

# SMART INDIA HACKATHON 2024



## HACKERWAR 5.0

ORGANISED BY

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# SMART INDIA HACKATHON 2024



## TITLE PAGE

- **Problem Statement ID** - 1592
- **Problem Statement Title** - Student Innovation
- **Theme** - Clean & Green Technology
- **PS Category** - Software
- **Team ID** -
- **Team Name** - DevUnion
- **Team No.** - 14



# SmartBin



## Detailed Explanation of the Proposed Solution:

Our platform is designed to address the problem of Waste Management by allowing users to report garbage which is spread along the sideways of roads in localities by uploading photo with location directly through the website . The key features include -

- **Improves the local sanitation** - It creates a direct channel between citizens and municipal authorities to report and track the cleanup of roadside litter and illegal dumping sites.
- **Enhance recycling efforts** - It will enable users to report recyclable items from their homes for pickup.

## How It Addresses the Problem:

- **Bridging Communication Gap** - Our platform directly addresses the lack of interaction between residents and authorities. It provides an easy-to-use interface for users to report roadside garbage, creating a direct line of communication with local sanitation departments that was previously missing.
- **Real-Time Reporting** - Users can instantly upload photos of garbage-strewn roadsides or items to be recycled allowing for immediate reporting of issues. This real-time capability significantly reduces the delay between problem identification and authority notification.

## Innovation and Uniqueness of the Solution:

- **Dual-Purpose Reporting** - The website handles both local garbage issues and household recycling needs through a single platform.
- **Photo-Based Reporting** - Users can submit photos of garbage or recyclable items, improving accuracy and response efficiency.
- **Location-Specific Targeting** - By utilizing location data from photo submissions, our system can create precise, geo-tagged reports of garbage hotspots, enabling highly targeted cleanup efforts .

# SmartBin

## SmartBin's Key Features:

### 1. Easy Reporting:

Users can quickly report garbage or request recycling pickups by simply taking a photo and uploading it to our platform. This makes it super easy for anyone to help keep their community clean.

### 2. Precise Location Tagging:

When you upload a photo, SmartBin automatically tags its exact location. This means the cleanup crews know exactly where to go, making the whole process much faster and more efficient.

### 3. Two-in-One Solution:

With SmartBin, you can report both street garbage and your home recycling needs in one place. No need to use different apps or websites - it's all in one convenient spot.

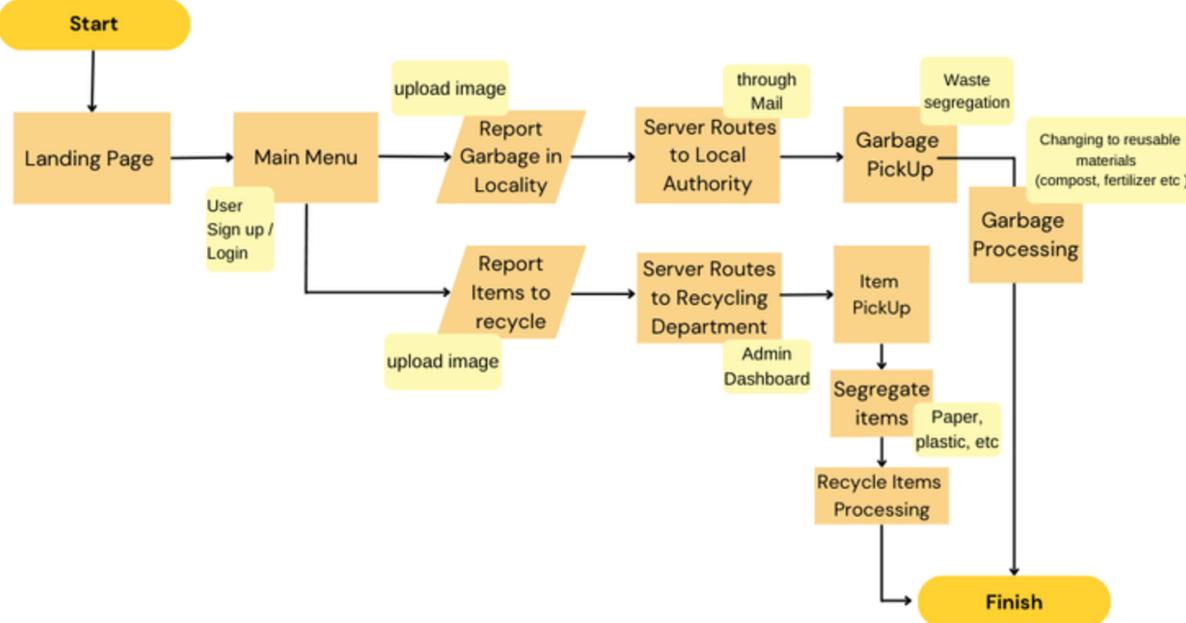
### 4. User-Friendly Design:

We've made SmartBin really simple to use. Whether you're tech-savvy or not, you'll find it easy to navigate and report issues quickly.

These features work together to make SmartBin a powerful tool for community cleanliness, bridging the gap between citizens and local authorities to create cleaner, healthier neighborhoods.



# Workflow Diagram



# To locate nearby Recycling Center:



Find the Nearest Recycling Cen × Infos (10) - harchinaind24@gmail.com +

localhost:3000/map

Booking.com Express VPN McAfee Security LastPass password... https://mvsp.in DL STATUS Top 150 Repacks of... Get Into PC - Down... Filter, Search Movie... Disney+ Hotstar ... All bookmarks

### Recycling Centers

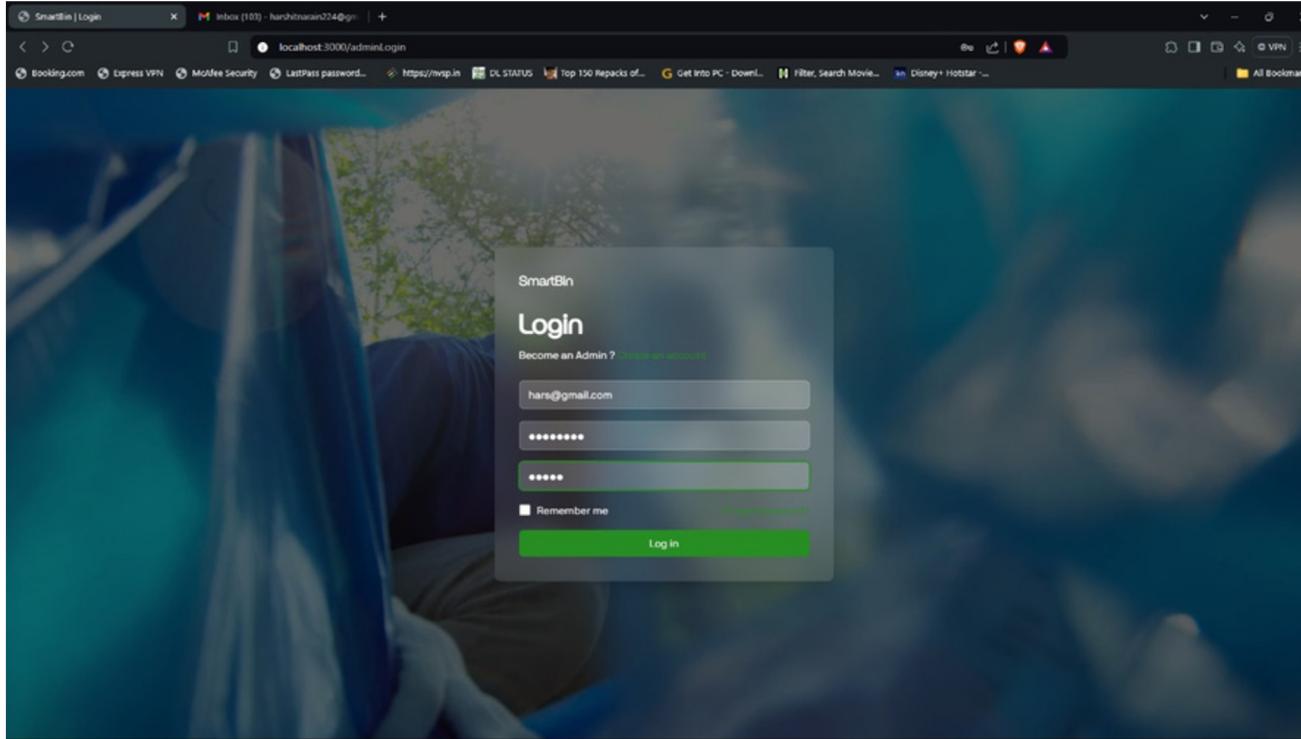
Enter radius in km...

