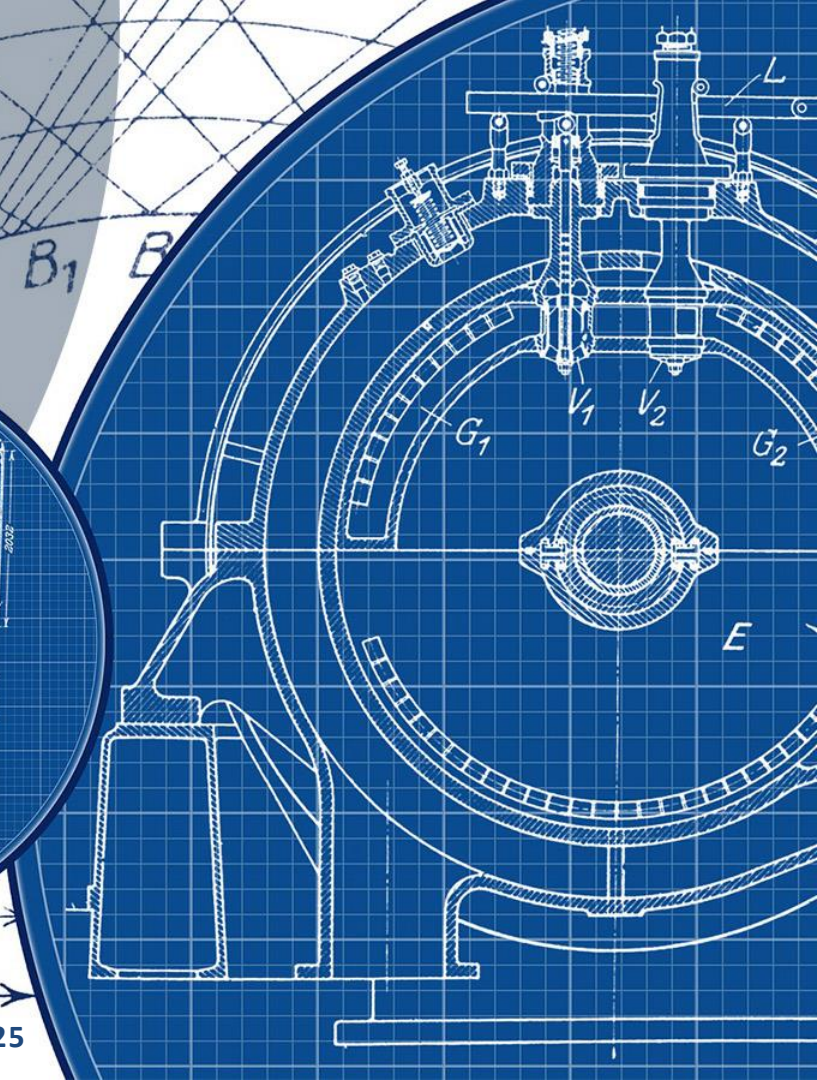
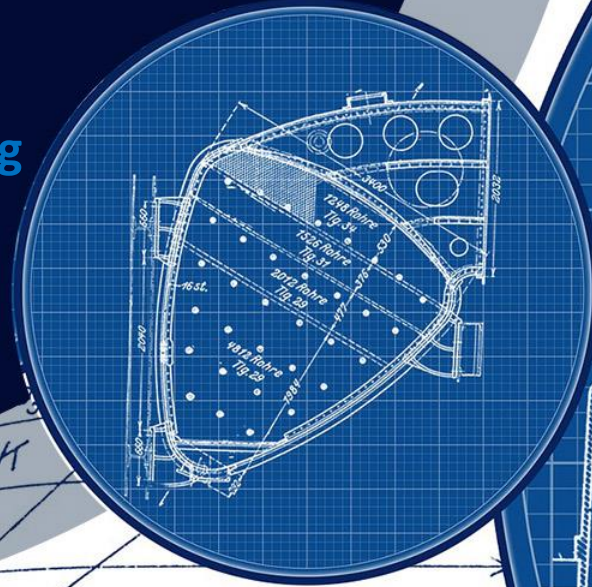


