New Heights for Airport Management: Better Passenger Experience, Less Downtime, and Optimized Resource Utilization with Innovative Industrial Telemetry Solutions at Jacksonville International Airport

How Senzary Solutions Provides Insightful Management to Improve the Already Top-Level Customer Experience with IoT Solutions Effortlessly

Location: JACKSONVILLE, United States

Milesight Partner	Location	Number of Devices Deployed	Applications
Senzary llc Actility	JACKSONVILLE, United States	VS350 / AM308L, GS301	Indoor Temperature Monitoring, Air Quality, People Counting, Improved Occupant Health and Productivity

Background

Jacksonville International Airport (JAX) covers an expansive area of 7,911 acres and features two concrete runways and a terminal with 20 gates. Considered a medium-sized airport, it serves over 7,000,000 passengers annually and ranks #2 in J.D. Power's 2024 medium airport satisfaction study.

Passenger traffic, operational excellence, and customer satisfaction are indicators of an airport's success. Modern airports require real-time visibility into equipment health, operational efficiencies, and the ability to address potential disruptions that proactively impact the passenger experience. Key operational aspects include escalators and people mover functionality, restroom conditions, baggage handling systems, and overall facility management.

Through advanced monitoring and analytics, airports can transform these challenges into enhanced service delivery and operational excellence opportunities. The ability to predict and prevent disruptions, rather than react to them, has become essential for maintaining high levels of passenger satisfaction and operational efficiency.

Our partner, Senzary, deployed their SkySmart solution at JAX to enhance their excellent customer experience through advanced IoT technology. The implementation provides comprehensive lifecycle asset management plus real-time visibility into people flows, equipment status, and operational metrics, enabling data-driven resource coordination across multiple facility aspects with your crucial support and involvement.

The contract began when Senzary won a competitive bid for air quality monitoring. Recognizing the potential of Senzary's significant IoT solutions portfolio, JAX leveraged Senzary's expanded capabilities:

- Air Quality across all areas.
- Conveyance & Equipment status monitoring, Door status monitoring.
- People flow analysis. - Passenger experience optimization.
- Baggage handling system with AI-enabled Predictive Maintenance.
- Performance Analytics, Actionable Alarms, and notifications.

A key factor of SkySmart's success at JAX is the Milesight wireless product line and the LoRaWAN® infrastructure and solutions provided by Senzary. Actility's ThingPark Enterprise (TPE) LoRaWAN Network Server (LNS) ensures the reliable operation of this network by seamlessly managing the communication between all deployed sensors and gateways. Thanks to Actility's advanced LoRaWAN network management, product capabilities, Senzary can provide to JAX:

- Reliable communication with all sensors across the airport.
- Easy troubleshooting and resolution of network issues.
- Pre-deployment device testing to ensure seamless integration.
- Sustained network operation and uninterrupted data flow even during internet outages.
- Outdoor radio coverage simulation for precise network planning.

This infrastructure is driven by mobile connectivity, with secure Simcard managed services provided by Senzary, initially not touching the airport network, and the simplicity of deployment, not requiring infrastructure modifications but mostly self-installed by Senzary. All sensor deployment, saving lots of money and time in the process.

As a leader in airport innovation, JAX is expanding its digital transformation goals leveraging Senzary's capabilities. The implementation establishes historic baseline metrics and delivers actionable resource optimization insights. For example, restroom cleaning schedules will be optimized based on historical utilization data and projected passenger traffic, which will soon integrate with Flightaware systems for even more precise forecasting, ensuring the least amount of disruption for passenger traffic.

The solution demonstrates JAX's commitment to leveraging secure, scalable, cutting-edge wireless technology while maintaining high operational excellence and customer satisfaction standards. Actility's TPE platform ensures the network's scalability, security, and reliability, enabling JAX to meet operational and passenger satisfaction goals efficiently. Through this data-driven approach, JAX continues to enhance its position as a top-ranked medium airport regarding passenger satisfaction.

