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PROBLEM

Each day, the city of Bangalore creates between 3000 and 4000 tons of municipal solid waste [1]. At least 25% of this waste is not collected during door to door collection due to inefficiencies in the waste management system and a lack of household waste segregation [2], [3]. This leads to trash piling up in the streets of the city creating what are known as blackspots. Blackspots are described as 'dirty, putrid, and extremely repulsive,' causing the city to look uninviting to both locals and visitors [3]. 15 out of 20 citizens interviewed in Rajarajeshwari Nagar expressed that blackspots were a problem in their community. A BBMP senior officer admitted that there could be around 1000 blackspots in Bangalore alone, showing the massive scale of this problem. Other sources say that there are a minimum of five blackspots in each of the city's 198 wards, but the numbers could be much higher [4]. These piles of waste build up over time until they are eventually burned, which contributes to air pollution. Leachate from blackspots pollutes nearby water and soil, and the rotting waste attracts insect and rodent vectors which can transmit diseases to humans [5].

Citizens living near blackspots and businesses located near blackspots are affected most by this problem. The sheer number of blackspots in Bangalore indicate that they are also a problem for citizens at large as well as the local municipal government, which has a stake in the public perception of the city. The large prevalence of waste dumping at night has led to a collective mindset that contributing to blackspots will go unpunished. Once one person dumps in an area, more people are likely to follow, seeing that the space has already been polluted and assuming that their contribution will be negligible. Many citizens throughout the city contribute to blackspots, all acting in their own best interest, until public spaces become littered with trash piles in a tragedy of the commons.

A local NGO, The Ugly Indian (TUI), identifies that blackspots are tarnishing the public image of Bangalore and recognizes the need for more NGOs to enter the arena to help cleanup these waste sites. TUI performs spotfixes around the city coupled with a sprucing up of the area post-cleanup as part of their mission to reduce the filthiness of Indian streets. They aim to create a greater sense of citizen ownership of public spaces through these efforts and many others, including painting underneath flyovers to discourage illegal postings and defacing. As people see their fellow citizens cleaning up the mess, they are more likely to get involved whether through spot fix participation, less littering, or conversations with those around them. Despite the efforts of TUI, the blackspot problem persists because of the massive scale of the problem. Green Spot sees the need for an organization to channel all of their energy into the cleanup of blackspots rather than performing cleanups in addition to many other types of projects. The introduction of Green Spot to the market will not impinge upon TUI's business simply because there are enough blackspots to go around for everyone.

OUR SOLUTION

Our solution is a citizen-led public dumpsite cleanup program. Green Spot facilitates the removal of blackspots around Bangalore while spreading awareness on proper waste management to prevent the creation of future blackspots and return of old blackspots. We empower citizens to take ownership of their city's public spaces and encourage the mentality that citizens' actions can create change. The process begins with the steps of organizing, planning, cleanup, and monitoring. A resident who is frustrated with a blackspot in their neighborhood can share it and contact us through our Facebook page to begin the process. There is a link to our google form (see Appendix IX) where they can upload a photo of the site, along with the location, other known details, and volunteer if they would like to organize a cleanup. Residents can then add a date and time that would work for them to be involved in the cleanup. After this request is made, we coordinate with the local government (BBMP) through our connections with NGO leaders to organize a cleanup event for the blackspot, and share the event with a network of citizen volunteers on social media and our mailing list. On the day of the cleanup, we provide all personal protective equipment and ensure that trucks are there to haul away the waste.

We at Green Spot are aware that a lasting solution must involve more than just the cleanup of the blackspot, which is why we also have an extensive follow up plan, outlined in Appendix X. Door to door advocacy in the week following the cleanup allows us to engage with residents who were unaware of the event or did not participate, opening up a conversation about the waste management in their area. We educate them on proper segregation of waste and hear their perspective on the waste problems. We will also follow up with BBMP supervisors or DWCC operators if gaps in collection are identified from our conversations with residents, to help address larger systemic waste collection issues. Each community has different needs, which is why we ask residents' opinions on what the best maintenance plan would be for the Green Spot. If dumping is due to a lack of door to door collection, we address this problem to BBMP to close those gaps. We also install signage in multiple languages to deter littering. Beautification of the Green Spot may be in the form of planting trees and flowers where allowable, or decorating the area with rangoli street art, and transforming it into an inviting communal space. We return to the space regularly to evaluate it's cleanliness and implement any further measures if needed. During returns to the site we engage with community residents and introduce our social media page, and provide contact information so they can contact us directly and provide updates on the littering taking place in the area. The combination of cleanup, follow up maintenance, and advocacy transforms a blackspot into a Green Spot.

