CityCollection

Disrupting Recycling with Data

Who are we?

We are a seed stage startup providing a technological platform that enables emerging trash collection authorities, public or privately funded, to efficiently collect, direct and understand recyclables
Our platform uses an incentivizing recycling model to gather and understand users disposal related data.
The data will be used to educate the users to reduce, reuse and recycle, and also be leveraged via a dashboard to help collectors optimize sorting costs, routes, and drive awareness campaigns.

Our stage of innovation:
- Working POC, building the platform for scalability
- Striking partnership deal with largest waste management company in Sri Lanka

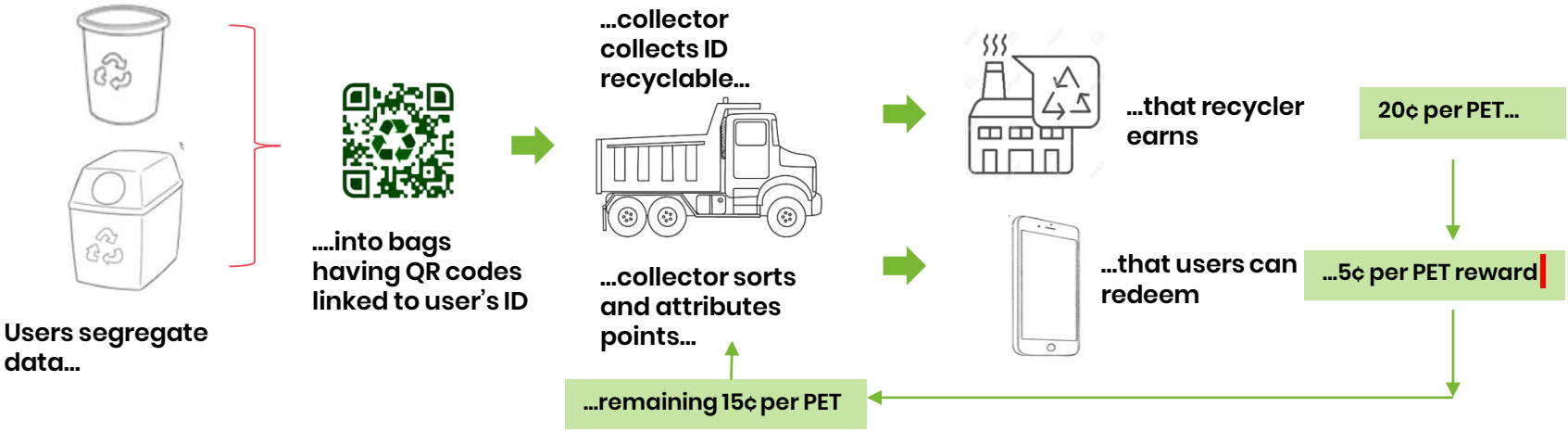
Future plans:
- Fully functional scalable platform
- Trial the solution in small districts for PET and E-waste
- Strike CSR deals with major retailers

Our team

Gamika Seneviratne	Avinath Gunasekara		Keshani Jayasinghe
Assistant Director at Acuity Knowledge partners, 5 years experience in financial analysis. Data scientist and image recognition programmer. MEng in Electrical and Electronic Engineering from Imperial College London	Final Year - BSc. Software Engineering, Former Trainee Associate Software Engineer at Zone24x7, **and** Co-Founder & Community Lead at Colombo Flutter Community		Bsc. Software Engineering undergraduate with experience in UX/UI and graphic design enthusiast Avid volunteer
Sri Lankan, Buddhist, Male	Sri Lankan/Canadian, Catholic, Male		Sri Lankan, Buddhist, Female

