200,000
Sales (Based on 2021)	\$2,000,000	Net Profit (Based on 2021)	\$800,000
Business Field	IoT, Smart factory, Smart Building, Smart Farm, Smart City		

2 Company overview

Monnit Korea provides wireless IoT sensor solutions for customers in wide range of industries. Our technology consists of more than 80 different sensor types and flexible software platform for real-time monitoring and collecting the data on environmental conditions and equipment status.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Wireless sensors	<ul style="list-style-type: none"> - Sensors can be used in a wide range of industries (construction, farming, building facility management, factory, logistics and cold chain, etc). - Totally wireless IoT sensor solution that is implemented in battery type. Easy to install and use and does not require any construction work. - Low power and long battery life (8-10 years). No need for frequent battery replacement, and the information on battery life is available for checking in real-time. - Superior wireless range (up to 300 m) - Onboard Data Memory (reading storage even in case of internet disconnection) - Integrated bank level security (256-bit exchange and AES-128 CTR on all messages)
Software	<ul style="list-style-type: none"> - iMONNIT is a cloud-based monitoring platform that is

provided exclusively for Monnit wireless sensors and gateways, and enables sensor and network-related settings and user settings. The iMONNIT administrator can set thresholds for each sensor, and when an abnormality occurs, a notification can be sent to the administrator or set users via text or e-mail, and can be accessed from any Internet-based device, including smartphones.

o Contact

Name	Department	Tel	E-mail
Alina Kim	Marketing	+82-2-3413-9384	alinakim@monnit.com

N-ark Technology Co., Ltd.



1 Information

Name of CEO	Peter Han	Date of Establishment	2012. 11. 13
Tel	+82-07-8107-1052	Homepage	http://n-ark.com
Address	105, 64, Yeonsuwon-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Republic of Korea		
Number of employees	3	Capital	180,000,000 Won
Sales (Based on 2022)	410,000,000 Won	Net Profit (Based on 2022)	30,000,000 Won
Business Field	Development and consulting of wired communication transmission system (MPoE) for IoT product installation.		

2 Company overview

As a company specializing in manufacturing and consulting wired communication transmission products, Nark Technology has developed an MPoE system, a new PoE system, by improving the problems of the existing PoE system. Currently, MPoE products are being delivered to SK shieldus(ADT CAPS) and SK Broadband, and excellent R&D products have been selected and delivered by the Public Procurement Service. It provides various IoT product installation solutions and services related to smart farms, smart cities, and smart factories.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
MPoE System	A system product capable of installing multiple IoT products on one line (UTP).

o Contact

Name	Department	Tel	E-mail
Im Jun Cheol	Research department	+82-70-8107-1052	ljc1202@n-ark.com



1 Information

Name of CEO	Chakeuk Koo	Date of Establishment	2014.08.19
Tel	+82-31-715-0717	Homepage	https://www.kr.remoplus.co
Address	605,22,Wiryeseoil-ro, Sujeong-gu, Seongnam-si, Gyeonggi-do, 13647, Korea		
Number of employees	21	Capital	7 Billion Won
Sales (Based on 2022)	9.8 Billion Won	Net Profit (Based on 2022)	-3.5 Billion Won
Business Field	IoT Integrated Operations Management Solution Development and Consulting, Module/Modem		

2 Company overview

Olive & Dove is a technology company has consistently focused on R&D since its inception. As a result, company has acquired many intellectual property rights. It provides various domestic telecommunications companies, products and technology services such as original software technology, cloud server platform and smartphone applications, and has won a number of awards at major overseas exhibitions such as CES.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
DoorCam™ 3	An Internet-of-Things camera for weak entrance security with a battery-type wireless LAN camera hanging on the door (US Market - B2C)
Doorguard™ 2	An Internet-of-Things camera for weak entrance security with a battery-type wireless LAN camera hanging on the door (Korean Market - B2C)

o Contact

Name	Department	Tel	E-mail
Chanwoo Lee	CTO	+82-31-715-0717 +82-10-3440-2518	cwlee@olivendove.com

Oysterable Co., Ltd.



