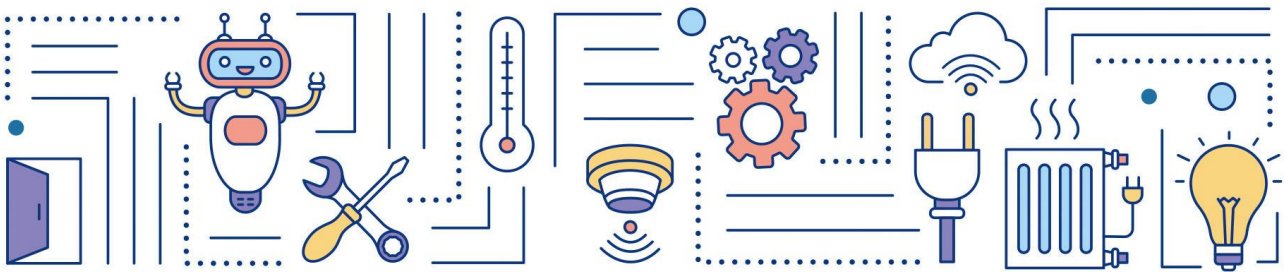


2023

# The AIoT Products & Services of Major Korea Companies



# AIoT



## Introductory Note

- This handbook is comprised of two chapters.
- **Chapter 1 (AloT Services and Products)** includes 38 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 20 companies including a business areas, Key Products and Services, location, president, sales, capital, homepage and contact

### < Summary of the 2023 Handbook >

Areas	Sub-areas
AloT Service (7)	Welfare(2), Manufacture(1), Smart Home(1), Smart Office(1), Agriculture and livestock(1), Construction/Facility Management(1)
IoT Product (23)	Modules(7) : Communication(3), Complex(4) Terminal Equipment(6) : Biometrics(1), Environmental monitoring(1), Warning/Alarm(3), ETC(1) Gateway(7), Reader(3)
Platform (8)	S/W Platform(8)

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

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

## Platform

Category		Contents
S/W platform	Connection/Device management	<ul style="list-style-type: none"> <li>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</li> <li>※ Management of connectivity and devices, etc.</li> </ul>
	Application / Operation support	<ul style="list-style-type: none"> <li>o Infrastructure server S/W platform for developing application SW for IoT service</li> <li>※ Data analysis, application management, service development tool (DevOps, etc.), security, charging, etc.</li> </ul>
Platform Equipment (H/W)		<ul style="list-style-type: none"> <li>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.)</li> </ul>

## Security

Category		Contents
Service		<ul style="list-style-type: none"> <li>o IoT-related security products and services</li> <li>- 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.</li> </ul>
Device		
Platform		

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## AIoT Service

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# AIoT Service



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## Welfare

### 1 Hyodol

**Company name** Hyodol Co., Ltd.

**Main function**

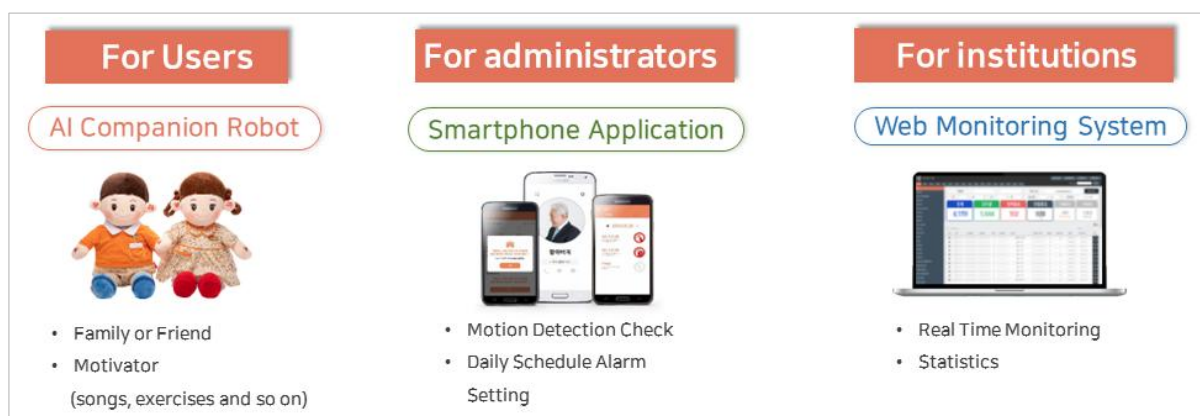
- \* **Hyodol: A Socially Assistive Chat Robot that helps seniors in their daily lives, enhances their cognitive health and supports them emotionally.**
- **Brings emotional support to the elderly throughout their day**
  - Hyodol replies with charming comments when the senior strokes its head, pats 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
- **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.

### 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 their care 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 Smart Pad

**Company name** Hyodol Co., Ltd.

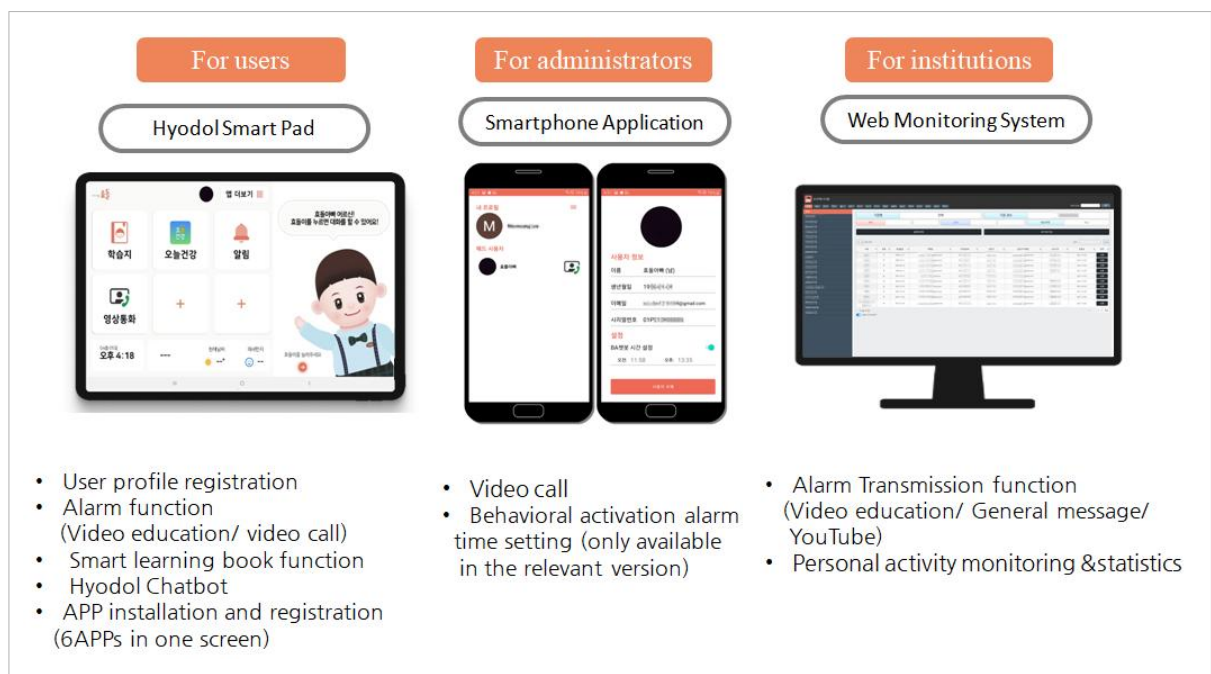
### **Main function**

- \* **Hyodol Smart Pad: Smart Pad for elders equipped with digital learning/ customized care/ healthcare solution**
- **Mental health care chatbot service that recognizes and sympathizes with the emotions of the elderly**
  - General conversation: Instead of simple command-type conversation, two-way conversation service is provided through the voice of Hyodol with unique speech function;
  - Heart-to-Heart Talk: The emotions of the elderly are recognized through their speech to promote sympathetic actions;
  - Memory Journey: Questions are asked about school years and youth of an elder person to enable him/her to reminisce about the past, and this can help prevent dementia, strengthen the cognitive ability, and improve the memory;
  - Contents Playback: When the video or song is requested through voice, Hyodol connects to YouTube for immediate play;
- **Smart Educational Contents based on Hyodol Character**
  - Offline Hyodol learning book for preventing dementia (Today's Poem and Word Search, etc.) is realized into digital form
- **Customized non-face-to-face care solution is provided according to the needs of the elderly and care centers**
  - APP preferred by the elderly and care facilities/ centers such as the kiosk and Korean language study APP, etc. can be installed additionally for use freely.
  - Online meeting link and YouTube educational contents, etc. can be sent to the Smart Pad by the welfare center, health center, and local government.
  - Video call is possible in real time with the children, guardian, and social worker.
- **Remote management by utilizing the smartphone application/ web monitoring system exclusively for the guardians (lifestyle manager & family member, etc.)**
  - Along with the 'Hyodol Learning Book' contents activity data for the elderly, pad data can also be monitored.

## Characteristics and Advantages

- **Digital contents developed for elder-friendliness and convenience in use**
  - UI/ UX (font, letter size, menu size, contents type, design and icon, etc.) optimized for the elderly were realized to be intuitive and with outstanding usability.
  - Instead of an AI voice without any emotions, responses are provided through a friendly tone of Hyodol for better intimacy.
- **Customized non-face-to-face care solution is provided through the safety network between the guardian and elder person**
  - Linked with the APP/ web monitoring system for verifying the status of program use and also checking the condition of mental health;
  - Any APP can be installed through the Google Play Store, and customized non-face-to-face care solution can be designed according to the elder person and center
- **Hyodol chatbot function that understands the emotions and feelings of the elderly**
  - Instead of a simple command-type conversation, the emotions of the actual user is recognized and sympathized.

## Service block Diagram



### Utilization Field

- **Educational Program for welfare and senior care facilities/ centers**
  - Jointly with the social worker, the moderator provides various programs by using the Hyodol Smart Pad contents to relieve any issues of digital literacy and prevent the degeneration of cognitive functions by the user. At the same time, interpersonal relations can be improved, and energy in life can be enhanced.

### Main Performance

- **Year 2022**
  - 4 Hyodol products provided for the demonstration and pilot service based on Living Lab in Seongnam Senior Industry Innovation Center

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## Manufacture

### 1 AIoT Service

Company name CRESPRIT Inc.

#### Main function

- **Pedestrian Crossing Alert Service**
  - A service to protect drivers and pedestrians safely by detecting trespassers through edge computing and artificial intelligence technology based on CCTV camera image
- **Search Service for Missing Persons, Criminals, etc.**
  - Smart city social safety net service by establishing a fast search and movement route of target based on CCTV camera image and artificial intelligence technology
- **Equipment Predictive Maintenance Service**
  - A service that provides continuous facility status identification and management and predictive maintenance through industrial site facility monitoring based on edge computing technology

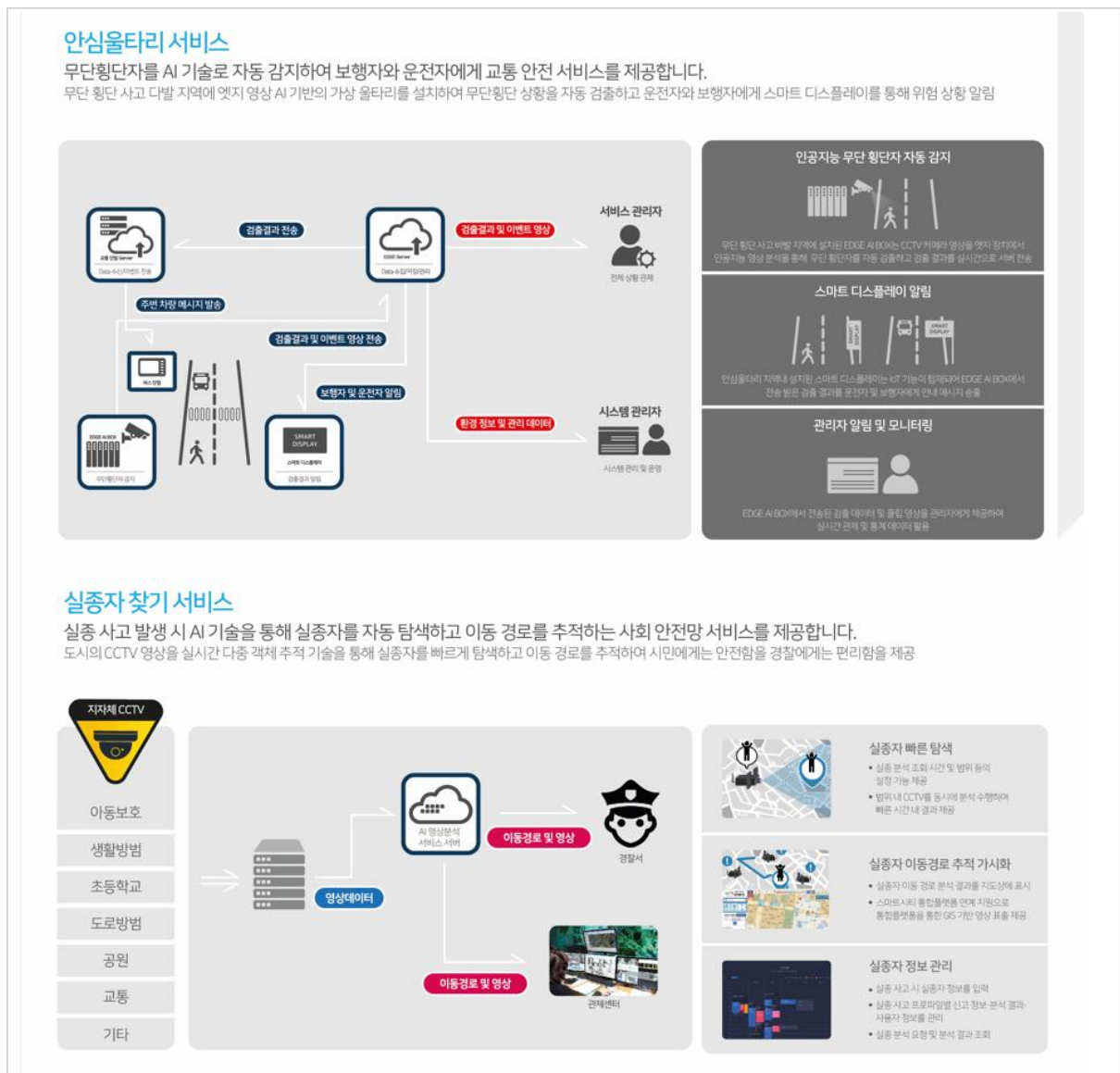
#### Characteristics and Advantages

- **On-device AI-based real-time analysis function**
  - Provides real-time service by performing immediate data analysis at the site of data generation
- **On-device AI Vision-based video analysis function**
  - Provides object detection, object tracking, and multi-object tracking services through on-site CCTV image analysis
  - In-house technology provides target detection and tracking with less error

## ■ Edge-Server Hybrid Analysis Monitoring System

- Based on edge computing technology, data analysis is performed immediately at the data generation site.
- Provides server comprehensive analysis and result monitoring through field result data and multiple terminal data

### Service block Diagram



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## Utilization Field

### ■ Smart City

- On-site CCTV-based pedestrian notification service
- Search service for missing persons, criminals, etc.
- Real-time floating population monitoring service

### ■ Smart Factory

- Smart Factory equipment failure prediction system
- Smart Factory quality prediction system
- Smart factory worker movement monitoring system
- Smart Factory worker safety area access monitoring system

## Main Performance

- Company N: Casting Manufacturing Line Quality Prediction and Integrated Monitoring System (2018)
- Company K: Auto parts injection manufacturing line quality prediction and integrated monitoring system (2021)
- Municipality B: Implementation of on-site CCTV-based pedestrian notification service (2020/2021/2022~)
- Municipality B: Perform missing person search service (2020/2021/2022~)

