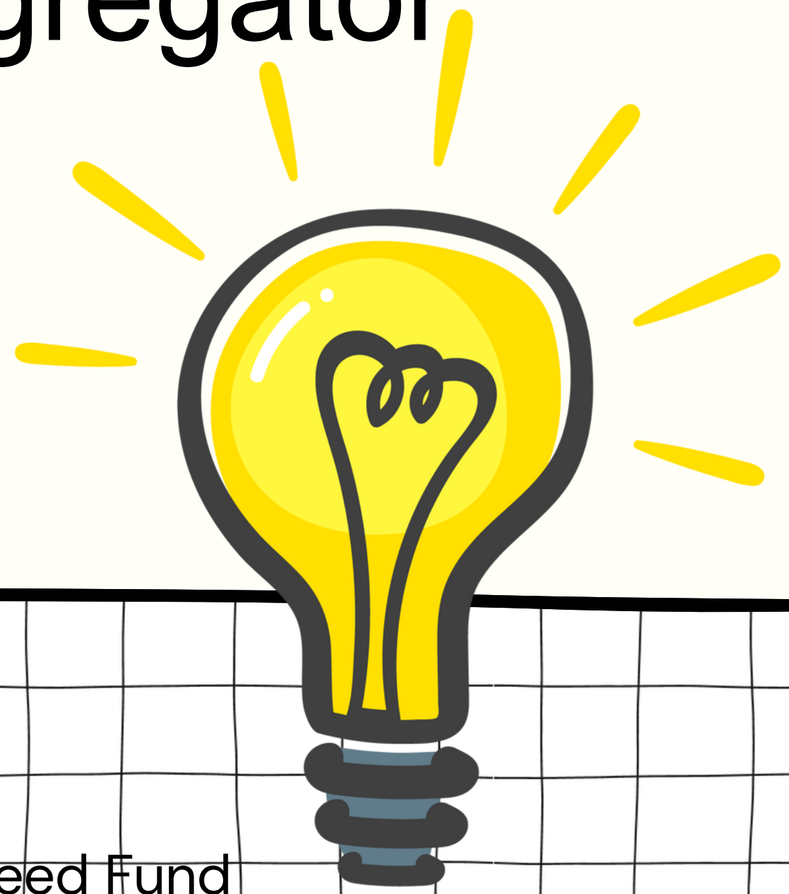
SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)
COIMBATORE – 641035
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Automatic Waste Segregator for Smart Cities

Stimulating innovation through collaboration



Proposal to Raise Seed Fund

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Introduction

- This Project aims to address the pressing challenge of **efficient waste management** in urban environments.
- As cities grow, so does the need for innovative solutions to **streamline** waste segregation processes.
- This project proposes the development of an **automated system** leveraging **sensor technology** and machine learning algorithms to accurately **segregate** different types of **waste at the source**.
- By integrating smart sensors and actuators into waste collection bins, the system can **identify and sort** recyclable, organic, and non-recyclable waste in real-time.
- Through this automation, the project aims to enhance recycling rates, reduce landfill overflow, and promote sustainable practices in **urban areas**.
- The proposed solution holds significant potential for optimizing waste management operations in **smart cities**, ultimately contributing to a **cleaner, greener, and more sustainable** urban environment.

The team

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TEAM MEMBERS

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Objective

- To Develop **a sensor-based system** to accurately **identify and sort recyclable, organic, and non-recyclable waste** in real-time.
- To Implement machine learning algorithms to **automate** the **waste segregation process** at the source, reducing manual labor and human error.
- To Integrate the automated system into **urban waste management** infrastructure to improve recycling rates, reduce landfill overflow, and promote sustainable practices in smart cities.

Business Model Canvas

Key Partners

- **Municipalities and local governments** for access to infrastructure and regulations.
- **Technology providers** for sensors, data analytics, and IoT devices.
- **Waste management companies** for logistics and processing..

Key Activities

- Manufacturing & deployment of hardware
- Integration with existing
- Monitoring, Maintenance and data analysis

Cost Structure

- **Research and development** costs for technology enhancement.
- **Manufacturing and installation expenses** for hardware components.
- **Operational costs** for maintenance, data analysis, and customer support.
- **Marketing** and educational campaign expenditures.

Customer Relation

- Partnerships- local governments
- Support for system maintenance
- Educational campaigns
- Feedback mechanisms

Value Propositions

- Efficient waste segregation
- Reduced environmental impact
- Cost savings for municipalities
- Improved public health
- Reduced exposure to hazardous waste.