1 Information

Name of CEO	Bae Taegoan	Date of Establishment	2023.10.26
Tel	+82-70-4418-5205	Homepage	https://oysterable.com/
Address	Room 807, 8th Floor, Main Building, Seoul Startup Hub, 21, Baekbeom-ro 31-gil, Mapo-gu, Seoul, Republic of Korea (Postal Code)04147		
Number of employees	33	Capital	30 million won
Sales (Based on 2022)	2,200 million won	Net Profit (Based on 2022)	-600 million won
Business Field	IoT Integrated Operation Management Solution Development and Consulting, Module/Modem		

2 Company overview

Oysterable is an environmental startup with a team of urban problem solvers who are tackling the growing problem of single-use plastics and waste with Lalalooop, an AIoT smart resource circulation infrastructure that creates a cycle of recycling and reuse. We are contributing to the circular economy and carbon neutrality by helping citizens practice reuse and recycling more easily and conveniently with our AIoT smart resource circulation infrastructure, helping companies, governments, and local governments build smart urban circulation infrastructure, and creating a virtuous cycle that motivates citizens by rewarding them for their participation with linked reward applications. We have secured 12 patent registrations and applications with original technologies developed in-house.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Lalalooop AIoT smart resource circulation infrastructure	A service that uses AIoT technology to create a cycle from rental to consumption to return and tracks the entire lifecycle of reusables.

o Contact

Name	Department	Tel	E-mail
Juyong Yum	Sales	+82-10-4024-3294	company@oysterable.com



1 Information

Name of CEO	Jinho Ko(Ph.D)	Date of Establishment	2002.09.25
Tel	+82-42-864-2402	Homepage	https://www.phychips.com
Address	#104, 187 Techno 2-ro, Yuseong-gu, Daejeon, Korea		
Number of employees	22	Capital	-
Sales (Based on 2022)	-	Net Profit (Based on 2022)	-
Business Field	RAIN RFID Reader/Writer Chip, Module, Antenna		

2 Company overview

PHYCHIPS is a company that specializes in manufacturing and supplying UHF RFID Reader/writer SoC, reader modules, and antennas based on wireless communications core semiconductor technology. By providing essential components required for building RFID solutions as a turn-key solution, PHYCHIPS offers professional technical support from experienced hardware and software engineers, enabling customers to reduce development time and costs while achieving optimized performance.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
PR9200, PR7 (RAIN RFID Reader/Writer Chip)	<p>PR9200: The PR9200 is a RAIN RFID reader SoC that supports the EPC UHF Gen2 air protocol and includes a built-in UHF RF, MODEM, ARM Cortex-M0 processor, and memory. A complete reader can be configured without adding a separate external MCU or memory. This provides a cost-effective solution for low power, short range IoT applications.</p> <p>PR7: The PR7 is a true single SoC solution for RAIN RFID reader/writer which integrated high performance UHF RF/Analog, MODEM, ARM Cortex-M3 processor, Flash memory and many other features with fully compliant EPC Global Gen2v2/ISO18000-63 protocol. With high integration and excellent performance, it will be a new product that leads the market by being used in various fields ranging from handheld to fixed readers.</p>
RED2, RED4S, WINE7 (RAIN RFID Reader/Writer Module)	<p>RED2: RED2 is designed based on PHYCHIPS' PR9200, which offers a small size and excellent performance, enabling customers to respond to the market quickly and easily. RED2 has a size of 14mm x 13mm and is designed for small devices that require a short read range.</p>