## 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.

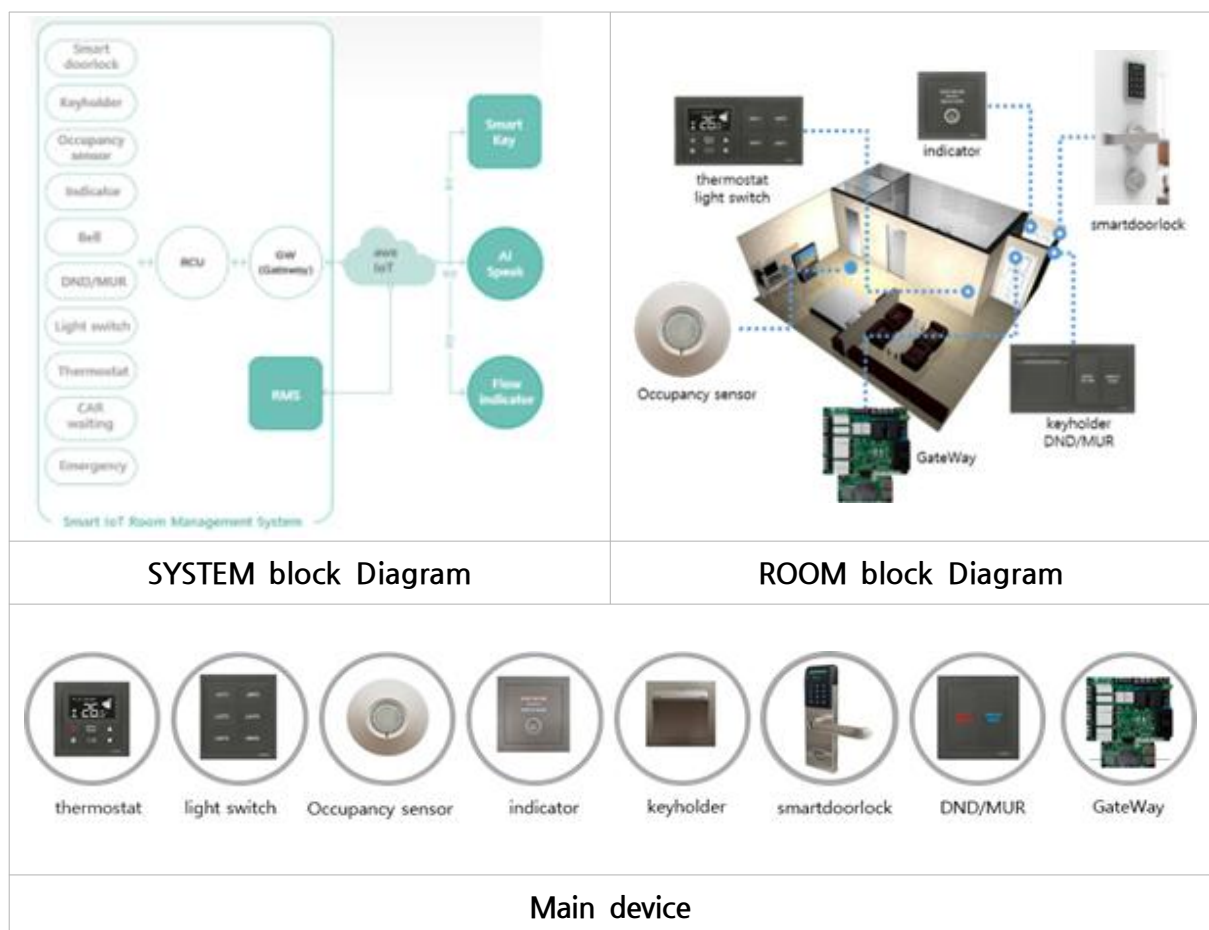
- **Convenient room function control with voice**

- 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 Roboro Hotel : scheduled for 2023
- Jaeun Ramada Sea One Resort : scheduled for 2023

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## Smart Office

### 1 AIBWorks - Smart Attendance Management Service

Company name AIBLab Inc.

#### Main function

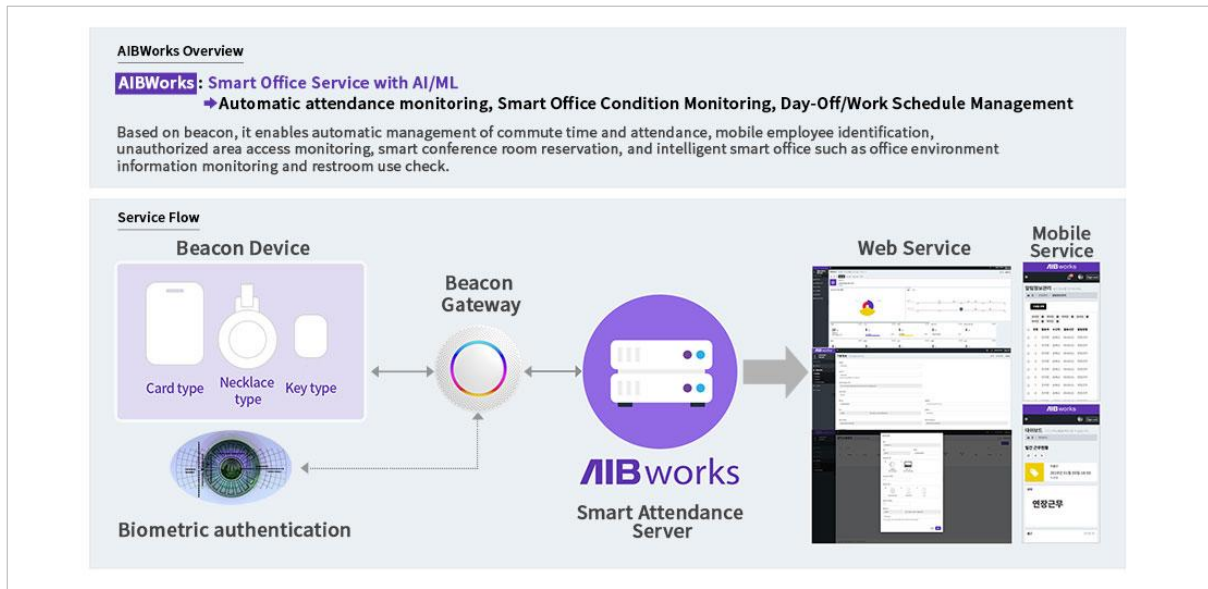
- **Automatic attendance management using beacon signal generator (employee card) and receiver (gateway)**
  - Automatically manage worker's attendance through installed beacon signal receiver
  - Work time monitoring / day-off, over-work approval / personal information management, work attendance notification 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)**

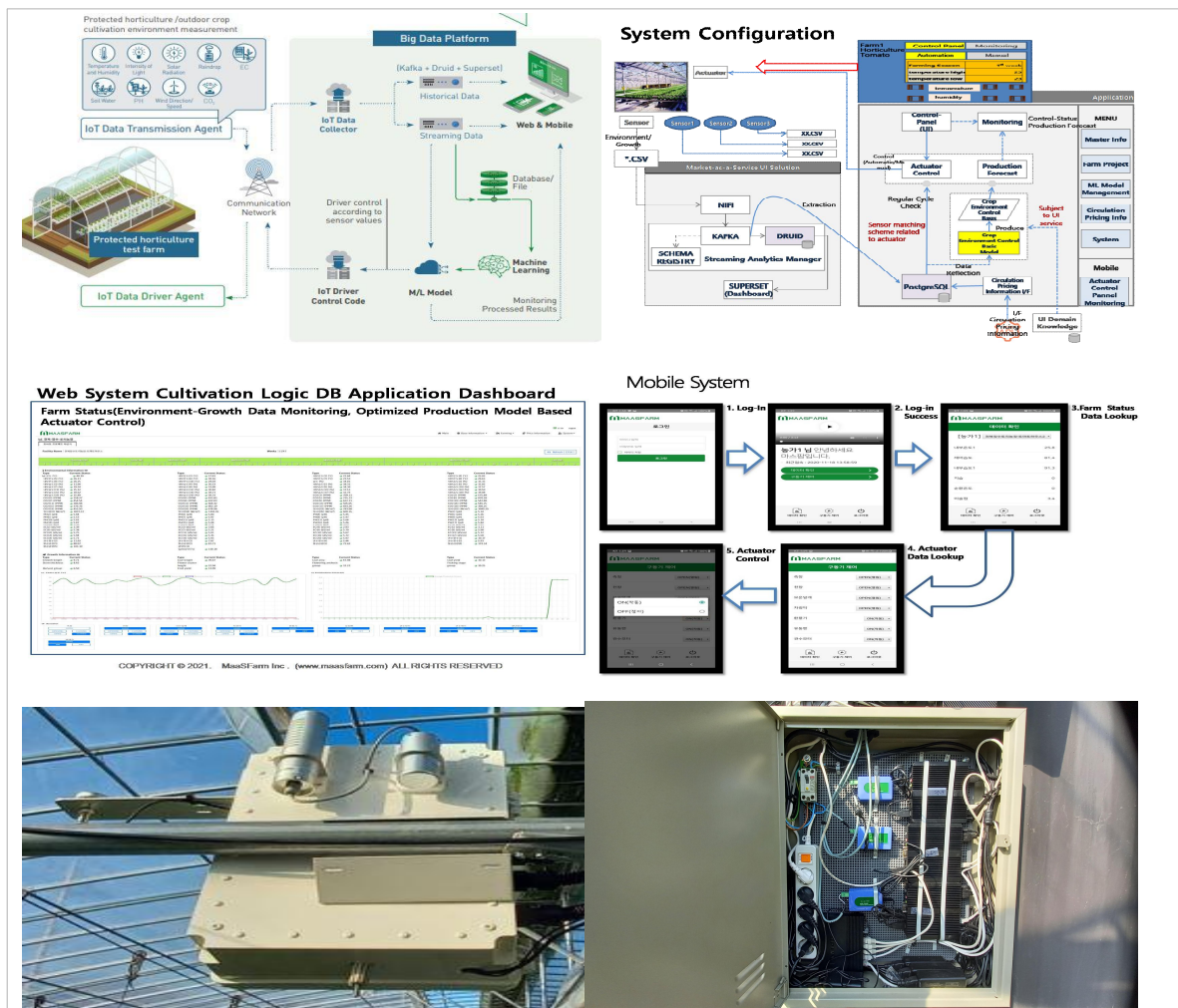
- Collected environment-growth data, Nutrition/reproduction growth and development data + Growth monitoring through prediction of nutrition/reproduction growth and development monitoring + Driver Control Data
- Prediction result posting on smart phone application from table by calling Rest-API(<http://MaaSFarm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

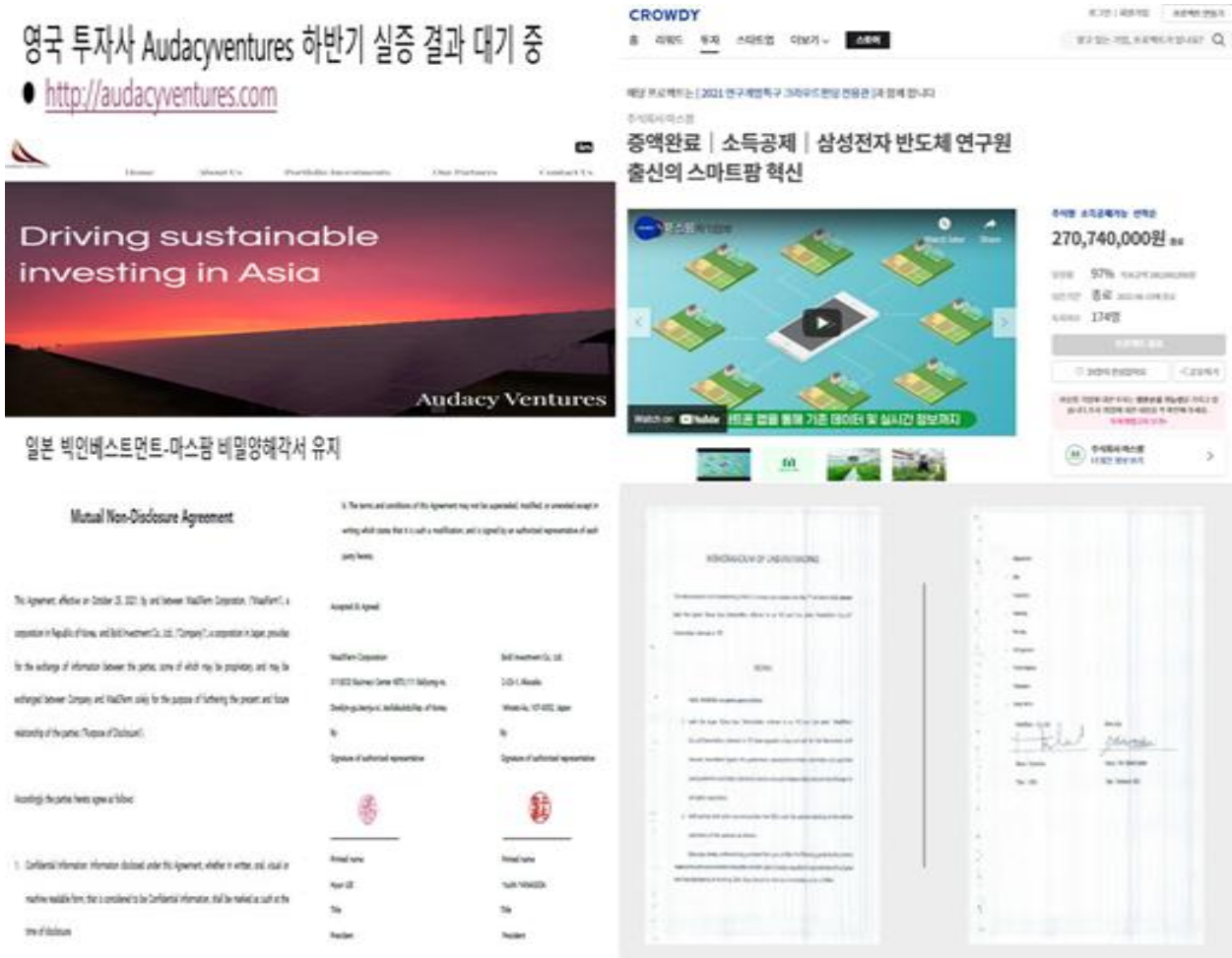
- environment control standards and yield prediction analysis supply using collected environment-growth data, nutrition/reproduction growth and development data
- environment control for optimized production by gateway interlocking with sensor-IoT and actuator-IoT control box

## 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 Zolvoin 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.





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## Construction / Facility Management

1

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

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Company name    Technonia Co., Ltd.

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#### 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

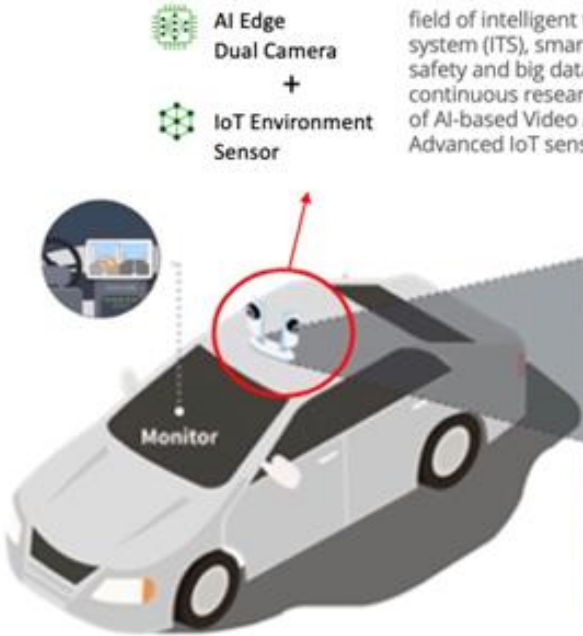
#### Characteristics and Advantages

- **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**



Product Picture


### < System Guide >





AI Edge Dual Camera  
+  
IoT Environment Sensor


Monitor

field of intelligent transportation system (ITS), smart security, smart safety and big data analysis through continuous research and development of AI-based Video Analytics and Advanced IoT sensor technologies.


