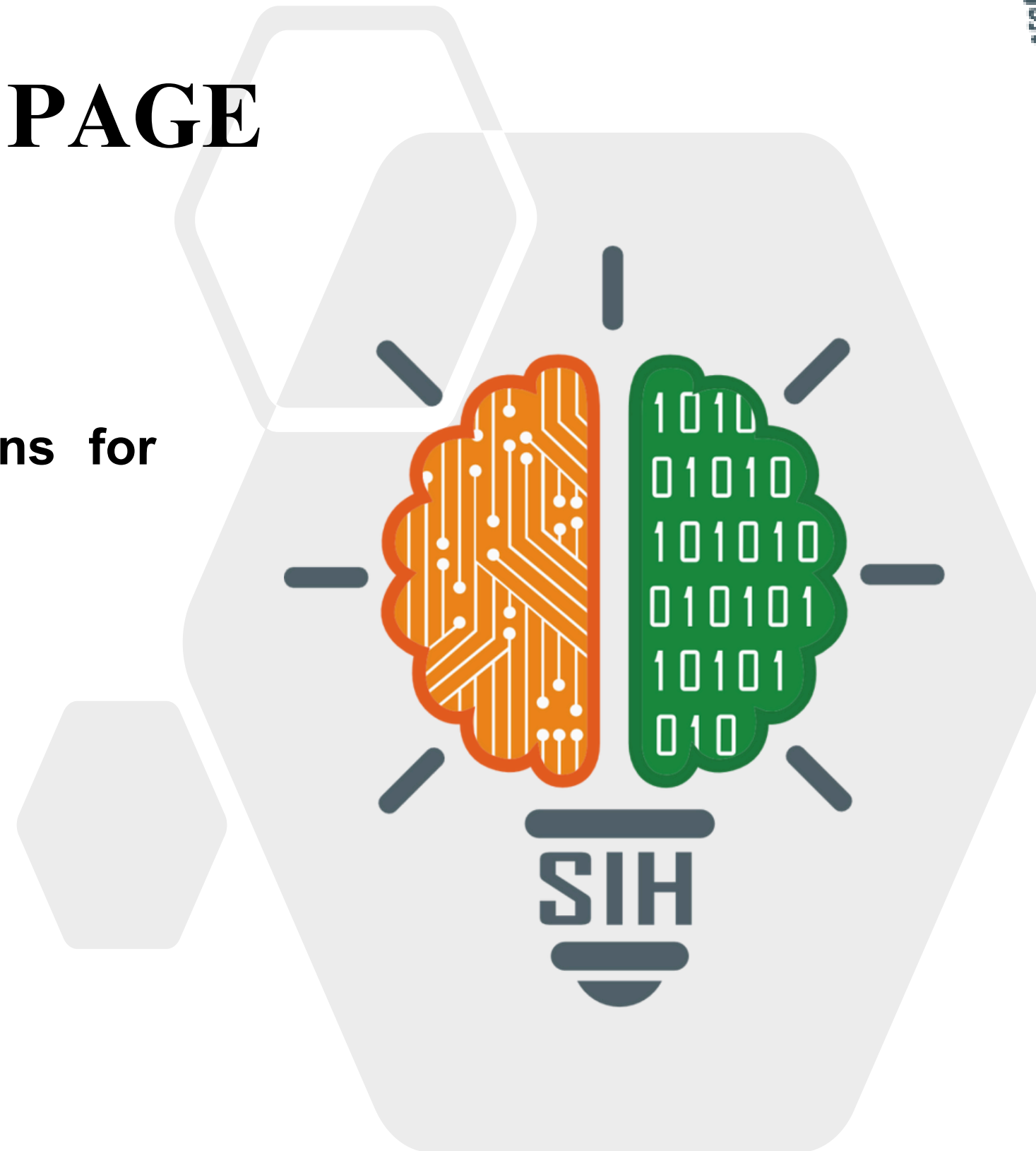


TITLE PAGE

- Problem Statement ID – SIH25060
- Problem Statement Title- Real life solutions for Waste Management.
- Theme- Clean & Green Technology
- PS Category- Software
- Team ID-
- Team Name : Turing.Tosh

