**MADHA INSTITUTE OF ENGINEERING AND TECHNOLOGY**

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**SMART PUBLIC RESTROOM**

# Definition:

In this digital world, the Internet of Things (IoT) is revolutionizing the way we interact with our surroundings. Smart public restrooms using IoT technology can provide an enhanced user experience and improve facility management efficiency. This project proposes an IoT-enabled solution designed to monitor restroom occupancy, automate cleaning schedules, air quality control, service supply levels, and receives user feedback. The proposed system comprises smart sensors, connected devices, data analytics, and cloud-based platforms, all integrated to create a reliable and intelligent infrastructure and hygienic restroom. The modules of the smart public restroom include occupancy monitoring, cleaning maintenance, air quality control, supply management, energy efficiency, feedback system, real-time monitoring, and alerts, all of which operate seamlessly to ensure clean and safe public restrooms.

# Design:

1. Cleaning Maintenance: This module uses the occupancy data to generate automated cleaning schedules based on usage patterns. This ensures that restrooms are cleaned based on demand, reducing wait times for users. This area mainly performs on hygienic restrooms

2. Air Quality Control: This modulemonitors, temperature, and humidity levels inside the restroom. The sensors detect the air quality levels and adjust the ventilation, air freshener, and heating systems accordingly.

3. Occupancy Monitoring: This module includes sensors that detect the presence of users in the restroom. The data is processed in real-time and displayed on a digital screen or mobile app for users to locate available stalls quickly. The occupancy sensor also triggers the cleaning and supply management

4. Supply Management: This module monitors the use of toilet paper, paper towels, and soap dispensers within the restroom. This ensures that the supplies are available where they are needed and alerts cleaning staff, when supplies need replenishing.

5. Energy Efficiency: This moduleincludes sensors that detects motion and control the lighting systems. Lights are turned on or off automatically based on occupancy to save energy.

6. Feedback System: This module captures user feedback through smart buttons or scanner codes inside the restroom. This enables facility managers to address complaints in real-time, identifying and addressing problems instantly.

7. Instantaneous monitoring: This module monitors all IoT devices connected within the restroom, ensuring that everything operates .Any problems, such as supply shortages or broken equipment, it always alerts to the facility managers for quick responses

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By incorporating smart IOT technology into public restrooms, we can improve user experience, reduce maintenance costs, and enhance public safety and hygiene.