Customer Segments

- Municipalities and local governments
- Waste management companies
- Citizens and communities

Key Resources

- Sensors & IoT
- Installation & maintenance
- Fund

Channels

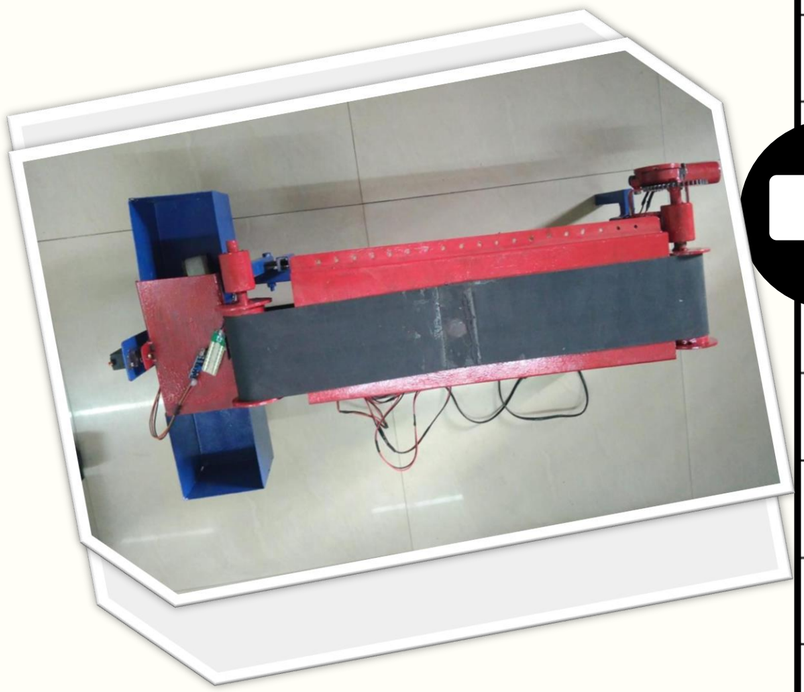
- Direct Sales
- Online Platforms

Revenue Streams

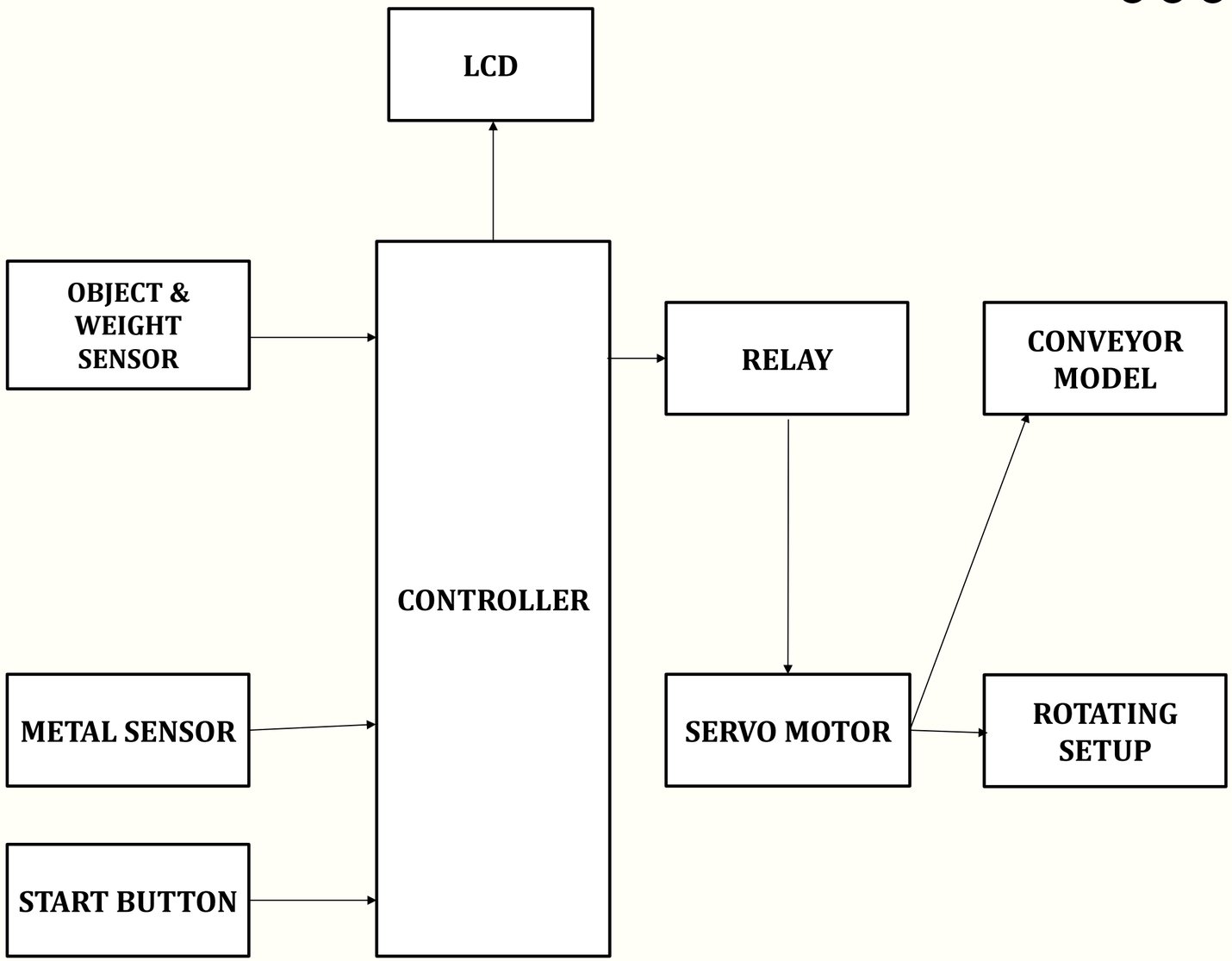
- **Initial sales** revenue from hardware installation and setup.
- **Subscription** or service-based revenue model for ongoing **maintenance** and support.
- Revenue sharing agreements
- Potential monetization of **data insights** generated through waste management analytics.