  
Carbon dioxide


  
Temperature

  
Relative Humidity




### < Example >







AI EDGE Device




Vehicle installation example



Dash Board



Monitoring



Car Monitoring

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## 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





# IoT Product



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# 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 ℃
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 <sup>2</sup> C, UART, SPI, GPIO
RF Certification	KC, CE, CB, FCC
LoRaWAN <sup>®</sup> Certification	EU 863-870MHz, US902-928MHz, KR920-923MHz, AS923MHz
RoHS Compliant	Yes

## Product Picture



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## 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 Ultra-Low Power Wireless SoC& Module

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Company name	Mamiel Co., Ltd
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### Main function

■ **Wi-Fi SoC : INP2045**

- Supports 802.11 b/g/n & BLE5LR
- World's lowest Power WiFiSoC
- Complete System on a Chip ;  
RF+ Baseband + ARM Cortex M3 Core+ PM I.C + Memory + Security
- ARM Cortex-M3 @80MHz, 512KB SRAM, 2MB integrated flash
- Advanced Security ;  
PUF (PhysicallyUnclonable Function), Crypto Engines, Secure Boot )
- GCC/Eclipse based SDK

■ **Wi-Fi Module : INP1010/1011/1012/1013/1014/1015**

- Supports 802.11 b/g/n & BLE5LR
- PolarFusion™ RF Patented Low Power
- Hosted or HostlessS/W Architecture
- Supports Host MCU S/W kit for STM32 MCUBase
- Low power and throughput Evaluation tool
- Host HAPI and AT command
- GCC/Eclipse based SDK
- AWS-IoT, MS Azure, IBM Watson, Google Home sample / demo apps
- Certified FCC/CE/IC/RED

### Characteristics and Advantages

■ **Wi-Fi SoC( INP2045 ) &WiFi module ( INP101X Series )**

- Supports Dual mode ( WiFi 2.4Ghz & BLE 5.0 )
- World's lowest Power WiFiComplete System on a Chip and Module
- ARM Cortex-M3 @80MHz, 512KB SRAM applications processor, 2MB flash

- Full Networking Stack
- PolaRFusion™ RF Patented Low Power Architecture
- Cost effective, CMOS scalability
- Secure boot/ Secure vault/encrypted portion of flash
- Secure root of trust – PUF (Physically Unclonable Function)
- Various hardware crypto accelerators
- Software based MAC functionality
- Wireless Base-Band custom co-processors
- Flexibility for enhanced wireless features via firmware

### Product Specifications

Part No	Description	Host Interface	Dimension( max )
INP2045	QFN42 SoC	UART, SPI	5 X 6mm
INP1010	Integrated PCB antenna module	UART, SPI	21.6 x 19.1 mm
INP1011	u.FI external antenna moodule	UART, SPI	21.6 x 19.1 mm
1NP1012	RF Pin external antenna mini-module	UART, SPI	15 x 12.8 mm
INP1013	Integrated ceramicantenna mini-module	UART, SPI	20 x 12.8 mm
INP1014	Integrated PCB antenna mini-module	UART, SPI	20 x 12.8 mm
INP1015	u.FI external antenna mini-module	UART, SPI	17 x 12.8 mm

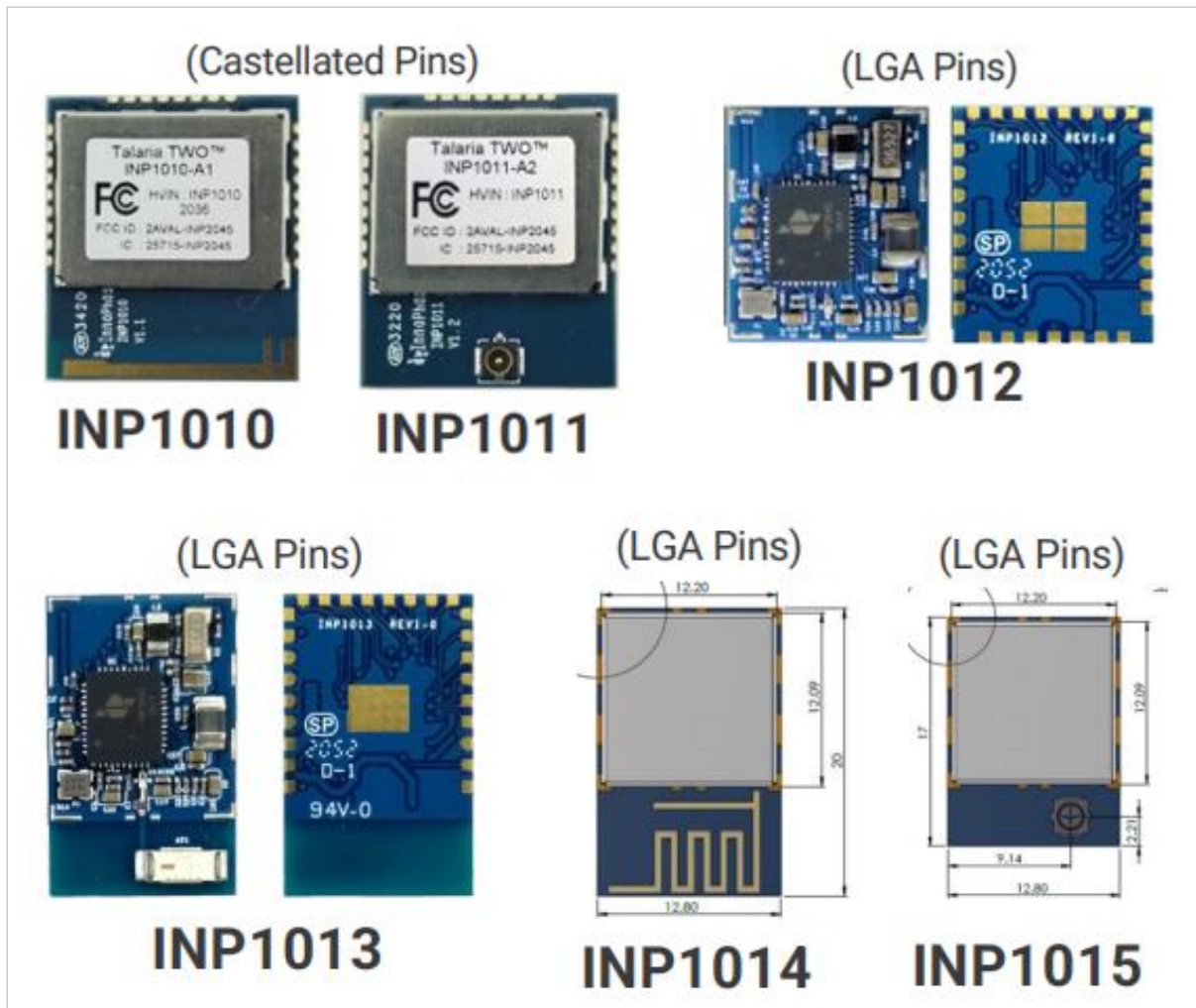
### Utilization Field

- Low Power IoT Terminals & Consumer Devices ( Battery Type )

### Main Performance

- Under development by majorIoTand Consumer device manufacturers

Product Picture



### 3 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 (2.4GGHz/5GHz/BLE 4.2)
- **Connectivity with home appliances using connectors**
- **Development support at customer request**
- **Wi-Fi communication at a low cost**

#### Product Specifications

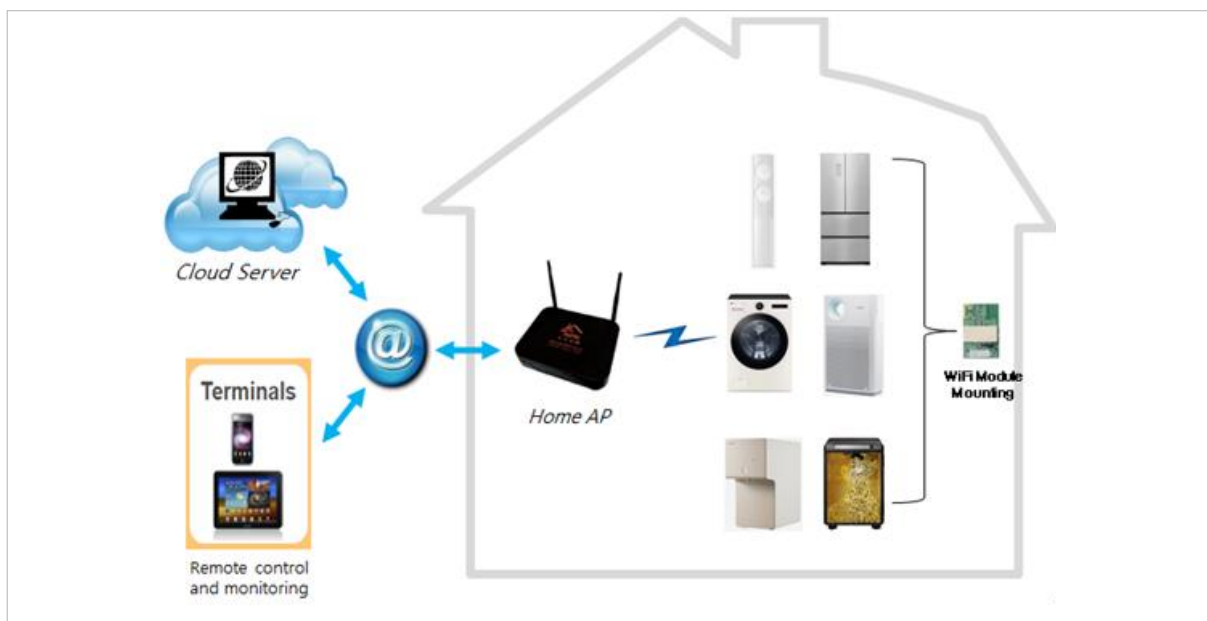
구 분	Specifications
CPU	ARM Cortex-M4 (192[MHz])
WLAN	<ul style="list-style-type: none"> <li>- IEEE 802.11 b/g/n Compliant</li> <li>- Supports 20MHz, 40MHz bandwidth in 2.4GHz band</li> <li>- Single-band 1T1R mode with data rate up to 150Mbps</li> <li>- Greenfield, mixed mode, legacy modes support</li> </ul>
Bluetooth	<ul style="list-style-type: none"> <li>- Bluetooth 4.2 Low Energy ( LE )</li> <li>- Supports SCO AND Esco link with re-transmission</li> <li>- Channel assessment for AFH</li> </ul>
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 IoT Manhole Monitoring Solution

Company name Mamiel Co., Ltd

## Main function

- **Manhole Sensing and Monitoring System**
  - Manhole cover opening/closing monitoring and notification
  - Monitoring of hydrogen sulfide gas in manholes
  - Monitoring of temperature and humidity in manhole
  - Water level monitoring in manhole
  - Transmission of sensing data to control center through LoRa communication

## Characteristics and Advantages

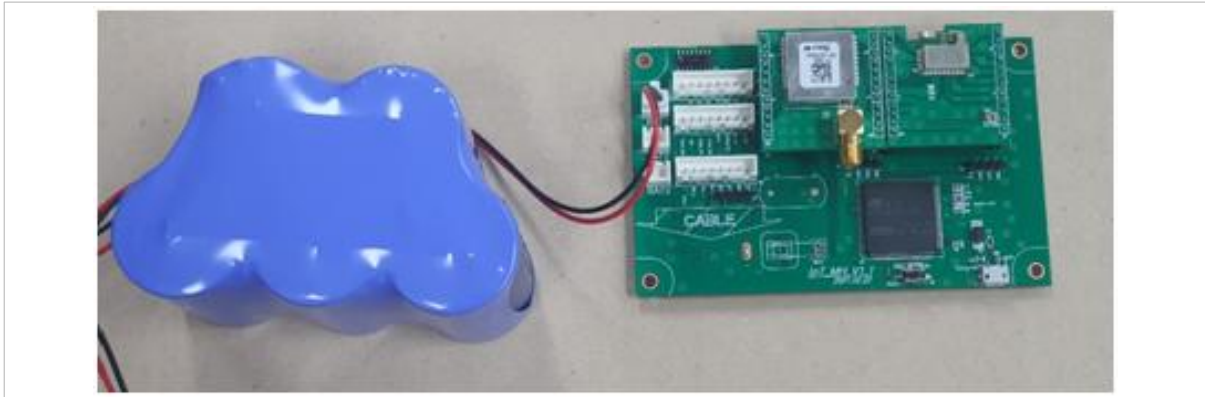
- Control with low operating cost using LoRa network.
- Scalability to add features to meet customer needs
- Manufactured in an inner lid or enclosure, so it can be installed easily without replacing outer lid

## Product Specifications

Description	Communication	Power	Dimension
Main board	LoRa(920Mhz)	Battery	7.5cm *11.5cm



### Product Picture



### Utilization Field

- Municipal Manholes
- Enterprise Manholes

### Main Performance

- 2021.09 Supplied Yongsagu Office

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## 2

## RAIN RFID Reader/Writer Module: RED2

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Company name	PHYCHIPS Inc.
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### Main function

- Function to read and write RFID tags

### Characteristics and Advantages

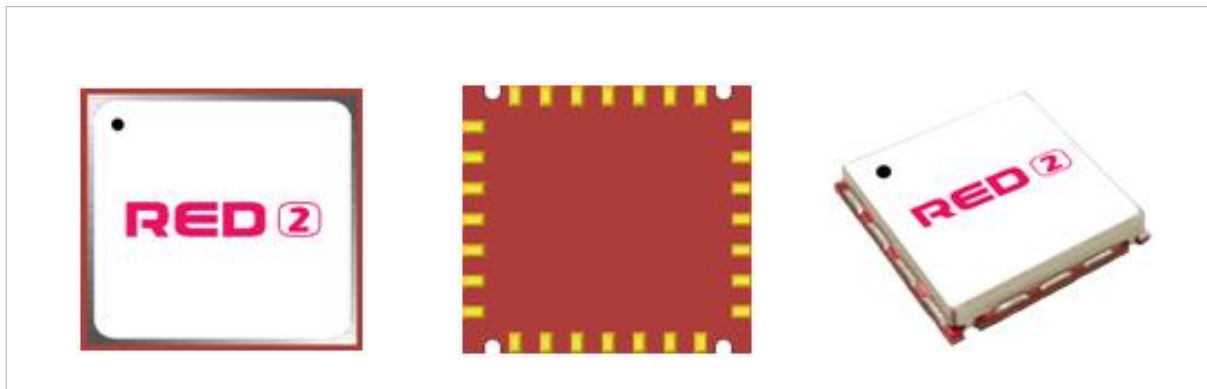
- **Tag Reading**
  - Superior multi-tag reading
  - Secure tag / Sensor tag
- **Protocol S/W**
  - Built-in multi protocol S/W
- **Free API**
- **Antenna Matching**
  - No antenna matching required
- **RFID Band**
  - Support global RFID band
- **Applications**
  - Applicable to many applications such as Retail, IoT, Health care etc
- **Developer Kit**
  - User friendly developer kit
- **EPC Gen2 V2**
- **Size & Cost**
  - Small & Cost-Effective
- **Tx Leakage Cancellation**
  - Real-time automatic Tx leakage cancellation offers optimal matching & sensitivity



### Product Specifications

Classification	Specification	Classification	Specification
Reader Chipset	PR9200	Antenna Port	1
Air Protocol	ISO 18000-6C / EPC Gen2 V2	Supply Voltage	3.3V(DC±5%)
Channel Share	Frequency Hopping or LBT (Listen-Before-Talk)	Output Power Range	9~16dBm
Modulation	DSB-ASK	Power Consumption	180mA @ 16dBm CW 20mA @ idle mode
Interface	UART[default], SPI	Size(W x L x H)	14.0 x 13.0 x 2.5mm

### Product Picture



### Utilization Field

- RFID Reader: Optimized for short read range, low power consumption, small size readers

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### 3 RAIN RFID Reader/Writer Module: RED4S

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Company name	PHYCHIPS Inc.
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#### Main function

- Function to read and write RFID tags

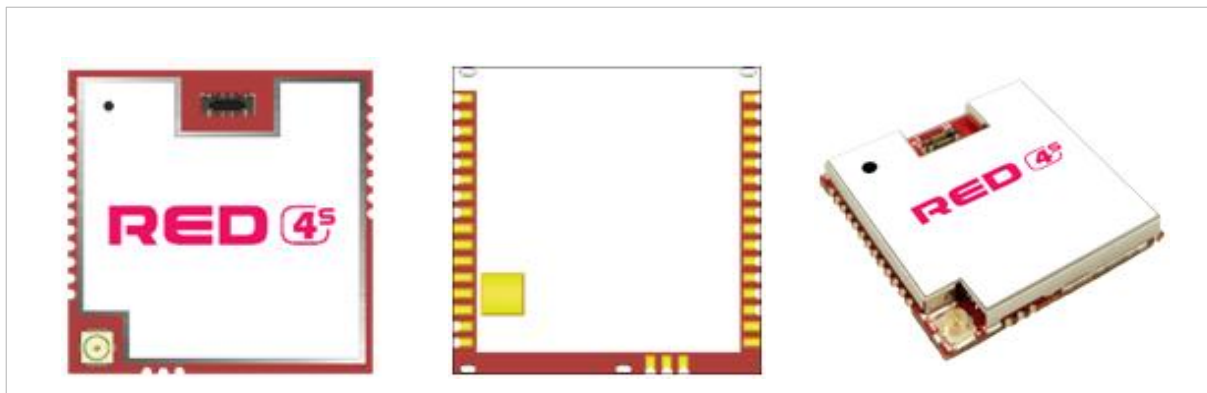
#### Characteristics and Advantages

- **Tag Reading**
  - Superior multi-tag reading
  - Secure tag / Sensor tag
- **Protocol S/W**
  - Built-in multi protocol S/W
- **Free API**
- **Antenna Matching**
  - No antenna matching required
- **RFID Band**
  - Support global RFID band
- **Applications**
  - Applicable to many applications such as Retail, IoT, Health care etc
- **Developer Kit**
  - User friendly developer kit
- **EPC Gen2 V2**
- **Size & Cost**
  - Small & Cost-Effective
- **Tx Leakage Cancellation**
  - Real-time automatic Tx leakage cancellation offers optimal matching & sensitivity

## Product Specifications

Classification	Specification	Classification	Specification
Reader Chipset	PR9200	Antenna Port	1
Air Protocol	ISO 18000-6C / EPC Gen2 V2	Supply Voltage	3.3V(DC±5%)
Channel Share	Frequency Hopping or LBT (Listen-Before-Talk)	Output Power Range	13~27dBm (Japan: 13~23dBm)
Modulation	DSB-ASK	Power Consumption	550mA @ 27dBm CW 20mA @ idle mode
Interface	UART[default]	Size(W x L x H)	24.0 x 24.0 x 3.0mm

## Product Picture



## Utilization Field

- RFID Dongle Reader, Jacket Reader, Handheld Reader, Fixed Reader etc

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## 4 RAIN RFID Reader/Writer Module: RED5

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Company name	PHYCHIPS Inc.
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### Main function