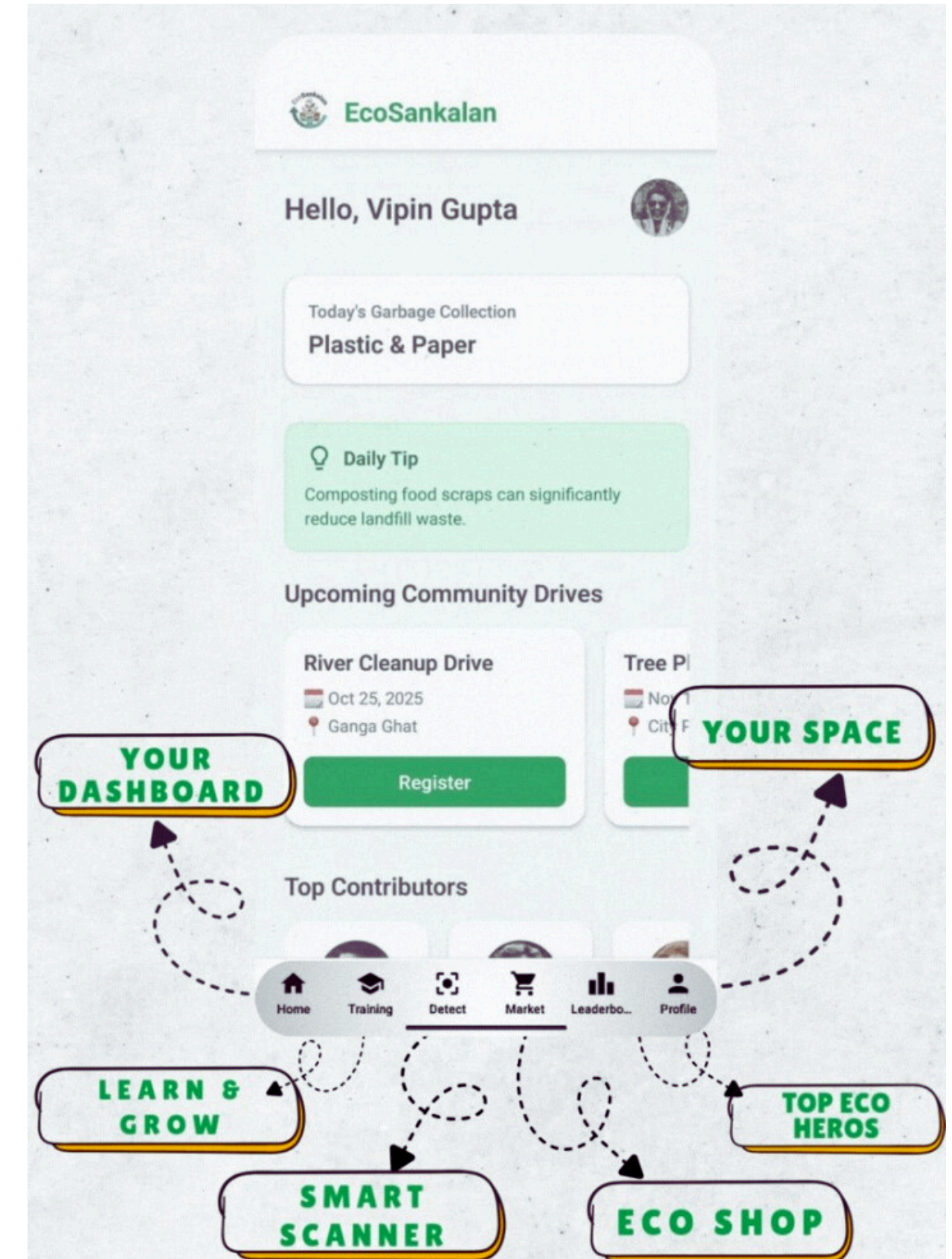


- Proposed Solution

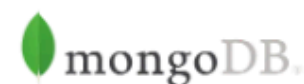
- **Training:** In-app micro-learning + quizzes for awareness → earn points.
- **Incentives:** Points, leaderboards, redeemable rewards to drive participation.
- **Citizen App:** Snap & report waste → AI auto-classifies → escalates if unresolved.
- **Marketplace:** Citizens sell recyclable waste → recyclers/workers buy directly.
- **Smart Scheduling:** Citizens & workers notified of today's waste type collection.

