SMART INDIA HACKATHON 2024

TITLE PAGE

- **Problem Statement ID – 1592**
- **Problem Statement Title-** Solutions could be in the form of waste segregation, disposal, and improve sanitization system.
- **Theme-** Clean & Green Technology
- **PS Category- Software**
- **Team ID-** 4041
- **Team Name – Jan Dhan Warriors**

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IDEA TITLE

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❖ Proposed Solution

- **Waste Collection:** Users upload a garbage photo to the site, and after **AI verification**, location is sent to the nearest garbage collector for pickup.
- **Waste Disposal:** We will partner with **startups** that use recyclable waste as raw material, ensuring they will purchase waste directly from our platform.

  A **tracking system** monitors the location of waste, ensuring it reaches the proper disposal site efficiently.
- **Sanitization**: Our site will collaborate with **NGOs** to organize community events.

  Our site offers guides on waste management and interactive **flipbooks**, **Quizzes** & **AI-based Chat Bot** to help you stay informed and engaged.
- **Self-Financed Model**: Revenue Generation through subscription & commission
- **Waste Sorting Technologies**: Categorization based on **3 R's**

❖ Uniqueness

- **ML- based Feed section :** user engagement
- **Wallet coins :** redeem coupons
- **Earn money** : by selling recyclable collected waste
- **Colony Ranking/Leaderboard:** Our leaderboard ranks areas based on their efforts to maintain cleanliness. The more active an area, the higher its rank!
- **Certificates**
- **Business Section/Event:** After selling the plastic garbage to the trader & Post before-and-after photos of area transformations in our feed, earn **virtual coins**, and redeem them for **exciting coupons!**

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TECHNICAL APPROACH

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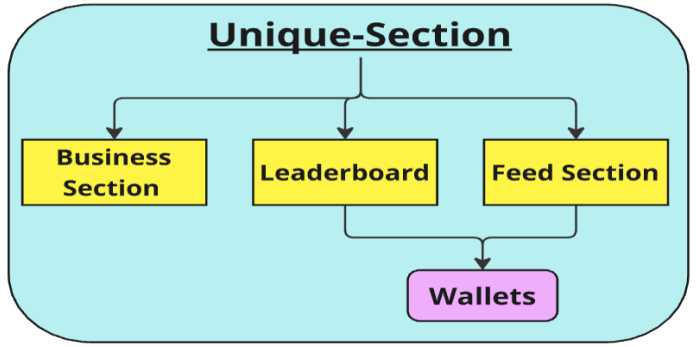
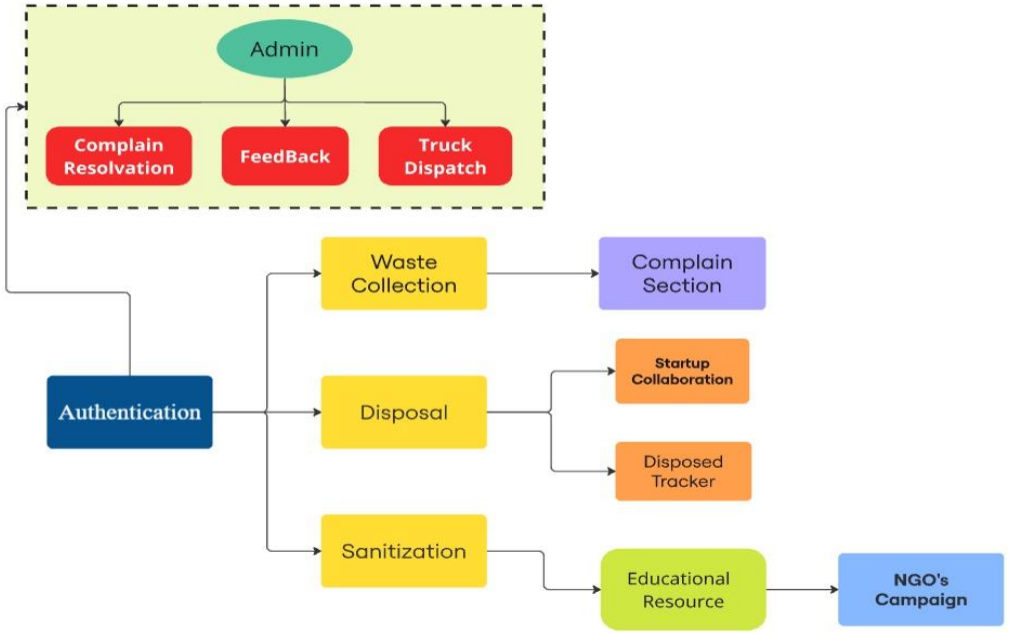
- **Platform Architecture**: Use Node.js or Django for backend, React or Vue.js for frontend, and a hybrid database with MongoDB (NoSQL)
- **AI Image Verification**: Develop a waste recognition model with TensorFlow or PyTorch; integrate Google Cloud Vision or AWS Recognition for image classification.
- **Geolocation and Task Assignment**: Utilize Google Maps API or OpenStreetMap for location tracking and assign tasks to the nearest garbage collector.
- **Waste Disposal Partnering and Tracking**: Integrate with waste management startups via API and use IoT sensors with GPS for tracking.
- **Community Engagement and Sanitization**: Develop modules for NGO collaboration, event scheduling, and educational content via a CMS.
- **Security and Data Privacy**: Ensure data security with SSL/TLS, AES-256 encryption, OAuth 2.0 authentication, MFA, and regular security audits.
- **Direct Connection with Garbage Collectors**: Build a communication interface using **WebRTC** or **Twilio API** for user-collector interaction
- **Scalability & Infrastructure**: Deploy on **AWS** or **Google Cloud**, using auto-scaling and load balancers for high traffic and efficient resource management.