For airports to be certified as SAFE, they need to have this monitoring solution in place, ensuring the highest level of safety and security for all passengers and staff. Also, in the USA, the FAA grants are focused on other areas, such as safety and environmental well-being.

*Note: Senzary security standards have already been approved by USA government entities, Fortune 500 customers, and the Airport Authority.

Challenges

Need for Greater Granularity and Visibility into the Actual People Flows

A top passenger requirement is access to clean and well-stocked restrooms, which are available for use. Before boarding or after deplaning, many passengers need to use the restroom nearest their gate. They are frustrated when they must spend time finding and walking considerable distances to alternative facilities because the closest one is closed for maintenance. Customers clean restrooms periodically, but closing restrooms may coincide with the passengers' peak affluence, therefore inadvertently creating an utterly avoidable problem
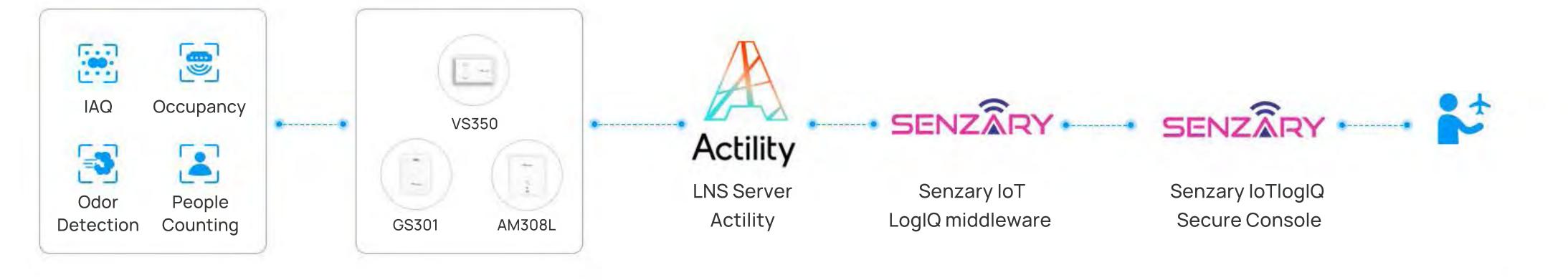
Air Quality Monitoring and International Certifications

Another critical factor influencing passenger satisfaction is the quality of the indoor environment, which is primarily determined by the effectiveness of Heating, Ventilation, and Air Conditioning (HVAC) systems, along with measurements of other health-related aspects such as dust, volatile or combustible particles in the air and CO_2 levels. Traditionally, these systems operate on pre-set schedules that lack the flexibility to adapt to real-time conditions. This rigid approach often results in suboptimal performance, which includes a lack of responsiveness, inefficient energy use, inconsistent comfort levels, and missed opportunities for optimization.

Unnecessary Waste of Resources

Traditional asset and workload management offers little to no connectivity, making predictive maintenance and flexible schedules impossible. In restrooms with high human traffic, like office buildings, airports, malls, or hotels, janitorial staff often waste time checking or cleaning restrooms that haven't been used. Further, in these large facilities, there are a great number of restrooms spread throughout a very large area.

Solution

By implementing Senzary SkySmart solutions and using Milesight sensors, our partner generates information that would allow the airport to adjust HVAC systems based on occupancy patterns and environmental measurements, reducing energy costs and improving comfort. This capability would save on energy bills and ensures a comfortable environment for passengers and staff, enhancing the overall airport experience.

Our partner's comprehensive solution includes Milesight sensors that monitor people flow, indoor air quality, odor levels in closets, and open-door sensors. In addition, there are other sensors from the Senzary portfolio, such as energy monitoring and predictive maintenance that aggregate all the information from motors, baggage systems, and other areas.

