

**PRO**  
**Restroom**

# "Smart Restroom" CASE STUDY Executive Summary



Enhancing AI & IoT-driven  
**"Smart"** Facility Management

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## Proactive Transformation in Restroom Hygiene

Smart Restroom Management for Enhanced Cleanliness, Efficiency, and Cost Optimization at Shopping Malls

### What is PRORestroom?

PRORestroom is an AI-powered smart restroom management system. It provides a digital solution for areas where hygiene is critical but control is difficult.

Fewer staff, higher quality, full visibility!

### Key Benefits

- **Comprehensive Monitoring:** Real-time tracking of consumable levels (soap, bins, paper, etc.)
- **Proactive Intervention:** Predicts cleanliness needs based on usage and alerts cleaning teams in advance.
- **Smart Task Assignment:** Automatically dispatches cleaning tasks to the nearest staff; monitors task duration and acceptance rate.
- **Staff Optimization:** Enables more efficient operations with fewer personnel.
- **AI-Driven Insights:** Analyzes usage data to detect issues early and produce actionable metrics.
- **Customer Satisfaction:** Provides a consistently clean, odor-free, and fully stocked restroom experience.
- **Loss & Waste Reduction:** Minimizes consumable waste and operating costs; detects anomalies via cross-location comparisons.





## The Challenge

“How can quality be sustained when restroom areas are hard to control, complaints are frequent, and staff numbers remain static or insufficient?”

The mall was facing persistent hygiene issues due to:

- Manual monitoring of cleaning and consumables
- Reactive and delayed cleaning responses
- Lack of auditability: No clarity on what was cleaned, when, and how well
- Waste of consumables and inefficient task distribution

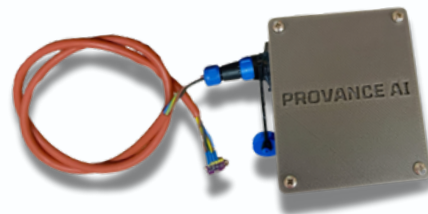
## The Solution

With Provance AI's PRORestroom module, sensor-based smart cleaning management was deployed.

## Installation & Setup

- 18 IoT Sensor Points were installed.
- Real-time tracking initiated for:
  - Soap dispenser levels
  - Paper towel & trash bin status
  - Odor & air quality
  - Visitor traffic density
- Anomaly-Triggered Tasks: Tasks are automatically triggered when an abnormal condition is detected (e.g., bad odor, full bin).
- Smart Cards Activated:
  - 2 Smart Task Cards (v1) and 5 Smart Shift Cards (v2) were provided to the cleaning staff.
  - Tasks were assigned digitally to personnel carrying display-enabled smart cards, allowing full traceability.

(Alternatively, task assignment can also be managed through the PROApp upon request.)







## Results

Key Metrics	Figures
PoC Duration	29 May – 30 June 2025
Average Daily Tasks	110 tasks
Total Tasks Completed	3,410 tasks
Task Completion Rate	88.3% completed on time and in full
Trigger Sources	54% usage, 22% supply, 24% hygiene

### From Complaints to Prediction

Tasks are triggered by the system proactively — before users notice issues.

### Time & Resource Optimization

Redundant control tasks were eliminated; consumable waste was minimized.

### Full Traceability

Each task's start and completion times are digitally recorded and stored.

### Operational Balance

Cleaner routes were optimized for efficiency — using the same team.

## Reactive Cleaning is Over — Proactive Hygiene Has Begun!





## Call to Action

PRORestroom brings data-driven transparency and measurable quality into restroom cleaning operations.

Now, restroom services rely not on chance — but on smart sensors.

“The system helped us prevent complaints, simplify consumable tracking, and manage our team more efficiently.”


— Cleaning Services Manager, Shopping Mall

### **Want the full PoC Report?**

Contact us to receive the detailed Proof of Concept results.

### **Launch Offer:**

Get access to this smart system without any upfront investment — through one of our 3 flexible monthly subscription models.

 Subscribe now → [provance.ai/prorestroom](https://provance.ai/prorestroom)

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### **\*GDPR Compliance Summary (PRORestroom)**

*No personal data is collected – Only restroom hygiene and usage data is processed. No employee tracking – Tasks are assigned via duty cards strictly during working hours. Data responsibility agreement is signed between mall management and the cleaning service provider. Employee consent forms can be collected if required, though the system avoids processing personal or biometric data.*

