Project Planning Phase Report

Team ID: NM2025TMID06106
Team Size: 4
Team Leader: Ragu M
Team Members:
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Project Title

Smart Waste Management System using IoT and Data Analytics

1. Objective

To develop a smart waste management system that leverages IoT sensors and data analytics to improve waste collection efficiency, reduce operational costs, and promote environmental sustainability.

2. Project Scope

The scope of this project includes the design and implementation of an IoT-enabled waste bin monitoring system, data transmission to the cloud, and development of an analytics dashboard for authorities to optimize waste collection routes.

3. Project Deliverables

• IoT-based smart waste bins
• Real-time waste monitoring system
• Cloud data storage and analytics dashboard
• Route optimization algorithm
• Project documentation and demonstration

4. Project Milestones

Milestone	Description	Timeline
Project Ideation	Identifying problem and proposing solution	Week 1
Requirement Analysis	Gathering technical and functional requirements	Week 2
Design Phase	Creating architecture and system design	Week 3
Implementation	Developing IoT and web components	Weeks 4-6
Testing & Evaluation	Testing system performance and reliability	Week 7
Final Presentation	Preparing final report and demo	Week 8

5. Resources Required

- IoT Hardware: Ultrasonic sensors, NodeMCU (ESP8266)
- Software: Python, MySQL, React, AWS Cloud
- Human Resources: 4 team members with defined roles
- Tools: GitHub, VS Code, Power BI

6. Risk Management

Potential risks include sensor malfunction, data transmission errors, and cloud integration challenges. Backup devices, error handling, and continuous testing will mitigate these issues.

7. Project Schedule

The project will be completed in 8 weeks following the planned milestones and deliverables. Weekly progress reviews will ensure on-time completion.

8. Expected Outcome

A functional prototype demonstrating real-time waste monitoring, analytics dashboard, and optimized route planning system.

9. Conclusion

The project planning phase establishes a strong foundation for structured development. The plan ensures clear objectives, defined deliverables, and effective resource utilization for successful execution.