Summary - Operational Dashboards

Seamless Network Operations with Actility's TPE

Actility's TPE has been pivotal in providing the reliability, scalability, and security necessary for managing the LoRaWAN® network, ensuring smooth operations and real-time visibility across the airport. The ThingPark Enterprise LoRaWAN Network Server serves as the backbone of the IoT infrastructure at Jacksonville International Airport, facilitating uninterrupted data flow between devices and enabling actionable insights across various applications, from rest room management, to BHS predictive maintenance.

Improved User Experience with Smart Restroom

Jacksonville International Airport identified the opportunity to enhance passenger experience through advanced monitoring of facility usage patterns. With thousands of daily passengers utilizing facilities across multiple terminal areas, JAX sought to implement real-time visibility solutions to optimize restroom availability and cleanliness. The ability to monitor actual usage patterns would enable data-driven cleaning schedules that align with passenger flow, ensuring optimal facility conditions when and where needed most. Additionally, real-time tracking of cleaning task completion would allow for strategic resource deployment during off-peak periods, maximizing efficiency while maintaining the highest service standards. Actility's TPE LNS supports the real-time monitoring by ensuring seamless data flow from sensors, providing the foundation for actionable insights into restroom utilization.

With Milesight products, the facility managers can coordinate janitorial resources based on restroom utilization. Following a data-driven schedule rather than a fixed schedule can save many labor hours per year. Even better, cleaning can be scheduled when the traffic is thinner, avoiding inconveniencing passengers unnecessarily. In practice, facility managers can determine cleaning schedules based on two factors: first, foot traffic/hour restroom, and second, not to clean during peak hours, improve overall cleaning efficiency and user experience.

With Senzary's real-time integration, JAX will have a comprehensive view of the projected passenger flow in the coming hours. It will include detailed information about incoming and outgoing flights for each terminal and scheduled flights. This information is subject to change because flight schedules can be altered. Various airport dynamics, including flight cancellations and schedule adjustments, can influence passenger flow. Therefore, having access to up-to-date data is essential for effective operations management.
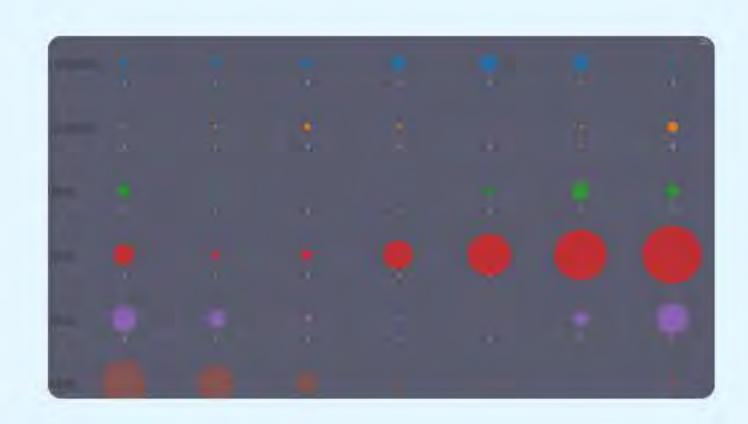