Due to the sheer volume of blackspots in Bangalore, cleaning them up can seem like a daunting task. Citizens in Rajarajeshwari Nagar that were interviewed expressed concern regarding the number of blackspots in their community but had a mentality that the problem was too big to tackle. By working on one blackspot at a time, Green Spot breaks up the problem

into smaller pieces and shows residents that progress can be made. We demonstrated this through a prototype cleanup event in Rajarajeshwari Nagar in which representatives from BBMP, Hasiru Dala, and a citizen volunteer, Kumar, were involved. 10 out of 20 of those interviewed in Rajarajeshwari Nagar said they would volunteer 1-4 hours at a cleanup event, and one resident named Kumar was able to show up with only 48 hours advance notice. With the help of Kumar and a few BBMP and Hasiru Dala workers, we loaded about 500 kilograms of mixed waste onto a BBMP truck for removal, and separated 50 kilograms of recyclable waste from the blackspot for processing. Kumar was able to start a conversation with the BBMP supervisor in attendance regarding waste collection problems in his neighborhood with bribery during door to door collection. The supervisor gave Kumar his personal phone number and asked him to contact him the next time this happened so that he could intervene. This interaction strengthened the relationship between Kumar and a stakeholder in the waste management system, and increased BBMP awareness on important issues that citizens of Bangalore face. Three days after the cleanup, we returned to the street and spoke with nearby residents. The response was overwhelmingly positive. While going door to door we met Shivakumar who lives across the street from the new Green Spot. Shivakumar told us that he had been keeping an eye on the site since the cleanup and telling people not to dump their waste there. He expressed excitement that the blackspot had been cleaned and said, “this is our place, we need to keep it clean.” This is the exact kind of ownership of public spaces that Green Spot is seeking to cultivate. Shivakumar said that he would absolutely be willing to organize a cleanup event in the future. By simply seeing that the blackspot in his neighborhood had been cleaned, Shivakumar was inspired to keep it clean and be involved in the cleanup of other blackspots. Through cleanup events, Green Spot will ignite this spark in residents and inspire future change agents to pave the way towards a cleaner Bangalore.

But how can we be sure this solution will work in the long term? Fortunately, TUI has some expertise in the field, having conducted over 400 blackspot cleanup events between 2015 and 2018 in collaboration with the BBMP, 95% of which have remained clean [4]. In conversations with Aniruddha Abhyankar from TUI, he stressed the importance of understanding the unique set of causes for each blackspot in order to ensure it does not return post cleanup. In learning from TUI’s model, we have developed the followup system (Appendix X) described above and received good reason to believe in its efficacy via our prototype event.

FINANCES

An initial investment capital investment of ₹16.5 Lakh for one year’s expenses will allow Green Spot to get started cleaning blackspots. The financial details section of Appendix III outlines the breakdown of supplies, salaries, and other expenses. Operating costs to cover the continuation of the service include two salaried positions for a Field Coordinator managing clean ups, and a Business Developer coordinating partnerships, funding, and social media outreach. Green Spot will start with a target of cleaning one blackspot per week and scale from there. The Ugly Indian can currently perform five spot cleanings in a single day, and scaling to

provide multiple cleanings per day is an immediate goal of Green Spot. Interview responses revealed that citizens would be willing to make a one-time donation of ₹90 on average for cleanup efforts in their community. We will solicit donations at cleanup events, and will put the funds towards the costs of new cleaning supplies as needed.

We will apply for grants in the United States to acquire startup money. Options that we will pursue have been outlined in Appendix XIV. In addition, corporate social responsibility (CSR) funding could serve as a revenue stream. CSR compliance is expected to exceed 95% in India this year, and environmental sustainability is the third highest funding category [6]. We know that CSR companies require organizations to have three years of establishment before being eligible to receive funds which is why we believe that partnering with an existing NGO is the best option moving forward [7]. This can reduce the overhead costs for building and business development, and reduce the staffing needs to just a project coordinator.

Established NGOs in similar lines of work have greater access to resources and valuable expertise that will help Green Spot get off the ground. RR Nagar iCare, a public trust aiming to address environmental issues in Rajarajeshwari Nagar, has been contacted to incorporate Green Spot as a partner. Existing advocacy organizations can help expand the reach of Green Spot to citizens at large through social media, and help generate volunteers for events, as well as positive publicity. Green Spots can be organized as a service provided by an existing NGO like Hasiru Dala, or a multinational corporation (MNC). The benefit to these organizations would be creating an opportunity to engage citizens in a positive way through helping to clean streets together, and can be complementary to other outreach and marketing efforts companies are already undertaking. Citizens we interviewed responded that they would be willing to donate more money to cleanup efforts if they could see results from Green Spot that prove our platform actually works. By partnering with NGOs, MNCs, and community groups like RR Nagar iCare, we ensure strong community support and financial sustainability in the initial stages of development.