Highly diverse team, from various nationalities, genders, and religions

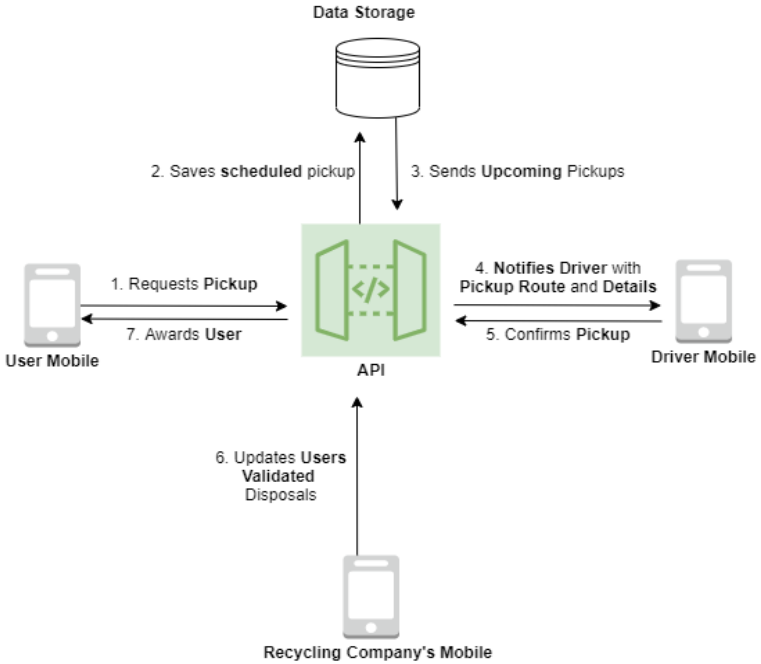
The business model



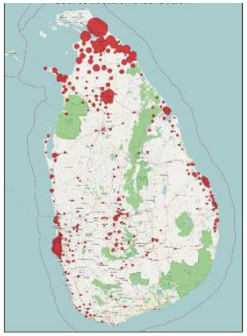
- QR codes enables user validation and redemption for each contribution
- Validation by the collector can be done at the user's premise (e.g. laptops) or at the recycling facility (e.g. lot of PET bottles) via the manual sorters
- Data is collected during the sorting and point attribution stage,
  - This can be done through various methods, our solution leverages image classification in order to validate a trash item
  - The datasets generated from this classification can be used for various purposes described in slide 5
- Data at user level is collected (e.g. disposal patterns, favorite brands) and at district level (types of items most thrown, proximity to water canals, etc) will be combined to drive a targeted collection and education process

The platform

1. User requests a pick up.
2. The API saves a scheduled pickup in the database
3. The Backend polls the database on a timely basis checking upcoming pickups.
4. Notifies the driver of an upcoming pickup with the pickup route and details.
5. The Driver confirms the pickup back through the API
6. Once the Driver has dropped off the garbage at the Recyclers facilities, the Recycler validates the users disposal(have they entered the correct amount of garbage to claim an adequate amount of points?). They also take an image of the item to be used for data analytics and phase II.
7. The user is rewarded, once the recycler validates the garbage items.

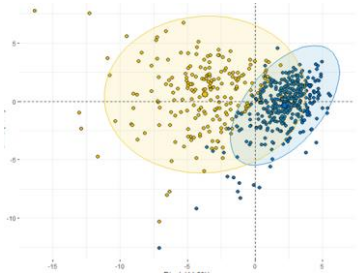


What is the data we generate?



Location data

- Explain location, what we will use it for
- How to track entry into water ways



Brand data

- Etc

Types data

- Etc

Image data

- Gathered for extra incentive
- Sold/used for training image recognition algorithm
- Two existing models;

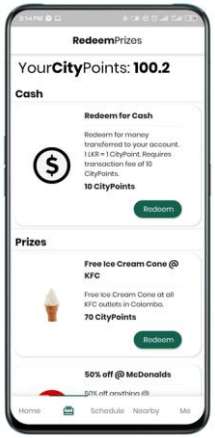
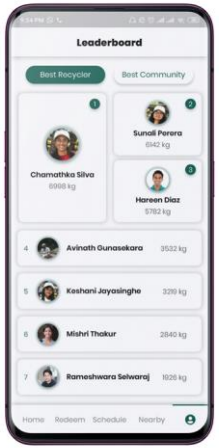
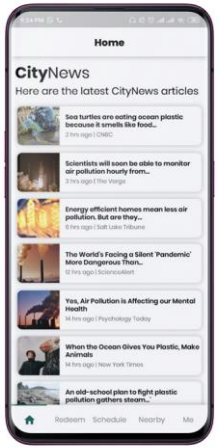
1. mobile capable platform for image classification
2. specific brand identification model (YOLOv3)

Actual data from 100 participants in a crowdsourced data gathering initiative

Visualizing data through “the dashboard”

Heatmap of recycling		Education	Location (For Phase II, see slide 9)
Users can redeem for prizes and coupons on the application	Users can compete with others in the community and friends to see who recycles the most.	Users can see any news regarding recycling, pollution, and related articles.	Users can find near by CityBins to dispose their garbage

How do we scale?