Search

- Nandankanan Zoological Park Recycling Center 9.08 km
- Mahanadi Barrage Recycling Center Barrao 22.09 km
- Odisha State Museum Recycling Center 23.86 km
- Orissa High Court Recycling Center 23.91 km
- Cuttack Railway Station Recycling Center 24.26 km
- Netaji Birth Place Museum Recycling Center 24.51 km
- Barabati Recycling Center 24.92 km
- CDA Recycl Center 25.13 km

The map displays the city of Bhubaneswar with various neighborhoods labeled such as NHB, Kharagpur, Jaj�ia, Tamanda, Khambat, Raja Nagar, Old Town, Sisupalgarh, and Utrata. A red dot marks the user's current location at "Biju Patnaik International Airport". A green polygon highlights the "Biju Patnaik International Airport" area. A red circle indicates the search radius around the user's location.

# Admin Login page:



# Admin Profile Page:



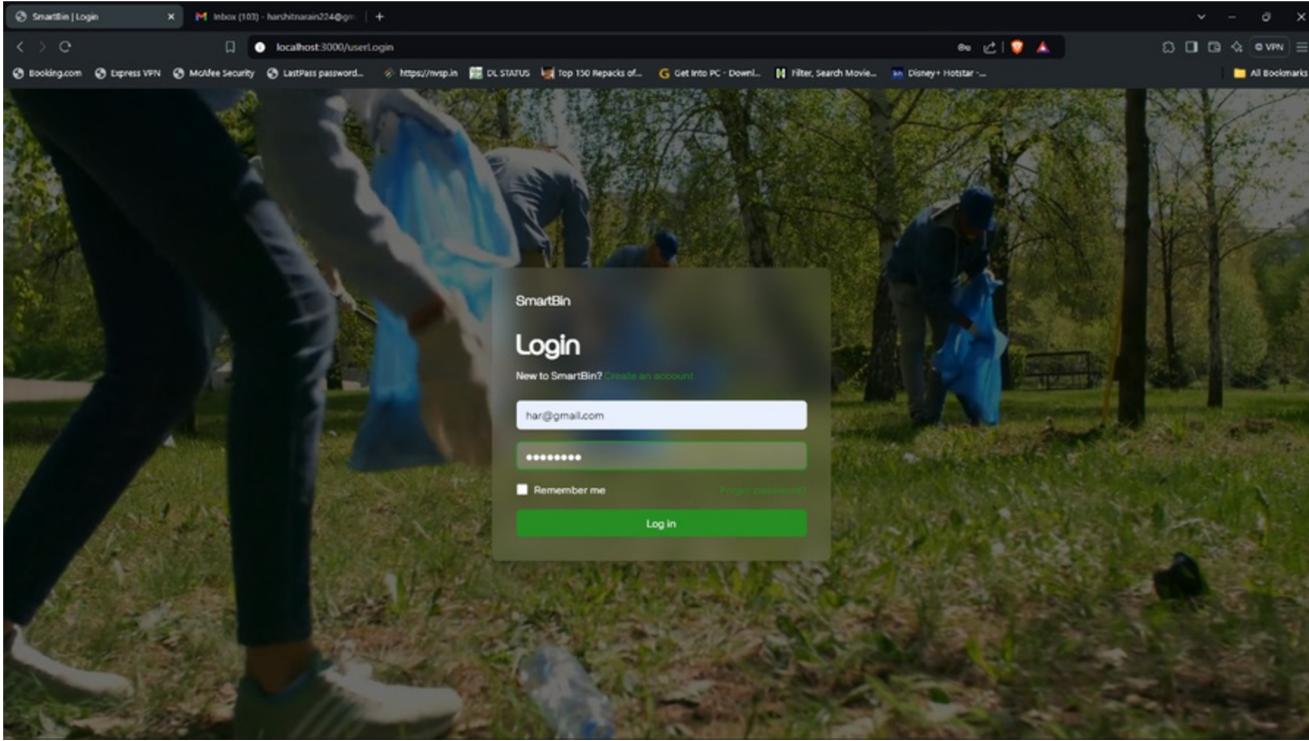
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HACKATHON  
2024