	<p>RED4S: RED4S is designed based on PHYCHIPS' PR9200, which offers a small size and excellent performance, enabling customers to respond to the market quickly and easily. RED4S has Tx output of 27dBm and is inserted into mobile readers such as dongle-type and jacket-type readers, which is widely used in IoT applications. It has already obtained FCC, CE, TELEC, and KCC certifications.</p>
	<p>WNE7: WNE7 is a high-performance module based on PR7. It has an optimal configuration to maximize the performance of the PR7, PHYCHIPS' 3rd generation reader chip. The new WNE reader protocol allows users to effectively implement their own applications. It is designed as a SKU(Stock Keeping Unit) that can be used anywhere in the world with a simple region setting and will be used in a wide range of single antenna applications including mobile, handheld and fixed readers.</p>
<p>QUBE Series, Ceramic Patch (RAIN RFID Reader/Writer Antenna)</p>	<p>QUBE Series: QUBE series are high performance antennas using patented original technologies such as Quadrifilar helical antenna, Power dividing, etc. It is smaller, lighter, and more robust than any other high gain antennas, and can maintain constant performance in any environment. It provides optimized performance for medium and long-range UHF RFID applications.</p> <p>Ceramic Patch: The ceramic patch is a high-performance antenna using proprietary materials specially developed for high-performance antenna elements. It has lower fabrication cost which easily mass manufactured. Its small and light features are fit to compact devices to provide optimized performance for short-range UHF RFID applications.</p>

o Contact

Name	Department	Tel	E-mail
Rockho Jeong	Sales	+82-42-864-2402	sales@phychips.com



1 Information

Name of CEO	Hyounhee Koo	Date of Establishment	2013.12.11
Tel	+82-70-5043-9943	Homepage	http://synctechno.com
Address	Room 904, 311, Gangnam-daero, Seocho-gu, Seoul, Korea		
Number of employees	12	Capital	10M KRW
Sales (Based on 2022)	1066M KRW	Net Profit (Based on 2022)	67M KRW
Business Field	Software development (UAV web-based GCS, Maritime communication gateway supporting multi-RATs, and IoT certification tester), international standardization activities and standardization consulting for domestic organizations		

2 Company overview

SyncTechno is a startup company that leads, researches, and develops technologies and solutions for public safety and maritime domains. We are leading international standardization activities in global standards bodies such as 3GPP, APT, and oneM2M, and domestic standards strategy development activities in the fields of public warning system and maritime autonomous ships.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
CertMate	Designated oneM2M Release 2 test platform for domestic and international IoT certification bodies

o Contact

Name	Department	Tel	E-mail
TeaHyun Kim	Head of Research Lab	+82-70-5043-9943	thyun@synctechno.com
SangMin Yi	Head of Sales & Marketing	+82-70-5043-9943	smyi@synctechno.com

SystemBase Co., Ltd.



1 Information

Name of CEO	YounSig Jang	Date of Establishment	1987.06.15
Tel	+82-2-855-0501	Homepage	https://www.sysbas.com/en/
Address	16F, DaeRung Post Tower-1, Digital-ro 288, Guro-gu, Seoul, Korea 08390		
Number of employees	30	Capital	\$ 1,061,538
Sales (Based on 2022)	\$ 7,244,615	Net Profit (Based on 2022)	\$776,153
Business Field	Industrial Connectivity (Serial/LoRa Communication)		

2 Company overview

SystemBase Co., Ltd., established in 1987, is an IoT specialist company that has consistently introduced innovative and convenient products centered on serial communication. The company has succeeded in equipping all product lines related to serial communication, from semiconductors, which are the core products of serial communication, to serial cards, converters, and device servers. It sells these products in both domestic and overseas markets, growing into a world-class serial communication specialist company. Recently, through the development of new products related to I/O (Input/Output), it is evolving into a leading IoT specialist company.