- Innovation & Uniqueness:

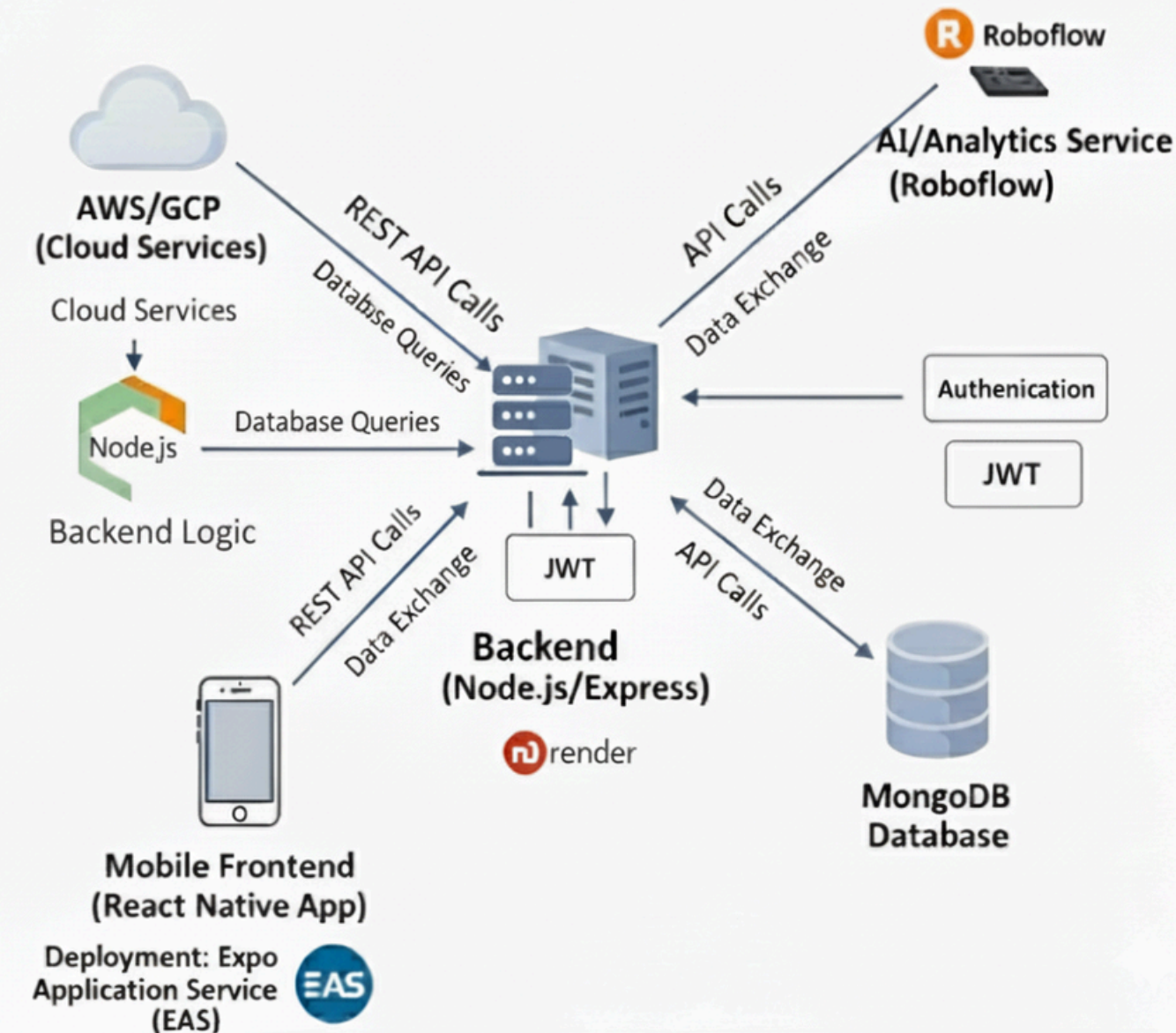
- Combines **reporting + incentives + education + marketplace** in one ecosystem.
- Ensures **accountability** (before/after proof + auto-escalation).
- **Gamification + Transparency** = sustained citizen participation.