The screenshot shows a web browser window titled "Admin Dashboard" with the URL "localhost:3000/adminLogin". The main content area is titled "SmartBin Admin". It displays a greeting "Hello admin, hawkaye" and a section titled "User Requests". Below this is a table with columns: Serial No., Username, Description, Location, Date, Status, and Action. At the bottom of the table are navigation buttons for "Previous" and "Next".

Serial No.	Username	Description	Location	Date	Status	Action

Previous      Page of      Next

# User Login Page:



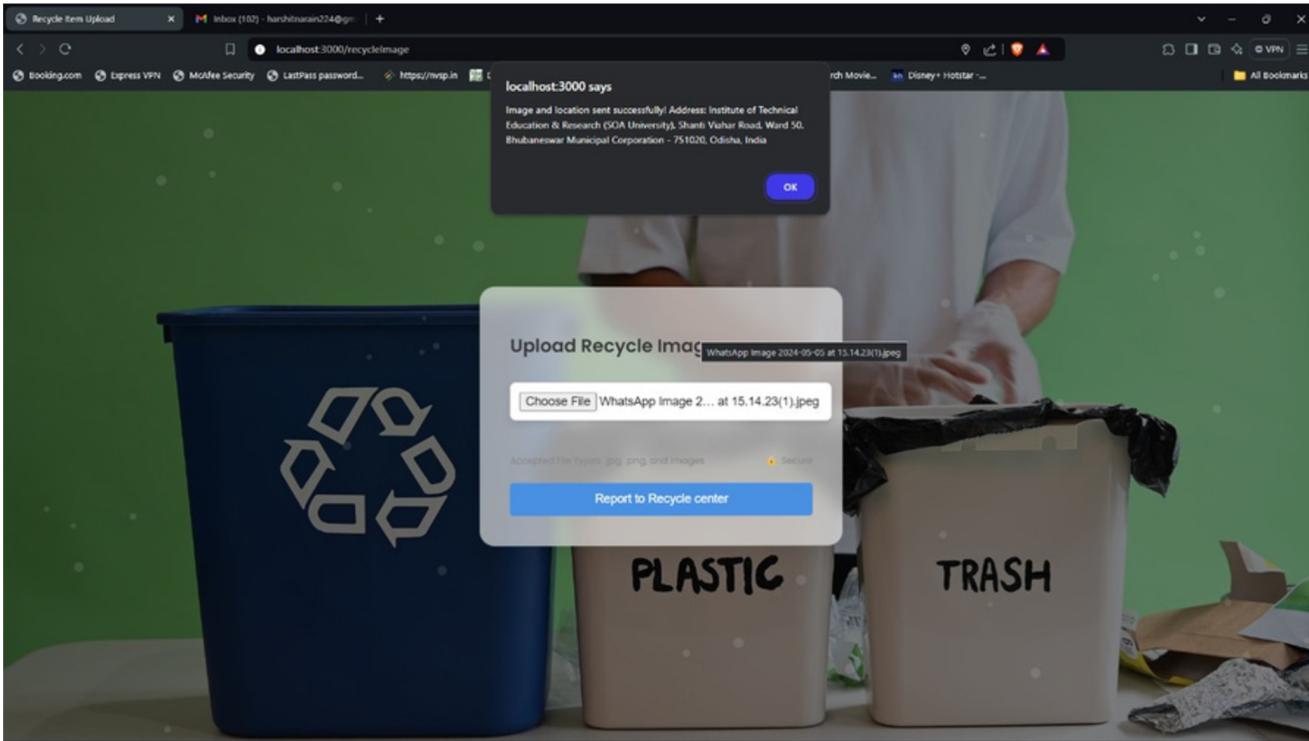
# User Recycle Request page:



The screenshot shows a web browser window titled "Inbox (101) - harchinaraan22@gmail.com" with the URL "localhost:3000/userProfile". The main content area is titled "SmartBin" and displays a message "Hello, hawkeye". Below this, there are two tabs: "Garbage Requests" and "Recycle Requests", with "Recycle Requests" being active. The section title "Your Recycle Requests" is followed by a table with three rows of data. At the bottom of the table is a green button labeled "Report New Items to be Recycled".

