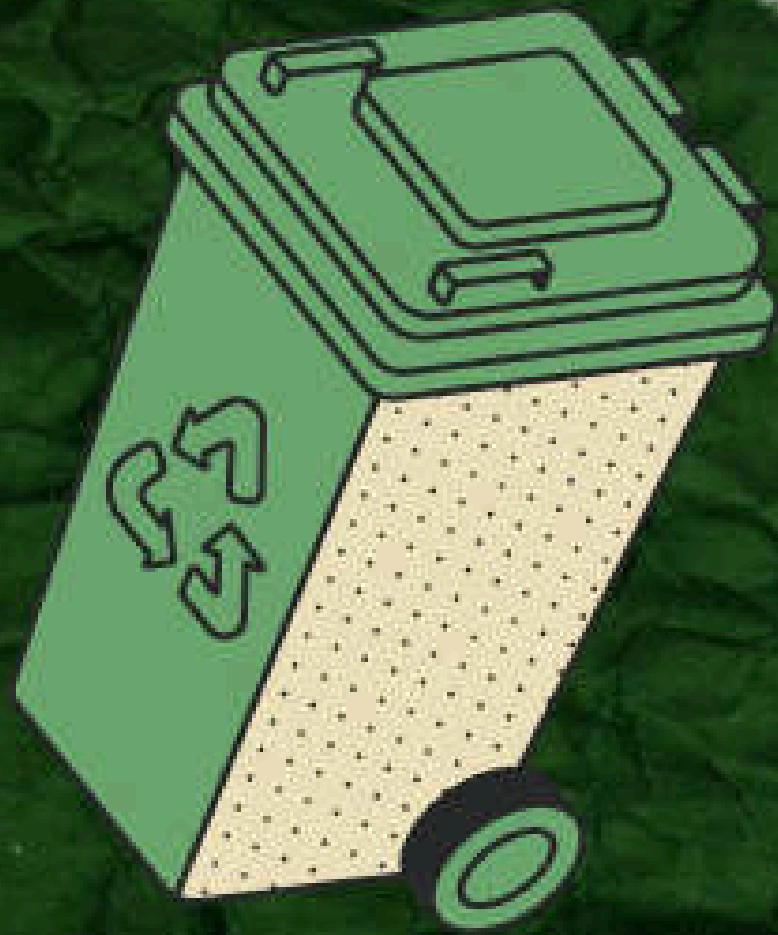




Smart Waste Management System

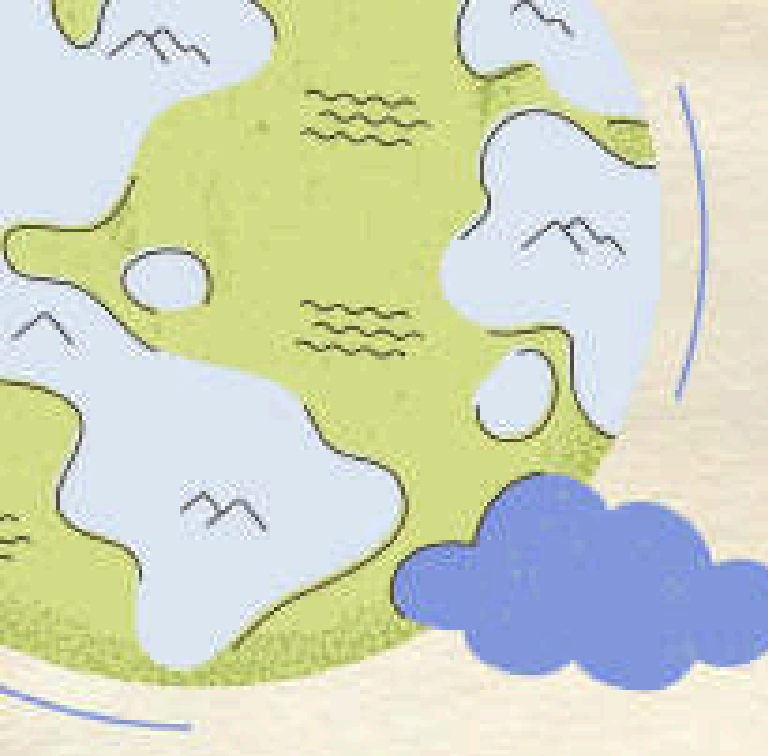


R26-IT-126

PROGRESS PRESENTATION 2



Veo



RESEARCH PROBLEM

Traditional waste collection systems use fixed schedules and manual coordination, leading to overflowing bins, delayed pickups, inefficient routes, lack of future waste generation insights and increased fuel costs. These issues negatively affect urban cleanliness, operational efficiency, and public health.

AFFECTED STAKEHOLDERS

- Municipal councils
- Waste Collection Drivers
- Residents
- Public Health & Environmental Authorities



PROPOSED SOLUTION

The proposed Smart Waste Management System integrates sensing, monitoring, prediction, and analytics to move waste operations from reactive management to proactive decision-making.

The system combines:

- **IoT-based environmental sensing smart bins**
- **Smart fill-level and occupancy monitoring**
- **ML-based waste composition prediction**
- **Smart Waste Collection App: Real-Time Bin Detection, Adaptive Route Optimization, and Resident-Driven Coordination**





PROPOSAL PRESENTATION 1 COMMENTS

Student's ID number	Comment
IT22213358	Need to show how the component work with the actual data. Try to get the rainfall through an API
IT22202772	For the pp2, need to set up this unit to bin and show how it functions and implement alert system
IT22548528	For the pp2, need to set up this unit to bin and show how it functions and implement alert system
IT22088482	Enhance the UI representation





PROPOSED SOLUTION

Student's ID number	Solution
IT22213358	Used actual municipal council records and integrated a rainfall forecasting API
IT22202772	Integrated all components into the smart bin and implemented the alert system. The complete functionality of the system has been demonstrated and tested
