2022

USE CASE CATALOG

ROLTEK

ROLTEK

INDUSTRIAL & AUTOMATION CASES

PROBLEM

Power grids are often unreliable in developing countries, causing voltage fluctuations and other problems. For modern cities, this means that electrical infrastructure may not be able to keep up with population growth.

The more powerful the technology, the more powerful its backup engines, control units, and computers. They often lack backup power and are more prone to industrial sectors such as FMCG (Fast Consumer Goods) that rely heavily on data. When storing products, you must be careful about temperature and humidity levels. In order to minimize energy consumption, industrial climate control must be done automatically according to indoor sensor values. If anything changes over an extended period of time, your stock could be compromised - making it unavailable for sale in many markets. Constant monitoring is essential for these solutions, and power outages can seriously disrupt this process.

SOLUTIONS

Continuous monitoring of data and equipment is vital as if the temperature or humidity reaches a certain point the entire stock could be damaged. Refrigeration equipment with sensors that detect temperature and humidity are connected to the LoraWan gateway, which monitors the FMCG storage. The RLTK Router then wirelessly sends the information back to a monitoring center where it is monitored remotely (Fast IoT Platform etc.).

Some of our customers with less reliable electricity seek stability and security. We recommend using a system that relies on the mains but has a backup that can supply power to the device but is still not grid-dependent. In this case, the RLTK Router device we are using has custom alerts set where it sends notifications via SMS, HTTP POST, or email.

BENEFITS

- SensNode Wireless LoraWan Sensors allow you to fully automate industrial climate control in the warehouse with the LoraWan Gateway and RLTK Router.

- RLTK Router device provides secure and uninterrupted internet to industrial devices such as LoraWan Gateway.

- RLTK Router can work with backup power. In this way, you will be aware of the problems that occur in the power line.

- SensNode LoraWan sensors transmit sensor values wirelessly to the -LoraWan gateway. It is battery-operated and easy to assemble.

- The RLTK Router can be mounted on a DIN rail for easy installation in server rooms and other mounting solutions.

INDUSTRIAL CLIMATE CONTROL AND SYSTEM RELIABILITY

CLOUD

FAST IOT PLATFORM

INTERNET

CLOUDIO
DATA COLLECTOR 1

PRODUCTION LINE 1

CLOUDIO
DATA COLLECTOR 2

PRODUCTION LINE 2

WIRED DATA CONNECTION

WIRELESS DATA CONNECTION

DATA COLLECTION FROM PRODUCTION LINES & MES

PROBLEM

Manufacturing facilities often have a variety of complex specialized machinery and equipment that only trained engineers can configure and maintain. These equipments are usually different products from different suppliers. Situations such as an equipment not working properly, malfunctioning, needing to be reconfigured at the production site can cause problems in the entire production line, resulting in delays and losses in production.

In addition, when the production information of the machines on the production lines is not followed, situations such as poor quality and inefficiency may occur in production. Manually writing these data on papers by the operators or entering them into the systems means unnecessary labor consumption.

SOLUTIONS

One of the biggest benefits of networking machines on production lines is the ability to collect data. The CloudIO DataCollecor industrial gateway has an Ethernet port, configurable digital inputs and outputs, and RS485 connectivity to easily connect various equipment and computers to the Internet. Pre-configured Firewall secures the solution from the ground up and provides data encryption with support for multiple VPNs.

Its rugged industrial design with high temperature and vibration resistance makes this device comfortable to use in harsh industrial environments.

In order to increase the quality and efficiency in production, it is important to automatically obtain working and production information from each of the machines. Thus, you can follow the real-time process of your production plan remotely and in real time.

BENEFITS

Data acquisition: The device supports the Modbus industrial protocol and MQTT protocol, which are widely used in the industry. It can be used for monitoring, analytics, optimization and health control for MES systems.

Security: Predefined and preconfigured Firewall and multiple VPN protocols to choose from.

Industrial design: Made from a robust aluminum enclosure. Configurable I/Os support a wide range of power supply voltages.

CLOUDIO PRO IOT GATEWAY

SERVER

CLOUD

MODPROBUS RTU-P RF

INTERNET

FAST IOT PLATFORM

RF

RF

MODPROBUS RTU-P RF

RF

SENSOR

HMI

PLC

HMI

PLC

WIRED DATA CONNECTION

WIRELESS DATA CONNECTION

WIRELESS CONNECTION OF INDUSTRIAL SYSTEMS
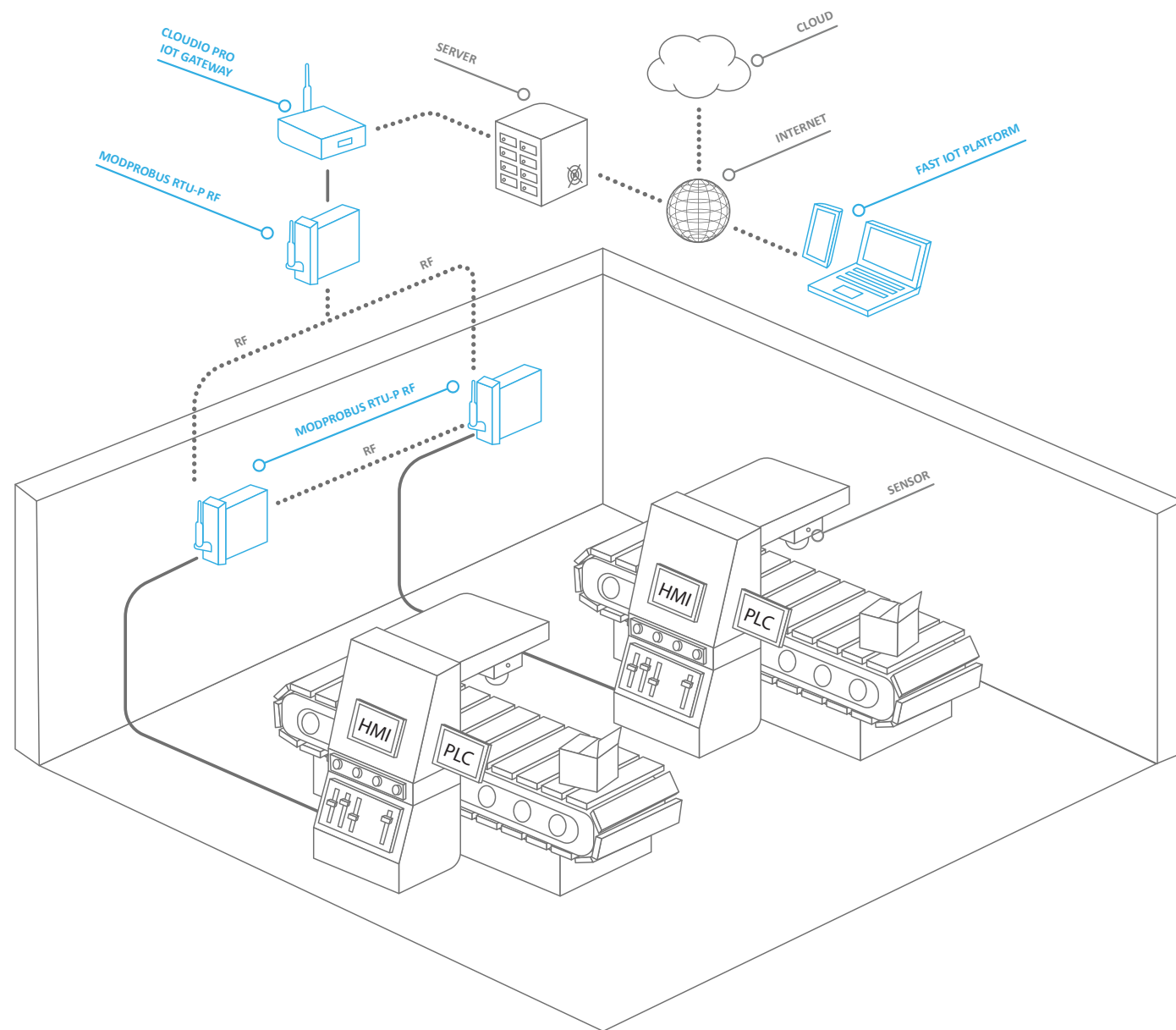
PROBLEM

It is a known fact that a solution is only as strong as its weakest link. No matter how high investment value and quality your production machines in your production area have, they also require professional connection tools. There are different alternatives for connection equipment. However, industrial applications require reliable, robust, easily accessible and professional network devices. Production lines are not an area to take risks with poor quality products.

SOLUTIONS

Factories often have more than one different production line. It consists of various HMIs, PLCs and sensors all connected in a network. ModProBus RTU-P RF product enables PLC, HMI and other industrial equipment to communicate with each other by Radio Frequency. This means that your machines can talk to each other wirelessly. It does not require wiring costs and is very useful especially in areas where wiring is difficult.

CloudIO Pro IoT Gateway product converts data in Modbus protocol to MQTT protocol. It allows you to include the data of the equipment in the field into the network both wired and wirelessly over 4G. In this way, redundant data communication is also provided.

The factory environment requires a robust device. Therefore, a product with a solid aluminum body is the best option. Its compact size combined with DIN rail or surface mount options makes mounting a quick and easy task.

BENEFITS

Compact design: Easy to install, this device fits in any electronics box or server cabinet and takes seconds to commission using DIN rail or surface mount options.

Wide operating temperature range: -40 to 75°C, providing reliable connectivity in most industrial environments.

Economical: It broadcasts on free band with radio frequency signals. No additional communication fee is required.

CLOUD

INTERNET

FAST IOT PLATFORM

CLOUDIO LITE IOT GATEWAY

4G/LTE

TEMPERATURE SENSOR

PRESSURE SENSOR

LEVEL SENSOR

LEVEL SENSOR

FLOW SENSOR

WIRED DATA CONNECTION

WIRELESS DATA CONNECTION
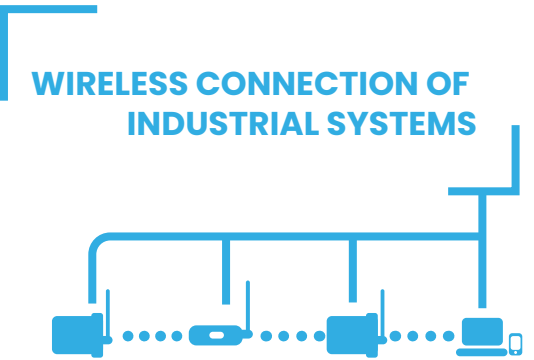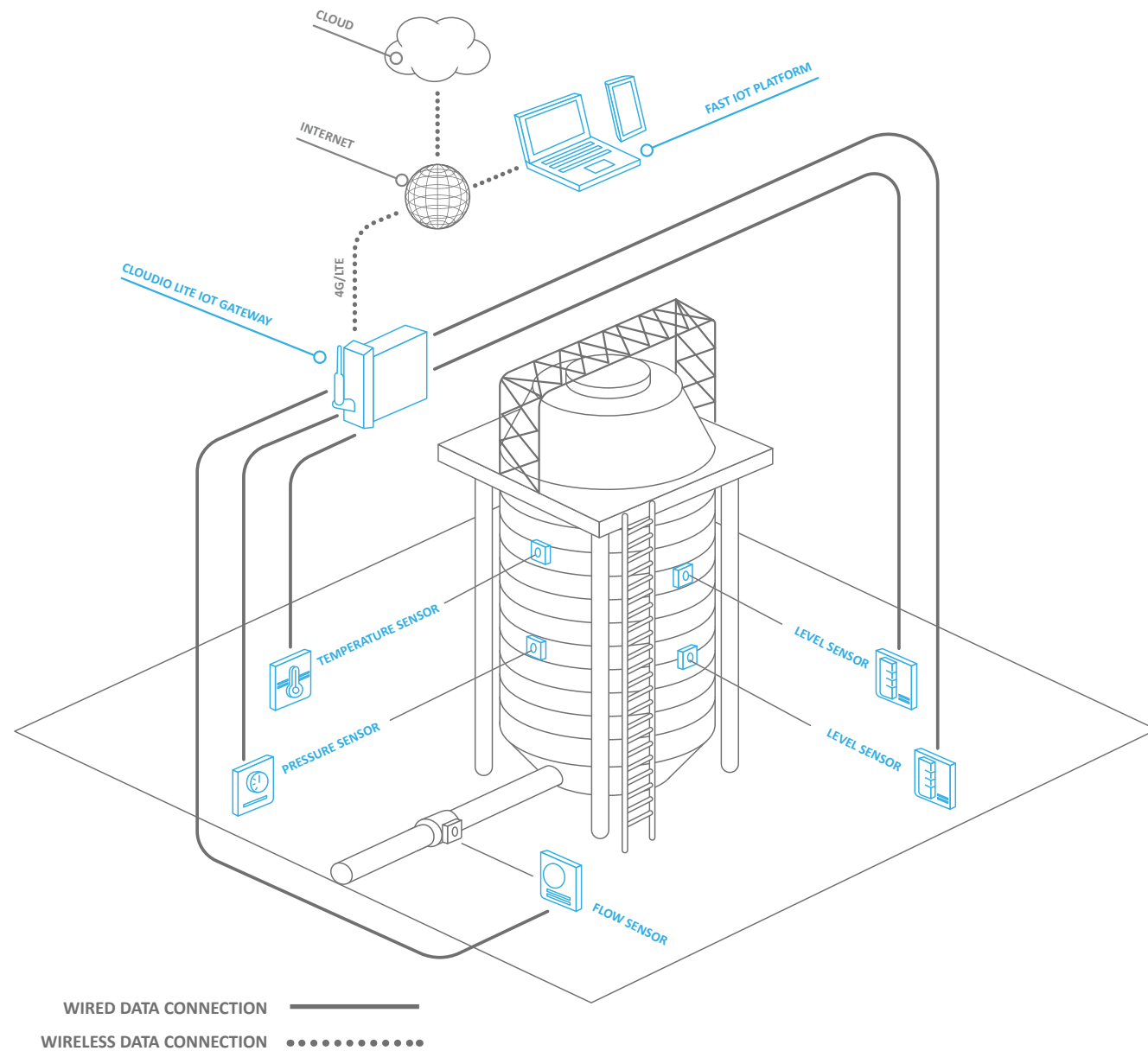
PROBLEM

It is important to monitor occupancy rates to allow planning and business continuity of places such as silos in factory sites, and tanks in water and wastewater centers. If loading and unloading are not managed on time, it can create high financial and environmental losses.