- Technology Stack
- **Frontend** : React Native , JavaScript , TypeScript , Tailwind CSS
- **Backend** : NodeJS , ExpressJS , MongoDB
- **AI and ML** : Roboflow
- **API Services** : Roboflow API
- **Cloud and Deployment** : EAS , Render , GitHub
- **Add-Ons** : JWT



EcoSankalan System Architecture



- Feasibility

1. Mobile-first → lightweight React Native app (cross-platform) works on low-cost Android phones.
2. Cloud-based Node.js + MongoDB → low infra, quick scale to multiple ULBs.
3. Easy training → in-app micro-learning content.

- Challenges

4. **Citizen-side:** Low awareness, digital illiteracy, app fatigue.
5. **Technology-side:** Spam reports, server downtime, photo misclassification.
6. **Operational-side:** Marketplace trust issues, logistic gaps, unverified buyers/sellers.

- Use Cases

7. **Citizen Participation** – Snap waste → AI verifies → task auto-assigned to worker.
8. **Training Adoption** – Students, SHGs & citizens earn points after completing training.
9. **Marketplace** – Households sell recyclables, recyclers/NGOs buy → direct income.

- Solutions

1. Awareness campaigns, gamification & rewards → drive citizen adoption.
2. AI-based spam filtering + citizen reputation scores → improve trust.
3. Verified recycler/worker onboarding + escrow system for marketplace.
4. Cloud backup & monitoring → minimize downtime, ensure reliability.

- Supporting Facts

- Yadgir “See Waste, Send Photo” success shows citizens *will* participate if easy & accountable.
- Smart city pilots with AI/RFID showed 20–30% reduction in missed pickups.
- Recycling market projected to cross ₹6,000 crore by 2030 → marketplace viability.

Benefits of the solution

Social

Economic

Environmental

Operational

Governance

• Potential impact on target audience:

- **Citizens** : Easy reporting, rewards (points, leaderboards), awareness training in local language.
- **Workers & Staff** : Daily waste-type instructions, optimized routes, reduced confusion.
- **Recyclers/NGOs** : Direct access to sell/buy waste items, better material sourcing.
- **Youth/Students** : Incentivized participation through gamified learning modules.

• Benefits of the solution

Social :

- Community-driven participation through incentives & gamification.
- Awareness campaigns & in-app training → long-term change in waste habits.
- Builds trust between citizens & municipal authorities via public dashboards.

Environmental:

- Increase in waste segregation → more recycling, less landfill.
- Reduced open dumping → improved sanitation & air quality.
- Marketplace ensures recyclables are reused efficiently.

Economic :

- Fuel & operational cost savings for ULBs (15–20%).
- New business opportunities for recyclers/startups in circular economy.

Operational :

- Complaint resolution time reduced ~40%.
- Real-time dashboards improve accountability & performance tracking.

Policy & Governance :

- Strengthens Swachh Bharat Mission & Smart City programs.
- Improves Swachh Survekshan rankings with measurable results.

Problem Validation

- The Problem: The core issue of waste management in India is a behavioral one: a lack of consistent segregation at the household level.
- Reference: Official reports from the Government of India's Swachh Bharat Mission and the CPCB.(Link:<https://sbmurban.org/swachh-survekshan>)