Smart Waste Management System

ICE Fiesta Idea Showcasing
- 2025

Presented by: Md Rifat
Hossen



Short Description

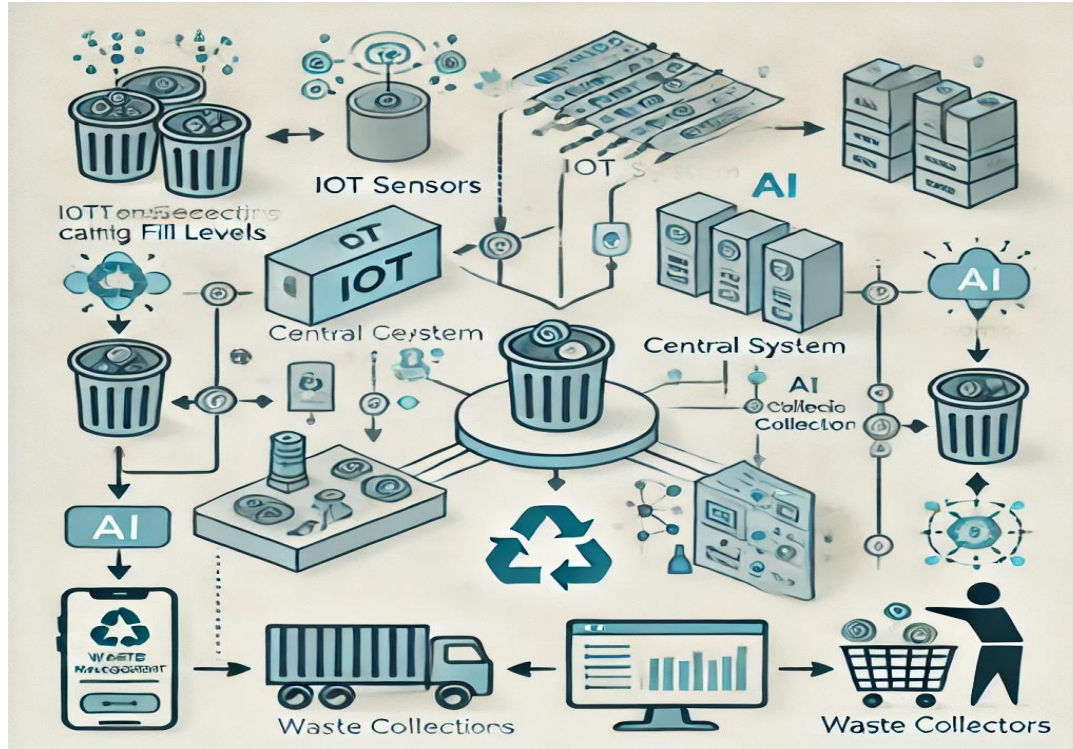
A technical drawing or blueprint background featuring circular and curved mechanical components, possibly gears or parts of a machine, rendered in white lines on a dark blue grid.

- **AI-Integrated IoT Solution:** Optimizes waste collection and recycling.
- **Smart Bins with AI Sensors:** Classify waste into biodegradable, recyclable, and non-recyclable categories.
- **Real-Time Monitoring:** Tracks waste levels for efficient collection.
- **Predictive Analytics:** Forecasts waste generation trends.
- **Route Optimization:** Reduces operational costs and environmental impact.

Aims and Objectives

- To **automate waste classification** using AI and IoT sensors.
- To **reduce environmental pollution** by promoting efficient waste recycling.
- To **improve public health** by ensuring cleaner urban environments
- To reduce **landfill** usage
- To **optimize waste collection routes**, minimizing fuel consumption and costs.

Working Principle & System Architecture



Data Collection

- IoT Bins
- Data Transmission

Analysis & Optimization

- Central System
- AI Algorithms

Action & Communication

- Waste Collection
- Waste Management App

Required Technologies/Components

Hardware and Software

- **IoT Smart Bins**
 - **AI/ML Models** for waste classification (TensorFlow, OpenCV)
- **Cloud Computing** for data storage & analytics (AWS, Google Firebase)
 - **Mobile App & Web Dashboard** (Flutter, React, Node.js)
 - **IoT Communication Protocols** (MQTT, LoRaWAN)

Cost and Benefit Analysis

The background of the slide features a technical drawing or blueprint on a dark blue background. The drawing includes various mechanical components, such as gears, pipes, and structural elements, rendered in white lines. Some parts of the drawing are labeled with letters like 'G' and 'V'.

- Initial Setup Cost: Moderate investment
- Long-term Benefits:
 - Significant savings in waste management costs
 - Increased efficiency in waste collection
 - Higher recycling rates
 - Positive environmental impact

A technical drawing of a mechanical part, possibly a turbine or engine component, is shown in the top right corner. The drawing is a cross-section showing internal features like a central shaft, vanes, and a casing. It includes labels such as G_1 and V_1 , and a scale bar indicating 1000 units. The drawing is on a blue grid background.

THANK YOU ALL