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FEASIBILITY AND VIABILITY

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Potential Challenges and Risks

1. Technical Challenges:
1. Integration issues between various platform components.
2. Reliability concerns for waste tracking systems.

2. Partnership Risks:
1. Challenges in forming and maintaining partnerships with startups and NGOs.
2. Ensuring aligned interests among all stakeholders.

3. User Engagement:
1. Low user participation and retention without strong incentives.

4. Operational Risks:
1. Managing logistics for waste collection and disposal effectively.
2. Maintaining effective waste sorting technologies.

5. Data Privacy and Security:
1. Ensuring user data protection and compliance with regulations.

6. Financial Risks:
1. Uncertainty in generating revenue through subscriptions and commissions.

Strategies to Overcome Challenges

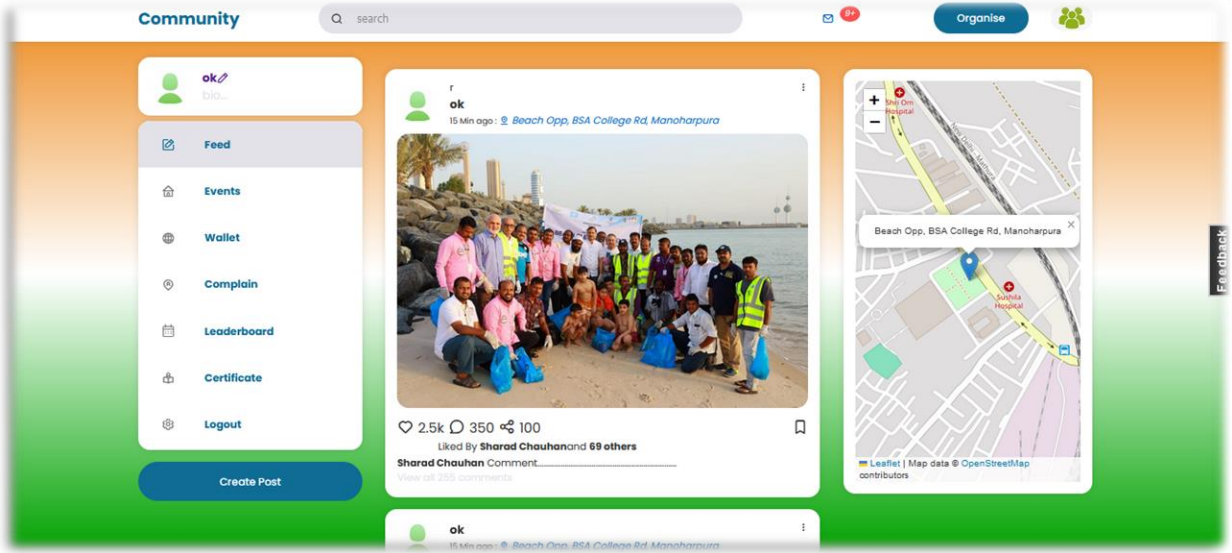
1.Technical Solutions:
1. Start with pre-trained AI models and build custom models over time.
2. Use a modular, cloud-based system for scalability and integration.