Additionally, following short-range and long-range wireless, we have adopted WiFi-HaLow communication technology that enables communication up to 1km for mid-range wireless. As a result, we now possess a full lineup of wireless products that support short, medium, and long range communications.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
sHaLow/all	<p>Industrial Serial to WiFi-HaLow Converter</p> <p>This is an industrial Serial to WiFi-HaLow converter in the 900MHz band, supporting a maximum distance of 1.5km and a top speed of 2Mbps. It allows for easy communication, control, and monitoring of remote serial equipment connected through the WiFi-HaLow network, facilitating the simple construction of various M2M networks such as smart grids and sensor networks.</p>

CS-428i V2.0	<p>Industrial High-Performance Isolation Converter</p> <p>This is an industrial-grade high-performance isolation converter that provides stable operation and excellent protection against noise and surges that occur in harsh industrial environments. It offers the function of converting RS232 signals into RS422 or RS485 signals. It also provides the ability to register, set, and cancel IDs without a separate protocol, dramatically increasing the flexibility of device interconnections. Additionally, it supports a filtering function that allows for selective transmission and reception of data on communication lines.</p>
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o Contact

Name	Department	Tel	E-mail
Jamie Song	Overseas Sales	+82-2-855-0501	overseas@sysbas.com

SYStoUS Inc.

SYS2US



1 Information

Name of CEO	Yoo Byung-Hoon	Date of Establishment	2021. 08. 19
Tel	+82-70-8800-4153	Homepage	http://www.sys2us.com
Address	#977, Anyang Startup Support Center, 11-41, Siminda-ro-327-beongil, Dongan-gu, Geonggi-do, Korea		
Number of employees		Capital	
Sales (Based on 2021)		Net Profit (Based on 2021)	
Business Field	IoT Automated Control System Integration Advise and Implementation		

2 Company overview

SYStoUS Inc. is developing automatic controls system integration advisory, design and construction services, as well as devices and software necessary for it. We plan to build a system that can transmit and receive information from smart sensors and controller devices to the cloud by utilizing IoT solutions for zone control systems, and to improve energy efficiency and manage environment and disasters using artificial intelligence. This is SYS2US, which provides a service to build a system tailored to our Earth.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
System design and installation services	Artificial intelligence convergene control system design Integrated control system design and construction service
Control System Development	Controller Firmware / Software Development of atificial intelligence control system and solution Web / Windows Application
Zone environment controller	Zone environment management Monitoring and control of environment such as temperature and humidity, fine dust, noxious gas, illuminance, noise, vibration

o Contact

Name	Department	Tel	E-mail
Yoo Byung-Hoon		+82-10-3351-4153	bhyoo@sys2us.com



1 Information

Name of CEO	Park Byung Hoon	Date of Establishment	2007. 01. 25
Tel	+82-2-6344-7660	Homepage	http://www.t3q.ai
Address	#603, Mario Tower, Digital-ro 30 gil 28, Guro-gu, Seoul, Korea		
Number of employees	114	Capital	\$457,020
Sales (Based on 2021)	\$7,947,000	Net Profit (Based on 2021)	\$37,000
Business Field	S/W Development & Supply Business, S/W Development Industry		

2 Company overview

T3Q, founded in 2007 with the motto of 'Reduce time to One-third and Increase Quality Threefold,' has been concentrating on big data & AI intelligence platform technology since 2014. We were the first in Korea to obtain AI platform GS certification and have been providing platform and AI-based services to the defense, public, and businesses.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
T3Q.ai	AI&Big data integration platform for AI development and operation
T3Q.search	AI convergence intelligent search solution - finding target items in video, audio, images, documents, etc.

o Contact

Name	Department	Tel	E-mail
Kim Sail	Strategic Planning Team	+82-2-6344-7665	maccyber@t3q.com

TECHNONIA co., Ltd.

TECHNONIA



1 Information

Name of CEO	Sung Wonyong	Date of Establishment	2000.04.13
Tel	+82-2-2108-8123	Homepage	http://www.technonia.com
Address	#1101 Hanshin IT Tower, 235 Guro-dong, Guro-Gu, Seoul, Korea		
Number of employees	17	Capital	1,000,000 USD
Sales (Based on 2021)	1,260,000 USD	Net Profit (Based on 2021)	37,000 USD
Business Field	IoT integrated operation management solution development and consulting, Module/modem		