Serial No.	Date	Description	Location	Status
3	06/09/2024	Items to be Recycled at reported at Institute of Technical Education & Research (SOA University), Shanti Vihar Road, Ward 50, Bhubaneswar Municipal Corporation - 751020, Odisha, India	20.246138, 85.801641	pending
2	06/09/2024	Items to be Recycled at reported at Institute of Technical Education & Research (SOA University), Shanti Vihar Road, Ward 50, Bhubaneswar Municipal Corporation - 751020, Odisha, India	20.246138, 85.801641	pending
1	06/09/2024	Items to be Recycled at reported at Institute of Technical Education & Research (SOA University), Shanti Vihar Road, Ward 50, Bhubaneswar Municipal Corporation - 751020, Odisha, India	20.249991, 85.800652	pending

# Recycle Upload Page:



# Recycling Report Mail to the admin site:



Recycling Items Report

smartbin.official@gmail.com

Items to be recycled reported at latitude: Institute of Technical Education & Research (SOA University), Shanti Vihar Road, Ward 50, Bhubaneswar Municipal Corp

01:36 (10 hours ago)

smartbin.official@gmail.com

Latitude: 20.248167022161146, Longitude: 85.80138530314234 Nearest recycling center: Mahanadi Barrage Recycling Center [hars@gmail.com](mailto:hars@gmail.com) request from hawk12

11:02 (1 hour ago)

smartbin.official@gmail.com

to me

Items to be recycled reported at latitude: Institute of Technical Education & Research (SOA University), Shanti Vihar Road, Ward 50, Bhubaneswar Municipal Corporation - 751020, Odisha, India

Latitude: 20.24815425, Longitude: 85.80140075

Nearest recycling center: Mahanadi Barrage Recycling Center [har@gmail.com](mailto:har@gmail.com) request from hawkkeys

12:03 (1 minute ago)