The Milesight VS350 Passage People Counter monitors restroom use by accurately sensing a person each time a large object passes in front of it. This data is transmitted to a LoRaWAN® gateway, which routes it through Senzary IoT LogiG middleware for processing and integration with external systems. Thresholds are set based on the area of the airport, and the Senzary SkySmart IoT LogiG middleware will alert staff if the cleaning threshold has been reached via a webpage or mobile app and schedule a cleaning. The Senzary Analytics board also uses this information to showcase cleaning opportunities based on hourly traffic on any given day since patterns fluctuate during the week, instead of fixed schedules, usually colliding with high traffic situations, inconveniencing passengers.
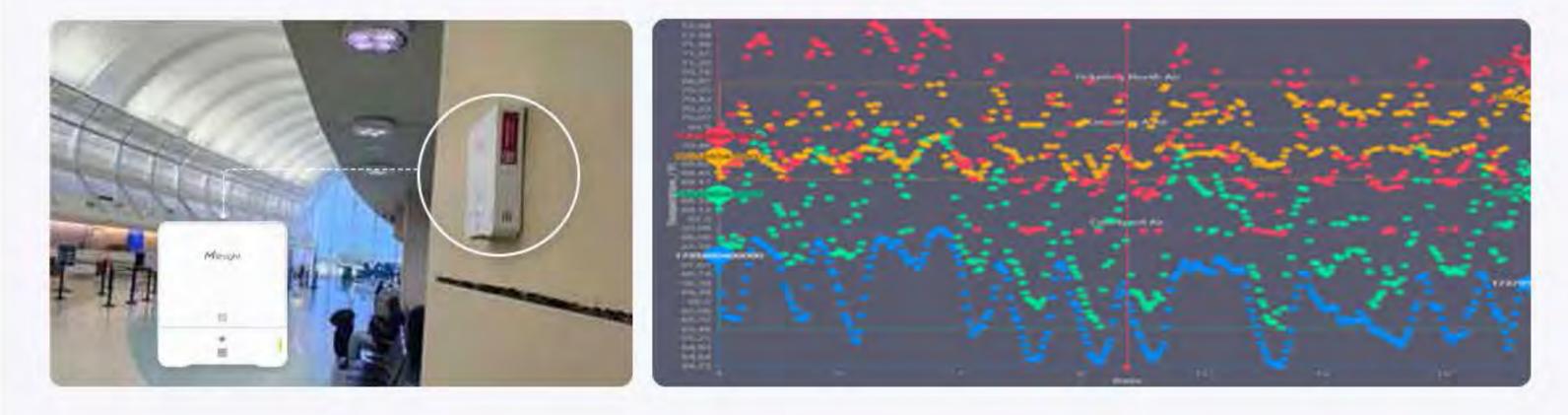
Restroom Occupation Projection Next 8 Hours

From here, custodial management can know if the cleaning threshold has been reached via a webpage or mobile app and schedule a cleaning.

To further maximize the effectiveness of the cleaning staff, Senzary installed the Milesight GS301 Bathroom Odor Detector measures the concentration of foul gases, ammonia and hydrogen sulfide, in real-time. When ammonia or hydrogen sulfide concentration reaches thresholds, the alarm will be activated, including a traffic light indicator, built-in buzzer and uplink data packets.

Better Indoor Air Quality and Compliance with International Guidelines.

The Airport Improvement Program (AIP) is a United States federal grant initiative managed by the Federal Aviation Administration (FAA) to support the development and improvement of public-use airports. The program is designed to enhance airport safety, capacity, security, and environmental sustainability. The Milesight AM308L 8-in-1 IAQ Sensor measures temperature, humidity, light, CO_2 concentration, TVOC, barometric pressure, PM2.5, PM10, and motion. This data is transmitted to a LoRaWAN® gateway, which then routes it through Senzary IoT LogiG middleware for processing and integration with external systems. This data is important in airports to monitor that safety levels towards passengers, from CO_2, volatile and other unhealthy exposure such as dust or pollen when outside the normal ranges.

Data-Driven Operations with Powerful Platform

Senzary provides the IoTlogiG Secure Console, an integrated portfolio of hundreds of wireless sensors, especially deploying LoRaWAN® secure infrastructure, and easily customizable airport-oriented dashboarding solutions.

Results

"SENZARY SkySmart solution deployment at Jacksonville International Airport leveraging our partnership with Milesight and Actility established comprehensive baseline metrics and predictive maintenance capabilities in a matter of weeks. By implementing a secure wireless sensor infrastructure across critical operational areas, we've enabled JAX to make data-driven decisions that optimize resource allocation and maintenance schedules. The solution provides real-time visibility into air quality, equipment performance, and passenger flow patterns, transforming raw data into actionable insights for improved operational efficiency." - Eric Schummer, CEO, Senzary