2 Company overview

Technonia is a professional developer that builds a system that integrates sensors and networks, and implements digital twins through it. The A-IoT sensor platform includes AI Camera, IoT environment sensor, and IoT detection sensor to increase productivity and quality of business and services, and to enter the rapidly changing Internet of Things market faster and more accurately through ready-made end-to-end functions. It is the best IoT solution for you.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Artificial intelligence (AI) image analysis service that replaces the human eye	<ul style="list-style-type: none"> - Real-time video analysis Edge AI technology is used to support situational judgment and processing according to conditions. - Rather than simply monitoring a camera, artificial intelligence learns variables and patterns about the situation to increase the accuracy of analysis and predict results.
Digital twin implementation IoT sensor monitoring service	<ul style="list-style-type: none"> - The IoT sensor monitoring service provides an efficient and productive digital twin construction environment by collecting, transmitting, storing, and analyzing various and real-time information of various external environments using IoT sensors in real time.

o Contact

Name	Department	Tel	E-mail
Sangjin Lee	Sales	02-2108-8123 010-5168-8123	sjlee@technonia.com



1 Information

Name of CEO	DK Park	Date of Establishment	2010. 02. 25
Tel	+82-2-3273-2608	Homepage	http://www.wizcore.co.kr/en
Address	15F, 49, Ahasan-ro 17-gil, Seongdong-gu, Seoul, Republic of Korea		
Number of employees	70	Capital	USD 0.8M+
Sales (Based on 2021)	USD 20M+	Net Profit (Based on 2021)	USD 0.8M+
Business Field	Software Development and Supply Business		

2 Company overview

[WIZCORE, A Navigator for Your Digital Innovation] WIZCORE is a specialized company in the field of smart manufacturing(DX), providing integrated solutions for the digital transformation of domestic manufacturing companies. From collecting manufacturing data using on-site networks and Internet of Things (IoT) devices to analyzing and utilizing manufacturing data through solutions such as MES, SPC, and monitoring, we support the entire process of building a smart manufacturing environment. We offer step-by-step solutions that can be applied to various sizes and industries and have more than 250 construction cases both domestically and internationally.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
NEXPOMer	Gateway for manufacturing data collection From solution lineups such as Standard, IoT, DI/AI to the upcoming release of a Private 5G exclusive solution (Dec 2023) Integrated data collection and management solution that supports heterogeneous equipment data collection and preprocessing.
NEXPOM	Integrated manufacturing data analysis and monitoring solution Achieved GS(Good Software) certification Grade 1 (Sep 2021) Offers monitoring and analysis functions based on collected data through modularized systems such as MES, SPC, EMS.

o Contact

Name	Department	Tel	E-mail
Jieun Lee	Management Planning Team	+82-2-2205-2607	jieun.lee@wizcore.co.kr



ZIEN



1 Information

Name of CEO	Cho Youngmin	Date of Establishment	2021. 06. 14.
Tel	+82-70-4571-9854	Homepage	http://zi-en.io
Address	05-104, 5th floor, O2 Tower, 83 Uidang-daero, Yeongdeungpo-gu, Seoul		
Number of employees	11	Capital	KRW 5 million
Sales (Based on 2022)	KRW 707 million	Net Profit (Based on 2022)	KRW 249 million
Business Field	Automated IoT Firmware Security Inspection Solution		

2 Company overview

ZIEN, Inc. is a company specializing in convergence security, focusing its research on IoT security, a core technology of the Fourth Industrial Revolution.

As IoT services continue to expand across diverse sectors, security incidents are continuously on the rise, ranging from breaches that expose users' privacy to events that pose threats to users' lives.

ZIEN offers an automated solution for inspecting IoT firmware security for the prevention of IoT security incidents in areas intricately connected to the lives, safety, and property of the nation's citizens, including smart homes, smart cities, smart factories, healthcare, and autonomous vehicles.

3 AIoT Products·Services and Contact

o Key AIoT Products·Service

Name	Description
Z-IoT	Automated IoT Firmware Security Inspection Solution

o Contact

Name	Department	Tel	E-mail
Yoo Jaejung	Management support team	+82-70-4571-9854	support@zi-en.io