BENEFICIARIES & CUSTOMERS

Residents living near blackspots are the primary beneficiaries of the Green Spot service. Their streets are transformed from spaces that accumulate unhygienic waste and give off an unpleasant smell to clean, inviting spaces. Residents living near blackspots are also a target customer through donations. Specifically, residents that are inconvenienced by a blackspot in their neighborhood or that care about the environment and the appearance of the city's public spaces have the option of giving either their time, their money, or a combination of both to support solving the problem. The contribution of time is valuable to the waste cleanup efforts, however we understand many citizens lead busy lives while having the financial capacity to contribute to solving the problem, which is why Green Spot also accepts monetary donations. In starting a blackspot cleanup event, a resident is taking ownership of a public space near them

and leveraging their social network to spread awareness of the issue. Citizen champions are central to Green Spot's services gaining momentum and increasing in scale beyond Rajarajeshwari Nagar.

Secondary beneficiaries include groups like RR Nagar iCare, and citizens of Bangalore at large, because they get to live in a cleaner city, even if the service has not yet come to their neighborhood. The local municipal government benefits from this form of waste management because it helps address the gaps in the waste collection system and improves public perception of the city, while providing a positive interaction with residents, showing them the government can do helpful things in their communities. Business owners whose businesses are located next to blackspots may enjoy a larger customer base and therefore more revenue as a result of Green Spot's service when trash is removed, and their customers develop a positive perception of their storefronts.

As described in the Finances section above, NGO partners and MNCs offering CSR funds are an important customer, because in covering the operational expenses of Green Spot, they can generate large amounts of positive publicity with the general public through our social media, and our positive branding around cleanup events. While a Green Spot sponsored by Coca Cola or another company may have heavy influence on the mission and long term vision for the organization, scaling up Green Spot to address the problem of open public dumping will require ownership from not just the public, but also financial support from large MNCs. Conversations with the Ugly Indian and Hasiru Dala have shown they used this customer model to generate funds to run similar campaigns, and this can be considered a highly effective method for funding an NGO project.

Secondary customers for generating start up capital include the grant administering agencies mentioned above in the Finances section. In generating capital, Green Spot needs to demonstrate an alignment with the mission of the organization bestowing a grant, as well as high levels of professionalism and a full and thorough plan for possible funding. Many innovation challenges are won by groups creating new technology. Green Spot is not heavily reliant on technology and looks to address a global problem through a service, which will require an intentional effort in pursuing appropriate funding sources. Appendix XIV outlines some possible funding sources and steps Green Spot will undergo, including the foreign contributions process for Indian organizations receiving foreign funds.

Beneficiaries face the problem of blackspots because there is a lack of accountability for waste dumping, resulting in a large accumulation of waste in a tragedy of the commons. Of a random sample of 20 citizens in Rajarajeshwari Nagar, 75% saw blackspots as a problem in their community. Abisheck, a college student who lives in the area describes blackspots as 'ugly' and Joseph, the manager of a clothing store located on the ward's main road, sees blackspots as 'unhygienic.' Hasiru Dala, who serves as an intermediary between the local municipal government and waste collectors in 33 of the city's wards, monitors a resident Whatsapp group. There are daily complaints from residents across the city about waste piles

appearing in their neighborhoods due to inefficient door to door collection. Citizens currently face insufficient resources and lack of organization to solve the immense blackspot problem. As Aniruddha from TUI said, people want to take ownership, they just need a catalyst. This is why Green Spot is here to help. The large scale of the waste problem in Bangalore can make it appear daunting to tackle, but by cleaning up one blackspot at a time, change can be made.

MAKING IT REAL

We interviewed 20 citizens near blackspots in Rajarajeshwari Nagar. These conversations confirmed the reality of the problem and the extent to which we should expect citizen involvement in our solution. 75% of interviewees agreed blackspots are a serious problem that affects their everyday lives. We found 50% would volunteer 1-4 hours of their week to a cleanup event, and an average of ₹90 per person can be expected as a one-time donation. This figure helps us moving forward as we plan the financial aspects of our solution, as further illustrated in the Appendix X.

What these interviews did not confirm, however, was the viability of our solution. To address this, we had to actually do it. At 8:30am on Saturday, March 7th, we met BBMP and Hasiru Dala representatives, along with Kumar the citizen volunteer, at a blackspot in Ward 160, Rajarajeshwari Nagar. The total turnout consisted of three BBMP officials including the ward supervisor, three Pourakarmikas (sanitation workers) a DWCC operator, two Hasiru Dala coordinators, one citizen volunteer, and four students. In just over an hour, we loaded about 500 kgs of mixed waste into the BBMP truck and 50 kgs of recyclables into the DWCC truck, left rangoli on the ground for beautification, and a sign discouraging public dumping (Appendix XV.) Because this was our first attempt, Hasiru Dala provided the gloves, masks, and coordination with BBMP for the truck. However, in following up with Vishwa, a Project Coordinator from Hasiru Dala, we learned the BBMP truck can be easily secured with only two days notice for an event like this.