- Function to read and write RFID tags

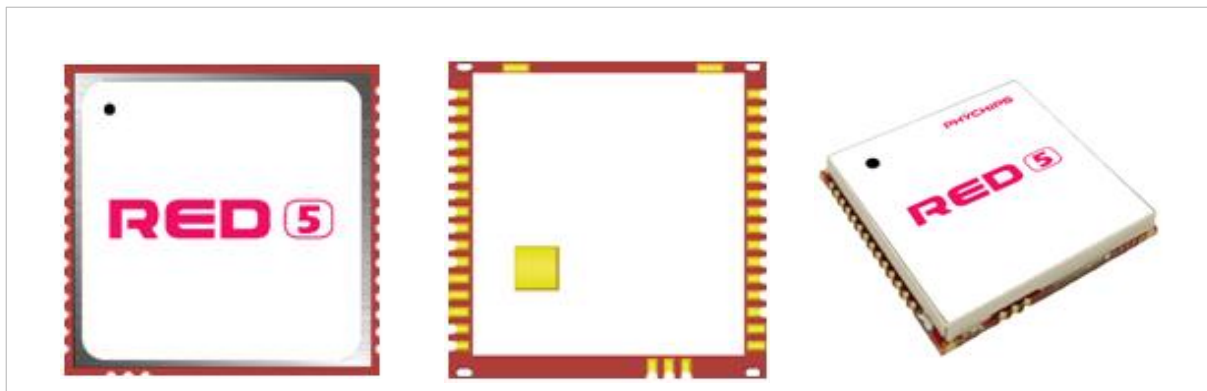
### Characteristics and Advantages

- **Tag Reading**
  - Superior multi-tag reading
  - Secure tag / Sensor tag
- **Protocol S/W**
  - Built-in multi protocol S/W
- **Free API**
- **Antenna Matching**
  - No antenna matching required
- **RFID Band**
  - Support global RFID band
- **Applications**
  - Applicable to many applications such as Retail, IoT, Health care etc
- **Developer Kit**
  - User friendly developer kit
- **EPC Gen2 V2**
- **Size & Cost**
  - Small & Cost-Effective
- **Tx Leakage Cancellation**
  - Real-time automatic Tx leakage cancellation offers optimal matching & sensitivity

### Product Specifications

Classification	Specification	Classification	Specification
Reader Chipset	PR9200	Antenna Port	1
Air Protocol	ISO 18000-6C / EPC Gen2 V2	Supply Voltage	3.6V(DC±5%)
Channel Share	Frequency Hopping or LBT (Listen-Before-Talk)	Output Power Range	0~30dBm
Modulation	DSB-ASK	Power Consumption	1.3A @ 30dBm CW
Interface	UART[default], I2C	Size(W x L x H)	24.0 x 24.0 x 3.0mm

### Product Picture



### Utilization Field

- RFID Dongle Reader, Jacket Reader, Handheld Reader, Fixed Reader etc

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## Smart Terminal Equipment

### Biometrics

#### 1 Trustkey G310H/G320H (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.

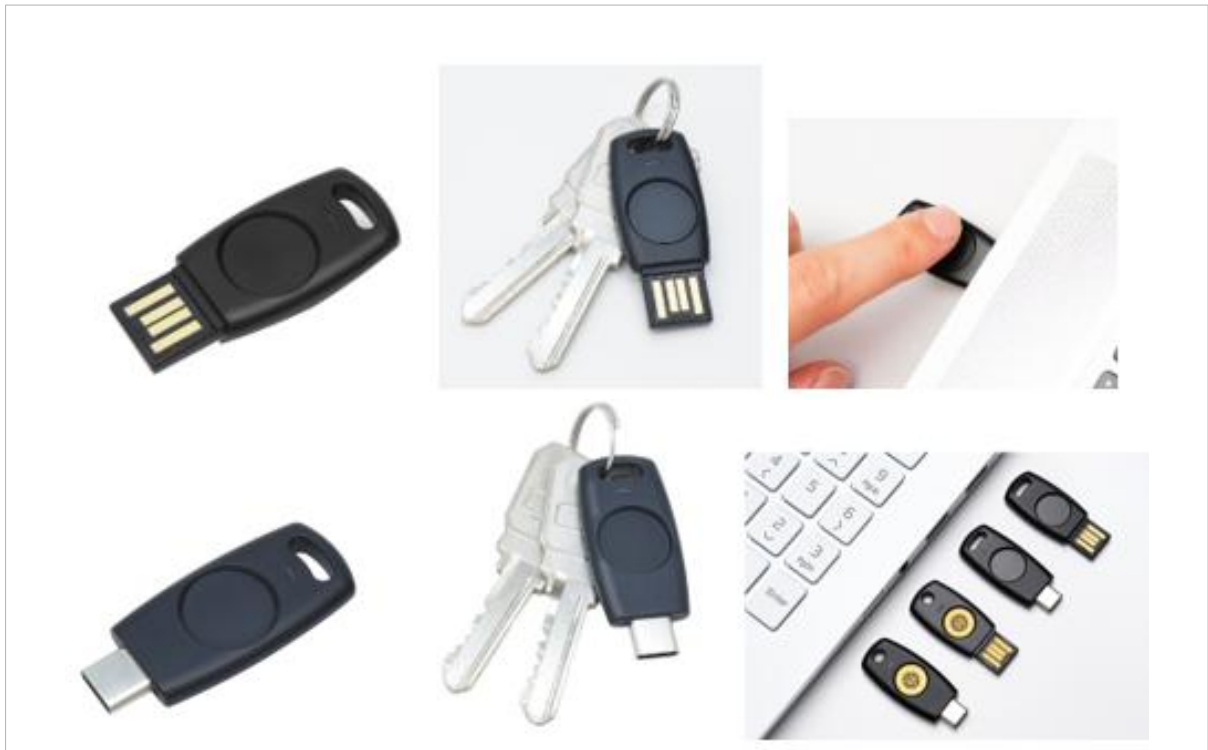
#### Characteristics and Advantages

- **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	G310H / G320H
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)	17.8 x 41.9 x 4.7
Weight	3.1g
Status Indicator	3 Color LED
Compliance Certification	KC, CE, FCC, RoHS
Material	Polycarbonate
Windows Hello	Support
Supported OS	Windows, macOS, Linux, Android, Chrome, etc.
Supported Browsers	Chrome, Edge, Firefox, Safari, Brave, etc.

## Product Picture



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## 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.

## Main Performance

- Smart Modular (Brazil) – completed the delivery (2020)
- Point Blank (Germany) – completed the delivery (2021)
- Korean government agency (Rep. of Korea) – completed the delivery (2021)
- AWS(Amazon Web Services, USA) – completed the delivery (2022)
- American national bank of Texas(USA) – completed the delivery (2022)



## Environmental monitoring

### 1 Humidity Control Fine Dust Measuring Device

**Company name** Pillars of Creation Co., Ltd.

#### Main function

- **Measuring the concentration of fine dust in real time**
  - Improvement of sensor performance by Signal processing circuit board design
- **Measuring temperature and humidity in real time**
  - Accurate data generation by measuring PM10, PM2.5, temperature and humidity simultaneously with one device
- **Real-time data verification and data download to file**
  - Adopting a reference sensor to prevent sensor malfunction and to check sensor life

#### Characteristics and Advantages

- **Improved sensor accuracy by using average value by introducing triple sensor**
  - Simultaneous measurement of PM10 and PM2.5 with one device
- **Adoption of sensor signal correction algorithm technology to reduce errors caused by humidity**
  - Physical resolution of calibration according to humidity
- **Adopting a reference sensor to prevent sensor malfunction and to check sensor life**
  - Improvement of sensor performance by Signal processing circuit board design

#### Product Specifications

Product Size	540*250*180(mm)		
Power	12V[DC], 12.5A	Current Consumption 4A Max[when the dehumidifier is operated]	
Product Composition	Dust Sensor (Nova Fitness)	Dehumidification Module (DTA-56-12-DHC)	T/H Sensor(ETH-01D)
Communication Method(frequency)	Bluetooth	HC-06(DIP)	

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## Product Picture



## Utilization Field

- Weather center, Place that can have harmful effects on respiratory patients and sensitive groups(child, the old and weak), Place heavily affected by moisture and dust, Place where the effects of moisture and dust should be minimized

## Main Performance

- In January 2023, commercialization begin after the end of the support project for commercialization of Korea Environmental Industry Technology Institute small and medium-sized environmental enterprises

## Warning / Alarm

### 1 IoT smart emergency bell system

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Company name	D&SHINE Co., Ltd.
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#### 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 4,600 sets of products have been delivered as of December 2021.
    - Installing the system at approximately 4,600 sites(Public restrooms, Emergency rooms, Public service centers, Counseling rooms, School, etc.) in about 490 local governments and agencies

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## 2 Smart-IDS (Radar-based Incident Detection System)

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Company name	METABUILD Co., Ltd.
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### Main function

- **Real-time monitoring of traffic communication status**
  - Real-time digital twin display and video monitoring of traffic information using radar
- **Real-time emergency management**
  - Detect(AI) road accidents, pedestrians, etc. and notify operators in real time
  - Automatic tracking in case of an unexpected situation and automatic storage of images for seconds before and after an unexpected occurrence
- **Management of traffic statistics and accident history**
  - Inquiry and reporting of unexpected situations by period and branch office

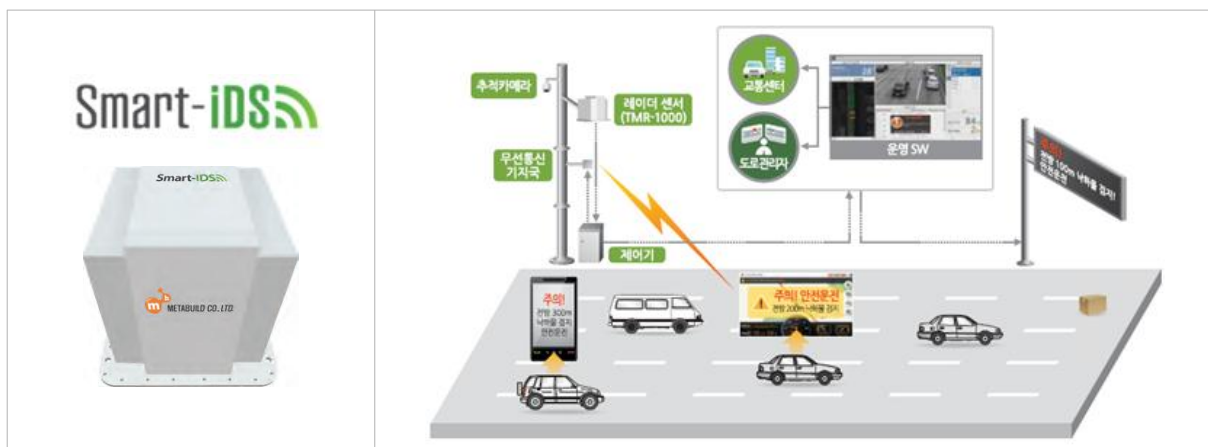
### Characteristics and Advantages

- **Various types of Incident detection**
  - Smart-IDS is a next-generation Automatic Incident Detection (AID) system that can detect real-time unexpected situations based on radar sensors
- **Excellent detection performance**
  - 1km of detection area and system that can be used during the day and night and all weather conditions. Various environments such as highways, tunnels, and long bridges can be applied
  - New transportation technology, European CE certification, and patent acquisition in a number of related fields
  - Application of neural network image object recognition technology to refine unexpected detection information and enhance detection accuracy
- **High utilization**
  - Utilization and expansion of road infrastructure for C-ITS projects and autonomous driving

## Product Specifications

Item	Specification	Item	Specification
detection range	1,000m	frequency	Ka-band(34~35GHz)
distance/ speed accuracy	±2m / ±2kph	size/weight	350×350×350mm / 10kg
data reloading time	within 100ms	operating temperature	-40°C ~ 60°C

## Product Picture



## Utilization Field

- Real-time detection of various road environments through real-time emergency detection system
- Build next-generation infrastructure sensors through C-ITS deployment
- Technology of road infrastructure sensor in development of autonomous

## Main Performance

- Construction of Bongcheon Tunnel on Gangnam Circulation Road (Tunnel, May 2016)
- C-ITS pilot project / demonstration project (highways and general roads, June 2016 and June 2019)
- New Airport Highway Yeongjong Bridge (Bridge, November 2017)

- 
- National highway ITS new safety service (6 types) (general roads, December 2021)
  - Dae-gu C-ITS & 5G-based Field Operational Test Platform for Autonomous Vehicles (general roads, October 2022)
  - The straightening of the Gyeongbu Expressway (tunnel, December 2022)
  - Asan-Cheonan Expressway (tunnel, December 2022)
  - Nongui Tunnel-Many domestic and foreign deliveries in and out of Taebaek City, China (Tunnel, October 2019)



### 3 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

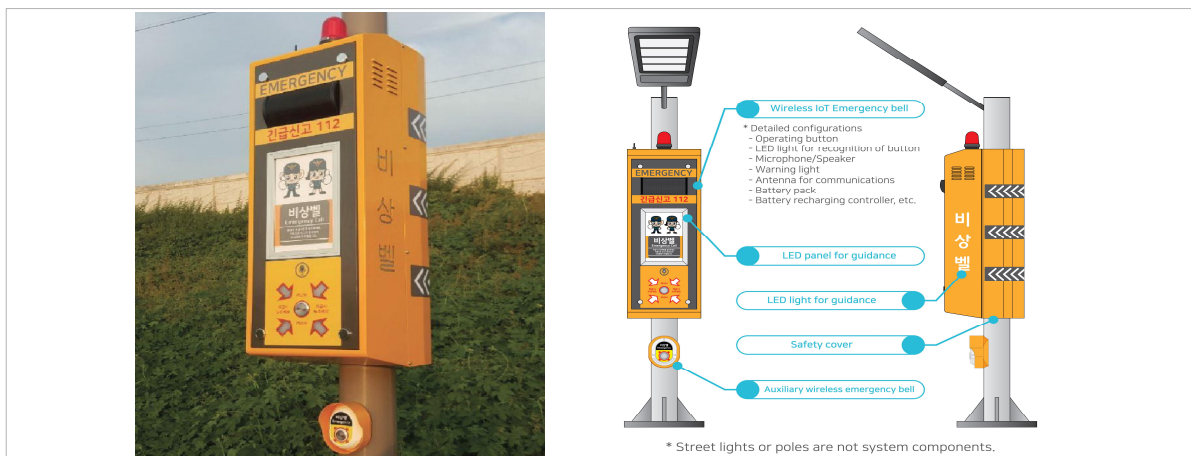
and take immediate actions in control center such as check and control in case of an event such as disconnection of a power line.

- **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
  - 24 sets of products have been delivered as of December 2021.
    - Installing the system at 24 sites(Trails, School, Waterfront parks, Village alleys, etc.) in 5 local governments and agencies

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ETC.

## 1 Long Range LoRa Modules xDot and mDot

**Company name** Multi-Tech Systems, Inc

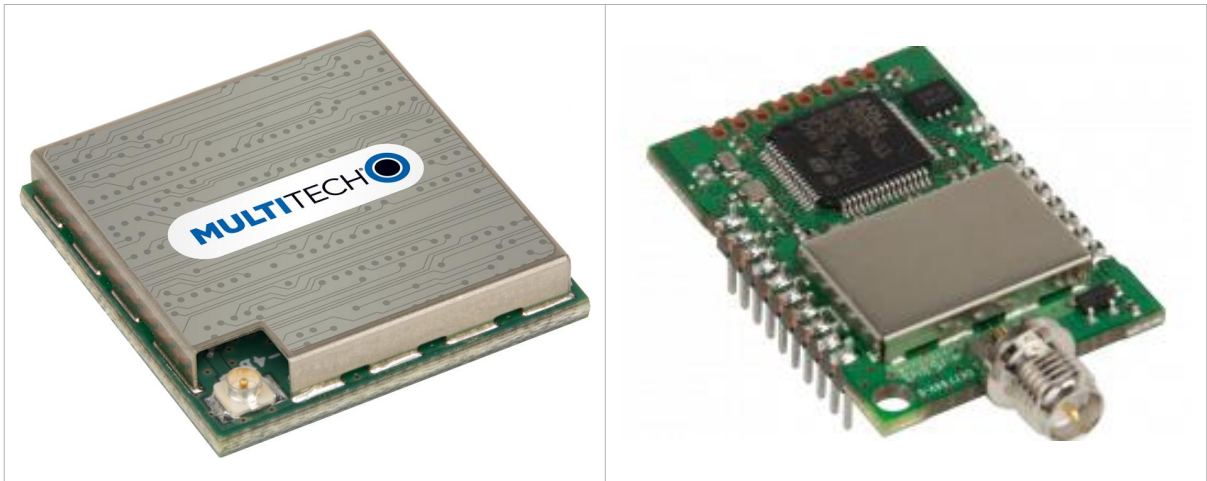
### Main function

- The xDot® is a secure, CE/FCC/RCM/GITEKI certified, Arm® Mbed™ programmable, low-power RF module, that provides long-range, low bit rate M2M data connectivity to sensors, industrial equipment and remote appliances. The xDot is LoRaWAN® 1.0.2 compliant, providing bi-directional data communication up to 10 miles/15 km line-of-sight and 1-3 miles / 2 km into buildings\*\*, using sub-GHz ISM bands in North America, Europe, Australia (AU915), Asia Pacific (AS923), India (IN865) and Korea (KR920). xDots bring intelligence, reduced complexity and a lower overall bill of material cost to the very edge of the network while supporting a variety of electronic interfaces to connect just about any “Thing” for years on battery power.