Other critical indicators to monitor are the temperature, humidity, and pressure of silos and tanks. These factors are essential for safe silo and tank storage as most of the losses are due to unsuitable containment conditions during the storage phase. The faster the detection of abnormal situations, the lower the losses.

SOLUTIONS

CloudIO Lite IoT Gateway gateways can be used in any storage unit and are connected to sensors such as level sensor, temperature sensor, humidity sensor, and pressure sensor via internal I/Os and RS-485 connection. It collects information about the fullness, temperature and humidity, and pressure of silos and tanks. All data then goes to the Central Management Platform (Fast IoT Platform) via the MQTT protocol. When the silos and tanks reach the predetermined level, temperature, and humidity threshold values, CloudIO Lite IoT Gateway sends an SMS or e-mail to the relevant people. This alarm feature allows planning and prevents downtime.

BENEFITS

Remote management: There is no need to physically go to the location to measure the status of silos and tanks in real-time and set alarm levels.

Reliable connectivity: Provides reliable connectivity even in remote or rural areas with 2G.

Ease of installation: The CloudIO Lite IoT Gateway is small, light and energy-efficient, providing flexibility to install almost anywhere.

Rugged: It has an RS-485 connection, analog inputs, and multiple digital inputs/outputs for sensor connection and control.
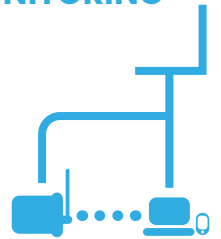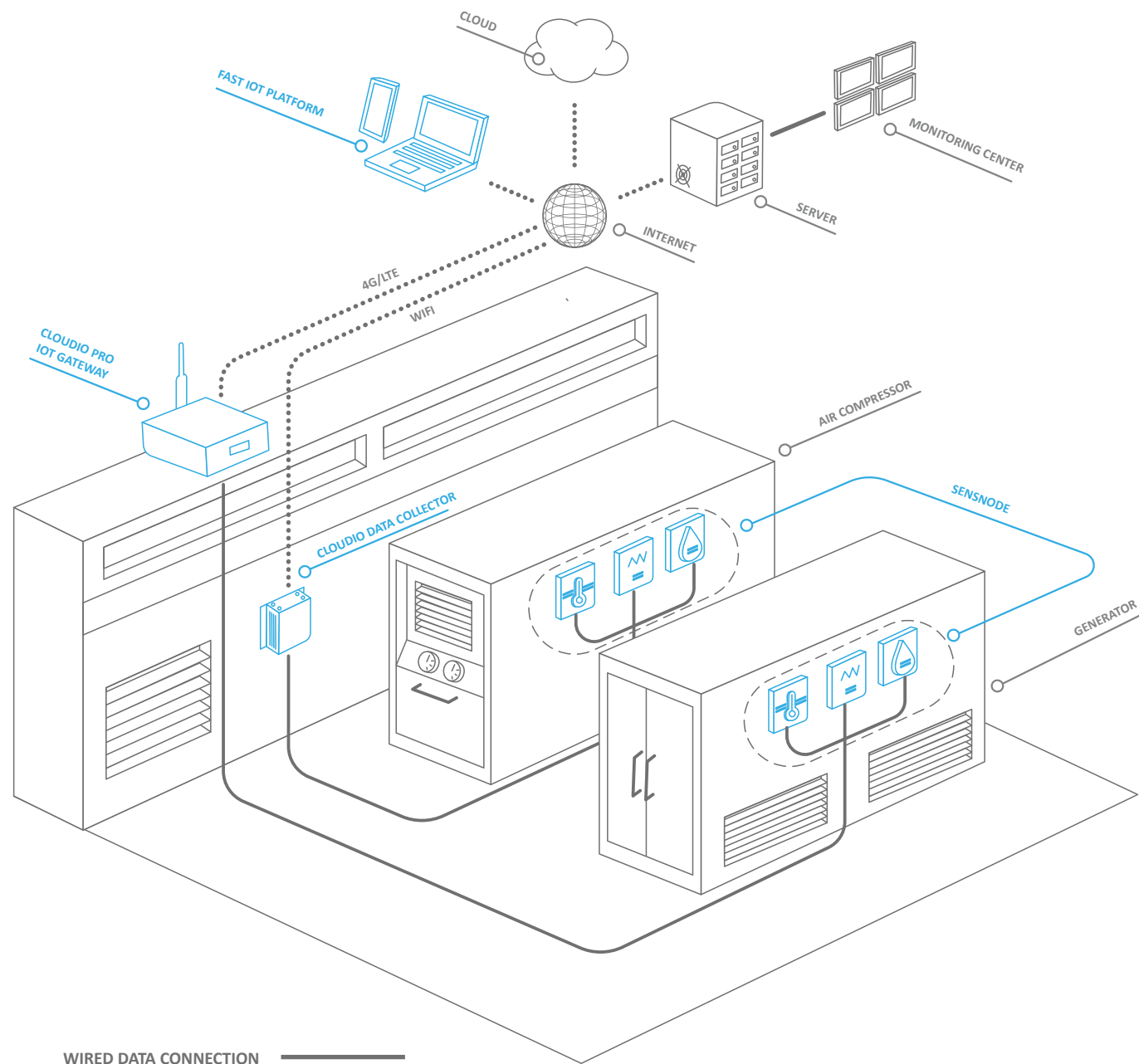
PROBLEM

Generator, Air Compressor, etc. In order to maximize the efficiency of use of the machines they produce, and to provide complete and easy after-sales service to their customers, they have to monitor their machines remotely and in real-time. Such complex machines have different types and types of sensors on them. At the same time, the energy data consumed by the machines is important for fault detection and efficiency. This solution requires a device that will collect all data and energy consumption data from a large number of different sensors placed in the installation. The collected data then needs to be forwarded to a monitoring center for processing. All of these parts need reliable and fast internet connection as unexpected changes in the system can be a sign of malfunction.

SOLUTIONS

Two different solutions can be provided according to suitable site conditions. Generally, CloudIO Pro IoT Gateway is used for this monitoring solution to transfer sensors and energy information to the center via 4G connection. CloudIO DataCollector is preferred for WiFi and Ethernet connections.

CloudIO Pro IoT Gateway collects data from sensors with an RS485 serial communication interface, analog inputs, digital inputs to sensors. After collecting energy and diagnostic data via Modbus, it transmits these data to the monitoring center using the MQTT protocol. The data is analyzed with Fast IoT Platform, the monitoring center software, and used to optimize the system and achieve the best result.

Multiple digital input/output connections allow remote control of devices connected to the CloudIO Pro IoT Gateway. Users can also securely connect to the router via a web interface using a VPN. It can also be used to access the system, perform checks, and change settings when on-site service is required.
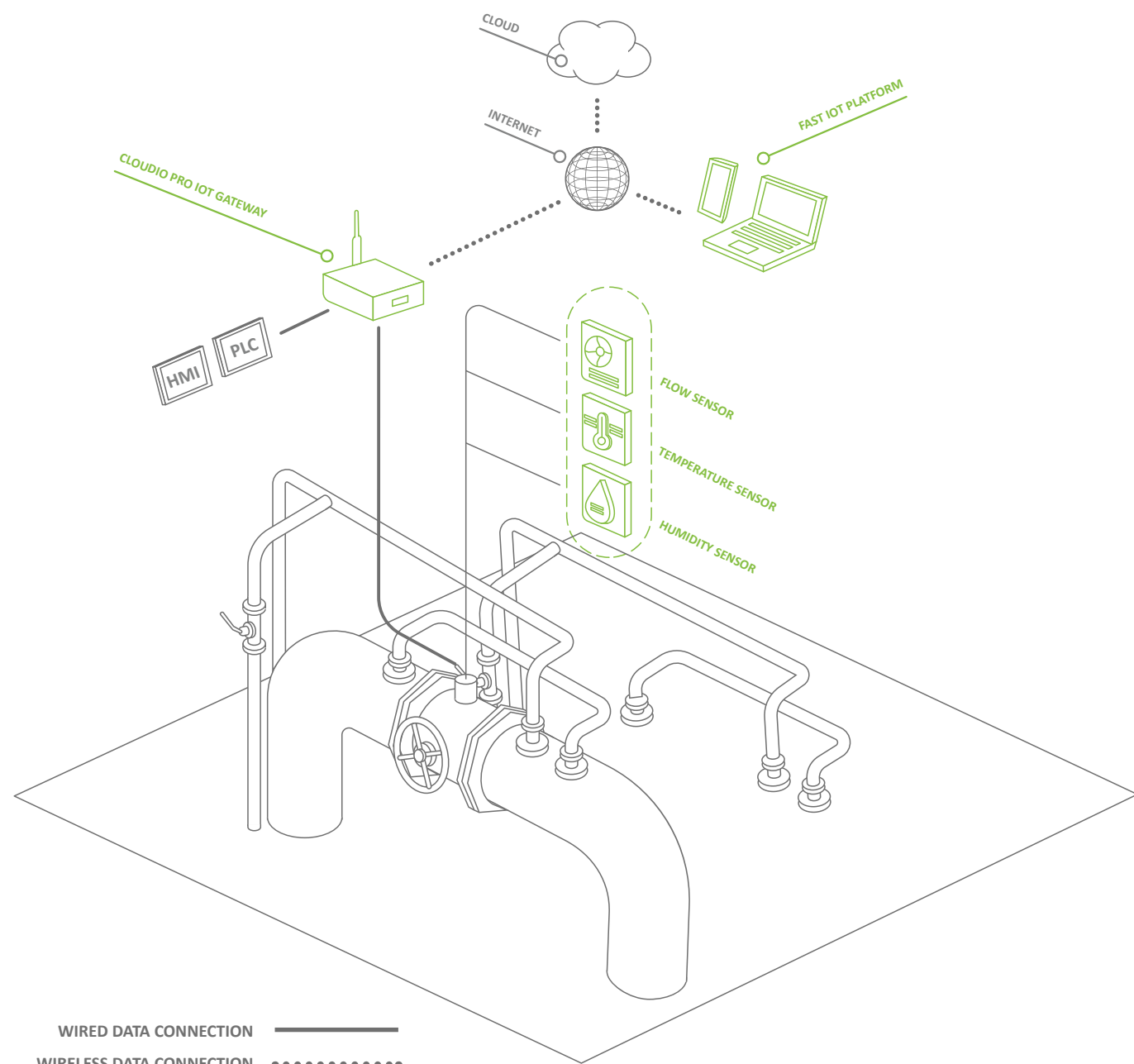
BENEFITS

Stable connectivity: CloudIO Pro IoT Gateway provides stable 4G/LTE connectivity for industrial installations.

Remote Input/output: It has RS-485 and a wide variety of digital and analog interfaces, perfect for industrial applications with many different components.

Industrial protocol: Modbus (RTU and TCP/IP) and MQTT protocols provide data collection and transmission to the analytical server.

Secure connection: It has multiple VPN options to choose from for encrypted data transfer.

DATA COLLECTION FOR MACHINE BUILDERS

ENERGY &
UTILITIES CASES

CLOUD

INTERNET

FAST IOT PLATFORM

CLOUDIO PRO IOT GATEWAY

HMI   PLC

FLOW SENSOR

TEMPERATURE SENSOR

HUMIDITY SENSOR

WIRED DATA CONNECTION

WIRELESS DATA CONNECTION
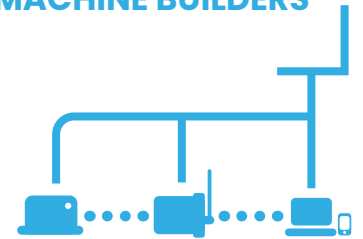
REMOTE MONITORING ON PIPELINES

PROBLEM

Obtaining energy from oil and gas resources is a complex process that requires a lot of infrastructures. Part of this infrastructure is pipelines, which are the key transport mechanism for the Oil and Gas industries. Pipelines are a safe, efficient, and cost-effective way to transport processed and unprocessed materials. They also work non-stop all the time outside of scheduled maintenance times. Important measurements such as flow rate, temperature, humidity, and pressure in the pipe should be monitored to diagnose potential safety and/or productivity issues beforehand. However, the bulk of the pipeline infrastructure is in rural and remote areas where there is usually no wired internet connection.

SOLUTIONS

Satellite communication for wireless internet is still quite expensive. Therefore, expanding the 4G LTE coverage globally will be the most cost-effective solution for monitoring Oil and Gas pipelines. A pipeline flow monitoring application is created using custom flow meters that support industrial protocols. Flow meters and other important sensors usually have serial communication via RS-485 and Modbus industrial protocol. Data produced by sensors such as flow meters, temperature sensors, humidity sensors must be transmitted to control centers, SCADA or IoT Platform systems in order to be collected and interpreted centrally.

CloudIO Pro IoT Gateway is the best choice for such applications. With its RS-485 interface, Modbus RTU function, it can periodically read the information of flow meters and other sensors and transmit the collected data via 4G LTE connection. It can send to remote servers with HTTP/HTTPS or to various IoT platforms using the MQTT protocol. Its wide power supply range and low energy consumption allow solar power operation. Finally, with the Ethernet port on it, it can connect to industrial products such as PLC, and HMI at pipeline observation points.

BENEFITS

High availability and low data cost – 4G LTE is highly available and cost-effective globally due to the low amount of data required for this application.

Data security – Supports enhanced data protection with Firewall and encryption with multiple VPN services.