On Tuesday, three days later, we returned to the site to get feedback on our prototype from the local community. We spoke with three people living and one working directly adjacent to the green spot. Everyone we spoke to had noticed the spot was cleaned and voiced complaints about how the site used to smell, look, and pose health hazards. Two of the homeowners told us they were discouraging others from dumping there on their own accord. One in particular, Shivakumar, was especially passionate about keeping the place clean. As previously mentioned, he told us citizens need to take more ownership of their public spaces, and he would be willing to use our service to champion a future blackspot cleanup event.

Moving forward, we know we need to partner with other NGOs having more expertise and resources in the field. We have reached out to RR Nagar iCare in hopes of future collaboration and championing of spot fixes, and will continue our current partnerships with Hasiru Dala and the BBMP to provide the necessary trucks.

The Green Spot platform aims to put as much ownership in the hands of citizens as possible. The ideal model for Green Spot involves citizens using a robust social media network to coordinate cleanings amongst one another, and receiving supplies, truck support, and long term monitoring from Green Spot.

Prior to the COVID-19 outbreak, Green Spot identified next steps to continue cleaning blackspots on a lean operational model, and secure possible partnerships and funding sources. The initial prototyping generated momentum for more cleanings within the community, which will not be possible into the foreseeable future until the health concerns end. Additionally a partnership cannot likely be pursued for about six months, after which conversations with NGOs and community partners will restart, and residents' relationships will be redeveloped.

Our organizational next steps upon continuation involve coordinating with RR Nagar iCare and Shivakumar, who was willing to champion a blackspot cleanup, and offer to support him in identifying a blackspot, and recruiting other volunteers. We will also continue to add more blackspots and update an internal map with green spots (Appendix XI) as they are created through future cleanup events. Additionally, to decrease our reliance on other organizations like Hasiru Dala, we will source our own gloves, masks, rakes, and other tools needed for the cleanup events. We will also develop a full app (Appendix XIII) and website support once sufficient funds are secured.

This plan cannot be executed without the right partners by our side. First and foremost, we need the local government. We have received outstanding support from the BBMP in the form of trucks and personnel, through their connection with Hasiru Dala. Cultivating this with direct communication with the BBMP will be imperative for the success of our organization. Next, NGO partners such as RR Nagar iCare and Hasiru Dala will be vital for access to funding and other resources such as connections and expertise. As mentioned above, we are in communication with RR Nagar iCare and are looking into other community leader organizations in the ward. Finally, our project goes nowhere without the citizens of Bangalore buying into our vision and getting on board. This looks like using our service to locate blackspots, champion or participate in cleanup events, offering monetary donations, and spreading our vision word of mouth to their community.

Open public dumping in Bangalore is a problem that can be solved. Green Spot can bring communities together to take ownership of this problem, change the narrative surrounding waste, and empower residents to address their community problems.

