Milesight

Enhancing Public Amenities Monitoring with IoT Solutions across 72 Sites in the City of Casey in Australia

Better Management and User Experiences in Public Restrooms

Location: Melbourne, Australia

| Milesight Partner	Location	Devices Deployed	Applications
Minnovation	Melbourne, Australia	VS350	Smart Restroom, Smart City

Background

The City of Casey, spanning a region of approximately 407 square kilometers in southeast Melbourne, Australia, is a vibrant and rapidly growing municipality. With a commitment to improving public infrastructure and services, the City of Casey identified a need to better monitor the usage of public toilet blocks across 72 different sites.

Our partner, Minnovation, provided professional and practical IoT solutions to meet the requirements and needs in this project. The project successfully delivered actionable insights to the council while showcasing the benefits of leveraging IoT technologies in urban management.

The City of Casey's toilet block monitoring project is a testament to the power of IoT technologies in transforming public services. This initiative not only enhanced the city's ability to serve its residents but also set a precedent for other municipalities looking to adopt smart city solutions. The combination of rapid deployment, robust technology, and advanced analytics ensured the project's success, providing a scalable model for future applications.
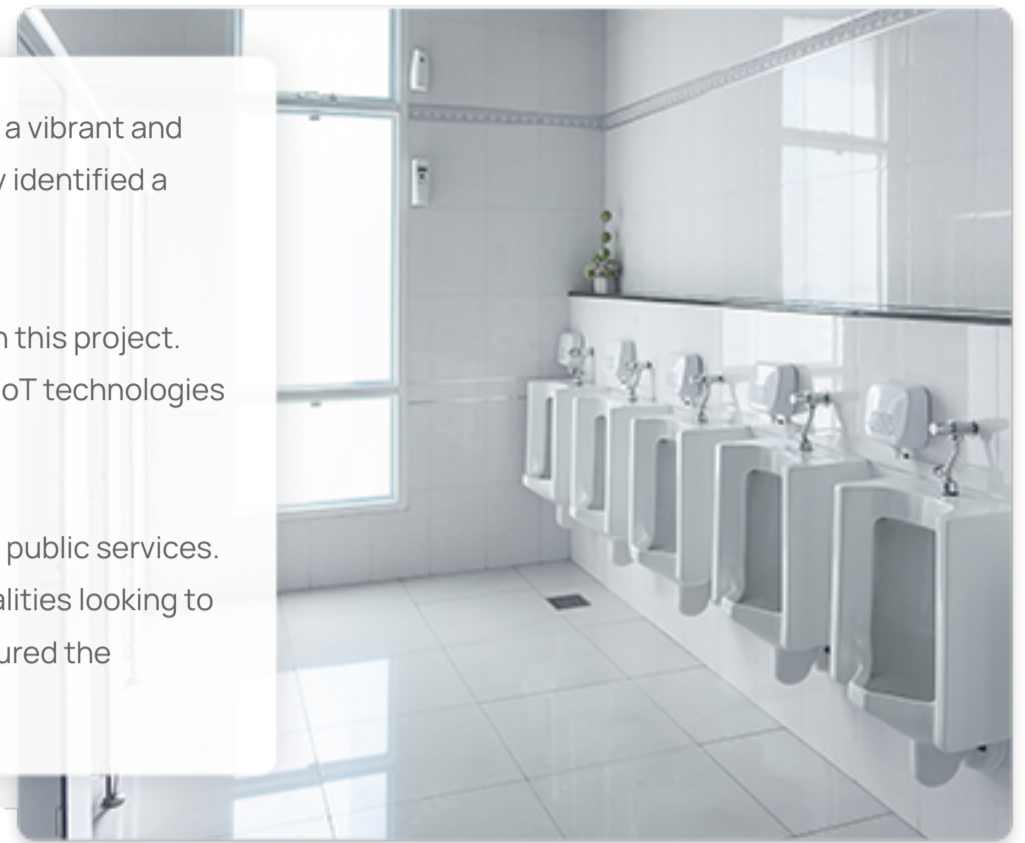
Challenges

Network Coverage
Some remote sites initially struggled with LoRaWAN connectivity. Additional gateways were installed to enhance coverage.

Data Interpretation
Training sessions were held to help staff interpret the visualizations and use the AlphaX data effectively.

Weather Impact
Heavy rain occasionally interfered with sensor readings. The stainless steel shields mitigated most of these issues.