One attachment - Scanned by Gmail

<https://mail.google.com/mail/u/1/#/inbox/1M1cgzQVzXWxvDCMNJrqZqKfFmNkICoH>

# User Garbage Request page:

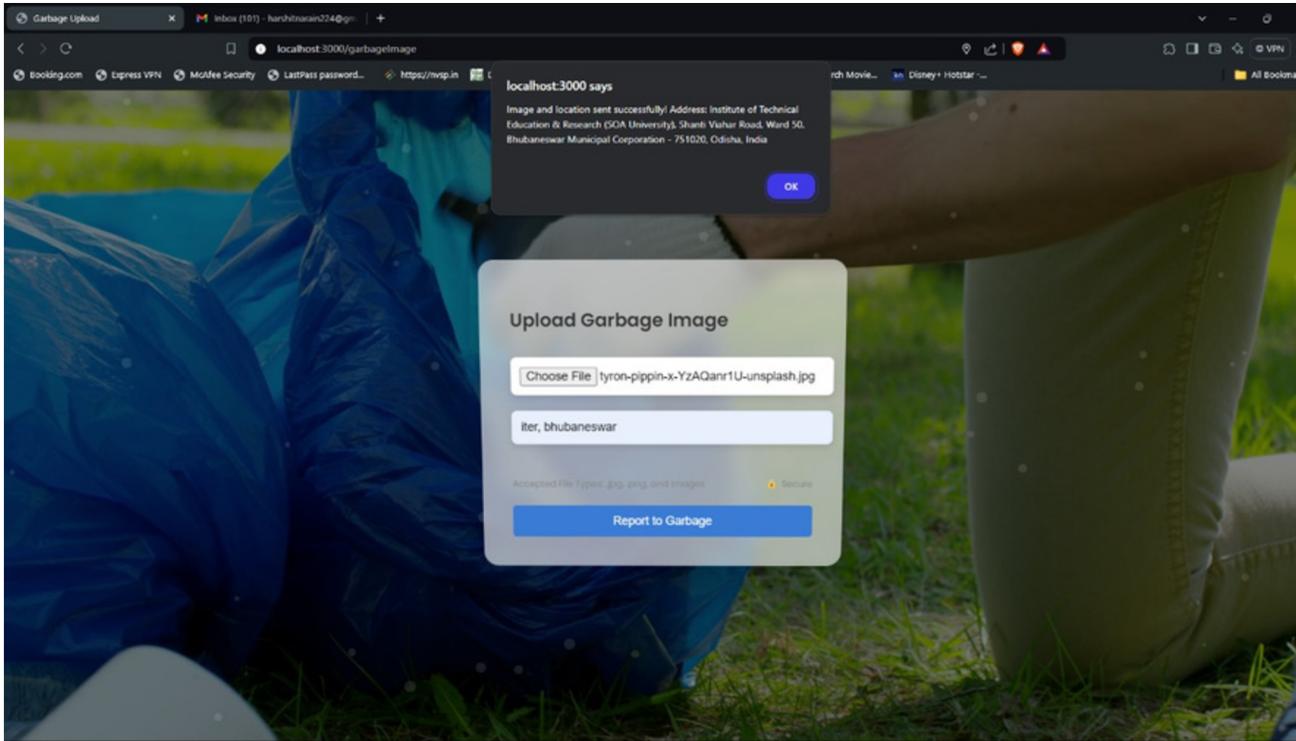


The screenshot shows a web browser window for 'localhost:3000/userProfile'. The title bar says 'Inbox (101) - hardikrajan224@gmail.com'. The main content area is titled 'SmartBin' with a user icon and 'Logout' button. A greeting 'Hello, hawkeye' is displayed. Below it are two tabs: 'Garbage Requests' (selected) and 'Recycle Requests'. The section 'Your Garbage Requests' contains a table with the following data:

Serial No.	Date	Description	Location	Status
9	06/09/2024	Garbage reported at iter, bhubaneswar	20.246220793673427, 85.80166632959937	processed
8	06/09/2024	Garbage reported at iter, bhubaneswar	20.246220793673427, 85.80166632959937	processed
7	06/09/2024	Garbage reported at iter, bhubaneswar	20.246225, 85.801669	processed
6	06/09/2024	Garbage reported at iter, bhubaneswar	20.246225, 85.801669	processed
5	06/09/2024	Garbage reported at iter, bhubaneswar	20.246138, 85.801641	processed

At the bottom, there are 'Previous' and 'Next' buttons, and a green 'Report New Garbage' button.

# Garbage Upload Page:



# Garbage Report Mail to the admin site:



The screenshot shows a Gmail inbox with three messages from 'smartbin.official@gmail.com'. The first message is from 'smartbin.official@gmail.com' and contains the text: 'Garbage reported at iter, bhubaneswar Nearest garbage center Mahanadi Barrage Garbage Center username : hawkeye har@gmail.com'. The second message is from 'smartbin.official@gmail.com' and contains the text: 'username : hawk12 hars@gmail.com'. The third message is from 'smartbin.official@gmail.com' and contains the text: 'to me' followed by 'Garbage reported at iter, bhubaneswar Nearest garbage center Mahanadi Barrage Garbage Center. username : hawkeye har@gmail.com'. Below the messages, it says 'One attachment • Scanned by Gmail' and shows a thumbnail of a photograph of a person at a trash bin.

<https://mail.google.com/mail/u/1/a/2ka-3e072567adult/0.1&permmsgid=msg-f118094279672494/196&th=191c699dc594bd&view=att&disp=safe>

# AI Chatbot to get information on waste management and Recycling:

A screenshot of a web browser window showing a chatbot interface titled "Recycling Center Chatbot". The chat history is as follows:

You: how can i report garbage?  
Bot: You can report garbage by clicking a picture of it and uploading it through our website. The information will be sent to the nearest recycling center.  
You: how long will it take to clear up the garbage?  
Bot: The recycling center will usually pick up the materials within 24-48 hours after you upload the photos.  
You: What if no one comes to pick up the garbage?  
Bot: If no one comes to pick up the garbage within 48 hours, please contact our support team through the 'Help' section on the website.