Instant notifications – if the preset flow, temperature, humidity, and pressure values fall outside the defined criteria, system operators are instantly notified via SMS.
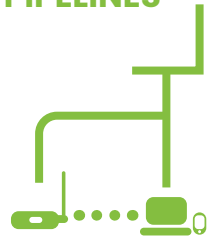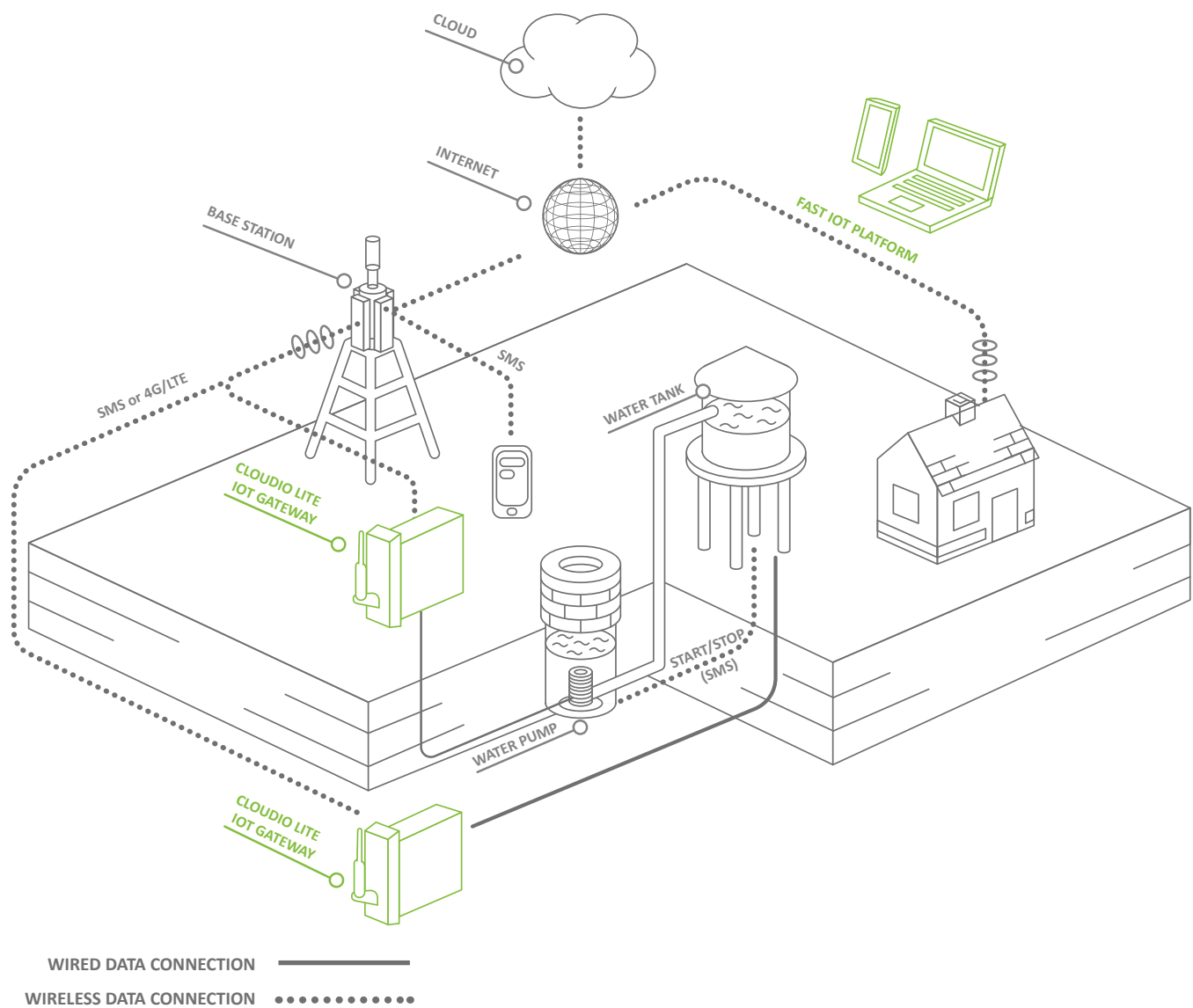
PROBLEM

Today, although modern technologies make remote control quite simple, cost efficiency and the field where the technology will be applied still determine the method of the solution. Although water pump and tank automation is used in city centers and industrial areas, it is generally used in drinking water automation of towns and villages in rural areas. Since the distances between the water well and the tanks are more than a few kilometers, communication over the cable is costly and difficult. The most suitable solution for such situations is to use the cellular network. The pump can be controlled by SMS messages using a mobile phone that is readily available everywhere. This simple control solution can also be used as a more comprehensive solution, such as control over the internet using a smartphone app.

SOLUTIONS

In this solution, the well, water pump, and control panel are located in a remote area, and the tank/tank where the water needs to be transported is located on a mountain a few kilometers away. The water pump fills the water tank in the mountain through the water pipe.

With CloudIO Lite IoT Gateway, the water pump is automatically turned on or off according to the tank level. Devices communicate with each other via SMS. If necessary, the relevant personnel can activate or deactivate the water pump by sending an SMS to the SIM card of the CloudIO Lite IoT Gateway connected to the pump control unit. Alarms such as critical water level and overflow water level on the tank side, and alarms such as power failure, unauthorized entry to the pump building, and thermal failure on the pump side can be sent to the relevant user via SMS.

BENEFITS

Cost-effective and simple remote SMS controlled solution.

Remote control via SMS - the pump can be managed at any time with a simple SMS message sent by a specific list of users.

Easy to install – the included easy installation guide is clear and simple.

OIL SENSOR
TEMPERATURE SENSOR
HUMIDITY SENSOR
SECURITY SENSOR
SENSNODE
LORAWAN GATEWAY
CLOUDIO PRO IOT GATEWAY
INTERNET
CLOUD
FAST IOT PLATFORM
MONITORING CENTER
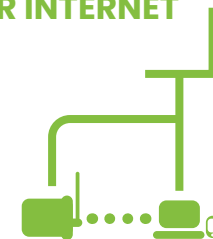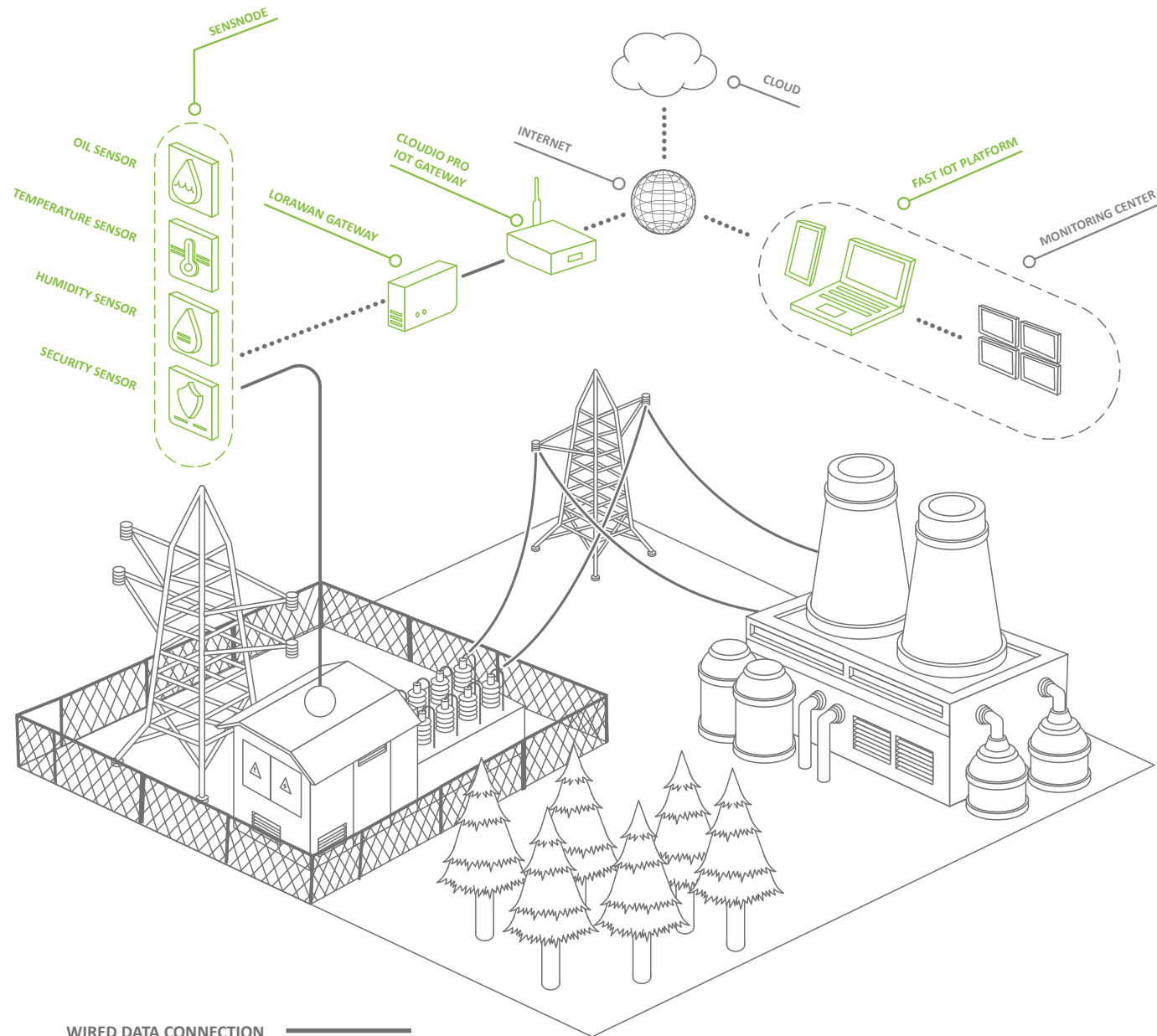
WIRED DATA CONNECTION
WIRELESS DATA CONNECTION

SMART GRID & SUBSTATION MONITORING

PROBLEM

Basically, the energy infrastructure consists of generation and transmission. Nuclear, coal, gas power plants, and renewable energy plants together generate electricity and transmit it to the grid using a series of high, medium, and low voltage stations and substations. This provides electricity to homes and businesses. All steps of generation and transmission must be closely monitored, with all components of the grid centrally controlled by professional engineers and advanced SCADA systems to ensure that the infrastructure produces enough power that is efficiently distributed throughout the energy network. Substations have a complex automation network managed by a substation controller. Monitoring of transformer environment information such as temperature, humidity, flooding, unauthorized entry, and oil level is also extremely important in substations. To enable the smart grid, all these need to be connected to the central SCADA system via the internet. Even where a wired Internet connection is available, the cellular connection and the Internet connection must be backed up for uninterrupted monitoring.

SOLUTIONS

A coverage area should be created with the LoraWan Gateway in order to collect the sensor data scattered in substations and energy grid areas without the need for cabling. LoraWan Gateway transfers the sensor information it collects to the SCADA system or IoT Platform over the internet. CloudIO Pro IoT Gateway with 4G LTE offers the most reliable connectivity for complex substation systems.
Transformer controllers usually have an RS-485 serial interface for communication. CloudIO Pro IoT Gateway is a cellular gateway that can connect with RS485, manage connections with multiple industrial and network protocols such as Modbus RTU and MQTT. It also has advanced security functions with a firewall and multiple supported VPNs.

BENEFITS

SensNode LoraWan sensors are battery-powered and easy to install.

CloudIO Pro IoT Gateway supports industrial, networking, and remote management protocols such as Modbus RTU and MQTT. It offers a firewall and multiple supported VPN services.
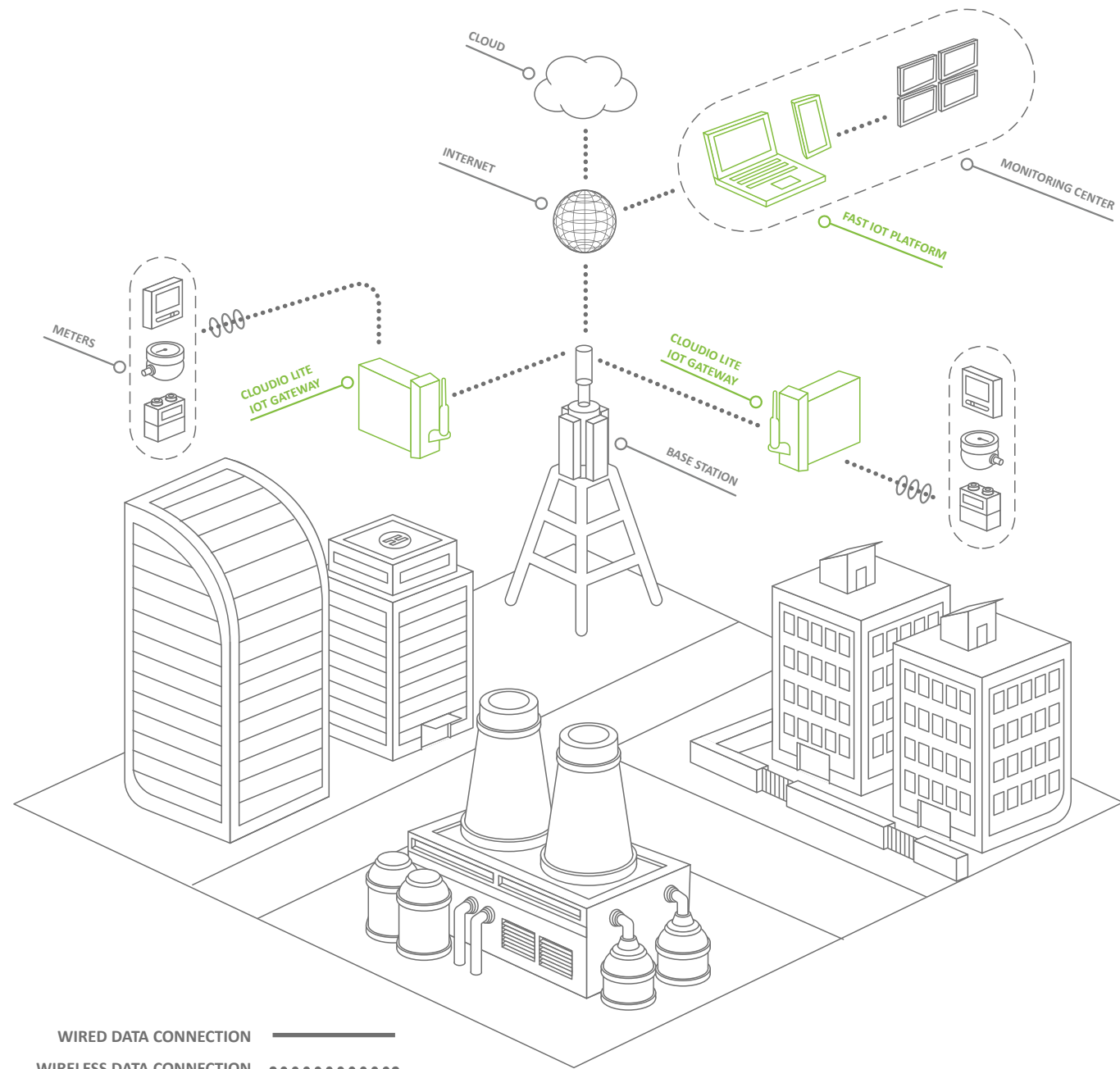
PROBLEM

With the developing urbanization, millions of homes and workplaces have subscribed to energy networks such as electricity, water and natural gas. The energy consumption of homes and workplaces is tracked and billed through meters. The meter reading personnel of the electricity distribution companies visit the meters in the designated area for certain periods of time, read the consumption information of the meters and enter this data into the system. This traditional solution is quite costly. On the other hand, situations such as erroneous reading are frequently experienced.