### Characteristics and Advantages

- Range of miles
- Deep in-building penetration - 1 to 3 miles / 2 km
- Developer friendly to integrate and quickly deploy assets
- Run for years on battery power
- LoRaWAN Certified CM
- Unicast and Multicast message support
- Multiple I/O interfaces for connecting almost any "Thing"
- Data rates 293bps - 20Kbps + LoRa®

### Product Picture



#### Utilization Field

- IoT LoRa sensor for monitoring environment

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## Gateway

### 1 LoryRelay-1020TR

**Company name** SystemBase Co., Ltd.

#### Main function

- LoRa Wireless Remote Relay Control Converter
- LoRa Low Power Mid- and Long-Range Wireless Support
- Supply AC/DC Compatible Relay 250VAC/30VDC[NO:5A, NC:3A] 2Port
- Modbus Protocol Available
- ± Built-in 15kV ESD protection
- Industrial Operating Temperature -40°C to 85°C
- Provide setup utilities LoRaConfig, AT Command, and Android App
- Provide USB-C Type Serial Port (For Setting)
- Provide Test Utility LoRaConfig, Android App Relay
- Build Independent Networks in conjunction with the LoryNet series

#### Characteristics and Advantages

- LoRa is a wireless communication technology for sensor networks, a next-generation LPWA (Low Power Wide Area) communication technology that can transfer a small amount of data over long range.  
LoryRelay-1020TR from SystemBase uses the LoRa to provide a communication range of a few kilometers. And it provides AC and DC relays for power supply and cut-off of various equipment at industrial sites such as factories. So LoryRelay-1020TR can be applied to facilities such as parking lots for remote power control.

#### Utilization Field

- Power management in hospitals and factories
- Control of the building's entry/exit system
- Vehicle entry/exit management in the parking lot

## Product Specification

	Item	Specification
Wireless	Protocol	LoRa
	Frequency	917 ~ 923MHz
	Transmission Power	25mW
	Application distance	open ground Max. 20km
	Encryption	AES128
Relay	Port	2 Port Relay
	AC/DC	NO: 250VAC 5A /30VDC 5A NC: 250VAC 3A /30VDC 3A
Software	Settings	LoRaConfig2
	O/S Support	More than Windows 7 More than Windows Server 2008
Hardware	LED	RDY, RF, DATA, IO1, IO2, IO3, IO4(Relay NC/NO)
	Power Supply	DC 12V 1A, Power Consumption 2.5W
	Size	83.55 x 118.9 x33.2 mm
	Operating temperature	-40 ~ 85℃

## Product Picture



## Main Performance

- Supplied large numbers to large companies and other enterprises

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## 2 LTE Cat M1 and Cat 4 Terminal Modem - MTC, MTCM2

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Company name	Multi-Tech Systems, Inc
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### Main function

- The MultiConnect® Cell 100 and microcell Series cellular modem is a compact communications platform that provides cellular capabilities for fixed and mobile applications. It is intended for use in settings demanding reliable performance under rugged conditions, low power and long range such as remotely monitoring solar micro-inverters, power generators, tanks, pipelines, meters, pumps and valves in any energy, utility or industrial application

### Characteristics and Advantages

- Quick deployments to shorten time to market
- Long and stable lifecycles
- Certified and carrier approved
- 4G (Cat 4 and Cat M1) and 3G models
- SSL/TLS support
- USB or RS-232 serial interfaces
- KC, FCC, PTCRB, Industry Canada, and RED certified
- Rugged, military and SAE tested
- Two-year warranty, upgradeable to five years



Product Picture



MTC



MTC M2

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### 3

## Monnit Wireless Sensors, Gateway and Software Platform iMonnit

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### Company name

Monnit Korea Co., Ltd.

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### 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

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## 4 Multi-1/USB all-ISO

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Company name	SystemBase Co., Ltd.
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### Main function

- Latching USB to 1Port Serial (male) Adapter/Converter
- RS232/RS422/RS485 interface
- Supports USB Rev 2.0 (Full-Speed)
- Communication Speed: Up to 921.6kbps
- Display communication status via TX/RX/PWR LED
- $\pm 30\text{kV}$  Surge protection
- $\pm 3\text{KV}$  digital isolation
- Auto Toggling: Automatic control of BUS I/O for RS422/RS485
- Slew-Rate limit control

### Characteristics and Advantages

- Multi-1/USB all-ISO is a serial communication adapter that allows you to easily and quickly mount a serial communication port to a system through a USB bus. In addition, it supports USB Full-Speed and serial communication speed of 921.6Kbps, and is equipped with  $\pm 15\text{KV}$  surge protector and  $\pm 3\text{KV}$  isolation functions to provide excellent compatibility and stability. In addition to debugging purposes, the LED indicating the serial communication status goes well with the beautiful design, giving users a better sense of satisfaction. Multi-1/USB-ISO is an all model that supports RS232 and RS422/RS485 communication interfaces, and is used in various fields such as R&D, office automation, and factory automation. Multi-1/USB-ISO makes it easy to select a communication interface through a switch installed on the back, and set terminal resistance ON/OFF and slew rate according to the communication line situation.

## Product Specification

Item		Specification
USB	USB I/F	USB Specification Rev 2.0, High-Speed
Serial	Number of Port	1
	Interface	RS232/ RS422/ RS485
	Maximum communication speed	921.6 Kbps
	Signal Line	RS232: TXD, RXD, RTS, CTS RS422: TXD+, TXD-, RXD+, RXD- RS485: TRXD+, TRXD-
	Protection	±30kV ESD Protection
	Flow control	RTS/CTS, XON/XOFF
	Communication Signal Collision Prevention	Auto Toggling
Software	OS Support	Windows 7 or later automatic recognition (32/64bit) Linux 2.6 or later automatic recognition Android OS 3.2 or later automatic recognition
Hardware	LED	TXD, RXD, PWR
	Size	34.9 x 74.04 x 16.5 mm
	Operating temperature	-40 ~ 85°C

## Product Picture



## Utilization Field

- Various areas requiring stable serial communication, such as R&D, office automation, and factory automation

## Main Performance

- Supplied large numbers to large companies and other enterprises

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## 5

# Multiport transmitter over long distances for the setting up of the Product IoT(MPoE)

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**Company name** N-ark Technology Co., Ltd.

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### Main function

- **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.

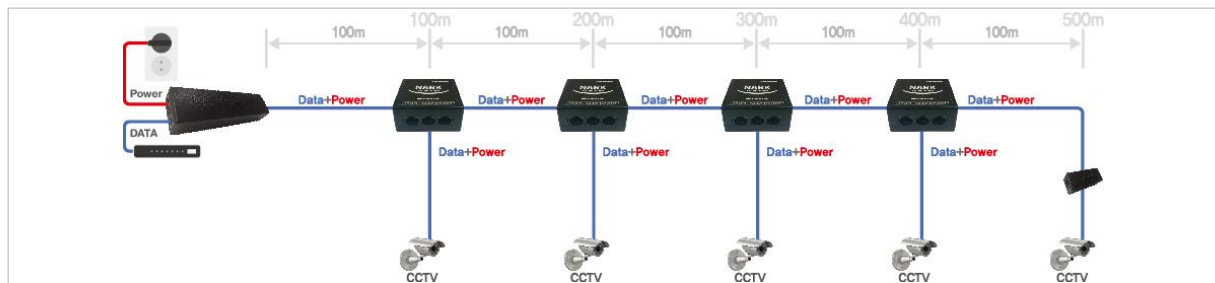
### Characteristics and Advantages

- **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.
- **NRK-GE301**
  - Convert MPoE signals into PoE signals.

## Product Specifications

classification	NRK-P6405	NRK-GP6494	NRK-MR100	NRK-FR500	NRK-FR501	NRK-GE301
DATA	10/100Mbps	100/1000Mbps	10/100Mbps	10/100Mbps	10/100Mbps	10/100Mbps
Wattage	32W	60W	60W	60W	60W	60W
Port	2	2	3	5	5	2
Transmission distance	100m	100m	100m	100m	100m	100m
Size	181x50x36	130x61x27	65x70x31	135x70x29	135x70x29	65x29x25

## Product Picture



## Utilization Field

- IoT
  - CCTV, Wi-Fi, Sensor, Installation industry.

## Main Performance

- ADT CAPS delivered the product in June 2020.(MPoE)
- Selection of excellent R&D innovative products(Innovation Marketplace)
- Selection of venture innovation products.

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## 6 Outdoor LoRa Base Station - MTC DT, IP67

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**Company name** Multi-Tech Systems, Inc

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### Main function

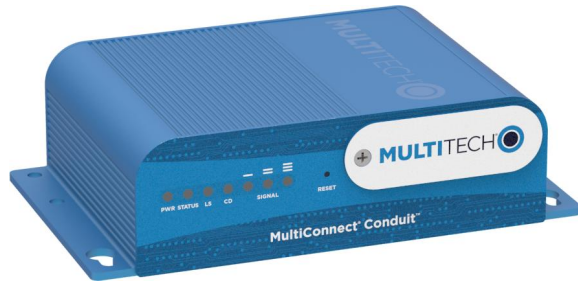
- The Conduit® IP67 Base Station MTC DT Blue Conduit are a ruggedized IoT gateway solution, specifically designed for outdoor LoRa® public or private network deployments. The highly scalable and certified Conduit IP67 gateway is capable of resisting the harshest environmental factors including moisture, dust, wind, rain, snow and extreme heat. The device supports LoRaWAN® applications in virtually any environment. Leveraging the Conduit, this device can support thousands of LoRaWAN-certified end nodes, including the mDot™ \*. This flexible solution provides durable, low-power, low-power, wide area network connectivity in support of M2M and IoT applications for both LoRa service providers and individual enterprises wanting to expand their LoRa network coverage. Bundled for easy deployment, the solution includes a Conduit with a LoRa mCard™, IP67 enclosure and LoRa antenna to improve outdoor range. It also provides a choice of cellular 4G-LTE or Ethernet backhaul options. The LoRa transceiver can be deployed as part of an existing telecommunications tower, individual stand or wall mount

### Characteristics and Advantages

- External high gain antenna increases LoRa connectivity to remote assets
- Greatly expands LoRa network coverage
- Supports 868 MHz and 915 MHz ISM bands
  - LoRaWAN Compliant
  - Supports Public and Private LoRa network deployments
  - POE (power over Ethernet) for easy deployment and maintenance
  - Lightning arrestor and grounding mechanism for protection against storm damage (optional accessory - sold separately)



Product Picture



MTCDT



IP67

## 7

## 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 goals
  - Monitor environmental elements such as temperature, humidity, fine dust, CO, CO2, NOX, SOX, illuminance, noise, vibration
- **Find and control the optimal method according to their current condition**
  - 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

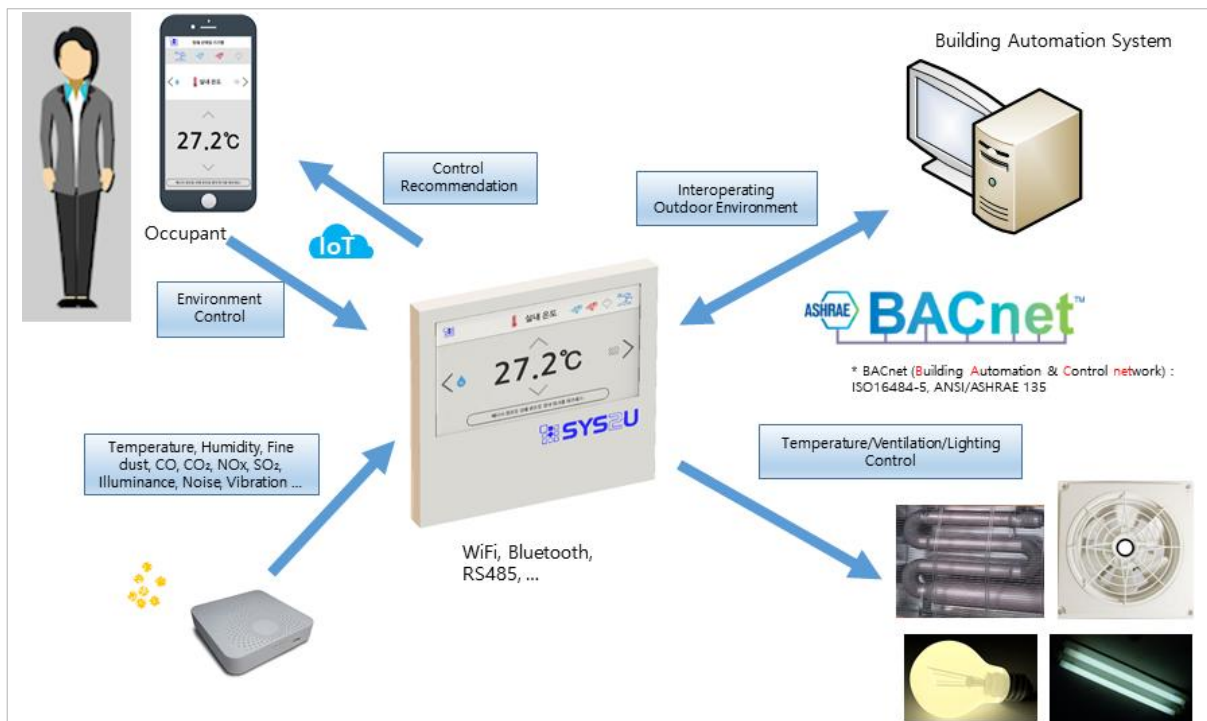
### Utilization Field

- 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, BTLE, IR	Integrated Protocol	BACnet (ISO16484-5, ANSI/ASHRAE135)
Wired Communications	USB, RS485, RS232C	IoT Protocol	oneM2M IN-CSE
User I/O	touch LCD	Input Sensor	Temperature, Humidity, Fine dust, CO, CO2, NOx, SOx, Illumination, Noise, Vibration
I/O method	GPIO, Wired/Wireless	Output Control	ON/OFF, Relay, Fan Speed
Size	W × H × T(mm)	Total Front Rear	126 × 144 × 64 126 × 144 × 23.5 92 × 72 × 40.5

## Product Picture



## Main Performance

- In 2023, scheduled of release

## Reader

### 1 NL-RF2200 UHF Fixed RFID Reader

**Company name** Nesslab Corporation Ltd

#### Main function

- RFID UHF(900MHz) TAG Identification & TAG Data Communication.
- Performed Multi Reading Function.
- Multiple Reader Monitoring Function.
- Reader Search & DHCP Supporting Function.
- Server Mode & Client Mode Operation Type Supporting Function.
- High Performance & Long Life Adaptor Provision for Stable Keeping Performance.

#### Characteristics and Advantages

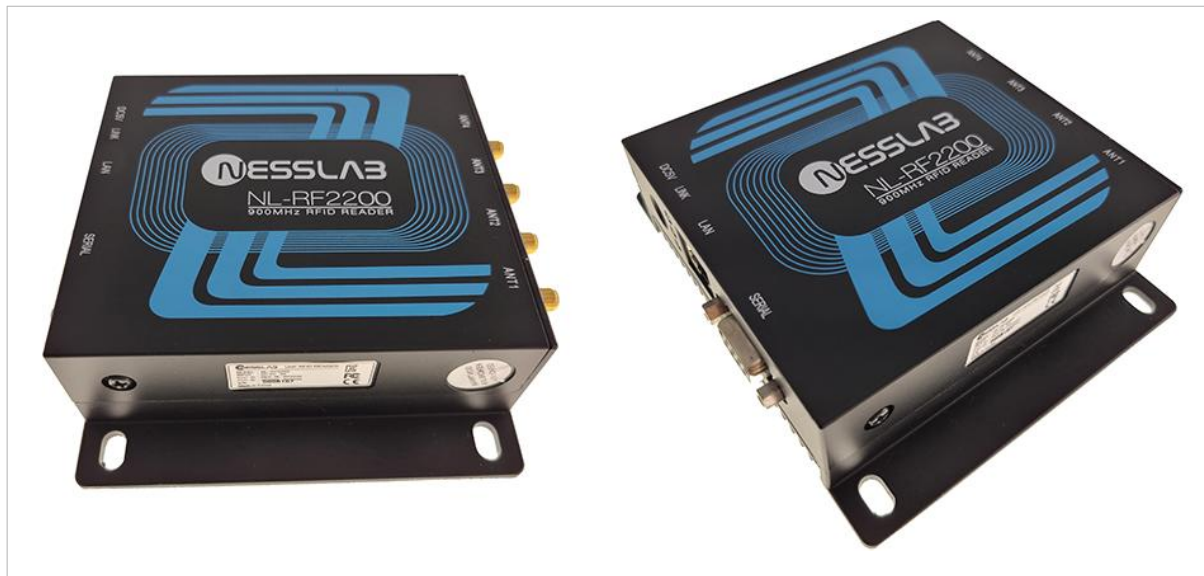
- High & Multi Reading Functional R2000 Provided by Impinj.
- Anti Collision Function applied Anti Collision Algorithm.
- 4 Antenna Port & 4 I/O Port Provision.
- Korea(KC), USA(FCC), China(SRRC), Europe(CE) Certification Acquired.
- Firmware Upgrade & Multiple Operation Mode Provision for Client Company.