Incentivizing	Gamification	Education	Location (For Phase II, see slide 9)
Users can redeem for prizes and coupons on the application with the points they earn from using CityCollection	**Users can compete with others in the community and friends to see who recycles the most.**	**Users can see any news regarding recycling, pollution, and related articles.**	**Users can find near by CityBins to dispose their garbage**
			

Phase II

Phase I
CityCollection

At home **incentivised recycling.**

Phase II
CityBin

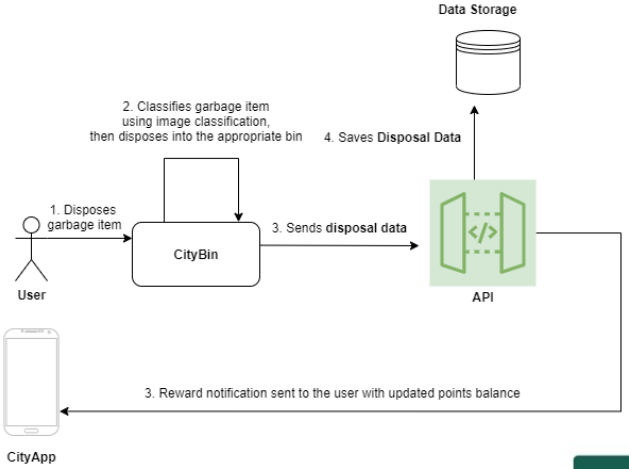
Out of home **incentivised recycling.**
Recycle anywhere.

- CityBin is phase II of the platform where we leverage the collected garbage image data from CityCollection to deploy physical 'ultra' smart garbage bins that allows users to dispose of garbage items in them and rewards them for the trash with points.

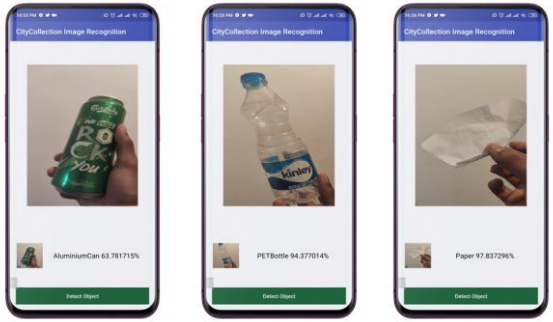
- A CityBin is an "auto-segregating" smart garbage bin that can be placed anywhere (sidewalks, malls, cafeterias, schools), these bins reward you with points for using them to recycle .

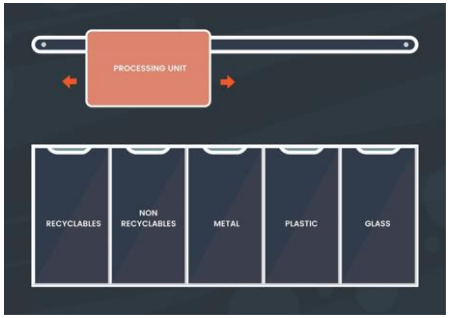
- The bins will be placed in areas where large crowds gather, especially near waterways (after analyzing data we gathered from community level user disposal trends)

How does CityBin work?



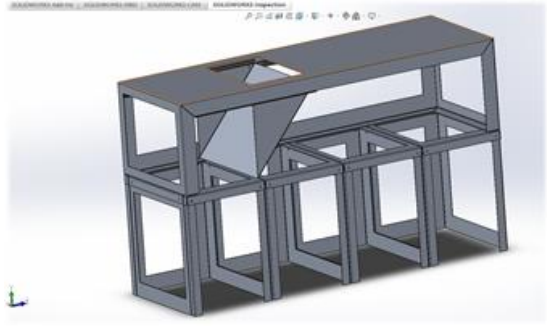
Current Image Classification for CityBin





Inside CityBin

Front View of CityBin



SolidWorks Render of CityBin

Challenges we address

Challenge 1 - Improved Visibility of Plastic Waste Generation and Material Flows

1. Tracking and understand where plastic waste comes from and where does it go? ✓
   - CityCollection allows us to track the disposal of different types of garbage from start to end.
2. Better understand waste generation based on its quality (type, cleanliness, etc) and source ✓
   - Segregation by type is inherent and tagged to locations. Further incentivised image data collection identifies brands.
3. Predict the consumer attitudes and behaviors to identify potential channels of influence on plastics? ✓
   - We are able to track a users disposal habits, patterns, this data can be used ….

Further detail is available on our comprehensive assessment report

Challenge 2 - Optimization of Circular Supply Chains for Plastics

1. How might we incentivize responsible for plastic use and waste management? ✓
   - CityCollection rewards users with points that they can use to redeem for coupons and cash on the app.
2. How might we enhance the visibility, connectivity, and efficiency of informal sector waste collectors and aggregators? ✓
   - 'News' tab drives education and allows for community and collector led awareness campaigns
3. How might we better track and improve value generation across the supply chain? ✓
   - Image, location, time series disposal, brand, and type data is gathered to help the us/collector understand source, generation, and evaluate collection strategy and integrate fragmented value chain

Thank you!

We are currently in discussions with Cleantech, a major waste management solutions company in Sri Lanka, regarding which recyclable items and which regions are suffering the most acute environmental damage.

Following these discussion, we are hoping to partner with them to launch the platform and utilize their vast collection logistics network (largest in Sri Lanka) to help save our country, and eventually other emerging markets as well.

We like to hear from you!

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