SOLUTIONS

By remotely reading meters such as electricity, water, and natural gas, meter reading operation costs and error reading rate are minimized. Even meters in geographically difficult areas can be read remotely in real-time. CloudIO Lite IoT Gateway reads all Modbus supported meters via RS485 connection and transfers these meter data to central software via HTTP/HTTPS or MQTT protocol over 2G connection. CloudIO Lite IoT Gateway can read multiple meters and types of meters. Thanks to the internal analog inputs and digital input/output interfaces, leak detection and on/off controls can be made remotely.

BENEFITS

Real-time reading: Provides real-time energy consumption tracking.

Economy: The meter reading minimizes the operation cost.

More reliable system: Minimizes the false reading rate of meters.

Remote control: With remote on/off, there is no need to physically go near the meter.

REMOTE ELECTRIC, WATER AND GAS METER READING

SMART CITY
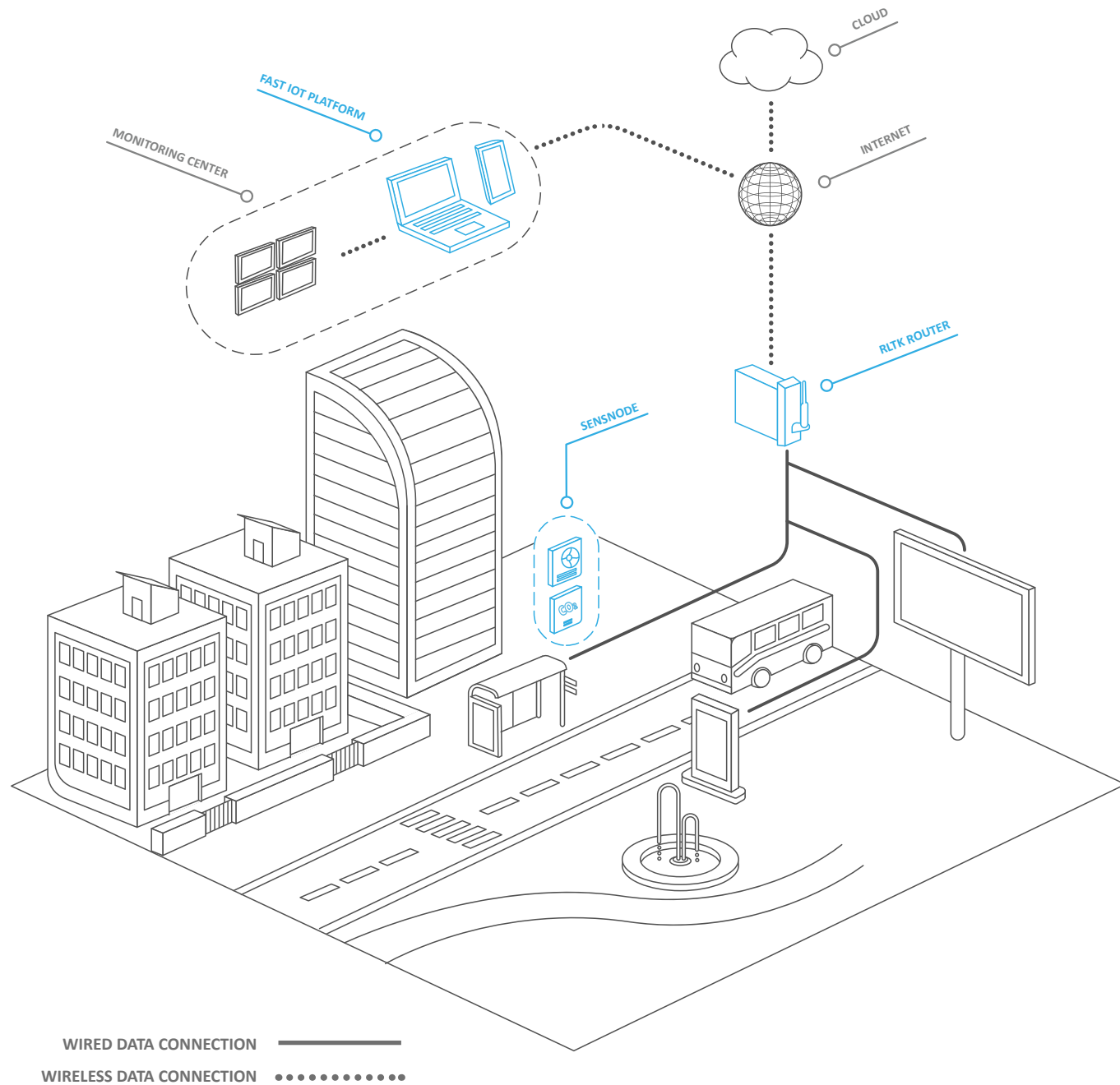
PROBLEM

Digital Billboards basically have a simple structure. It usually consists of a display panel and a media player with storage. But the real challenge is to control what content is displayed, at what intervals, and when. When we think that a single operator can be responsible for the large number of digital billboard screens in the field, we go to the digital billboard physically and see that manual loading is not even an option. In order to have an efficient business, the operator of the digital billboard infrastructure must be able to upload content and control all screens individually, without interruption, and in real-time.

SOLUTIONS

Digital Billboard needs reliable and convenient connectivity for efficient content management across its infrastructure. Cellular solutions based on 4G LTE are well suited for this use as they eliminate multiple challenges such as internet speed, different connectivity provider management, and dependency on 3rd party wired network infrastructure that cannot guarantee 100% uptime.

As defined in the topology, the media player is responsible for the playback of marketing content such as images or videos, while the RLTK Router is the device that enables the media player to access the internet, allowing the content to be uploaded and managed remotely. RLTK Router is a 4G LTE-enabled router. On the other hand, it also enables remote monitoring of sensors that can be positioned around digital billboards.

BENEFITS

SQuick installation: no need to wait for wired Internet access contracts, infrastructure, and installations.

Secure - RLTK Router products provide secure infrastructure with advanced security features such as APN, VPN, IPsec, Firewall, and Access Control.

Small size - RLTK Router features a compact design. It is easily stored on the digital billboard panel.

SECURE AND UNINTERRUPTED INTERNET FOR DIGITAL BILLBOARDS

REMOTELY CONTROLLED URBAN IRRIGATION SYSTEM
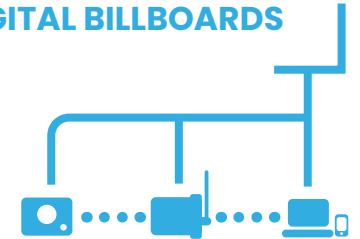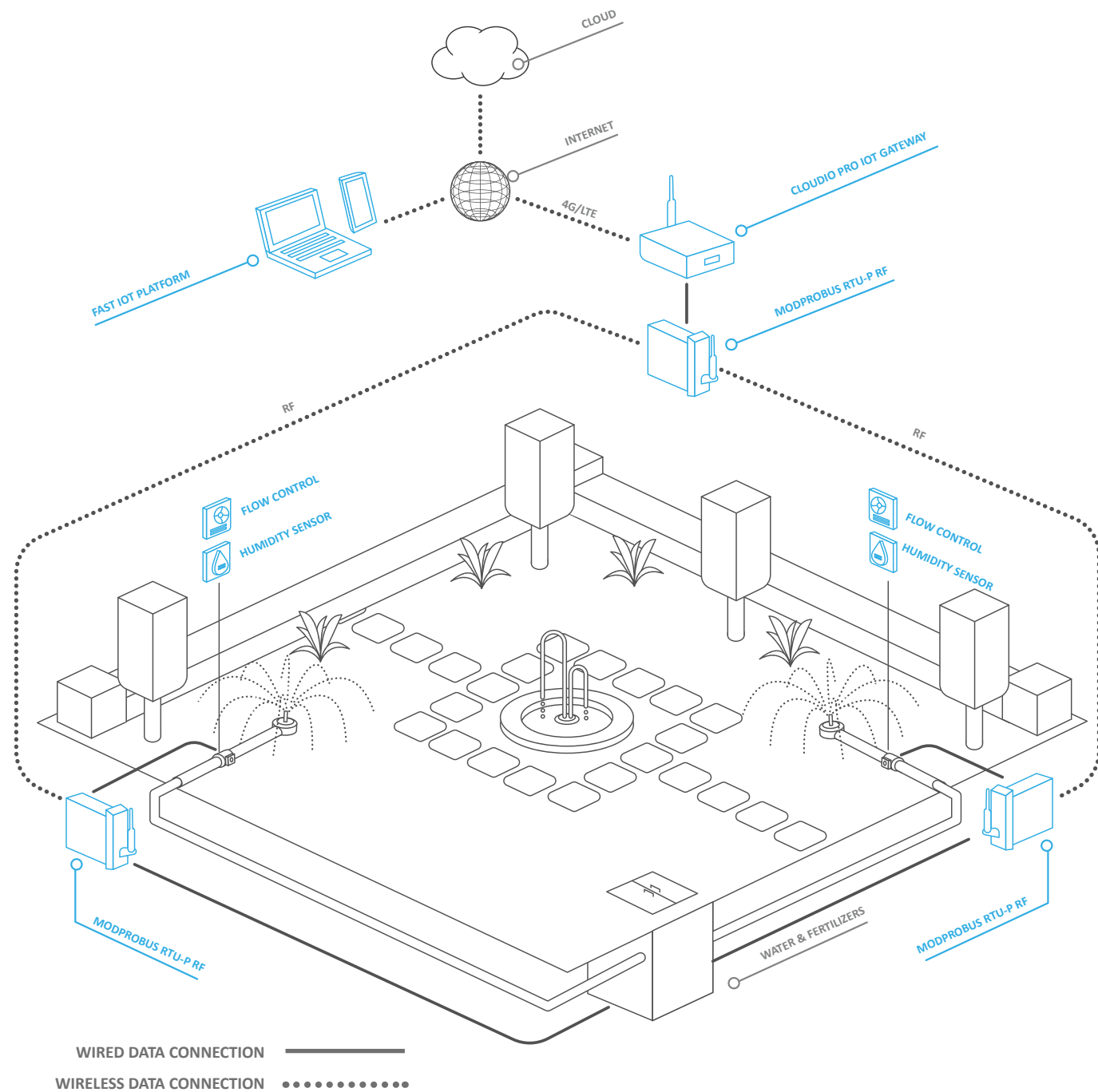
PROBLEM

Like potted plants in your home, plants in large city parks need constant care and adequate moisture to grow and thrive. It is easy to water a potted plant, but when the irrigation process comes to parks and gardens spread over many parts of the city, important problems such as operational costs and plant health arise.

The humidity needs to be just right, as plants grown in the city will experience drastic changes of the local microclimate. It is highly inefficient for staff to physically move around the city to check and maintain all green spaces. An irrigation system can eliminate such needs, making irrigation much faster and more efficient. To further increase the efficiency of such a solution, the irrigation system can be automated. But such a solution requires connectivity for all sensors and control equipment in the irrigation system.

SOLUTIONS

In order to provide remote irrigation system control in green areas, sensors such as temperature, humidity, soil moisture, pressure, flow meters, and electrical valves should be used.

ModProBus RTU-P RF product enables the collection of sensor and valve information from parks and gardens by radiofrequency. CloudIO Pro IoT Gateway transmits this information to the Fast IoT Platform over 4G LTE connection. The Fast IoT Platform knows the appropriate predetermined humidity for each zone and ensures that the electric valves operate accordingly. Insufficient or excessive irrigation is prevented, and the health of plants and all irrigation equipment is monitored remotely. Optionally, the irrigation system works automatically and can be monitored and controlled in real-time.

BENEFITS

ModProBus RTU-P RF uses a free band for communication. It does not create communication costs.

Multiple I/O connections on ModProBus RTU-P RF allow remote monitoring and control of connected equipment.

CloudIO Pro IoT Gateway provides 4G LTE connectivity that enables data collected from sensors to be transferred to the monitoring center.