#### Product Specifications

Category	Content
Protocol	ISO 18000-6 Type-C, EPC Class 1 Gen.2
Frequency	KC(917.3MHz~920.3MHz) FCC(902.75MHz ~ 927.25MHz) SRRC(921.375MHz ~924.375MHz) CE(865.7MHz ~ 867.5MHz)

RF Output Power	MAX 30dBm
Communication	RS232 Ethernet Interface
Antenna Port	4PORT
Dimension & Weight	107 mm x 98mm x 35,5mm / 440 g
Basic Construction	Reader, Adapter, LAN Cable
Optional Construction	Antenna, Antenna Cable, NL-GP400 GPIO Controller
Power Consumption	Below MAX 5V DC / 2A 이하

### Product Picture



### Utilization Field

- Logistic Management & Materials Management.
- Product Production & Process Management.
- Automation Process & Self Service Shop.

### Main Performance

- KUMHO TIRE Production Process & Logistic Management for Domestic & Foreign Factory (2012.08~Now).
- S Display LCD Special Container Management (2012.03).

- 
- Safe Way to and From School Management Pilot Project Sponsored by The Ministry of Health-Welfare (2014.01).
  - S Display China Factory Process Management (2015.08).
  - L Energy Solution Battery Factory Logistic Management (2016.01~2020.03).
  - L Electronics Logistic Management (2016.12).
  - S Security Entrance & Exit Management (2017.07~Now).
  - H Motor Company R&D Center Automobile Inspection Gate (2018.09).
  - Double Star China New Factory Production Process Management (2019.09).
  - S Electronics Russia Factory Process Management (2020.04).
  - L Energy Solution Europe & China Factory Process & Logistic Management (2020.01~2021.12).

## 2 NL-RF300 USB Type RFID Reader

**Company name** Nesslab Corporation Ltd

### Main function

- UHF(900MHz) Reader for USB Port Connection.
- Short Distance Identification & Simple TAG Read/Write Function by USB Type.
- Auto Write Function.

### Characteristics and Advantages

- Simple Installation by USB Type.
- Short Distance Identification & TAG Data Input for Small & Multi Production Management.
- Integral Antenna Equipment.
- Low Power Operation by USB.

### Product Specifications

Category	Content
Protocol	ISO 18000-6 Type-C, EPC Class 1 Gen.2
Frequency	KC(920.9MHz~923.3MHz)
Distance	Below 50Cm
Communication	USB
Dimension & Weight	53mm x 85mm x 19mm / 121g
Input Power	500mA / DC 5V (USB)

## Product Picture



## Utilization Field

- Small & Multi Production Management.
- Small Sized Businesses Needed Short Distance Identification.
- Entrance & Exit Management.

## Main Performance

- KUMHO TIRE Production Process & Logistic Management for Domestic & Foreign Factory (2012.08~Now).
- L Electronics Logistic Management ( 2016.12 ).
- S Security Company Entrance & Exit Management ( 2017.07~Now ).
- Incheon International Airport Company Baggage TAG Management ( 2019.09~Now ).
- S Industry TAG Management ( 2020.05 ).



### 3 NL-RM2000 UHF Module Type RFID Reader

**Company name** Nesslab Corporation Ltd

#### Main function

- RFID UHF(900MHz) TAG Identification & TAG Data Communication.

#### Characteristics and Advantages

- High & Multi Reading Functional R2000 Provided by Impinj.
- Anti Collision Function applied Anti Collision Algorithm.
- Korea(KC), China(SRRC), Europe(CE), Japan(TELEC) Certification Acquired.
- Firmware Upgrade & Multiple Operation Mode Provision for Client Company Characteristic.

#### Product Specifications

Category	Content
Protocol	ISO 18000-6 Type-C, EPC Class 1 Gen.2
Frequency	KC : 917MHz~920MHz (FCC, CE, SRRC, TELEC )
RF Output Power	MAX 30dBm
Communication	UART/ USB
Antenna Port	1PORT (IPX TYPE)
Dimension & Weight	42mm x 42mm x 7.6mm / 23 g
Power Consumption	Average active Current < 1.3A @ 4.0V

## Product Picture



## Utilization Field

- RFID UHF Card Reader Development & Production.  
(Handheld Type, Dongle Type, Fixed Reader etc.)

## Main Performance

- Hanamicron RFID Reader for Brazilian Cow History Management (2010).
- Bonabank RFID Reader for Liquor Management (2010~2015).
- RFID Gun Reader Produced by M Company (2013~Now).
- RFID Reader for Clothes Management Produced by N Company (2016~Now).



The page features abstract teal and green geometric shapes and patterns in the corners. In the top-left, there are overlapping circles and a cluster of small yellow triangles. In the top-right, there is a stylized hand shape and a cluster of small green triangles. In the bottom-left, there is a curved shape and a stylized hand shape. In the bottom-right, there is a teal triangle containing a grid of small white dots.

# Platform



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## S/W Platform

### 1 3D Modeling, IoT 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)
  - High resolution, precise 3D modeling and low-capacity conversion with web-based services
  - Integrated indoor and outdoor precision modeling support
- **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
  - Need a visible representation of IoT-based real-time data collection
- **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

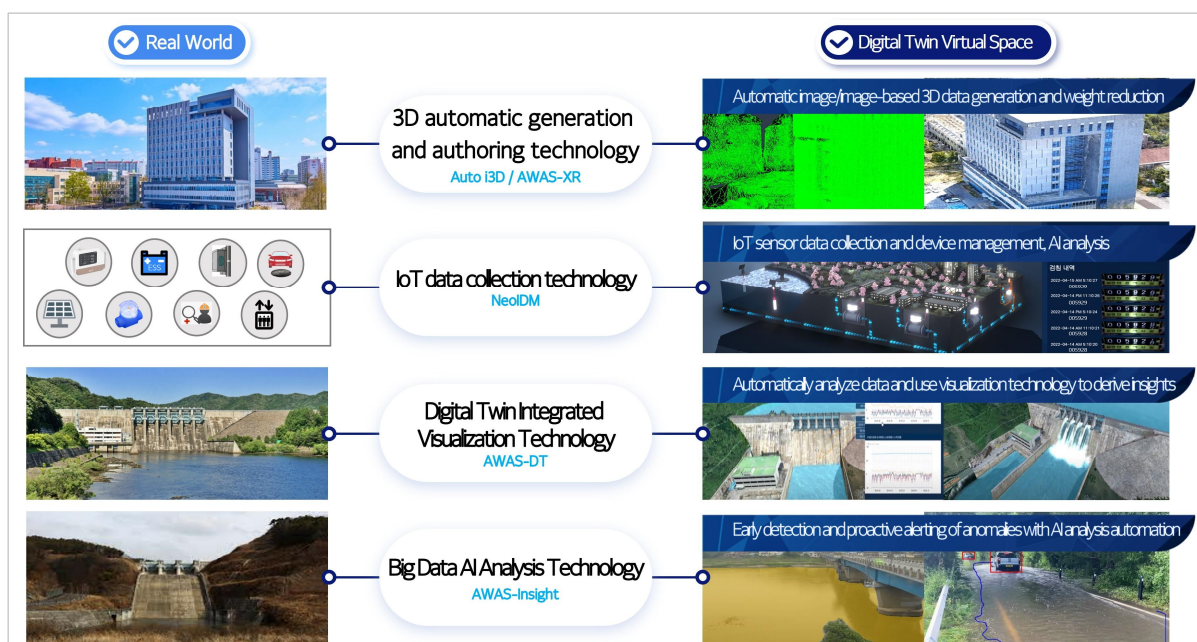
- **All-cycle technology know-how for building digital twin virtual spaces**
  - Electromagnetic technology know-how to create digital twin virtual spaces, such as data creation, authoring, collecting and analysis, enables real-world sage environments and systems to be identical to virtual spaces
    - 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 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

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## 2 AIBLab AI Platform

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Company name	AIBLab Inc.
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### 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

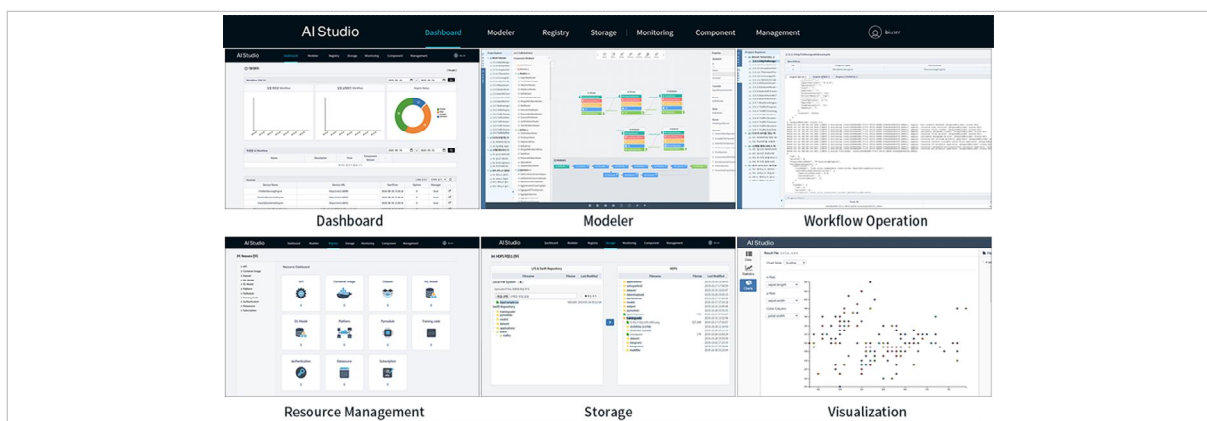
- **Sustainability** : Internalization of artificial intelligence technology using corporate data such as SW/Data/Analytics/Experience
- **Variety** : Various application service system composition by combination of SW components

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

## Product Picture



## 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)

### 3 AIBLab Logistics

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Company name	AIBLab Inc.
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#### 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

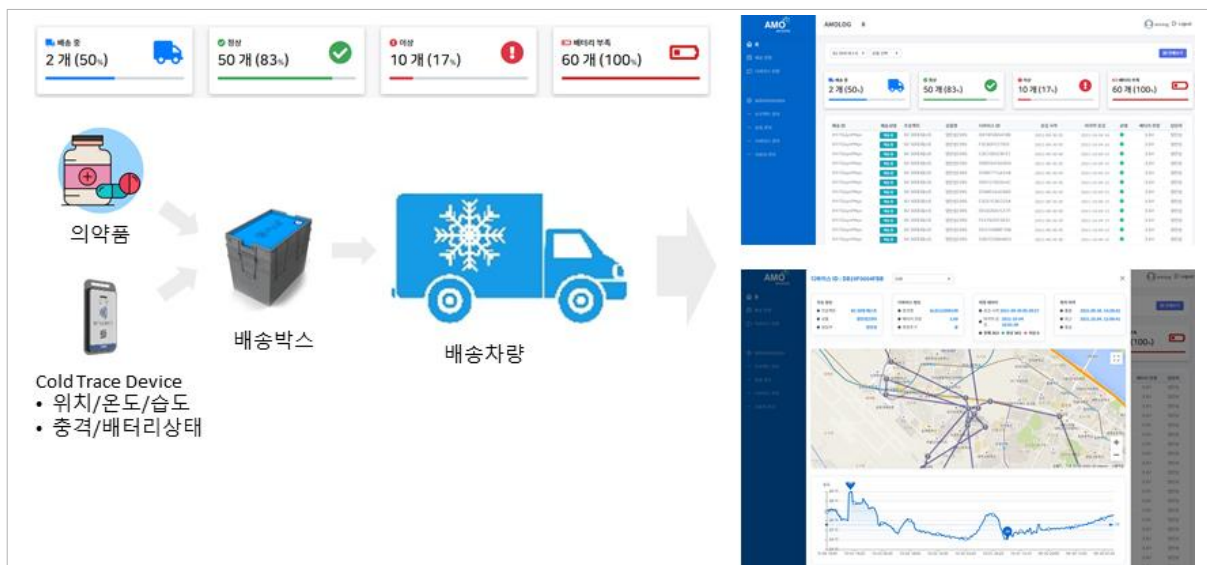
- A platform that uses the BLE gateway, which includes GPS receivers and BLE receivers, to help maintain the temperature of each product delivered after installation of a frozen transport vehicle and to manage the delivery status more easily through location verification.
- Shipping products are a platform 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	▪ Utilizing Cloud Services	
BLE Gateway	▪ GPS, BLE, MQTT service support products	BLE(Bluetooth Low Energy)
BLE thermometer	▪ Temperature sensor, BLE transmission support product	

## Product Picture



## 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.

## 4 ALOOH (EDGE COMPUTING IoT PLATFORM)

Company name CRESPRIT Inc.

### Main function

- **Edge Computing Device**
  - Provides real-time high-speed, large-capacity data collection, analysis, and control
  - IoT Gateway function for various communication support and continuous connection
  - High-speed, high-resolution multi-channel sensor data data collection
  - Equipped with hardware accelerators for on-device AI support
- **Edge Computing Engine**
  - Edge Computing Engine: Collected data management, sensor data preprocessing analysis, advanced analysis algorithms
  - Edge View: Provides real-time data monitoring and historical trend data monitoring
  - EDGE AI VISION: Edge computing-based high-speed/large-capacity image data acquisition software, Software such as on-device AI-based object detection, object tracking, and multi-object tracking
  - EDGE AI DATA: Edge computing-based high-speed/large-capacity sensor and equipment data collection software, on-device AI-based quality prediction, equipment failure detection, equipment failure prediction, etc.
- **Integrated Data Collection Analysis IoT Server**
  - Time series data, historical analysis/notification and alarm function
  - Provides Edge Builder for deploying and managing edge computing programs
  - Data Visualization for Data Monitoring and Reporting

### Characteristics and Advantages

- **Edge Computing-Based Real-Time Analysis**
  - Instantaneous data analysis at the site of data generation
  - Real-time service can be provided through real-time analysis

### ■ High-Speed, large-Capacity Data Collection and Analysis

- High-speed and large-capacity data collection and analysis such as analog sensor and image data collected on site

### ■ Reduce Data Traffic

- Analyzing large amounts of data from the field on an edge computing device and sending only event and result data to the server
- It is possible to build an efficient system by significantly reducing data traffic compared to the existing server analysis method

## Product Specifications

Classification	Specification
Communication support	WiFi, BLE, LAN, LoRa, Zigbee
power method	DC 24V (DC Jack, Wire Terminal Type)
I/O support	input channel: 4CH analog / 4CH Digital / 1CH USB Sensor / output channel: Relay 4CH
Program language support	C/C++, Java Script, Python
product size	Width: 17cm, Vertical: 19cm, Height: 6cm

## Product Picture





### Utilization Field

- **Smart City**
  - On-site CCTV-based pedestrian notification service
  - Search service for missing persons, criminals, etc.
  - Real-time floating population monitoring service
- **Smart Factory**
  - Smart Factory facility/environment monitoring system
  - Smart Factory equipment failure prediction system
  - Smart Factory quality prediction system
  - Smart Factory worker movement monitoring system
  - Smart Factory worker safety area access monitoring system

### Main Performance

- Company S: Monitoring the condition of home appliance manufacturing line equipment (2016/2017/2018)
- Company K: Monitoring of raw material input for automobile parts (2017)
- Company N: Casting Machining Manufacturing Line (2018)
- Company E: MLCC Manufacturing Line Equipment Condition Monitoring (2019)
- Company S: Delivery of image-based human tracking algorithm (2020)
- Company H: Delivery of an algorithm for predicting the distance between a confirmed person and a contact based on image recognition technology (2020)
- Company H: Edge computing-based manufacturing data collection/monitoring system establishment (2020)
- NIA: Transportation AI data set construction project (2020/2021)
- Company K: Auto parts injection manufacturing line quality prediction and integrated monitoring system (2021)
- Municipality B: Implementation of on-site CCTV-based pedestrian notification service (2020/2021/2022~)
- Municipality B: Perform missing person search service (2020/2021/2022~)

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## 5 Digital twin implementation IoT sensor monitoring service

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**Company name** Technonia Co., Ltd.