Type your query here...

The browser's address bar shows "localhost:3000/chatbot". The top navigation bar includes links for "Admin Dashboard", "Recycling Items Report - hanchaur", "SmartBins | Login", and the current tab "Recycling Center Chatbot". The status bar at the bottom shows "100% | 0:00 | 0:00" and "VPN".

# FEASIBILITY AND VIABILITY



## Analysis of the feasibility of the idea :

1. Our idea for a waste management platform is highly feasible, given the increasing demand for smarter, more efficient urban waste solutions and the current trend towards citizen engagement in environmental issues.
2. The technology required to build this platform is readily available. Existing frameworks for image uploading, geolocation tagging, and user management can be leveraged to bring our vision to life quickly and efficiently.
3. The core functionality can be easily adapted to include additional features or address other civic issues in the future, increasing its long-term viability.

## Potential challenges and risks :

1. Photo Verification Accuracy : False or misleading reports could undermine the system's credibility.
2. Misuse of the Platform: Spam, inappropriate content, or malicious reporting could divert resources and reduce overall efficiency.
3. Integration with Local Authorities : Resistance or slow adoption by local authorities could limit the platform's effectiveness.
4. System Scalability : Performance issues during peak usage times could frustrate users and authorities.

## Strategies for overcoming these challenges :

1. Minimal Viable Product (MVP) : Start with a pilot program in one locality or municipality focusing on serving a limited geographical area efficiently and gathering user feedback and refine the platform before expanding.
2. Strategic Partnerships : Collaborate with local environmental NGOs for community outreach, partner with municipal corporations to ensure official adoption.
3. Cost-Effective Development : Utilizing open-source technologies and cloud-based services , modular design for easy feature addition and scalability

# FEASIBILITY AND VIABILITY



## Additional Features to be added in future:

**1. Multilingual :** Our multilingual property ensures widespread accessibility across diverse linguistic communities, making the platform more inclusive and effective.

**2. Call & Message Service :** The addition of messaging and call service facilities caters to users who may not be technologically savvy, further broadening our user base and impact.

**3. AI Image Recognition :** We plan to implement a combination of AI based image recognition to verify garbage photos and to detect potential frauds. Additionally we have a user rating system that helps to build trust within the community

## Future Partner Organizations :

We plan to establish partnerships with the following organizations for garbage collection and processing :

### ➤ Garbage Collection & Processing:

- ◆ Bhubaneswar Municipal Corporation (BMC)
- ◆ Ramky Enviro Engineers Ltd.
- ◆ Sampurn(e)arth Environment Solutions Pvt. Ltd.
- ◆ Jagruti Welfare Organization

### ➤ Recycling Organization :

- ◆ Shree Ganesh Recycling Pvt Ltd.
- ◆ Pollution Control & Management System (PCMS)
- ◆ Swachh Bhubaneswar Abhiyaan

# IMPACT AND BENEFITS



SmartBin offers several key benefits:

**Improved Sanitation:** By allowing real-time reporting of garbage, it helps keep neighborhoods clean and promotes better hygiene.

**Enhanced Recycling Efforts:** It simplifies the process of reporting recyclable items, encouraging more people to participate in recycling.

**Community Empowerment:** Citizens are actively involved in waste management, leading to greater environmental awareness and responsibility.

**Health and Safety:** Cleaner streets reduce the risk of health hazards caused by uncollected garbage, improving public health.

**Increased Accessibility:** With our multilingual feature and phone/chat support, the platform is accessible to all, even those without smartphones or English proficiency.

# CONCLUSION



In conclusion, SmartBin offers a scalable and impactful solution to modern waste management challenges. By connecting citizens and local authorities through an easy-to-use platform, we facilitate faster garbage removal, enhance recycling efforts, and contribute to a cleaner, healthier society.