Fast IoT Platform provides real-time monitoring, control and automation of the system.
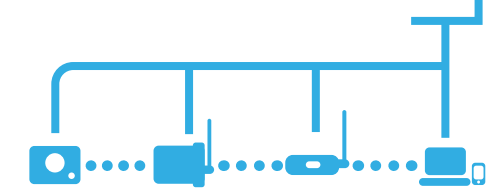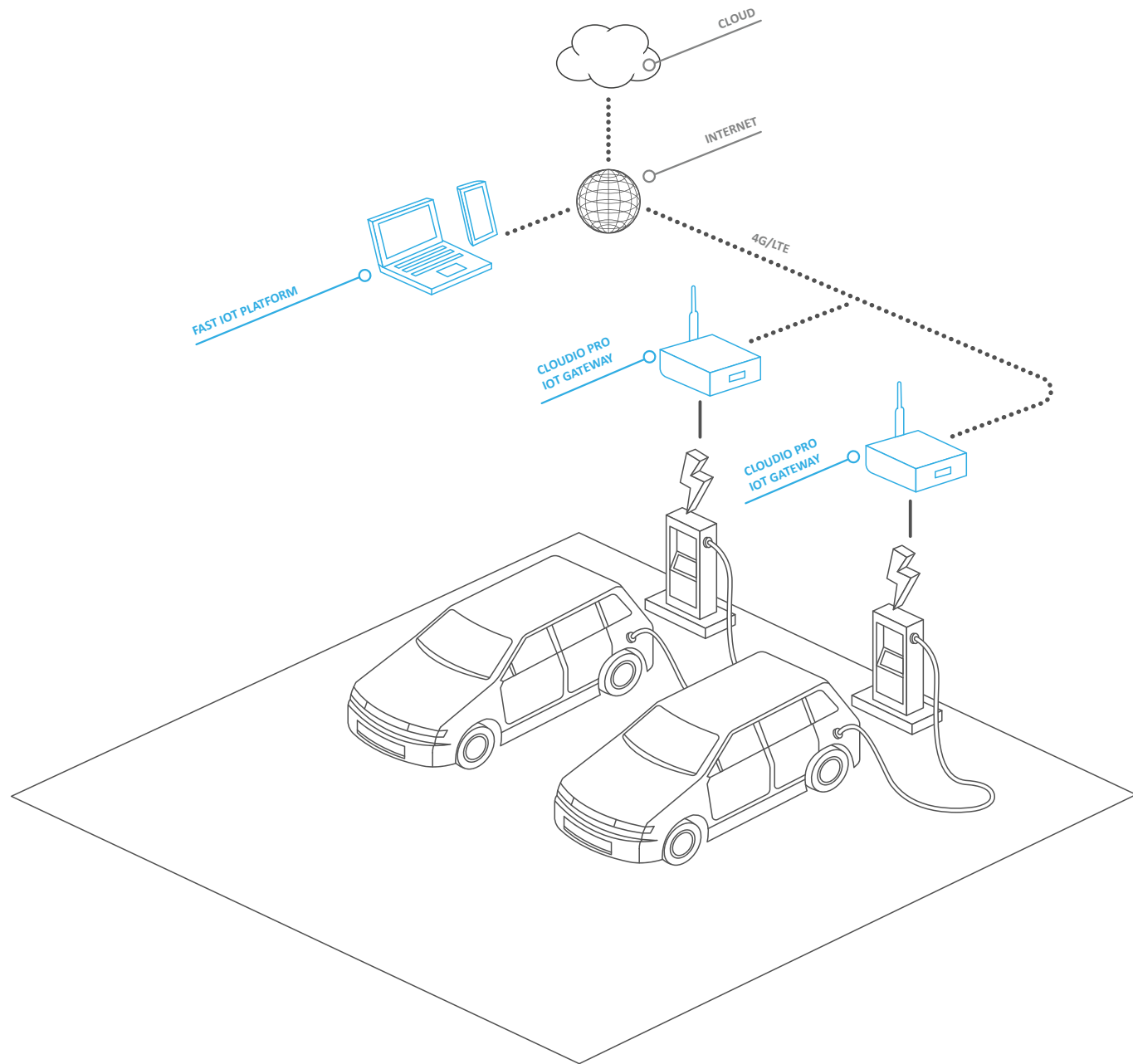
PROBLEM

In order to help the rapidly growing electric vehicle infrastructure, many companies have started to work on a new generation of the electric vehicle charging stations. New charging stations need a power source, payment systems, and reliable connectivity. All this also requires access to the Internet. If there is no internet infrastructure in a region, it would be very inefficient to create a new infrastructure just to set up a charging station. Therefore, a wired connection is not always a good option. In cases where there is a wired connection, it is best to back up this connection with a cellular connection.

SOLUTIONS

CloudIO Pro IoT Gateway is used for the electric vehicle charging station IoT solution.
CloudIO Pro IoT Gateway provides internet access over a cellular 4G connection without the need for any wired connection. Thanks to this connection, it can collect data from charging stations and manage them remotely with Fast IoT Platform, a cloud-based management system. Remote management helps to change settings, and perform firmware and payment system updates without visiting each charging station. It can also enable users to check the availability of charging stations and book them in advance.

In addition, CloudIO Pro IoT Gateway has a wireless access point functionality required for NFC (Near Field Communication) wireless payments. Customers can then pay for EV charging services using smart wallets or credit cards. CloudIO Pro IoT Gateway can be easily integrated into an EV charger, thanks to its compact design and plug-and-play functionality enabled by its wireless setup.

BENEFITS

CloudIO Pro IoT Gateway offers the high-level security any payment solution needs with the help of Firewall, Auto Encryption modes, and client separation.

CloudIO Pro IoT Gateway is compact allowing it to be integrated into an intelligent IoT solution without sacrificing aesthetics.

Fast IoT Platform enables remote real-time monitoring and control of electric vehicle charging stations. It visualizes the data obtained from the stations, and reports and creates alarms in unexpected situations.
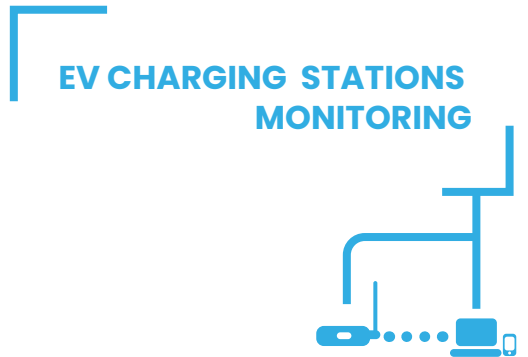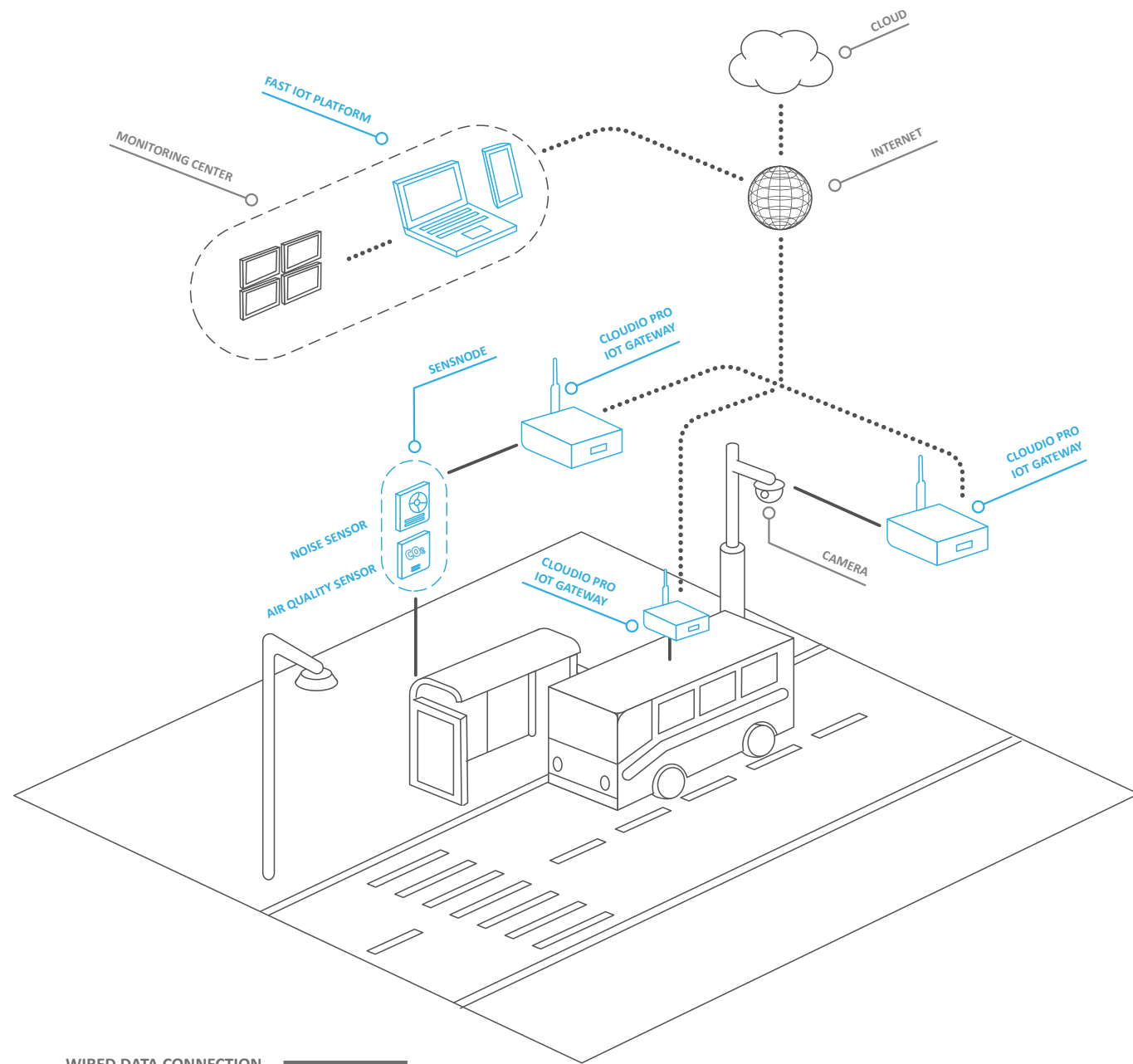
PROBLEM

Equipment such as sensors, cameras, digital screens, and payment systems in public transportation vehicles needs an internet connection for remote monitoring and control. In addition, many passengers on public transport want to use social media when traveling, read the news on the way to work or meet friends and family face-to-face. A strong internet connection is required for all these activities. However, the most difficult part of this job is to provide the connection on the move, and on the water for ferries and ferries.

While the bus and train are on land and the ferry is on the water, the router has to quickly switch to different base stations due to the changing geographical location. In addition, since many users will be connected to a network at the same time, a strong, uninterrupted and secure internet connection is needed.
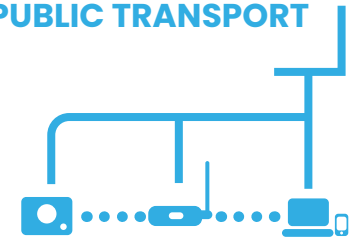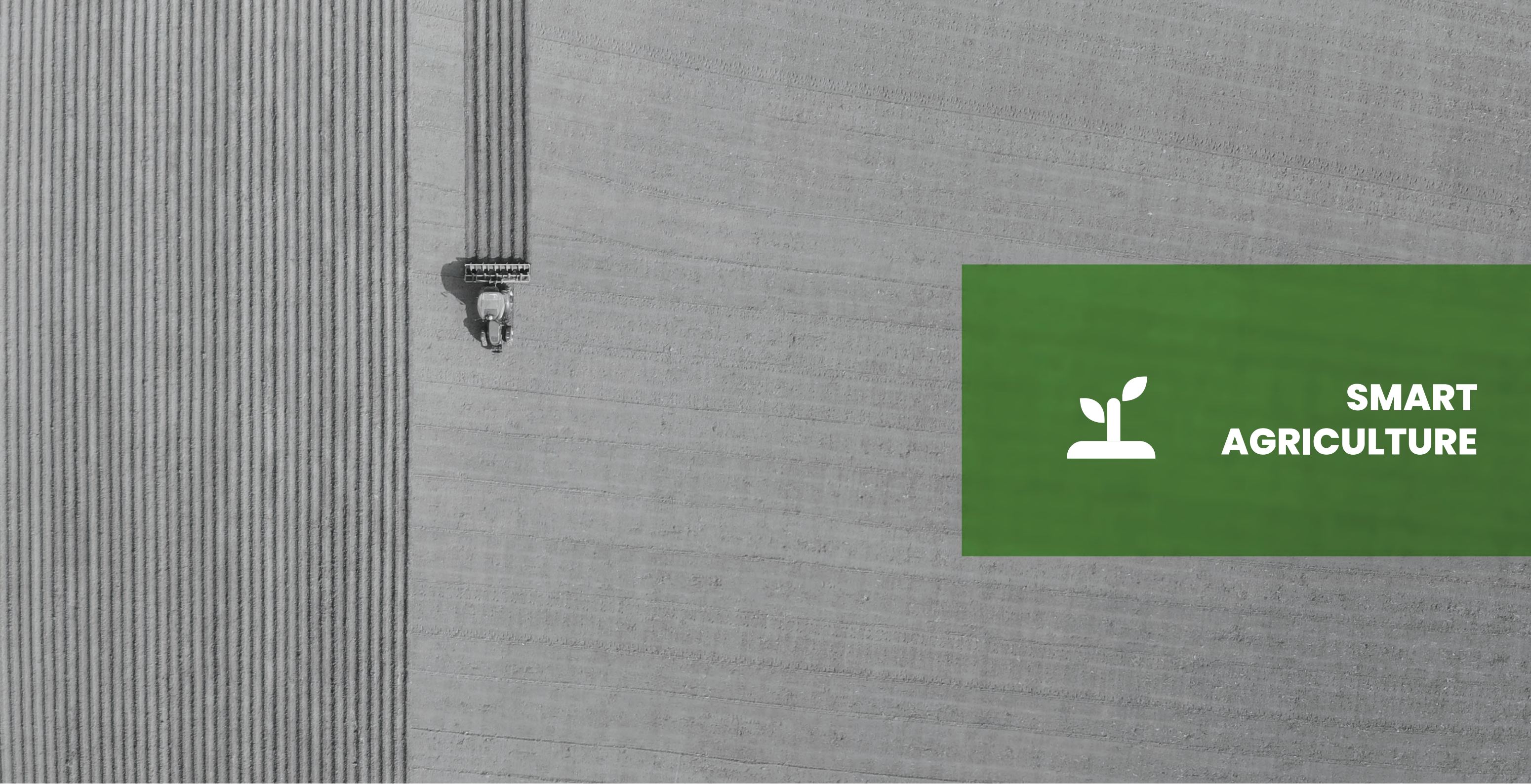
SOLUTIONS