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### 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

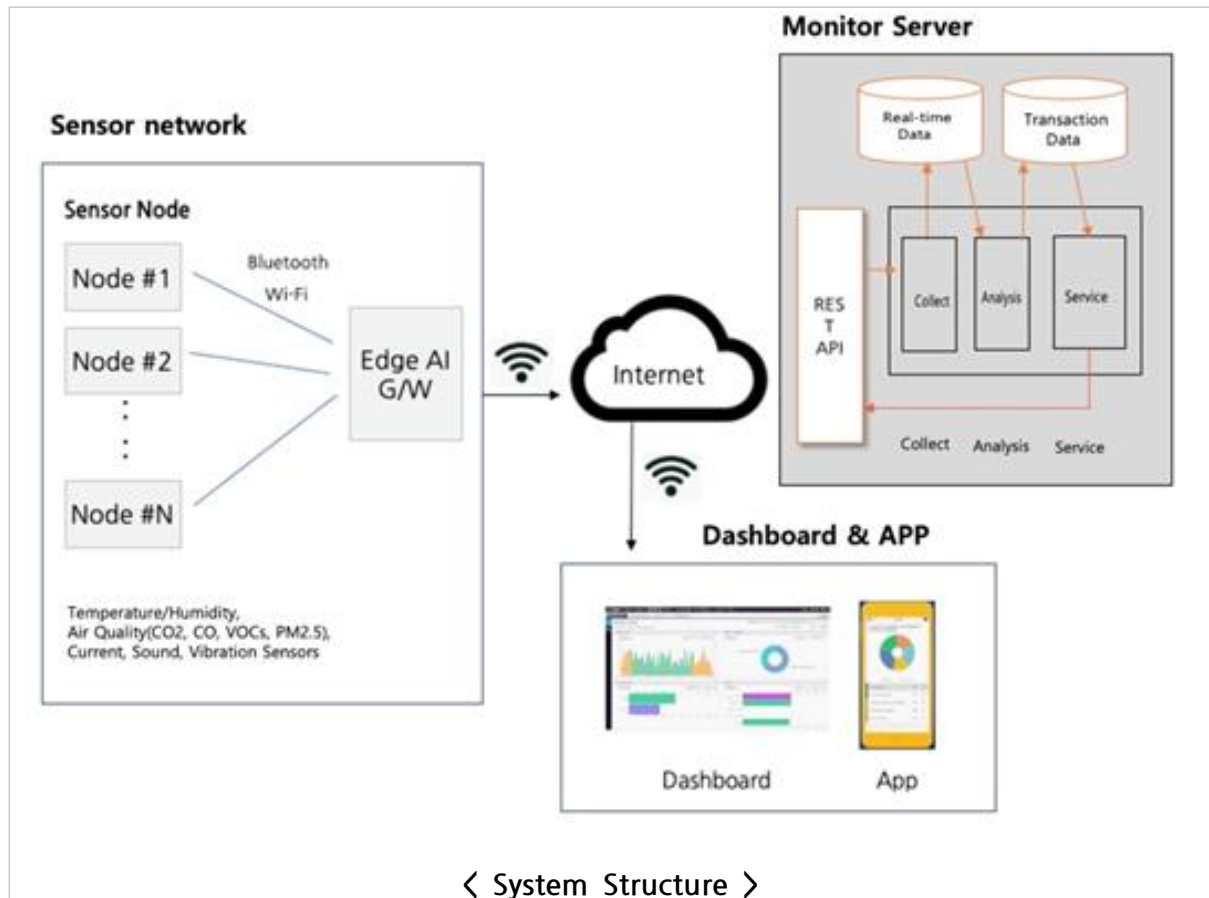
### Characteristics and Advantages

- 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)
- E-Mart EBMS solution development (2021)
- Smart farm automatic water supply system application development (2022)

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## 6 IoT-based remote water meter reading solution, HY-CHECK

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Company name	MDS Intelligence Inc.
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### Main function

- **Remote management of meter reader and Monitoring all meter statuses**
  - Monitoring the status of 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 graph for managing the overall usage and flow rate of water supply station.
  - Monitoring the status of the terminal, battery status, communication status, etc.
- **Check meter image data by each consumer and link the data to water cost**
  - Checking the used history during the specific period by each consumer.
  - Indexing meterized images by each consumer and checking AI analysis data.
  - Checking monthly usage by each consumer and estimating the trend through 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 alarm 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 analogue 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



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## 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 the false and missing meter reading, 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.

## 7 IoT Device Management Solution, NeoIDM

**Company name** MDS Intelligence Inc.

### Main function

- **Centralized control (automation)**
  - Message transmission management (automatic transmission)
  - Centralized automatic control according to predefined alarm rules
- **Bidirectional communication**
  - Bidirectional connections with different kinds of IoT devices
  - Sending / Receiving messages in both directions using LwM2M and MQTT
- **User and group management**
  - Generation and management of 4-stage organization
  - User registration, permissions management and setting for each group
- **Firmware update (FOTA)**
  - LwM2M-based FOTA (Firmware Over-the-Air)
  - Firmware history management
  - Simultaneous update on several devices
- **Excellent Security**
  - Enhancing security of IoT through DTLS communication based on COAP

### Characteristics and Advantages

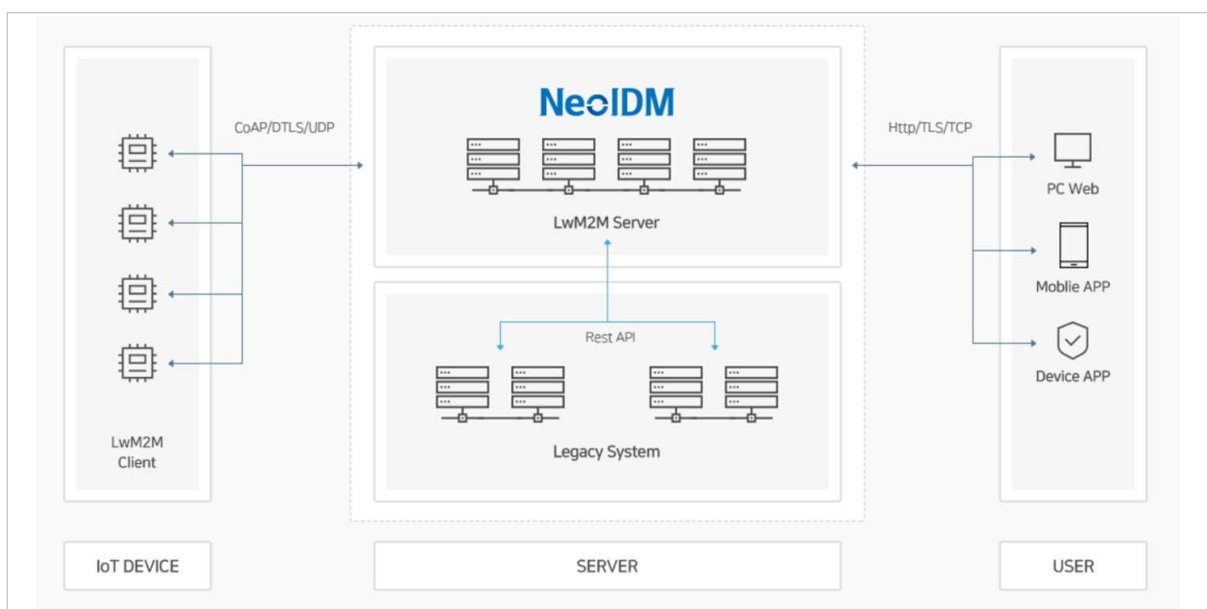
- **LwM2M (international standard)**
  - Adopted the LwM2M protocol, an international standard for managing IoT devices, for managing small-sized devices. It can be easily applied to IoT environment consisting of low-power and low-specification devices.
- **Expansion of application services**
  - With the use of RESTful API, different kinds of dashboard can be developed. You can send alarms via SMS, e-mail, or messenger, and provide user functions with voice command 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 standard (e.g., LwM2M)
- Interworking with NeoKeyManager developed by HANCOM 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 in 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 area 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 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"**

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## ■ 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 on fire accident in the factory
- Smart Store Management in Japan
- Remote inspection on water facility
- 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

## 8 MESIM IoT Platform

**Company name** METABUILD Co., Ltd.

### Main function

- MESIM IoT platform consists of IoT Hub, IoT gateway, IoT agent, IoT Service development tool and monitoring system.
  - It collects IoT data from various service sensors or devices such as smart city, transportation, building, drone, and defense.
  - It stores and integrates collected data in a data hub, and provide development and operating environments for all processes of IoT services that can be managed, analyzed, shared, and distributed on the platform.
  - It provides real-time monitoring of system resources, device status, and device data for real-time monitoring by layer, provides various types of widgets, and provides customized dashboards using widgets.
  - It provides a service management tool for service development • sharing • execution, and provides various service components and service simulation environments
  - IoT message infrastructure(CoAP, MQTT, TCP/IP, SOAP-over-UDP, RS232, CAN, BLE, Z-Wave, ZigBee, etc)
  - Standard service protocol(SOAP, RESTful, Socket, HTTP/S, JMS, FTP, SMTP/Pop3, etc)

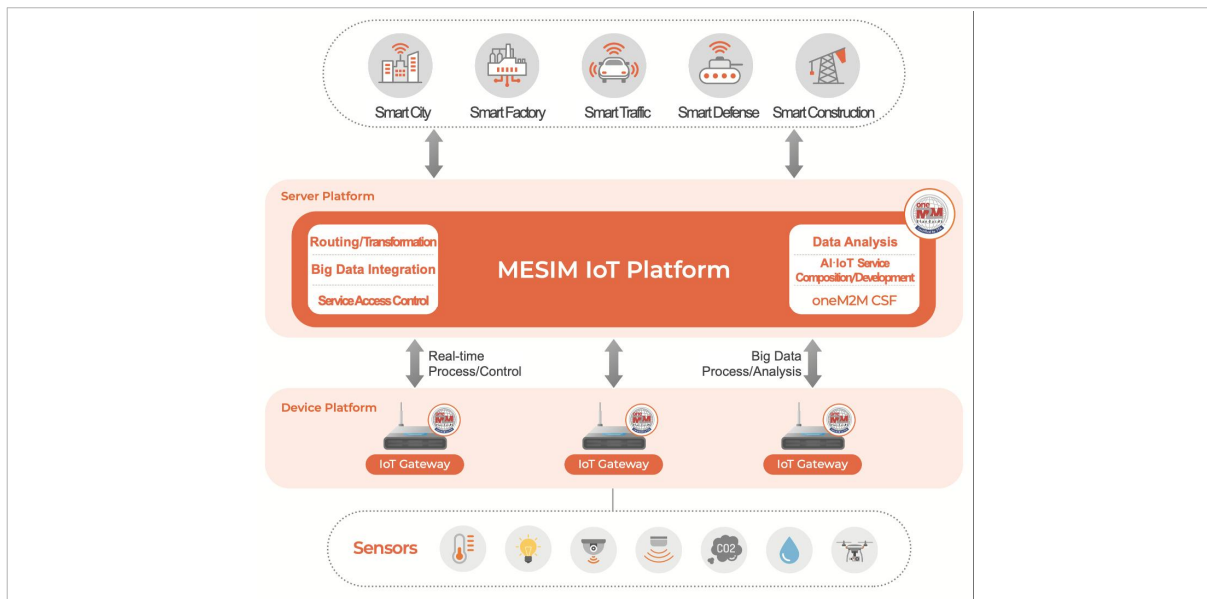
### Characteristics and Advantages

- It is possible to develop IoT services that operate across IoT environments and enterprise integrated environments
- GS (Good Software) Certification, MESIM IoT Platform v1.5, Aug. 2017
- oneM2M Certificate, MESIM IoT Platform, Feb. 2020
- 7<sup>th</sup> oneM2M Interop Event, Nov. 2020

## Product Specifications

Classification	Contents
Product name	MESIM IoT Platform
Product Components	IoT Hub, IoT gateway, IoT agent, IoT Service development tool and monitoring system
IoT Message Infrastructure	CoAP, MQTT, TCP/IP, SOAP-over- UDP, RS232, CAN, BLE, Z-Wave, ZigBee
Service protocol	SOAP, RESTful, Socket, HTTP/S, JMS, FTP, SMTP/Pop3

## Product Picture



## Utilization Field

- Smart City, Smart Building, Traffic, National Defense, Smart Factory, etc

## Main Performance

- Smart City: 2017(3 cities), 2018(3 cities), 2019(7 cities), 2020(5 cities), 2021(1 city), etc
- Smart Traffic: K-City (Self-driving car test city), Tunnel accident prevention system, 5G V2X-based service infrastructure construction, etc
- Smart Construction : Smart Construction R&D (2020~2025)





# Status of Companies





## 1 Information

Name of CEO	Youngju Seo, Yongwoo Kim	Date of Establishment	2019. 01. 01
Tel	070-8892-7160	Homepage	www.aiblab.co.kr
Address	#525, 54, Changeop-ro, Sujeong-gu, Seongnam-si, Gyeonggi-do, 13449, Republic of Korea		
Number of employees	25	Capital	US\$ 278K
Sales (Based on 2021)	US\$ 1,224K	Net Profit (Based on 2021)	US\$ 371K
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 (Team Leader)	ICT Research Center	070-8892-7163	aaron.shim@aiblab.co.kr



Cresprit Inc.

CRESPRIT



## 1 Information

Name of CEO	Kwon Jin Man	Date of Establishment	2013. 02. 20
Tel	+82-31-719-9923	Homepage	http://www.cresprit.com
Address	KINS Tower 1104, Seongnamdaero 331-8, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea		
Number of employees	19	Capital	-
Sales (Based on 2021)	-	Net Profit (Based on 2021)	-
Business Field	S/W Development and Supply Business		

## 2 Company overview

Cresprit is a specialized IoT platform company that enables companies to create value from data through real-time collection, monitoring, and analysis of vast amounts of data generated from various social field facilities. Cresprit's "ALOOH IoT Platform" is a solution that solves various problems in the field, such as data transmission delay and overload caused by on-site big data analysis and processing through edge computing and artificial intelligence technology.

## 3 AIoT Products·Services and Contact

### o Key AIoT Products·Service

Name	Description
<b>ALOOH</b> (Edge computing-based data collection/analysis IoT platform)	An integrated platform including an optimal device and server that collects/analyzes/processes data from on-site sensors and facilities in real time, and a visualization screen
<b>ALOOH application service</b>	<ul style="list-style-type: none"> <li>■ Pedestrian crossing alert service</li> <li>■ Search service for missing persons, criminals</li> <li>■ Equipment predictive maintenance service</li> </ul>

### o Contact

Name	Department	Tel	E-mail
Jeon Keun Hong (Director)	Marketing	+82-31-719-9923 +82-10-9171-8622	judy.jeon@cresprit.com



## 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	AloT Application Development, AI&Bigdata Application Development		

## 2 Company overview

DataCentric is a Global StartUP OpenSource Software that specializes in developing software data-based products and providing related services with the trademark WhaleShark, which swims not inside data reservoir but the sea of data. We are providing following products and services.

WhaleShark-LiteAI (Data Analysis Support Tool),

WhaleShark-AIoT(Edge AIoT),

WhaleShark-IIoT(Edge IIoT),

WhaleShark-MES(Production Management System)

WhaleShark-C/S(Contact Centert Consaltant Support Tool, QA)

## 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 (IoT 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

**D&SHINE Co., Ltd.**



## 1 Information

Name of CEO	Hee Jae, Oh	Date of Establishment	2010. 06. 07
Tel	+82-2-3159-8872	Homepage	<a href="http://www.dnshine.co.kr">http://www.dnshine.co.kr</a>
Address	Samsung Techno Valley B-B134, 140, Tongil-ro, Deogyang-gu, Goyang-si, Gyeonggi-do, Republic of Korea		
Number of employees	21	Capital	150,000,000 won
Sales (Based on 2021)	1,360,000,000 won	Net Profit (Based on 2021)	500,000,000 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	<ul style="list-style-type: none"> <li>- Total solution for criminal rescue request and crime prevention using IoT technology</li> <li>- Real-time crime surveillance integrated control solution</li> </ul>
IoT smart emergency bell system / Street light-form IoT emergency bell system	<ul style="list-style-type: none"> <li>- Advanced intelligent emergency bell system with IoT technology</li> <li>- Intelligent emergency detection/Emergency alerting and Rescue requests / Self-diagnosis, Remote monitoring and control of the system</li> </ul>
IoT emergency bell system for CCTV	<ul style="list-style-type: none"> <li>- IoT Emergency Bell System with CCTV network interworking function</li> <li>- Emergency alerting and Rescue requests / Self-diagnosis, Remote monitoring and control of the system</li> </ul>

### o Contact

Name	Department	Tel	E-mail
Dong Soo, Choi	General Management	+82-2-3159-8872	<a href="mailto:cds@dnshine.co.kr">cds@dnshine.co.kr</a>



## 1 Information

Name of CEO	Oh Stephen Sang Geun	Date of Establishment	Oct. 15. 2009
Tel	+82-2-556-7878	Homepage	<a href="https://www.ewbm.com">https://www.ewbm.com</a>
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
G310H / G320H	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

## 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	21	Capital	200 Million
Sales (Based on 2021)	1.7 Million	Net Profit (Based on 2021)	200 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 Smart Pad	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	Hyun Lee	Date of Establishment	2018.05.28
Tel	82-10-5201-2257	Homepage	<a href="http://www.maasfarm.com">http://www.maasfarm.com</a>
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
Integrated 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	<a href="mailto:hlee0212@gmail.com">hlee0212@gmail.com</a> / <a href="mailto:hlee@maasfarm.com">hlee@maasfarm.com</a>

# Mamiel Co., Ltd.



## 1 Information

Name of CEO	Sang Jun An	Date of Establishment	1999.07.19
Tel	+82-02-2065-6607	Homepage	<a href="http://www.mamiel.com">http://www.mamiel.com</a>
Address	RM#406~408, E&C Venture Dream Tower 2, 33gil 55, Digital-ro, Guro-gu, Seoul, KOREA		
Number of employees	21	Capital	U\$ 1.3Million
Sales (Based on 2021)	U\$ 36Million	Net Profit (Based on 2021)	U\$ 1.8Million
Business Field	S/W, H/W development and supply, Semiconductor distribution, IoT comprehensive commerce platform service		

## 2 Company overview

Mamiel Co., Ltd. is one of official semiconductor agency and Total solution provider which is fast growing company in Consumer, IoT and industrial markets. Mamiel has a full product line-up of MCU, memory, power, communication modules and sensor products from global semiconductor partners such as STMicroelectronics, Winbond, InnoPhase, and Thales etc. Mamiel provides customer-oriented solutions and products in optimized cost and differentiated technology to customers timely through a stable supply chain and system.