Execution Block

Fundamental Prototype -
April



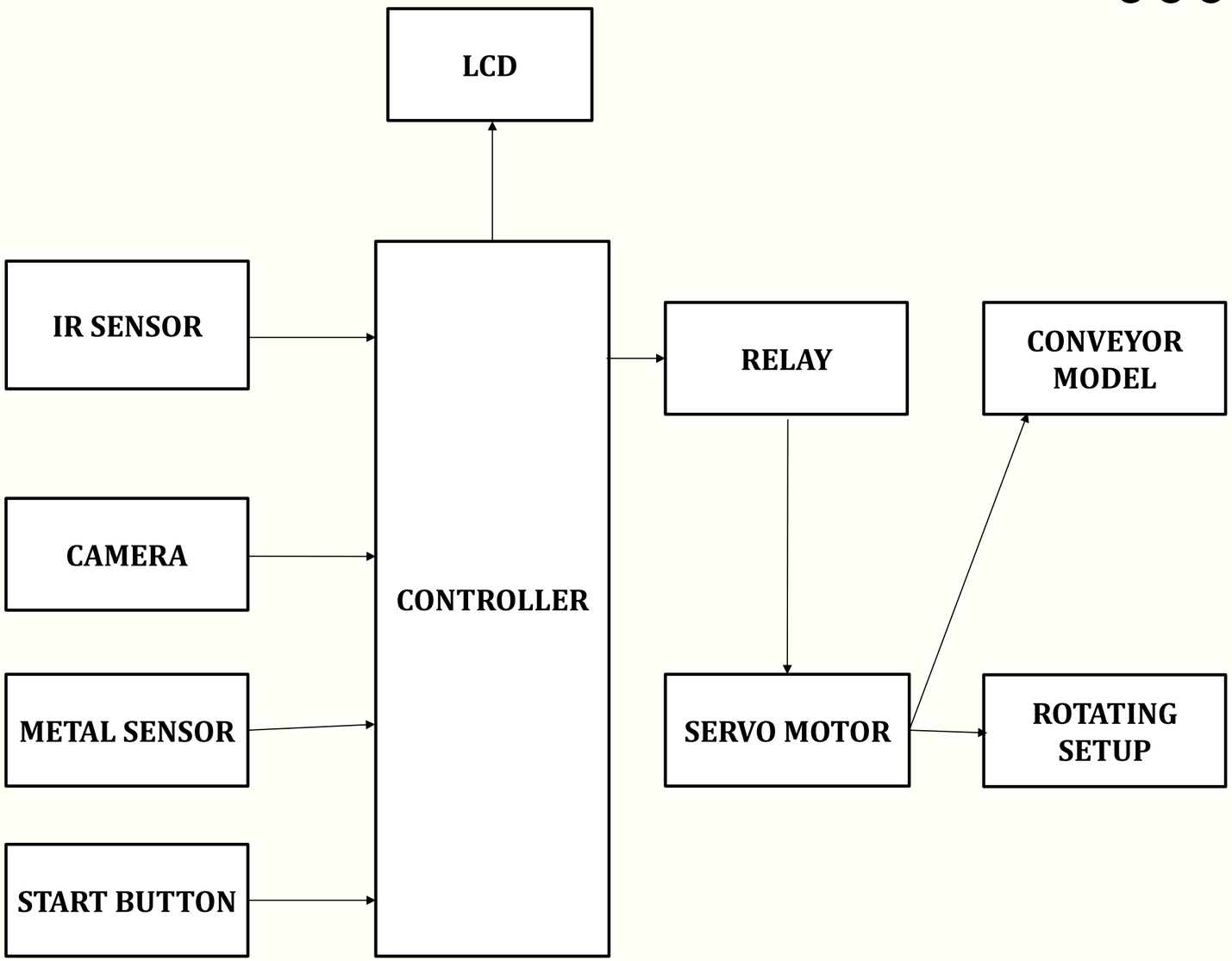
Fundamental Ideation



Execution Block

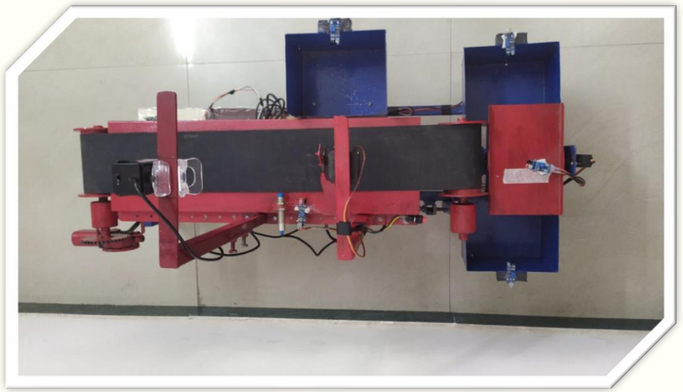
Fundamental Prototype -
May

Fundamental Ideation



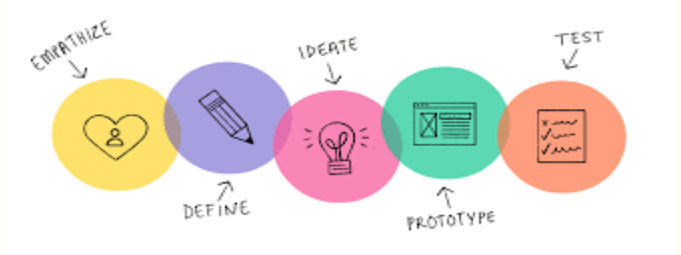
LIQUID STUDIO

Final Testing Completion - June



Design Thinking

Key Insights



Empathy

Interviews, surveys, and observations of stakeholders involved in urban waste management, including city officials, waste management companies, residents, and environmental organizations.

Define

Identify specific pain points, goals, and desired outcomes related to waste segregation in smart cities Reframe the problem statement to focus on user needs and objectives

Ideate

Generate creative solutions and concepts for automating waste segregation in urban environments in sensor technology, machine learning, waste management, and urban planning.

Prototype

Develop prototypes and proof-of-concepts to test and validate different design ideas.

Test

Analyze test results and iterate on the design based on insights gained during the testing phase.

SAMPLES

- Metal
- Degradable
- Non-degradable

METAL

Degradable

Non-degradable

The best ideas

Outcomes

- Enhanced waste segregation accuracy through sensor technology and machine learning.
- Increased recycling rates and reduced environmental impact.
- Improved urban sustainability by promoting efficient waste management practices.

Conclusion

The Project offers a promising solution to urban waste challenges. By integrating technology and sustainable practices, it aims to create cleaner, greener cities, though successful implementation will require collaboration and ongoing optimization.

Deliverables

- A Product
- A Research Paper Publication
- An Utility Patent
- A Design Patent

Timeline

- April'24 – Hardware setup completed
- May'24 -Implementation of Camera & software requirements
- June'24 – Testing and Protype completion.

Budget

- Non Recurring : Rs.37,000
- Recurring : Rs.5,000

Collaborations

- Emcog Solutions, Chennai
- Blackstraw AI, Chennai

Thank you

Towards a smarter & Greener Environment