

HIGHER EDUCATION FACILITY TEAMS CAN NOW DEPLOY LOW-COST AND INTELLIGENT WIRELESS SENSORS ACROSS THEIR CAMPUS TO MONITOR CRITICAL INFRASTRUCTURE, ENVIRONMENTAL AND EQUIPMENT RISKS IN REAL-TIME

LOW POWER WIDE AREA SENSORS

- ✓ Enterprise grade sensors and network infrastructure.
- ✓ Indoor and outdoor situational awareness.
- ✓ Easy to deploy and support.
- ✓ Affordable and scalable.
- ✓ Continuous data insights.

▶ WHY NOW?

Facility leaders at higher educational institutions are facing the same challenges as their peers in the private commercial sector – how to do “more with less”, create a healthier campus environment, and drive measurable and sustainable outcomes.

... While Campuses have been increasingly digitized with wireless connectivity spanning the entire premises to support investments in teaching and in academic research ...

... More attention from financial and operating leadership is now turning to leveraging digital infrastructure and connectivity to improve the operations, maintenance, costs, wellness, safety and sustainability of campus facilities ...

... Among recent advancements in connected sensors, or the Internet of Things (IoT), is the integration of wireless connectivity and sensor-enabled device data with building and related infrastructure monitoring systems to support campus-wide operational and safety services

...

Low Power, Wide Area (LPWAN) sensor network technologies, and particularly LoRaWAN®, have become the de facto choice for deploying multiple remote sensor solutions because they have proven to deliver value at scale in terms of costs, performance, security, ease-of-deployment and support.

▶ LORAWAN FACTS

The LoRaWAN specification is a Low Power, Wide Area (LPWA) networking protocol designed to wirelessly connect battery operated ‘things’ to the internet.

LoRaWAN delivers key Internet of Things (IoT) requirements such as end-to-end security, low battery power consumption, long-range and high-performance coverage, and enables multiple device types to join a private, public, or hybrid campus network.

▶ WHY ARE FACILITY PROFESSIONALS SELECTING LORAWAN TO SUPPORT THEIR IOT AND WIRELESS SENSOR INFRASTRUCTURE?

Many remote monitoring use cases, including facility operations, create the need for a technology solution that offers the ability to support a broad range of diverse IoT and sensor technologies and use-cases.

Some of these use-cases can be addressed using existing technologies such as Bluetooth, WiFi, Cellular or ZigBee. However, most of the use cases require much more than common networking technologies.

Common wireless networking technologies have shortcomings, including

- ☒ Unreliable connectivity indoors (e.g., utility spaces, interior walls),
- ☒ Unreliable connectivity over medium or long-range distances,
- ☒ Staff time to replace batteries on a frequent basis
- ☒ Two-way device communication to control equipment (e.g. remote water shut-off valves)
- ☒ Security gaps

LORAWAN BENEFITS

- ☑ Lower equipment and operating costs
- ☑ Flexibility - avoid vendor lock-in and share network across multiple use-cases
- ☑ Longer battery lives
- ☑ Longer range coverage than WiFi or Bluetooth
- ☑ Enterprise-grade security and service agreement connectivity reliability
- ☑ Better indoor coverage than cellular
- ☑ Manage data from multiple devices on a single application
- ☑ Network tools, including configurable alerts, to monitor network performance in real time
- ☑ Select network providers that avoid vendor lock-ups
- ☑ APIs and Message Broker software available for data integration

▶ WHAT USE-CASES CAN LORAWAN SENSOR SOLUTIONS SUPPORT?

The future of water in buildings is smart and sustainability.

Water creates levels of risk throughout campus operations. These risks are often difficult to detect, measure, and respond to in a timely basis with accurate data to make informed decisions.

IoT-enabled technology provides both data and remote and automated monitoring capability to facility managers, lowering overall operating costs and mitigating risks. Further, data analysis provided from sensor-enabled solutions allows for predictive maintenance, fewer equipment outages, and overall better control over appliances and equipment.

PROTECT WATER INFRASTRUCTURE AND REDUCE WATER CONSUMPTION



Connected Restroom Faucets and Flush Valves

Monitor water consumption patterns for restrooms. Detect restroom plumbing outages and parts replacements.



Connected Backflow Preventers

Detect and alert for backflow flood and leak risks.



Automated Submeter Reading

Reduce water and energy consumption and acquire better insights into individual building and asset utilization revealing failing equipment and water leaks.



Leak Detection

Monitor for early signs of indoor or irrigation water leak.



Indoor and Outdoor Air Quality Sensors

Monitor Particulate Matter (PM), Pollutants, CO₂, and VOCs indoors and outdoors.

UTILITY OPERATIONS



Steam Trap Monitoring Sensors

Early detection of steam trap failure risks. Reduce energy costs. Reduce maintenance downtime.



Blower, Pump, and Equipment Monitoring Sensors

Detect early signs of equipment failure and outages. Improve preventive maintenance management.

OTHER OPERATIONS



Connected Grease Trap Interceptors

Mitigate grease trap overflows and compliance violations. Reduce pumping costs.



Cold Storage Monitoring Sensors

Reduce energy costs. Improve food safety compliance.



Building Structural Health Monitoring Sensors

Detect early signs of building foundation failure.



Parking and Traffic Sensors

Measure vehicle, pedestrian, and bicycle counts and activity. Detect traffic risk events. Detect and enforce parking violations automatically.

▶ ABOUT SENET

Senet develops cloud-based software and services used by Network Operators, Application Developers, and System Integrators for the on-demand deployment of Internet of Things (IoT) networks. In addition to industrial and commercial applications, Senet has designed smart meter networks for many municipal water utility districts across the United States, representing millions of households. With a multi-year head start over competing Low Power Wide Area Network technologies, Senet offers technology in over eighty countries and owns and operates one of the largest publicly available LoRaWAN networks in the United States. Our disruptive go-to-market models and critical technical advantages have helped us become a leading connectivity provider with recognized expertise in building and operating global IoT networks. For additional information, visit www.senetco.com.



▶ ABOUT SENTHISYS

SentiSYS is an IoT solutions provider, working with facilities teams at higher education institutions, government agencies, utilities, and private commercial enterprises to identify, plan, implement, and support end-to-end IoT solutions, including sensors, network infrastructure, and data analytics, reporting, and visualization. We have expertise in LPWA technology solutions, including LoRaWAN. For additional information, visit www.senthisys.com