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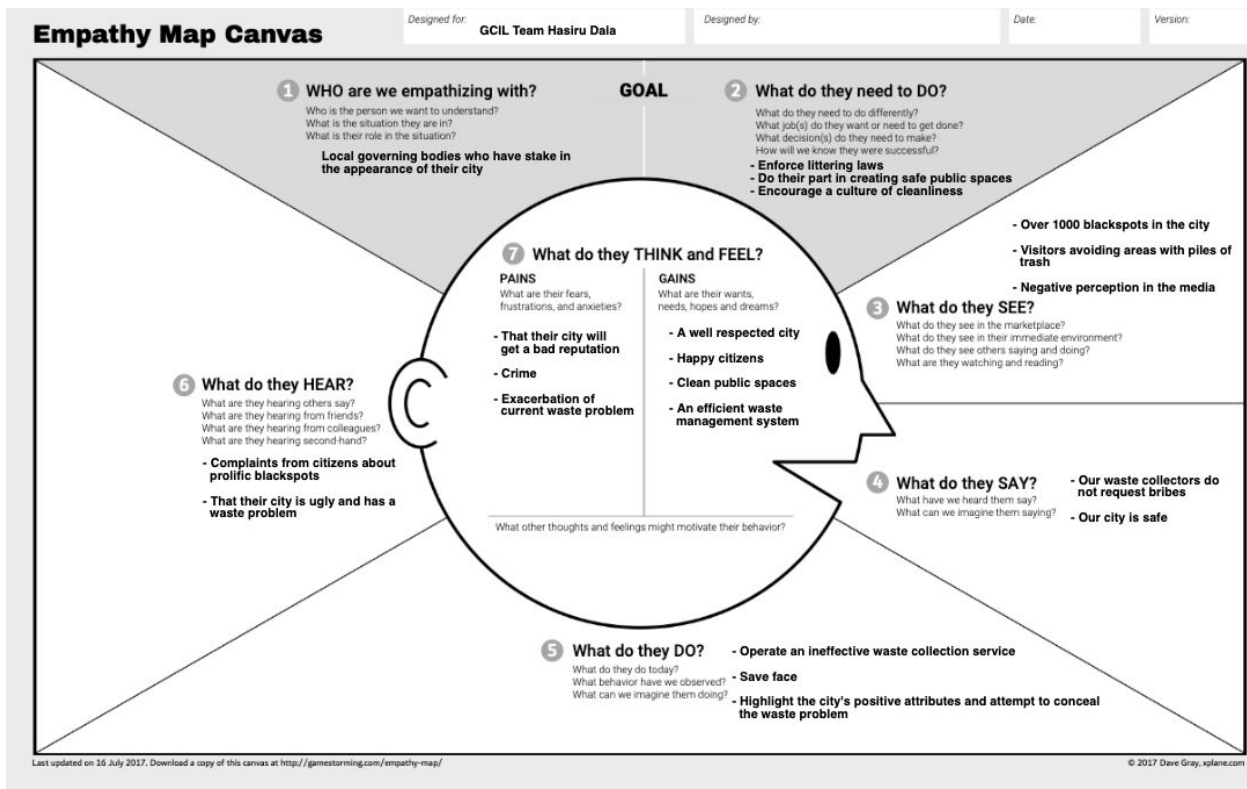
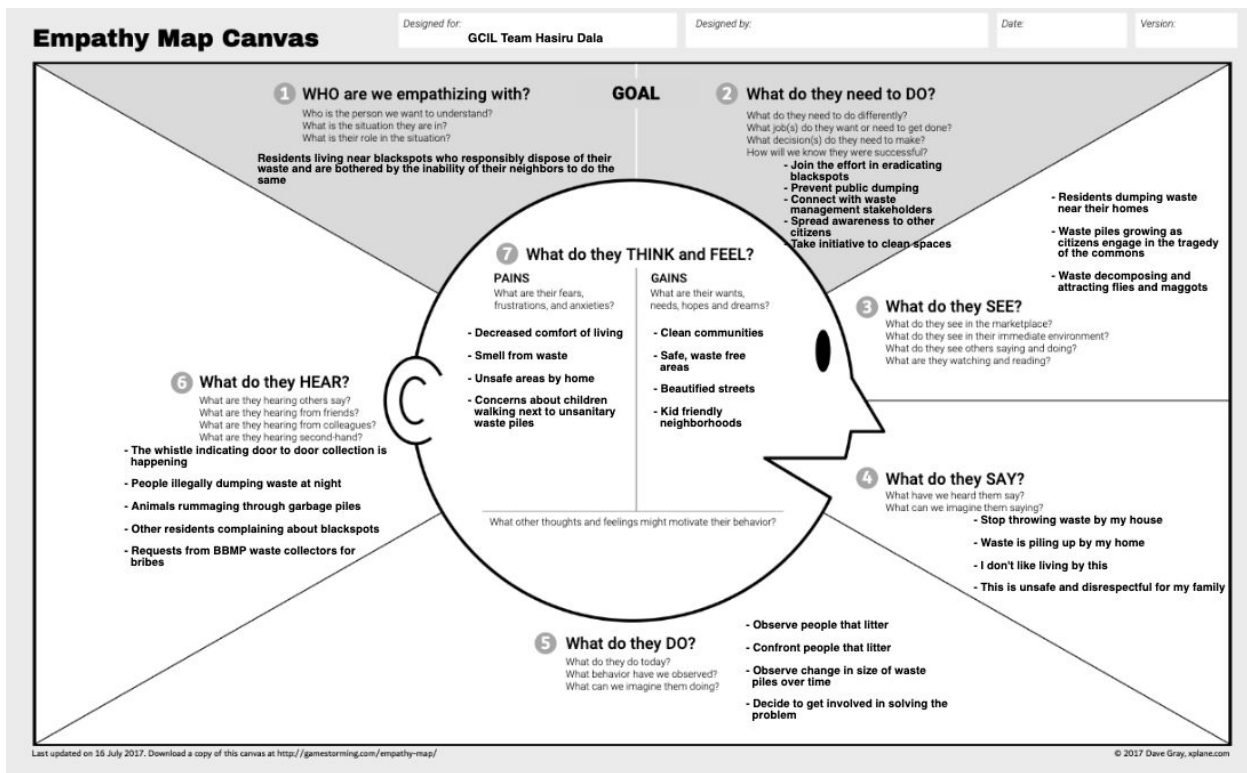
APPENDICES