IT22548528	Integrated all components into the smart bin and implemented the alert system. The complete functionality of the system has been demonstrated and tested
IT22088482	Enhanced the UI representation. Finalized the fully functional Mobile Application for Real-Time Bin Detection, Adaptive Route Optimization, and Resident-Driven Coordination



FUNCTIONAL REQUIREMENTS.

- Predict next week's waste composition by zone.
- Recommend resources and processing capacity.
- Alert for overflow, critical levels, and abnormal activity.
- Monitor bin occupancy and usage patterns.
- Allow residents to request pickups by marking locations on a map.
- Provide drivers with optimized pickup routes.

NON FUNCTIONAL REQUIREMENTS.

- Performance
- Security
- Usability
- Reliability
- Privacy
- Compatibility
- Maintainability
- ML integrity





COMMERCIALISATION PLAN: SMART WASTE MANAGEMENT SYSTEM

Smarter Waste Management for Cleaner, Greener Cities



TARGET MARKET



Municipal
Councils



Urban Local
Authorities



Smart City
Projects



POTENTIAL CUSTOMERS



Municipal
Councils



Educational
Institutions



Urban
Communities



Private
Organizations



VALUE PROPOSITION

A smart, data-driven solution
for cleaner, healthier and more
sustainable cities.



Cleaner
Environment



Lower
Operational Cost



Higher
Recycling Rate



Healthier
Communities



COMPETITIVE ADVANTAGES



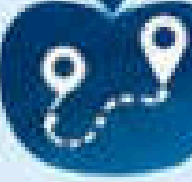
AI/ML based waste
composition prediction



IoT-enabled real-time
waste monitoring



Mobile application for
real-time bin detection



Adaptive route optimization
for efficient collection



Real-time municipal
dashboard & analytics



Resident-driven coordination
& feedback



Scalable and customizable
for any municipality



Supports sustainable
development goals



**THANK
YOU**