## 3 AIoT Products·Services and Contact

### o Key AIoT Products·Service

Name	Description
WIFI/BLE module	Ultra-Low Power Wireless SoC& Modules
IoT Manhole Monitoring Solution	Monitoring of opening/closing in manhole using LoRa network, monitoring of gas, temperature and humidity and water level, and transmission solution to control center

### o Contact

Name	Department	Tel	E-mail
Sol Yoo / asst. manager	Marketing	02-2065-6607	<a href="mailto:sales@mamiel.com">sales@mamiel.com</a>



## 1 Information

Name of CEO	Changgun, Ji, Junsung Lee	Date of Establishment	2020. 07. 01
Tel	+82-31-627-3001	Homepage	<a href="https://www.mdsit.co.kr">https://www.mdsit.co.kr</a>
Address	3Fl. Hancorn Tower, 49, Daewangpangyo-ro 644beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13493, Republic of Korea		
Number of employees	90	Capital	USD 1.66M
Sales (Based on 2021)	USD 21M	Net Profit (Based on 2021)	USD 3.5M
Business Field	Intelligent IoT Platform 'NeoIDM', AIoT-based Digital twin integrated solution 'RapidTWIN', Enterprise encryption key management Solution 'NeoFSM', Development Quality and Productivity Improvement Solution, 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	IoT-based remote water meter Solution
RapidTWIN	AIoT-based Digital twin integrated Solution
Hi-CAPS	3D Modeling, IoT-based Digital twin Solution

### o Contact

Name	Department	Tel	E-mail
Jihyun Lee (Marketing)	Business Management Team	+82-31-620-1438	<a href="mailto:marketing@mdsit.co.kr">marketing@mdsit.co.kr</a>
Hongkyu Lee (Sales)	IoT Business Team	+82-31-620-1475	<a href="mailto:neoidm@mdsit.co.kr">neoidm@mdsit.co.kr</a>



# Mercury Corporation



## 1 Information

Name of CEO	Hayoung Hwang	Date of Establishment	2000. 08. 21
Tel	+82-32-580-3114	Homepage	<a href="http://www.mercury.co.kr">http://www.mercury.co.kr</a>
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.

<b>GiGA IoT Home Manager IoT Z-wave HUB</b>	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.
<b>WiFi Module</b>	WiFi module is a product that enables IoT service through WiFi communication by being installed in general home appliances.
<b>Smart IoT Room Management System</b>	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
<b>DJ Kang (VP/Head of Global business Division)</b>	<b>Global business Division</b>	<b>+82-10-6383-7369</b>	<b>djkang@mercury.or.kr</b>

# Metabuild. Co., Ltd.



## 1 Information

Name of CEO	Cho, Pung Yeon	Date of Establishment	1998. 11. 23.
Tel	+82-2-598-3327	Homepage	<a href="http://www.metabuild.co.kr">http://www.metabuild.co.kr</a>
Address	Hyoryung-Ro 208, Seocho-Gu, Seoul, Korea		
Number of employees	250	Capital	1.58M USD
Sales (Based on 2021)	23.6M USD	Net Profit (Based on 2021)	2.33M USD
Business Field	A.I., Bigdata, Mydata, Smart services for Cities, transport, construction, military, new technology convergence.		

## 2 Company overview

We are specialized in software technologies for artificial intelligence, middleware (ESB/EAI, IoT, API Gateway, etc.), bigdata, mydata, smartcity, transportation, etc., and develops solutions for digital transformation. We are No.1 in domestic market share through continuous technological innovation and customer satisfaction in middleware. Through the development and commercialization of convergence technology and solutions, we are entering the domestic and world-wide markets.

## 3 AIoT Products·Services and Contact

### o Key AIoT Products·Service

Name	Description
MESIM IoT Platform	- It supports service implementation for smart cities, traffic, construction, UAV, military based on oneM2M standards.
Smart-IDS	- It is a radar based real-time incident detecting and monitoring system. It visualize real-time traffic via digital twin with monitoring, statistics, and supports managing of real-time incident and history.

### o Contact

Name	Department	Tel	E-mail
E. C. Kim	Overseas sales Dept.	(+82) 10-9289-8992	<a href="mailto:supereckim@metabuild.co.kr">supereckim@metabuild.co.kr</a>



## 1 Information

Name of CEO	Youm Jong Hun	Date of Establishment	2018.08.07
Tel	+82-2-20881454	Homepage	<a href="http://monnit.co.kr">http://monnit.co.kr</a>
Address	2F 13, Songi-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"> <li>- Sensors can be used in a wide range of industries (construction, farming, building facility management, factory, logistics and cold chain, etc).</li> <li>- Totally wireless IoT sensor solution that is implemented in battery type. Easy to install and use and does not require any construction work.</li> <li>- 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.</li> <li>- Superior wireless range (up to 300 m)</li> <li>- Onboard Data Memory (reading storage even in case of internet disconnection)</li> <li>- Integrated bank level security (256-bit exchange and AES-128 CTR on all messages)</li> </ul>
Software	<ul style="list-style-type: none"> <li>- iMONNIT is a cloud-based monitoring platform that is</li> </ul>

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



## 1 Information

Name of CEO	Stefan Lindvall	Date of Establishment	1970.06
Tel	+1 (763) 785-3500 010-3305-0805	Homepage	http:// www.multitech.com
Address	2205 Woodale Drive Mounds View, MN 55112 United States		
Number of employees	350	Capital	Private Company
Sales (Based on 2021)	USD 100M	Net Profit (Based on 2021)	TBD
Business Field	Industrial IoT		

## 2 Company overview

MultiTech designs, develops and manufactures communications equipment for the Industrial Internet of Things - connecting physical assets to business processes to deliver enhanced value. Our commitment to quality and service excellence means you can count on MultiTech products and people to address your needs.

## 3 AIoT Products·Services and Contact

### o Key AIoT Products·Service

Name	Description
LoRa Gateway (Conduit/IP67)	LoRa Indoor and Outdoor Gateway
Cellular Terminal (MTC)	LTE cat. M1 Terminal for Korea and global market
Cellular Terminal (MTE/MTR)	LTE Ethernet terminal and Router for both Korea domestic and global market

### o Contact

Name	Department	Tel	E-mail
KyungJun Lee	Sales	010-3305-0805	KyungJun.Lee@multitech.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 2021)	380,000,000 Won	Net Profit (Based on 2021)	60,000,000 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 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
Lim Jun Cheol	Research department	+82-70-8107-1052	ljc1202@n-ark.com



## 1 Information

Name of CEO	Lee, Jaeho	Date of Establishment	2002. 05. 08
Tel	+82-42-867-1081	Homepage	http://www.nesslab.com
Address	194, Techno-2ro, Yuseong-gu, Daejeon, Korea		
Number of employees	43	Capital	150 million won
Sales (Based on 2021)	-	Net Profit (Based on 2021)	-
Business Field	RFID Reader, IoT Module, National Defense Science Training Equipment		

## 2 Company overview

Neslab Co., Ltd. specializes in developing RFID readers, IoT modules, and defense scientific training equipment. Especially, The technology of 900MHz Passive reader which is developed RF & protocol from the beginning of its introduction in Korea, makes RFID reader to be the smallest & high performance. Additionally on that basis, RFID reader is acknowledged of its excellence of domestic and foreign company, and is utilized in the various Industrial fields such as logistics, production and process management.

## 3 AIoT Products·Services and Contact

### o Key AIoT Products·Service

Name	Description
NL-RF2200	UHF 900MHz Fixed Reader
NL-RM2000	UHF 900MHz Modular Reader
NL-RF300	UHF 900MHz USB Type Reader

### o Contact

Name	Department	Tel	E-mail
Park, JunCheol	Sales Department	+82-31-8016-1782 +82-10-3748-0574	jcpark@nesslab.com



**PHYCHIPS Inc.**

**PHYCHIPS**



## 1 Information

Name of CEO	Jinho Ko(Ph.D)	Date of Establishment	2002.09.25
Tel	+82-42-864-2402	Homepage	http:// www.phychips.com
Address	#104, 187Techno 2-ro, Yuseong-gu, Daejeon, Korea		
Number of employees	23	Capital	-
Sales (Based on 2021)	-	Net Profit (Based on 2021)	-
Business Field	RAIN RFID Reader/Writer Chip, Module, Antenna		

## 2 Company overview

PHYCHIPS supplies RAIN RFID Reader/Writer chip, module, antenna to major RFID companies.

## 3 AIoT Products·Services and Contact

### o Key AIoT Products·Service

Name	Description
PR9200 (RAIN RFID Reader/Writer Chip)	It is a RAIN RFID reader SoC that supports EPC UHF Gen2 air protocol and has UHF RF, MODEM, ARM Cortex-M0 processor and memory. A complete reader can be configured without adding a separate external MCU or memory.
RED2, RED4S, RED5 (RAIN RFID Reader/Writer Module)	RED series are designed based on PHYCHIPS' PR9200. By providing small size and excellent performance, it helps customers to respond to the RFID market quickly and easily.
QUBE Series, Ceramic Patch (RAIN RFID Reader/Writer Antenna)	QUBE Series: It is high-performance antennas using patented original technologies, such as quadrifilar helical antenna and power dividing. And it provides optimized performance for mid-long-distance UHF RFID applications. Ceramic Patch: Its small rectangular form factor of micro-strip flat patch antenna and compact, high-performance antenna using proprietary materials developed specifically for high-performance antenna elements. And it provides optimized performance for short-distance RAIN RFID applications.

### o Contact

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



## 1 Information

Name of CEO	Lee Chang Ho	Date of Establishment	2020. 01
Tel	+82-2-2633-6169	Homepage	www.thepoc.co.kr
Address	(08589) 303ho, 46, Gasan digital 2-ro, Geumcheon-gu, Seoul, Republic of Korea		
Number of employees	7	Capital	1 million won
Sales (Based on 2021)	104 million won	Net Profit (Based on 2021)	
Business Field	Fine Dust Measuring Device, Carbon Dioxide Measuring Device, Carbon Dioxide Sensor		

## 2 Company overview

Pillars of Creation Co., Ltd. has invested in continuous R&D since its establishment in 2019 and entered a new start with its corporate conversion in 2020. Our atmospheric environment is consistently deteriorating, but the reality lacks practical improvement measures. All of the employees are doing our best with the determination to create a clean, safe environment.

## 3 AIoT Products·Services and Contact

### o Key AIoT Products·Service

Name	Description
Portable Carbon Dioxide Measuring Device	The PoC Portable Fine Dust Measuring Device can conveniently measure PM2.5 ultrafine dust / PM10 fine dust / temperature / humidity at the same time with the laser sensor anytime, anywhere in real-time.
Portable Fine Dust Measuring Device	The Humidity Correction Fine Dust measuring device can accurately measure PM2.5 ultrafine dust/PM10 fine dust/temperature /humidity simultaneously in real time through laser sensor anytime, anywhere easily.
Humidity Correction Fine Dust Measuring Device	The PoC Portable Carbon Dioxide Measuring Device can conveniently check the carbon dioxide concentration / temperature / humidity at the same time with the non-dispersive infrared anytime, anywhere in real-time.

### o Contact

Name	Department	Tel	E-mail
Kim Taehong	Sales	+82-2-2633-6169 +82-10-3299-6599	ted@thepoc.co.kr

**SYStoUS Inc.**

**SYS2US**



## 1 Information

Name of CEO	Yoo Byung-Hoon	Date of Establishment	2021. 08. 16
Tel	+82-70-8800-4153	Homepage	<a href="http://www.sys2us.com">http://www.sys2us.com</a>
Address	#977, Anyang Startup Support Center, 11-41, Simindae-ro 327 beongil, Dongan-gu, Anyang-si, 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 control 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	<ul style="list-style-type: none"> <li>- Artificial intelligence convergence control system design</li> <li>- Integrated control system design and construction service</li> </ul>
Control System Development	<ul style="list-style-type: none"> <li>- Controller Firmware / Software</li> <li>- Development of artificial intelligence control system and solution</li> <li>- Web / Windows Application</li> </ul>
Zone environment controller	<ul style="list-style-type: none"> <li>- Zone environment management</li> <li>- Monitoring and control of environment such as temperature and humidity, fine dust, noxious gas, illuminance, noise, vibration</li> </ul>

### o Contact

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



## 1 Information

Name of CEO	YounSig Jang	Date of Establishment	1987.06.15
Tel	+82-2-855-0501	Homepage	<a href="https://www.sysbas.com/en/">https://www.sysbas.com/en/</a>
Address	16F, DaeRung Post Tower-1, Digital-ro 288, Guro-gu, Seoul, Korea 08390		
Number of employees	31	Capital	\$ 985,714
Sales (Based on 2021)	\$ 5,913,571	Net Profit (Based on 2021)	\$711,428
Business Field	Industrial Connectivity (Serial/LoRa Communication)		

## 2 Company overview

Since 1987, SystemBase has been specializing in serial connectivity and IoT networking technology. We are a leading developer and manufacturer of our own products and dedicated solely to industrial connectivity for over 35 years. Currently, with newly developed LoryNet devices using Low-Power, Wide-Area LoRa wireless technology, we are keen in providing our customers with better solutions and various communication technologies.

## 3 AIoT Products·Services and Contact

### o Key AIoT Products·Service

Name	Description
LoryRelay-1020TR	<b>Relay to LoRa Converter</b> LoryRelay-1020TR from SystemBase uses the LoRa to provide a communication range of a few kilometers. And it provides AC and DC relays for power supply and cut-off of various equipment at industrial sites such as factories.
Multi-1/USB all-ISO	<b>USB to 1port RS232/RS422/RS485 Digital Isolation Converter</b> Multi-1/USB all-ISO is a high-performance serial communication adapter with digital isolation capabilities that allows you to easily and quickly mount a serial communication port to a system through a USB bus.

### o Contact

Name	Department	Tel	E-mail
Jamie Song	Overseas Sales	+82-2-855-0501	<a href="mailto:overseas@sysbas.com">overseas@sysbas.com</a>

# 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"> <li>- Real-time video analysis Edge AI technology is used to support situational judgment and processing according to conditions.</li> <li>- Rather than simply monitoring a camera, artificial intelligence learns variables and patterns about the situation to increase the accuracy of analysis and predict results.</li> </ul>
Digital twin implementation IoT sensor monitoring service	<ul style="list-style-type: none"> <li>- 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.</li> </ul>

### o Contact

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



## 1 Information

Name of CEO	Kim Daeyong	Date of Establishment	2018. 09. 06
Tel	+82-70-4250-2916	Homepage	<a href="https://www.thelittlecat.kr">https://www.thelittlecat.kr</a>
Address	(24465) 4F, Douzone BI center, 130, Beodeul 1-gil, Namsan-myeon, Chuncheon-si, Gangwon-do, Republic of Korea		
Number of employees	9	Capital	2 billion won
Sales (Based on 2021)	7.5 billion won	Net Profit (Based on 2021)	2.8 billion won
Business Field	Manufacturing pet IoT home appliances and developing AI healthcare platforms.		

## 2 Company overview

LittleCat Co., Ltd. is an IoT pet healthcare product and application development company that provides solutions to partners using data from its pet healthcare products and eventually develops an integrated AI pet healthcare service platform. Through this, pets and companion can get careful smart healthcare services that they have never experience before.

## 3 AIoT Products·Services and Contact

### o Key AIoT Products·Service

Name	Description
INPET	As a cat body composition meter, it provides better solutions to pets companion through AI algorithms based on measurement data (to be linked with other devices)
b612 Cat Wheel	As a cat exercise equipment (catwheel), a solution is provided to pets based on the measured data (to be linked to other devices)

### o Contact

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