"By leveraging Actility's ThingPark Enterprise LoRaWAN® platform, JAX has achieved unparalleled reliability and efficiency in their IoT infrastructure. Our partnership with Senzary and Milesight has played a crucial role in enabling seamless communication between devices, ensuring secure and scalable operations. This solution empowers airports to optimize resource management, enhance passenger satisfaction, and meet the highest standards of safety and innovation." - Olivier Hersent, CEO, Actility

Improved Productivity
- Efficient staffing: helps determine optimal staffing requirements based on passenger flow data.
- Optimized cleaning: Avoid cleaning when high traffic is expected, undermining the experience of the passengers
- Real-time dashboards: Provide updating views of critical metrics, allowing for quick decision-making and improved service delivery.
- Healthier work and traveler environment: improved air quality and optimal temperature/humidity levels improve health and productivity.

Boosted Performance
- Reduces stress: Smoother operations and shorter wait times lead to less stress for passengers and staff
- Saves time: Reduce wait times and ensure smooth transitions from check-in to boarding, enhancing overall satisfaction.
- Temperature and humidity tracking: Continuous facility monitoring ensures comfort and regulation compliance.
- Facilities management: Knowing which areas have increased usage allows for scheduled preventive and maintenance activities

Bird's Eye View with Easy Operations
- Asset-based IoT LogiG solution connects areas, locations, assets, and devices in such a way that it can be navigated and managed
- Centralized cloud-based end-to-end management of all aspects, including gateways, devices, and status.
- Customized filtering according to airport operations needs
- Different views for different roles across the airports, including a Skyview for the intranet
- Easy onboarding: PRE-STAGED, PLUG AND PLAY. Senzary provided everything already programmed and working, so installation was performed on time day by the airport personnel with remote support from the Senzary Technical team
- Various sensors to address the original and multiple other use cases.

Milesight Partner

About Senzary

Senzary is an Industrial IoT service provider focused on delivering end-to-end, pre-integrated solutions for industrial environments. We offer customizable, pre-built solutions that can be implemented with LoRaWAN®, Nb-IoT, LTE-M, and/or satellite connectivity. Our platform, IoTLogiG, is the intermediary between IoT sensors and an organization's network that can be housed in the cloud, on-premises, or in a hybrid configuration. By integrating with legacy systems, IoTLogiG can leverage Machine Learning (ML) and Artificial Intelligence (AI) to transition from "actionable insights" to timely automated or manual actions. When your business deploys smart IoT solutions, you enable predictive maintenance, reduced downtime, and increased profitability.

IoTLogiG - Managed IOT solutions end-to-end Machine Learning
www.senzary.com/airportit/
Click here for Eric Schummer's Contact Card
Or connect via LinkedIn

TOP TEN PREDICTIVE MAINTENANCE COMPANIES 2023 IN THE WORLD
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https://www.startus-insights.com/innovators-guide/predictive-maintenance-startups-to-watch/#senzary

About Actility

Actility, one of the co-inventors of LoRaWAN® technology and a founding member of the LoRa Alliance, is the leader in industrial-grade low-power wide-area network (LPWAN) connectivity and IoT tracking solutions. Actility's ThingPark™ platform, which supports multi-radio connectivity (LoRaWAN®, NB-IoT, LTE-M), powers the majority of public networks and numerous private and enterprise networks worldwide. Through its subsidiary Abeeway, Actility offers patented city-low-power, multi-radio trackers, including ATEX-certified devices, and comprehensive indoor and outdoor geolocation services. Additionally, the ThingPark Market boasts the largest catalog of LoRaWAN® devices, gateways, and solutions available.
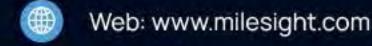
Why Choose Milesight

"Milesight is recognized for its commitment to quality and innovation in the IoT space. The system utilized in this solution are straightforward to configure and demonstrate reliable performance on the network. Their cost-effectiveness further enhances their appeal, making them an excellent choice for various applications. In addition, they offer exceptional customer and technical support.