CloudIO Pro IoT Gateway is used as an IoT solution that will help provide a stable wireless internet connection to equipment and passengers in public transportation. CloudIO Pro IoT Gateway provides convenient RS485, analog input, digital input/output interfaces for sensors and equipment, and a fast and stable WiFi internet access point for passengers.
This function enhances the security of the network with special accessibility settings where certain permissions can be set. It can also be used for marketing and research purposes as it can collect data from connected devices or display targeted advertisements while accessing the web.
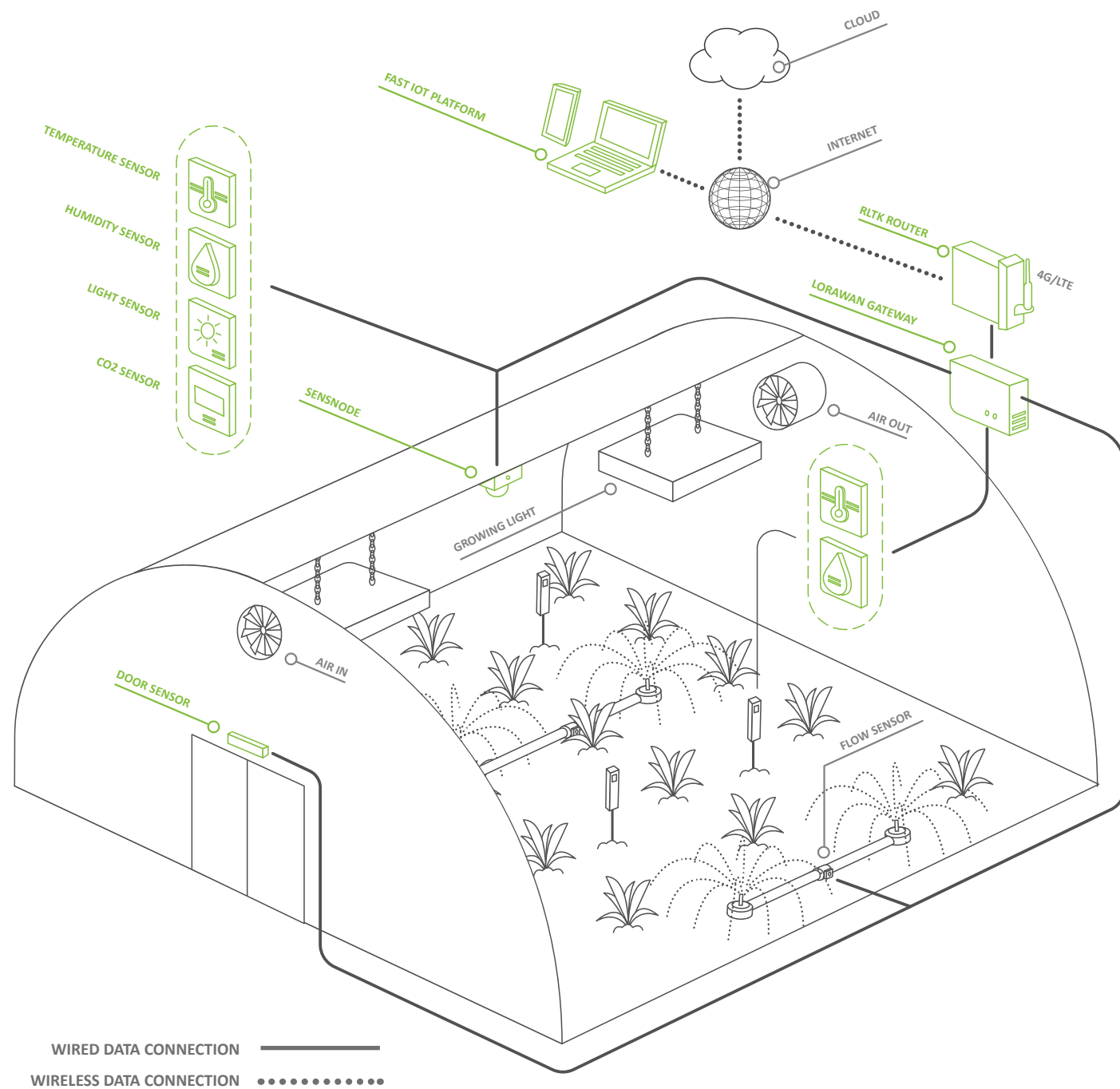
BENEFITS

CloudIO Pro IoT Gateway has a stable and high-speed internet connection.

Wide operating humidity and temperature range, CloudIO Pro IoT Gateway can be used in harsh environments such as ferries and ferries.

CloudIO Pro IoT Gateway has a number of advanced security features such as a VPN and Firewall that ensure the connection is secure.

CloudIO Pro IoT Gateway has RS-485, analog inputs, and digital input/output interfaces.

POWERFUL INTERNET CONNECTION FOR PUBLIC TRANSPORT

SMART
AGRICULTURE

CLOUD

FAST IOT PLATFORM

INTERNET

TEMPERATURE SENSOR

HUMIDITY SENSOR

RLTK ROUTER

LIGHT SENSOR

4G/LTE

CO2 SENSOR

LORAWAN GATEWAY

SENSNODE

AIR OUT

GROWING LIGHT

AIR IN

DOOR SENSOR

FLOW SENSOR

WIRED DATA CONNECTION

WIRELESS DATA CONNECTION

REMOTE GREENHOUSE MONITORING

PROBLEM

For the health and efficiency of the crop produced in greenhouses, it is critical to monitor and control soil temperature and humidity, ambient temperature and humidity, light intensity, carbon dioxide, and similar data. If these critical values come to a different level than they should be, all products may be lost or, at best, efficiency will decrease. Continuous management of the series by an operator also creates operational costs. This is why basic tasks such as ventilation and irrigation need to be automated whenever possible.

SOLUTIONS

For the health and efficiency of the crop produced in greenhouses, it is critical to monitor and control soil temperature and humidity, ambient temperature and humidity, light intensity, carbon dioxide, and similar data. If these critical values come to a different level than they should be, all products may be lost or, at best, efficiency will decrease. Continuous management of the series by an operator also creates operational costs. This is why basic tasks such as ventilation and irrigation need to be automated whenever possible.

BENEFITS

SensNode LoraWan sensors are battery-powered and provide ease of installation.

RLTK Router provides an uninterrupted and strong internet connection without the need for infrastructure.

Fast IoT Platform provides anywhere, real-time monitoring and greenhouse automation.
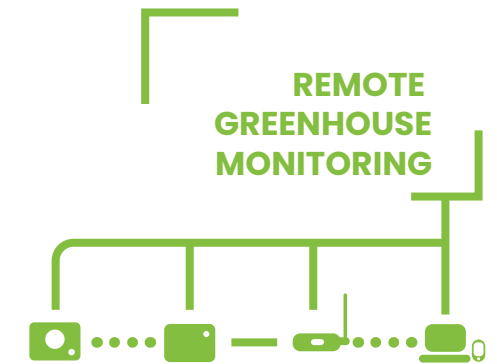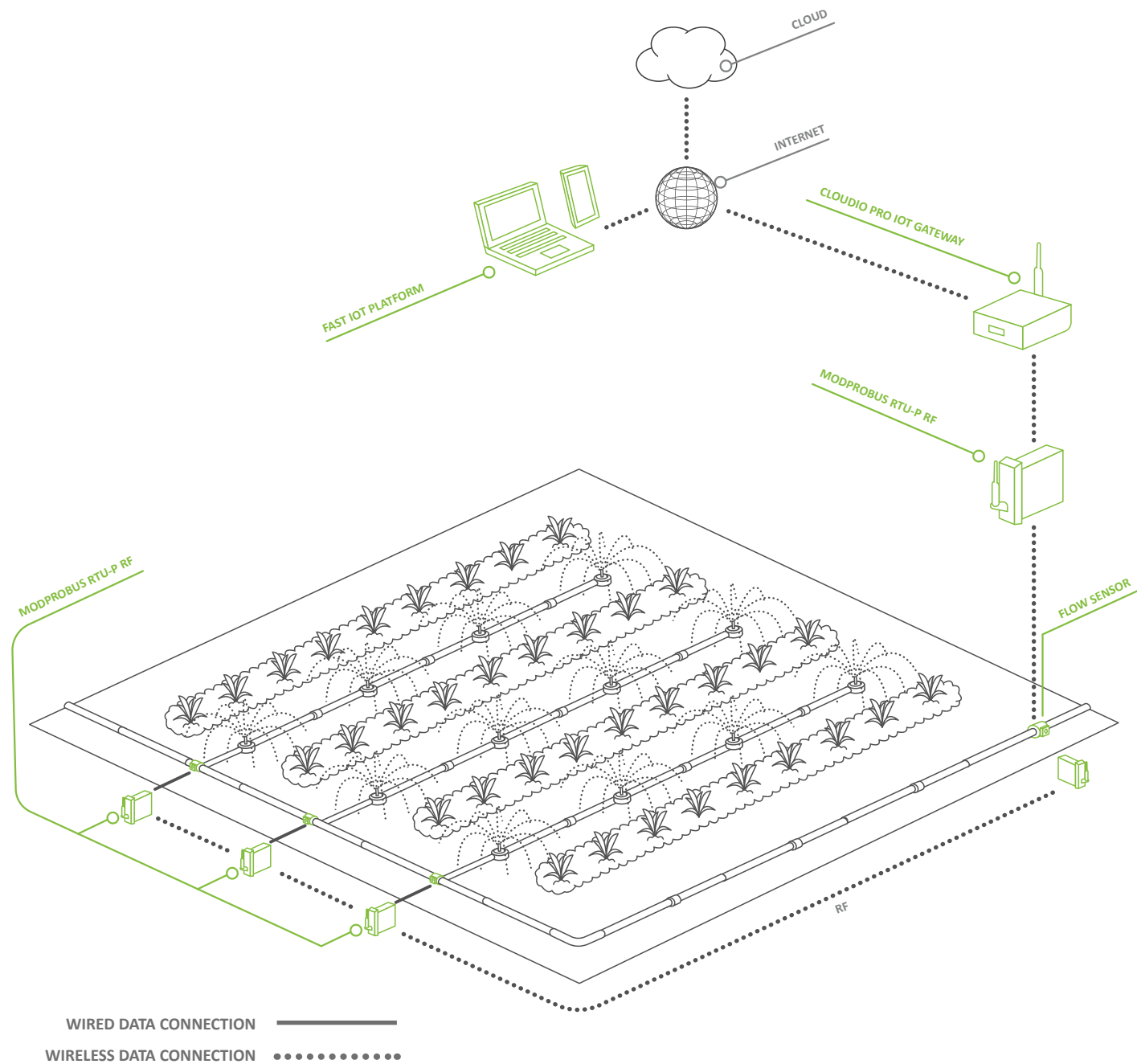
PROBLEM

Very large agricultural lands are generally irrigated with solenoid valves. Due to the size of the agricultural land, its geographical difficulty, and its distance from the living centers, it is not an efficient way to physically go to the land and activate the valves during peak irrigation times. It is very important for the production efficiency to follow the amount of irrigation and not to make unnecessary irrigation. There is some closed-circuit and cable irrigation automation, but cable pulling and labor in large areas create unnecessary costs. For this reason, the system to be built must be wireless and remotely accessible.
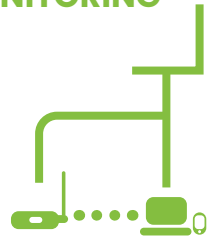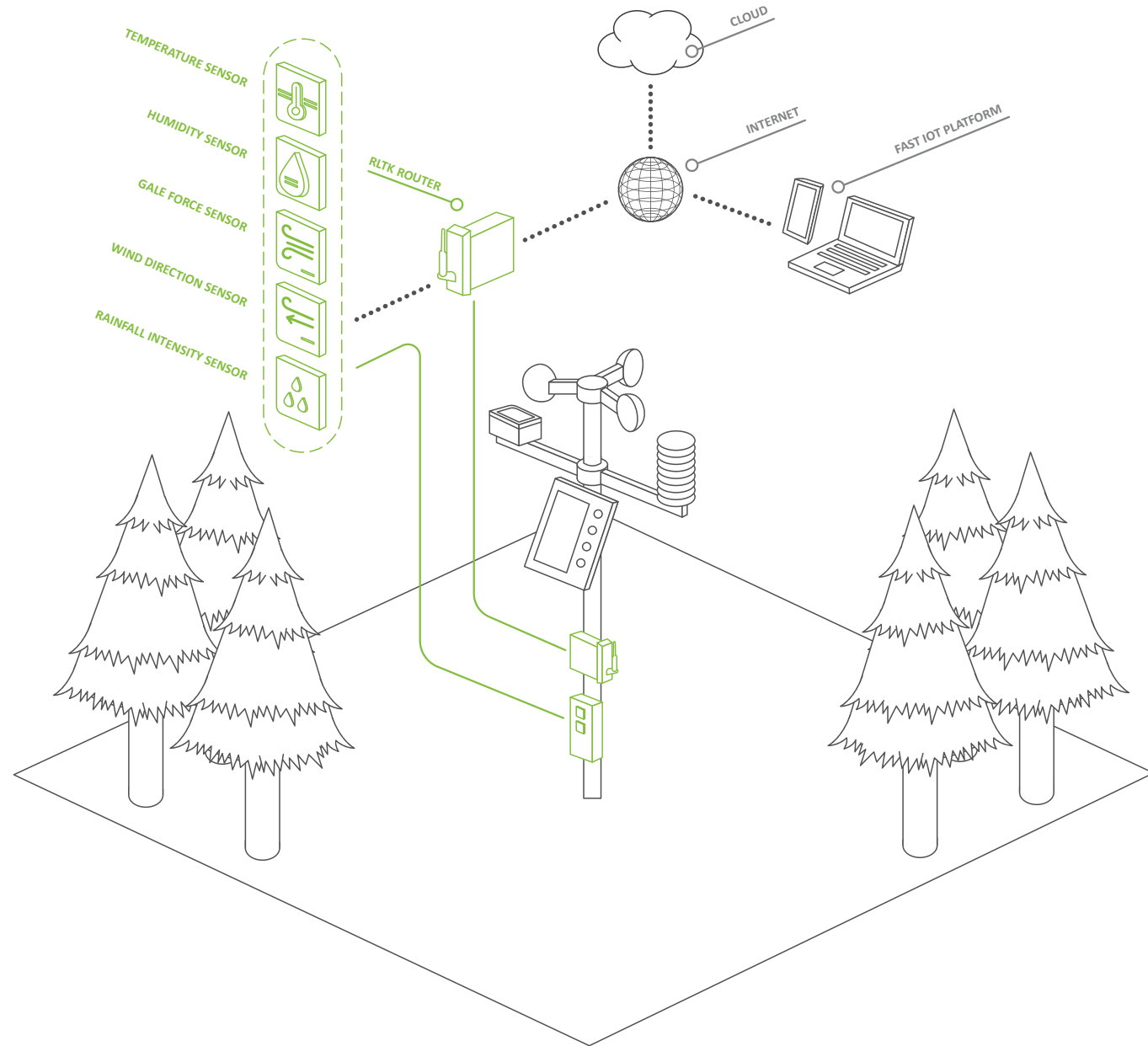
SOLUTIONS