Solution

Footfall Counting → VS350 → LoRaWAN® Gateway → AlphaX, IoT Cloud Platform

With helps from our partner, Minnovation, the city deployed an innovative solution using the Milesight VS350 Passage People Counter, coupled with a custom-designed monitoring system. In addition to leveraging real-time dashboards, the City of Casey staff extracted detailed data from the AlphaX, a IoT platform created by Minnovation, to conduct a deeper analysis, focusing specifically on strategic planning for capital replacements.

In this project, the City of Casey deployed Milesight VS350 sensors across all 72 toilet block sites. These sensors were paired with stainless steel (S/S) rain shields for outdoor durability and connected to the city's LoRaWAN network, enabling seamless data transmission over the vast area.

The deployment of the Milesight VS350 solution involved several key steps:

✓ **Sensor Installation:** Each of the 72 toilet blocks was equipped with a Milesight VS350 sensor. The addition of stainless steel rain shields ensured that the sensors could withstand outdoor conditions and maintain accurate readings.

✓ **Network Integration:** The sensors were connected to the City of Casey's existing LoRaWAN network. This wireless technology was ideal for the project, offering long-range communication capabilities across the municipality's vast area without requiring additional infrastructure.

✓ **Data Visualization Dashboards**

Custom dashboards were developed to make the data accessible and actionable for the city's teams. These dashboards included:

✓ **Heatmaps:** Visualizing usage density across all sites on a geographical map.

✓ **Time Series Heatmaps:** Displaying daily usage patterns in an intuitive, color-coded format.

✓ **Comparative Bar Charts:** Allowing users to compare usage across different sites at a glance.

✓ **AlphaX Data Analysis:** For deeper insights, staff extracted raw data from AlphaX. This platform facilitated advanced analytics, enabling the city to break down patterns by season, site, or external factors such as nearby events.

✓ **Training and Rollout:** City staff were trained to use the dashboards and AlphaX analytics tools, ensuring that the system could be seamlessly integrated into daily operations.

Within just three weeks, the entire deployment was completed, and custom dashboards were developed to visualize the data effectively. In practice, the sensors were configured to collect data in hourly intervals, capturing key metrics such as the number of people entering each toilet block. Additionally, data was exported from the AlphaX platform for in-depth analysis, allowing the city to dive deeper into usage trends and inform strategic decision-making.

Results

The monitoring system, augmented by the AlphaX analysis based on real-time data collected by people counter, provided the City of Casey with actionable insights, enabling data-driven decisions that improved both operational efficiency and long-term planning.

Optimizing Maintenance Services

The city aimed to ensure its toilet blocks were serviced at the most appropriate times, minimizing downtime and inconvenience to the public.

• Peak Usage Identification: Data from the Milesight VS350 sensors provided insights into the busiest times and days for each toilet block. This allowed service teams to prioritize high-traffic facilities and optimize their schedules, ensuring cleanliness and functionality during peak periods.

Strategic Planning and Capital Replacements

Understanding long-term usage trends was critical to the city's strategic planning for infrastructure investment.

• Data-Driven Decision-Making: Historical data from the sensors enabled the council to analyze patterns over months and years. Facilities with consistently high usage were flagged for potential upgrades, while underutilized sites could be reassessed for alternative uses or budget reallocations.

• AlphaX Data Deep Dive: Staff extracted granular data from the AlphaX platform to conduct more detailed analyses beyond the dashboards. This deep dive allowed for more nuanced insights, such as identifying peak months for usage, correlating data with events or weather patterns, and comparing year-over-year trends. This helped the city prioritize capital replacements based on evidence-backed insights.

• Evidence-Based Capital Allocation: By combining dashboard insights with AlphaX analytics, the city could justify which toilet blocks required replacement or refurbishment. This ensured that capital investments were both data-driven and strategically aligned with community needs.

Milesight Partner

About Minnovation Technologies

Founded in 2013 and headquartered in Melbourne, Australia, Minnovation Technologies specializes in advanced operational and maintenance monitoring systems for the built environment. Serving sectors such as government, facilities, infrastructure, and transport, we deliver secure, cloud-connected solutions that enhance operational visibility and empower decision-makers with valuable insights.

With a strong focus on quality and innovation, Minnovation Technologies ensures that organizations can efficiently monitor, manage, and optimize their assets. Our cutting-edge technology provides real-time data and analytics, improving efficiency, reliability, and sustainability in complex environments.