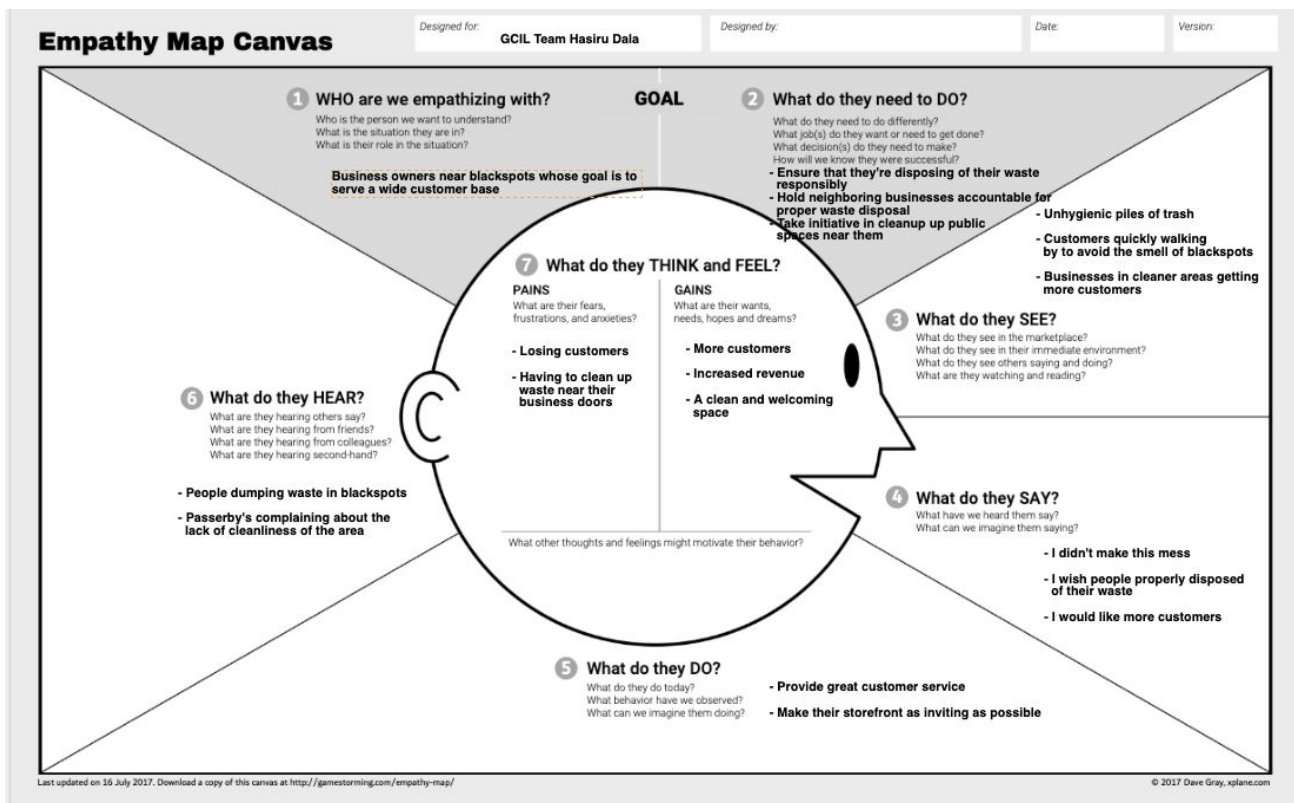
I. Empathy Maps

Empathy maps were developed for Litterers, Landowners near Blackspots, Local Government Officials, and Residents living near Blackspots. The Empathy Maps are included on the following four pages of this Appendix.