Strategic Learnings

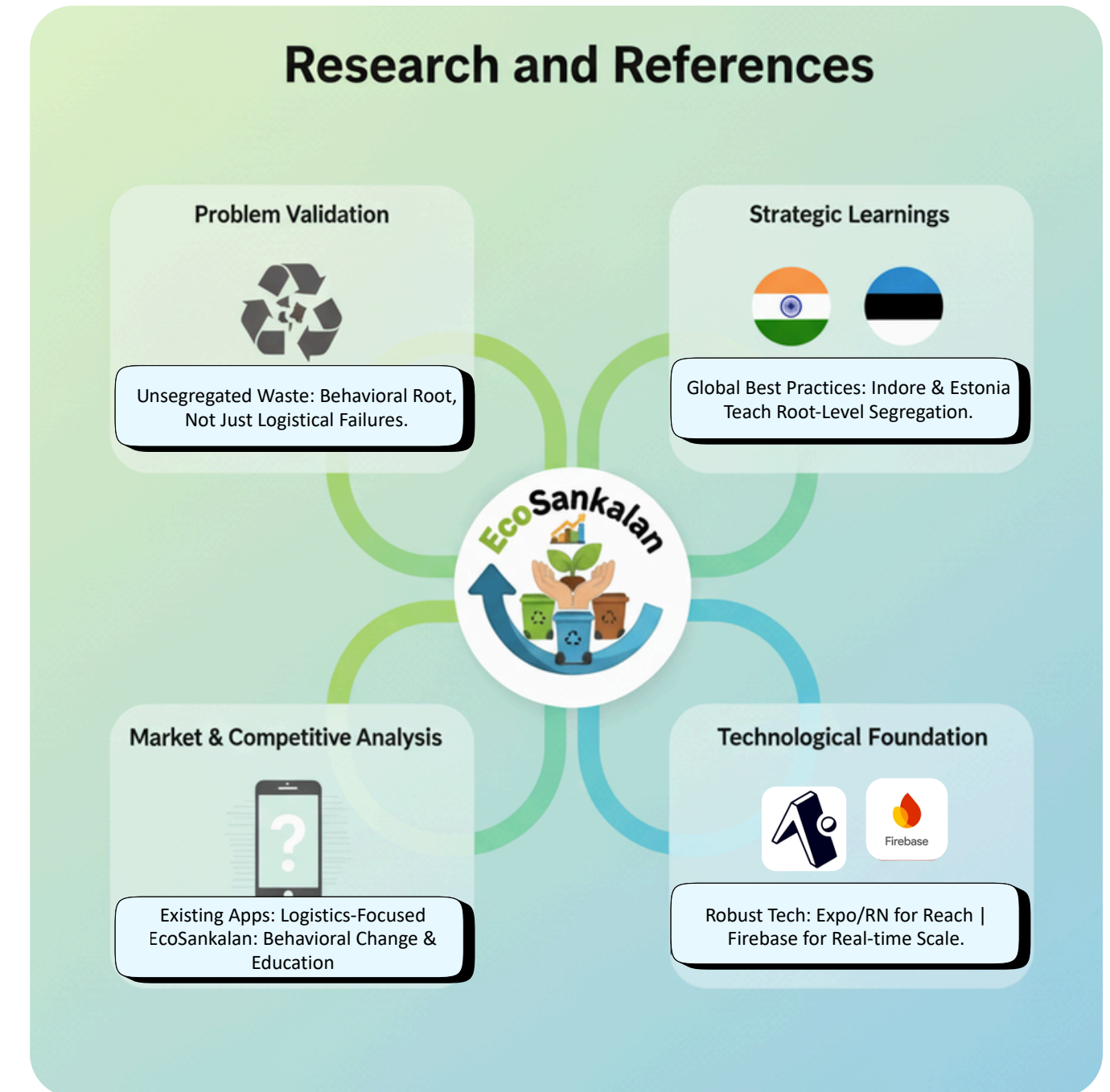
- The Indore Model: Learned that scheduled, segregated collection and continuous citizen education are critical for urban waste management success.
- Reference: Data and reports from the Indore Municipal Corporation's solid waste management program.(Link:<https://sbmurban.org/indore-clean-green>) (Link:<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/14511637051108755/waste-management-in-estonia-survey-on-behaviors-perceptions-and-motivations>)

Market & Competitive Analysis

- The Gap: Existing apps focus on logistics and collection. We identified the need for a solution that addresses the fundamental issue of behavior change and education at the source.
- Reference: Analysis of top waste management apps and market research reports.

Technological Foundation

- Our Stack: We chose Expo/React Native for rapid, cross-platform development and Firebase for a scalable, real-time backend.
- Reference: Expo and Firebase official documentation, highlighting the benefits of their ecosystems.
(Link:<https://docs.expo.dev/workflow/overview/>)
(Link:<https://firebase.google.com/docs>)



Deployment Link :<https://expo.dev/accounts/kvjha/projects/ecosankalan/builds/3926cf10-29f9-412c-b183-6ea67af0a313>

IMPORTANT INSTRUCTIONS



Please ensure below pointers are met while submitting the Idea PPT:

1. Kindly keep the maximum slides limit up to six **(6)**. (Including the title slide)
2. Try to avoid paragraphs and post your idea in points /diagrams / Infographics /pictures
3. Keep your explanation precise and easy to understand
4. Idea should be unique and novel.
5. You can only use provided template for making the PPT without changing the idea details pointers (mentioned in previous slides).
6. You need to save the file in PDF and upload the same on portal. No PPT, Word Doc or any other format will be supported.

Note - You can delete this slide (Important Pointers) when you upload the details of your idea on SIH portal.