ModProBus RTU-P RF modem wirelessly controls the solenoid valve in line with the commands it receives from the center and transfers the sensor data and valve status information connected to it to the central point. The CloudIO Pro IoT Gateway at the central point enables this data to be transferred to SCADA systems or the cloud-based Fast IoT Platform. Fast IoT Platform processes, visualizes and reports all irrigation-related data. Informs the relevant persons about the abnormal situations that may occur in the irrigation system and equipment. In this way, maximum efficiency in production is achieved with correct irrigation.

BENEFITS

- ModProBus RTU-P RF provides free communication with radiofrequency without the need for cabling.

- CloudIO Pro IoT Gateway enables the transfer of field data to central software with an uninterrupted and strong internet connection.

- Fast IoT Platform automates pivot and drip irrigation systems. Processes analyze and reports data. Notifies the relevant persons of the abnormal situations.

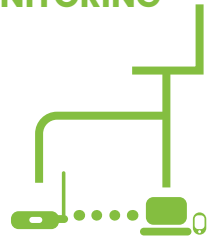## REMOTE PIVOT AND DRIP IRRIGATION SYSTEM MONITORING

TEMPERATURE SENSOR

HUMIDITY SENSOR

GALE FORCE SENSOR

WIND DIRECTION SENSOR

RAINFALL INTENSITY SENSOR

RLTK ROUTER

CLOUD

INTERNET

FAST IOT PLATFORM

WIRED DATA CONNECTION

WIRELESS DATA CONNECTION

REMOTE WEATHER STATION MONITORING

PROBLEM

Meteorological data is very valuable for smart cities and smart agriculture applications. Sensor data such as air temperature, air humidity, wind intensity, wind direction, atmospheric pressure, ultraviolet, precipitation type, precipitation intensity, air quality, particle density (PM2.5, PM10), noise, light intensity, etc. availability is extremely important. However, these data alone do not mean much. All data needs to be processed, visualized, and modeled. In this way, in smart city, smart agriculture applications, using this data, farmers make irrigation planning according to the precipitation situation in smart agriculture applications. It prevents the products from being damaged by taking quick measures in sudden temperature drops. In smart city applications, studies are carried out to determine the regions with air and noise pollution and to eliminate the sources of pollution.
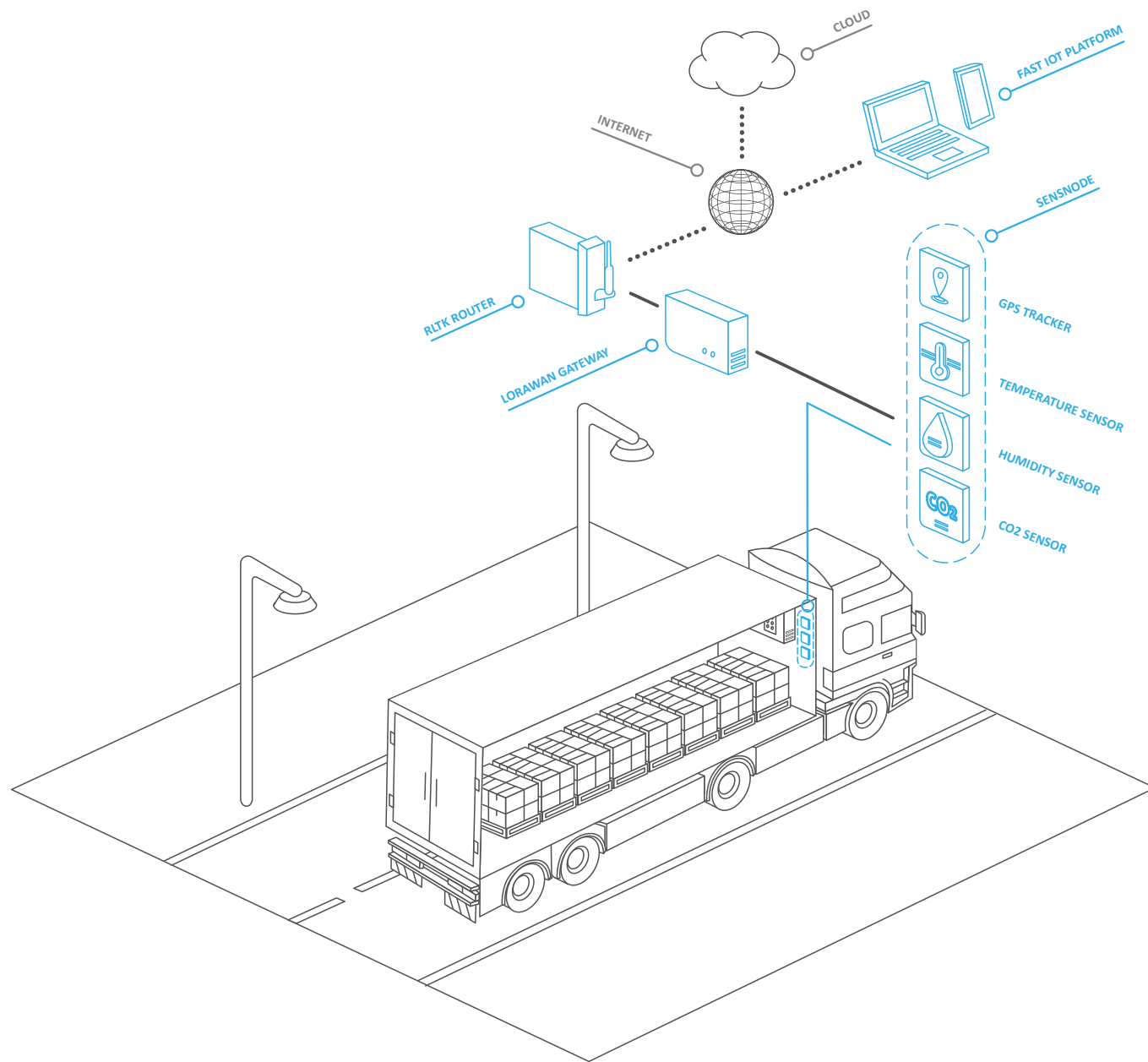
SOLUTIONS

RLTK Router, with its uninterrupted and strong 4G LTE connection, transmits the sensor information of the meteorology station, both in the countryside and in the city center, to the Fast IoT Platform, which is cloud-based monitoring software in real-time. Data is processed, visualized and reported here. In exceptional cases, the relevant persons are informed. According to the valuable meteorological data collected in the Fast IoT Platform, different systems such as irrigation systems and ventilation systems can be activated or deactivated.

BENEFITS

RLTK Router provides a stable and uninterrupted 4G LTE internet connection.

Fast IoT Platform processes data, visualizes, reports, and reports alarm conditions.

RETAIL

CLOUD

FAST IOT PLATFORM

INTERNET

SENSNODE

RLTK ROUTER

GPS TRACKER

LORAWAN GATEWAY

TEMPERATURE SENSOR

HUMIDITY SENSOR

CO₂

CO2 SENSOR

WIRED DATA CONNECTION

WIRELESS DATA CONNECTION

COLD CHAIN MONITORING

PROBLEM

When the temperature range requirements of food products, chemical products, drugs and vaccines are not met, even for a short time, they become unusable and must be destroyed. Since this situation causes very high financial losses, businesses have to constantly monitor some critical values in the supply chain. It is important that the follow-up is throughout the entire chain. Products may wait in some different warehouses during the logistics process. Continuous measurement in all environments and real-time monitoring of measurement information is critical.
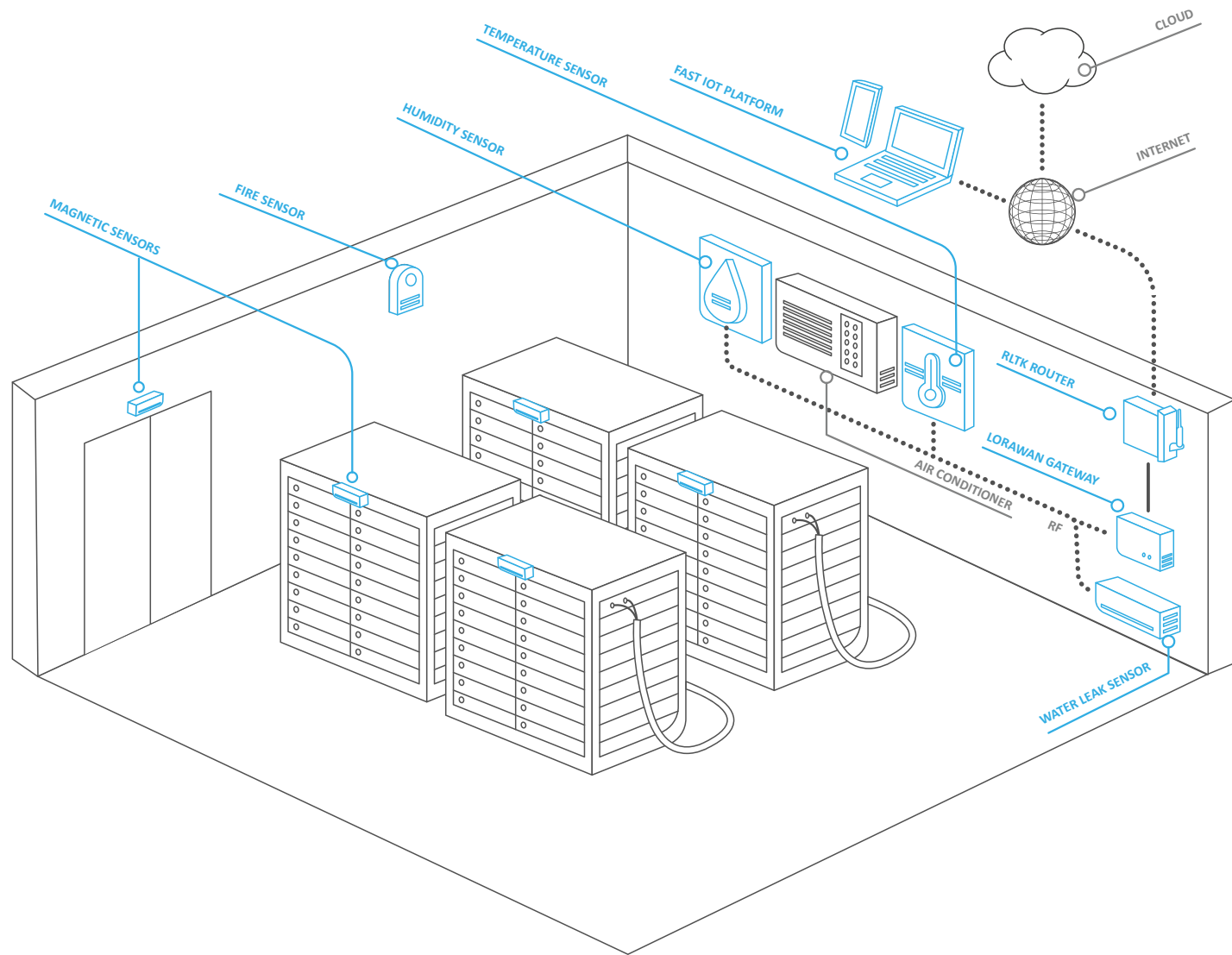
SOLUTIONS

Warehouses of products, shipping trucks, and all areas where products will wait, even temporarily, are covered by creating a LoraWan network with LoraWan Gateways.

By attaching SensNode LoraWan sensors to the pallets or boxes where the products are transported, efficient tracking is provided in the supply chain. Depending on what kind of metrics need to be tracked, GPS, temperature, humidity, light intensity, carbon dioxide, etc. It sends measurement values to LoraWan Gateways for monitoring dozens of different sensors such as LoraWan Gateways sends sensor information to Fast IoT Platform via MQTT or HTTPS protocols, thanks to an uninterrupted and secure internet connection with RLTK Router. All environments that make up the supply chain are monitored and reported in real-time. In case the collected data is abnormal, an alarm is generated and the relevant persons are informed without delay and necessary measures are taken without delay. Only in this way can it be ensured that the cold chain of the products is not disturbed.

BENEFITS

Reliable connection: Stable and strong internet connection.