Empathy Map Canvas		Designed for: GCIL Team Hasiru Dala	Designed by:	Date:	Version:
<p>1 WHO are we empathizing with? Who is the person we want to understand? What is the situation they are in? What is their role in the situation?</p> <p>Persons littering in blackspots who miss their door to door collection or simply don't care about public spaces enough to properly dispose of their waste</p>	<p>GOAL</p>	<p>2 What do they need to DO? What do they need to do differently? What job(s) do they want or need to get done? What decision(s) do they need to make? How will we know they were successful? - Stop littering and dispose of waste properly - Save their waste for the next door to door collection if they miss it - Prevent litter in spots that have been cleaned - Value shared public spaces</p>	<p>3 What do they SEE? What do they see in the marketplace? What do they see in their immediate environment? What do they see others saying and doing? What are they watching and reading?</p>	<p>- Other people littering - Waste pickup is unreliable - Waste in black spots piles up - Lots of litter spots in city - No enforcement of littering laws</p>	
<p>6 What do they HEAR? What are they hearing others say? What are they hearing from friends? What are they hearing from colleagues? What are they hearing second hand?</p> <p>- Other citizens do not complain about dump sites - Complaints about poor BBMP door to door collection service - Apathy about littering - Requests from BBMP waste collectors for bribes</p>	<p>7 What do they THINK and FEEL?</p> <p>PAINS What are their fears, frustrations, and anxieties?</p> <p>- Need to get rid of waste - Limited time - BBMP waste collection trucks sometimes miss their house</p> <p>GAINS What are their wants, needs, hopes and dreams?</p> <p>- Normal livable life - Quick and easy waste disposal</p> <p>What other thoughts and feelings might motivate their behavior?</p>	<p>4 What do they SAY? What have we heard them say? What can we imagine them saying?</p>	<p>- I can just throw my waste here and nobody will care - There is nothing else to do with my waste since it is not picked up at my house - Everyone else throws litter</p>		
	<p>5 What do they DO? What do they do today? What behavior have we observed? What can we imagine them doing?</p>	<p>- Throw household waste in black spots - Not get waste collected at their house - Throw litter when in public</p>			

Last updated on 16 July 2017. Download a copy of this canvas at <http://gamestorming.com/empathy-map/> © 2017 Dave Gray, xplains.com