2.Partnership Building:
1. Start with pilot projects to demonstrate value to potential partners.
2. Create agreements that benefit all parties involved.

3.Increase User Engagement:
1. Use gamification, rewards, and dynamic content to motivate users.

4.Operational Coordination:
1. Centralize logistics management and use real-time communication tools.

5.Enhance Data Security:
1. Implement strong security protocols and regularly update them.



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IMPACT AND BENEFITS

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Potential Impact on the Target Audience

1.Improved Community Engagement:

- Encourages residents to actively participate in keeping their neighborhoods clean through easy-to-use platforms and rewards.

2.Increased Awareness and Education:

- Educates users about waste management practices, recycling, and sustainability, promoting behavioral change.

3.Streamlined Waste Disposal:

- Simplifies the process of waste collection and disposal by connecting users directly to waste collectors and disposal partners.

4.Empowered NGOs and Local Groups:

- Provides NGOs and community organizations a platform to coordinate events and activities related to waste management.

Benefits of the Solution

1.Social Benefits:

- **Enhanced Community Cleanliness**: Contributes to cleaner and health communities.
- **Increased Civic Participation**: Involvement in local environmental issues.

2.Economic Benefits:

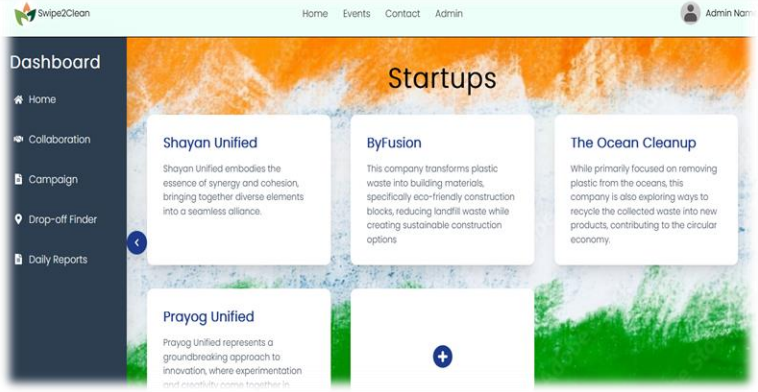
- **Cost-Efficient Waste Management**: Reduces the costs associated with waste disposal for municipalities by improving waste sorting and recycling.
- **Revenue Opportunities**: Generates revenue for local startups by providing a steady supply of recyclable materials.

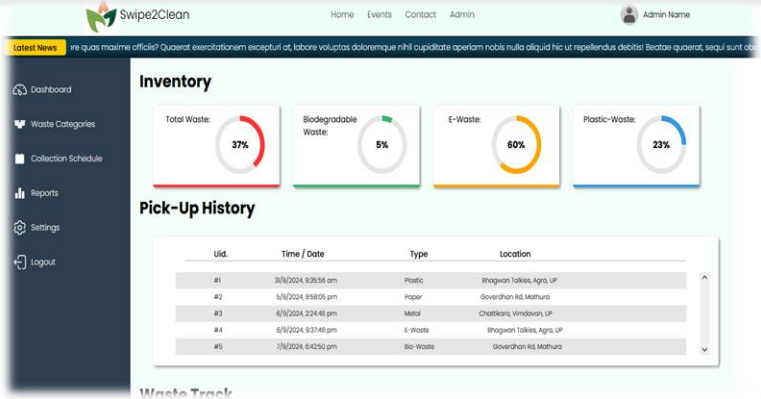
3.Environmental Benefits:

- **Reduced Waste in Landfills**: Promotes recycling and proper disposal, reducing the volume of waste that ends up in landfills.
- **Lower Carbon Footprint**: Minimizes the environmental impact of waste by promoting recycling and sustainable practices.

4.Technological Benefits:

1. **Data-Driven Decision Making**: Provides valuable data on waste patterns that can help local authorities make informed decisions.
2. **Innovation in Waste Management**: Encourages the development of new technologies and methods for waste sorting and disposal.





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RESEARCH AND REFERENCES

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2.Central Pollution Control Board:- https://services.india.gov.in/service/listing?cat_id=106&ln=en

3.Swachh Bharat Mission(Grameen):- https://swachhbharatmission.ddws.gov.in/about_sbm

4.Maps-API:- https://mapsplatform.google.com/india

Others:-

1.Flow-Chart Designer:- https://miro.com

2.Exalidraw:- https://excalidraw.com/

3.Flip-Book:- https://flippingbook.com/online-flipbook