Simple installation: SensNode LoraWan sensors are battery-powered and easy to install.

Precise traceability: Fast IoT Platform records and reports all the data it receives

SYSTEM ROOM AND ENVIRONMENT MONITORING

Labels on diagram:
- TEMPERATURE SENSOR
- HUMIDITY SENSOR
- FIRE SENSOR
- MAGNETIC SENSORS
- FAST IOT PLATFORM
- CLOUD
- INTERNET
- RLTK ROUTER
- LORAWAN GATEWAY
- AIR CONDITIONER
- RF
- WATER LEAK SENSOR
- WIRED DATA CONNECTION
- WIRELESS DATA CONNECTION

PROBLEM

Municipalities, Factories, Institutional buildings, etc. All similar places must have a server room. Server rooms are areas where critical data is kept and archived. So it must be safe, fire, flood, etc. precautions should be taken for such cases. Early detection is very important for rapid intervention in these adverse situations that may occur. For early detection of negativities, system room and environment information should be monitored and recorded in real-time. Temperature, humidity, flooding, door and server cabinets (magnetic detectors) in system rooms, smoke detectors, etc. in the room. the information must be followed.
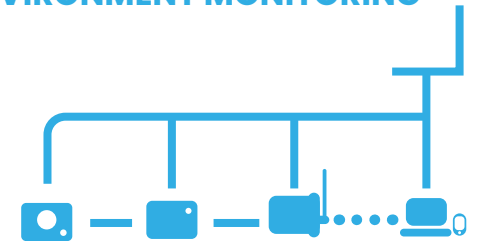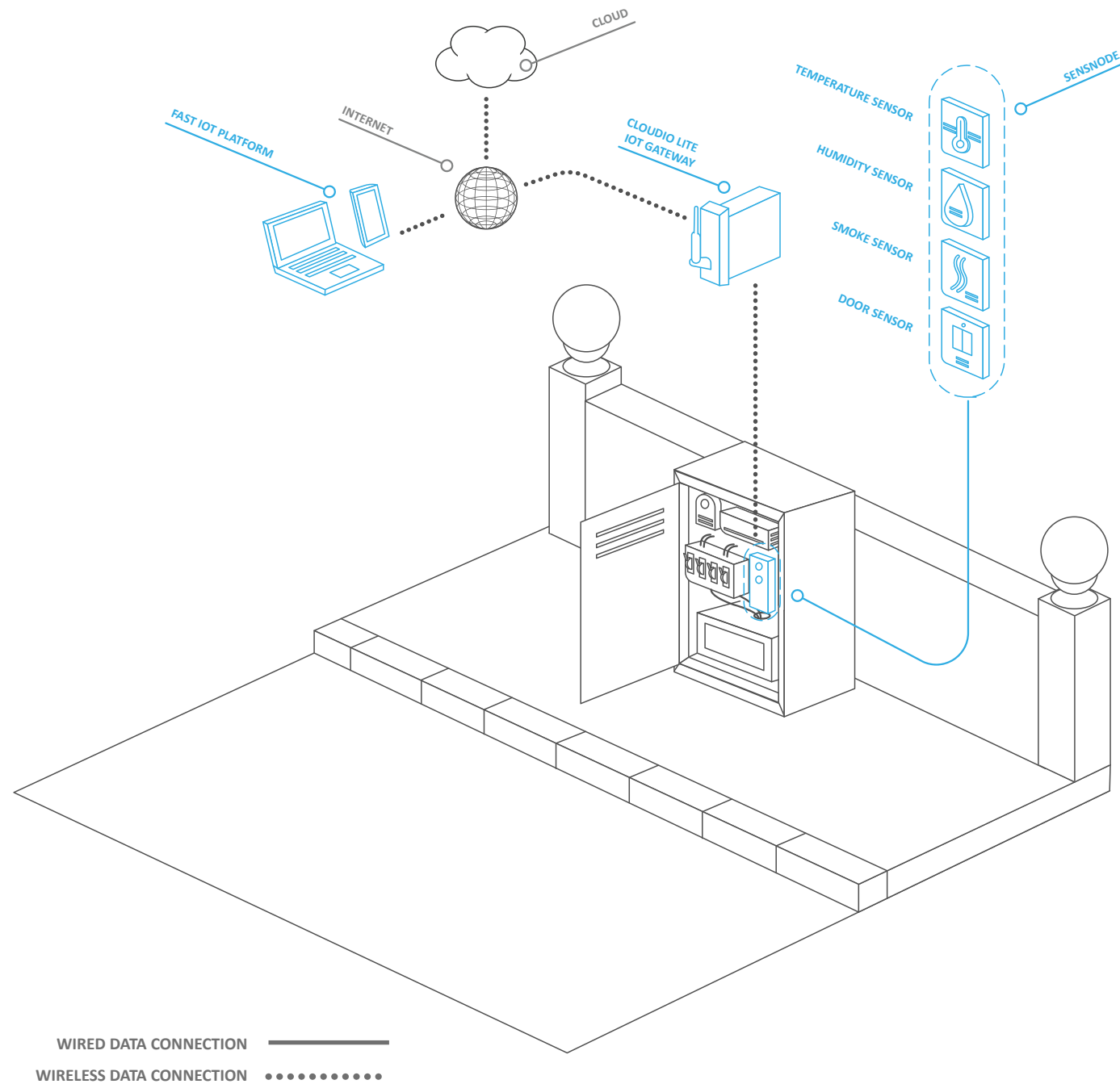
SOLUTIONS

Temperature, humidity, flood, door and server cabinets (magnetic detectors), smoke detectors, etc. in the room, which will follow the environment information in the server rooms. The sensors may need to be dispersed. That's why wireless SensNode LoraWan sensors are used. By creating a LoraWan coverage area in the server room, the data of the sensors are collected. The collected data is transferred to Fast IoT Platform with HTTP/HTTPS or MQTT protocol over 4G LTE cellular internet with RLTK Router. Fast IoT Platform records, processes, visualizes and reports all data. It creates an instant alarm for values out of the ordinary and informs the relevant people via SMS and e-mail. In this way, serious data loss is prevented.

BENEFITS

RLTK Router: Provides stable and uninterrupted 4G LTE internet.

SensNode LoraWan Sensors: Wireless and battery-powered. It provides ease of assembly.

Immediate response: systems are triggered immediately in case of any abnormality and gives a warning before serious damage occurs.

Scalability: a single solution can be easily used and monitored at many points.

CLOUD

INTERNET

FAST IOT PLATFORM

CLOUDIO LITE
IOT GATEWAY

TEMPERATURE SENSOR

HUMIDITY SENSOR

SMOKE SENSOR

DOOR SENSOR

SENSNODE

REMOTE CABINET
MONITORING

PROBLEM

In cities, there are cabinets that contain valuable and operationally critical equipment (PLC, Industrial sensors, etc.), such as CCTV panels used for security, internet distribution panels, electricity distribution panels, and traffic lights control panels. These cabinets are open to vandalism, theft, sabotage, fire, and flood risk. Therefore, it is extremely critical to monitor the status of the cabinets in real-time.
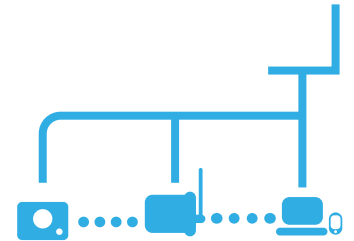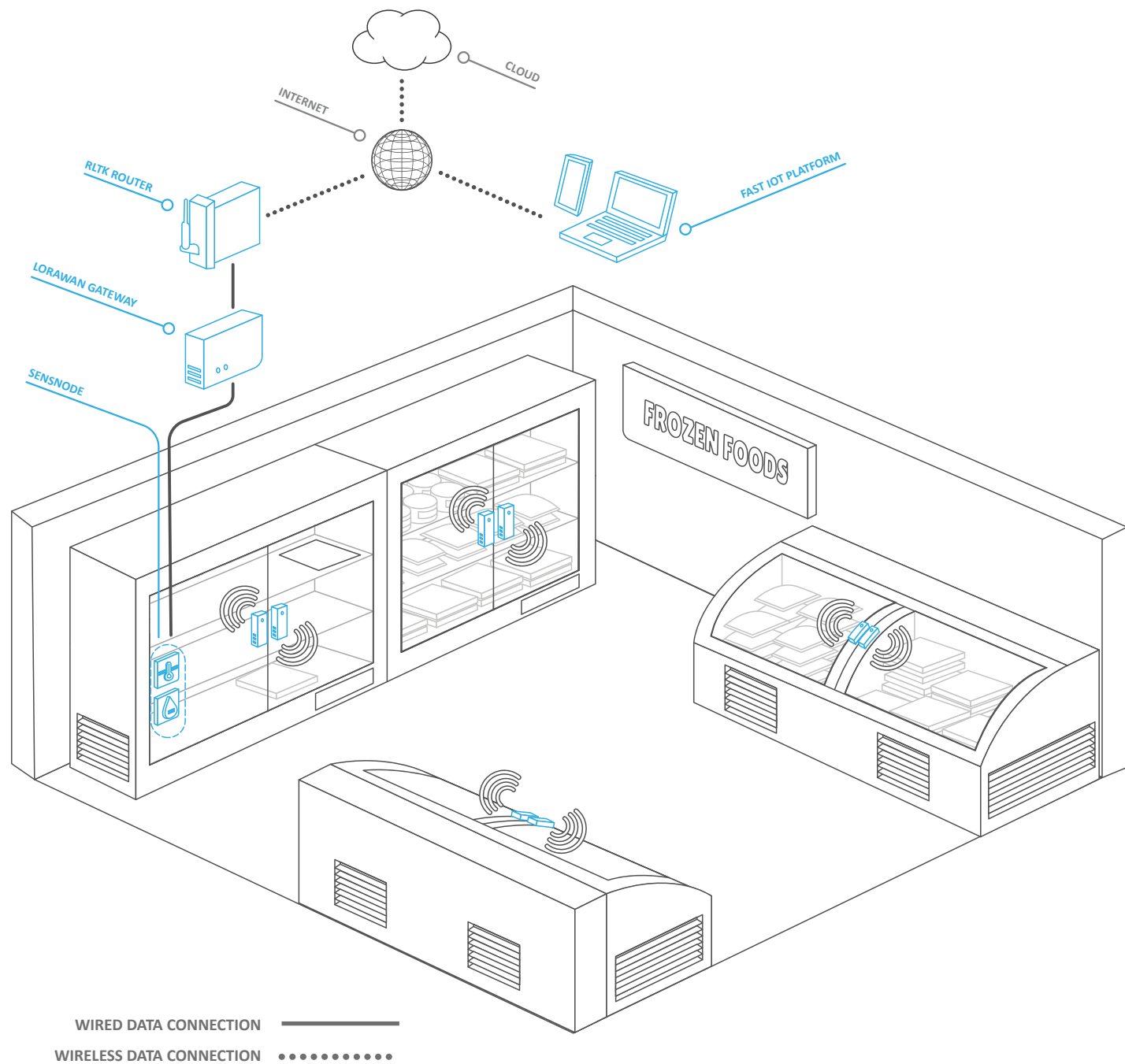
SOLUTIONS

Thanks to the RS-485, analog inputs, and digital input/output interfaces on the CloudIO Lite IoT Gateway, data is collected from sensors such as the open/closed door of the cabinets, temperature and humidity sensors, smoke detectors, and via HTTP/HTTPS or MQTT protocol over 2G cellular connection. transferred to Fast IoT Platform, the central monitoring software. Obtained data is visualized and reported. In case of exceeding the predetermined critical levels, notifications are sent to the relevant users via SMS, email, and mobile application, enabling them to quickly intervene in the problem. In this way, difficult situations can be avoided.

BENEFITS

CloudIO Lite IoT Gateway provides 2G cellular connectivity. It has low power consumption. It supports dozens of different sensor connections thanks to the built-in RS-485 connection, analog inputs, and digital input/output units.

Fast IoT Platform records and reports all the data it receives. It generates an alarm in critical situations.

WIRED DATA CONNECTION

WIRELESS DATA CONNECTION

RLTK ROUTER

LORAWAN GATEWAY

SENSNODE

CLOUD

INTERNET

FAST IOT PLATFORM

FROZEN FOODS

WIRED DATA CONNECTION

WIRELESS DATA CONNECTION

4. REMOTE RETAIL REFRIGERATOR MONITORING

PROBLEM

In retail and logistics, the responsibility for technical failures and losses due to malfunctions usually lies with the manufacturer or integrator of the system. Spotting minor problems in a remote refrigerator before they cause damage is virtually impossible without 24/7 remote monitoring. Early diagnosis of refrigerator malfunctions can often prevent high losses, but if the refrigerator is in a third-party organization and is managed only by employees, this is almost impossible. At the same time, this means leaving systems unsuper-vised outside of business hours. Therefore, a simple problem like the refrigerator door being left open can cost thousands of dollars in spoilage and lost sales.

SOLUTIONS

Since refrigerators can be scattered in the market, store or warehouse, and the wiring inside the refrigerator is difficult, the best solution is to use wireless, battery-operated, easy-to-install SensNode LoraWan sensors. The area with refrigerators is covered by LoraWan Gateway and sensor data is collected with LoraWan Gateway. LoraWan Gateway transfers the sensor data it collects to Fast IoT Platform with HTTP/HTTPS or MQTT protocols over 4G LTE connection with RLTK Router. Fast IoT Platform processes, visualizes and reports data. In case of any temperature fluctuation or change in energy consumption for each refrigerator outside the predetermined norms, a warning SMS is sent to the relevant persons. A similar warning is transmitted when the door is left open for a certain period of time. If any technical glitches occur, the system can be rebooted remotely, which saves a lot of time for technical personnel and solves most of the problems without human intervention.

BENEFITS

24/7 remote autonomous management: no human intervention is required to solve small problems, saving time and finances.

Immediate response: systems are triggered immediately in case of any abnormality and give a warning before serious damage occurs.

Scalability: a single solution can be conveniently deployed and monitored across multiple retail outlets.