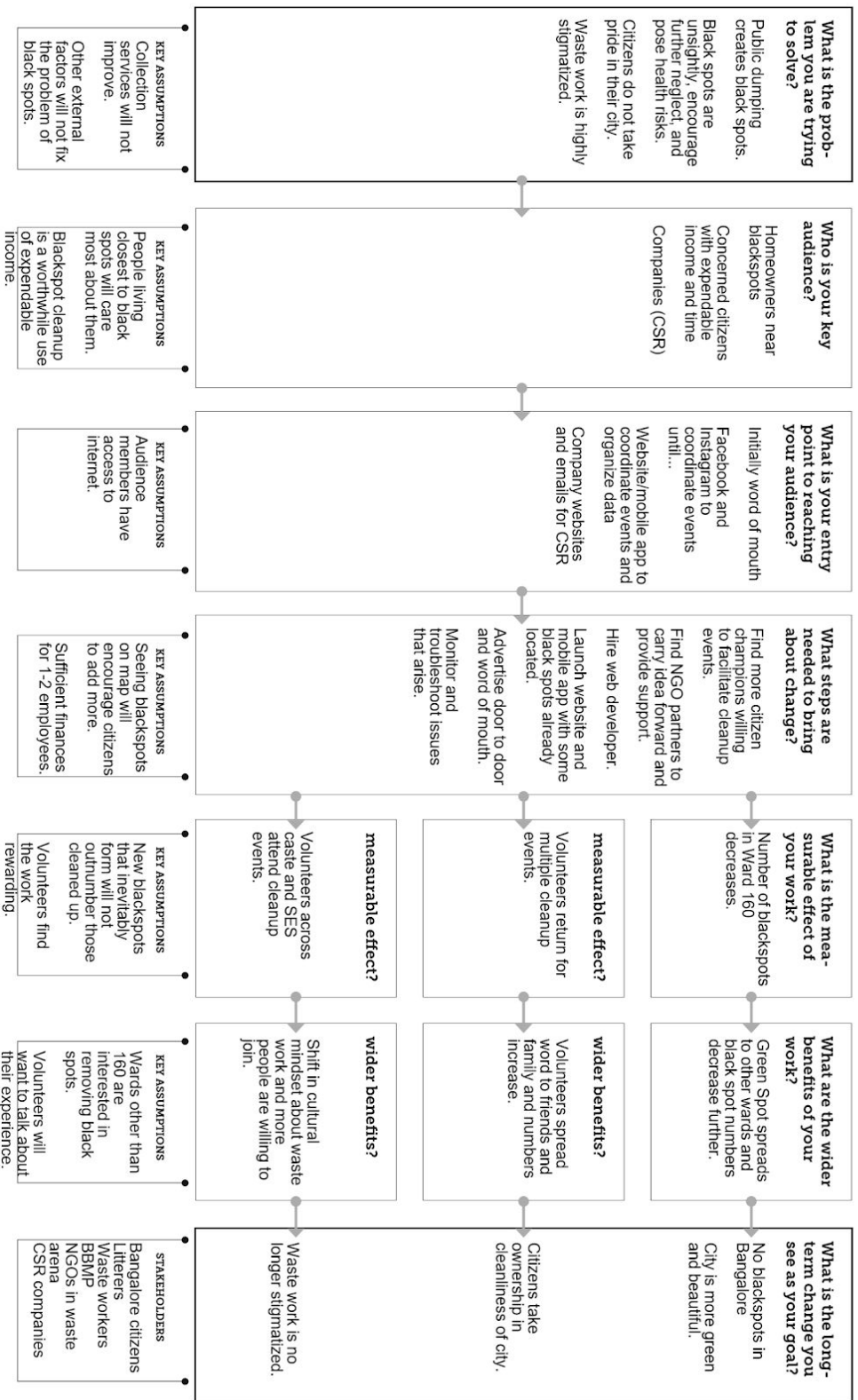




II. Theory of Change Canvas

I want to clarify my priorities
by defining my goals and the path to reach them

THEORY OF CHANGE



III. Financial Details

Labor Costs				
Position	Wage (INR)		Total	Roles
Field Coordinator	45,000	Month	5.4 Lakh	Coordinates with BBMP/Volunteers to schedule/perform cleanups Monitor past clean up sites and residents Outreach
Business Development	45,000	Month	5.4 Lakh	Grant writing, seeks partnerships and funding, manages social media, emails volunteers, and contacts local government partners
Overhead	7,500	Month	1.56 Lakh	15% Overhead added to salaries for benefits/taxes
			₹12.4 Lakh	Total salaries for one year of operation
Employee Expenses				
Cell Phone	4800	Year	4800	Two phones plans from Jio at 2121 INR for 1.5 GB/day of data for 336 days, prorated for a full year.
Transportation	4800	Month	57,600	3 Green Spot visits per week on average and supply transportation at 400 INR per trip.
Co-working Space	5000	Month	60,000	Jaaga can be reduced by working half time from an office to start, and home/coffee shops otherwise. Field Coordinator works remote
			₹1.4 Lakh	Total including a 15% contingency added

Item	INR	Qty	Total	Source	Comments
Rakes	700	2	1400	Amazon	May be purchased locally, pricing is conservative
Tarps	400	2	800	Amazon	Super sack material may be used instead May be acquired cheaper from informal markets
Masks	60	100	6000	Amazon	Consumable cannot be reused, pre COVID-19 price
Gloves	90	100	9000	Amazon	Can be reused/washed at multiple cleanings
Posters	40	100	4000	Printo	Posters for one year of operation, printed in small amounts of 5 at a time and updated as appropriate
Flyers	2	400	800	Printo	Print in small batches as cleanups develop and share about 20 with local residents living near a blackspot
			₹26,450		Total with a 15% contingency added

Total expected costs for 1 year: ₹16.5 Lakh or \$23,600

IV. Story in 7 Sentences

Across the street from Selma's house in Rajarajeshwari Nagar, Bangalore, a heaping pile of stinky rotting garbage grows by the day as people who have missed their door to door collection illegally dump their household and business waste there.

Each day as Selma walks by with her son and daughter past this mess, with flies buzzing around it and cows and dogs searching through it, on their way to school, she thinks about the impact of the waste pile on the very soil that her kids play in.

One day, she comes across a post on Facebook showing the transformation of a space from a garbage dump called a blackspot to an inviting street corner that was completed by citizen volunteers and waste workers in association with a startup called Green Spot.

She starts to wonder if she should do something about the blackspot in her neighborhood that causes her so much grief, and looks up Green Spot online to find more information.

Seeing that with a click of a button, she can start a campaign asking for volunteers to help her cleanup the blackspot, Selma vows that she will do something about it, and shares the campaign with all of her Facebook friends.

Soon, she's recruited 5 volunteers, and with the help of waste workers and the protective equipment and waste disposal trucks that Green Spot provides, they successfully clean up the blackspot in Rajarajeshwari Nagar.

Now, each day that Selma walks her children to school, she looks upon the tidy street corner and its rangoli designs with pride for having taken the initiative to clean up her neighborhood, and no longer worries about the health of her two precious children being compromised.

V. Prototype

Before



After



A blackspot in Rajarajeshwari Nagar was chosen for Green Spot's prototype cleanup event. Hasiru Dala partnered with us to facilitate many of the details of the event due to their connections and expertise in the field. A BBMP truck, driver, and supervisors were arranged two days prior to the event, as well as Ward 160 DWCC operators, Sidiq, their truck for dry waste collection, and three BBMP Pourakarmikas (Sanitation Workers.)

In future events, less personnel will be present. Sidiq being on hand to sort and haul recyclables was unnecessary given the low volume of reclaimed materials, and his time would be better spent working at the DWCC. We collected 50 kgs of unsorted dry waste, which was taken to the Ward 160 DWCC for further sorting and sale at roughly 3 Rs/kg. An income of 150 Rs for the one hour of work plus additional sorting time does not justify the time spent at the cleanup. In order for any value to be delivered to the DWCC, they should provide only one truck driver as the minimum required personnel to collect recyclables at the end of a cleanup. We also collected 500 kgs of mixed waste, which was taken by the BBMP truck to their musting point in Ward 160. The BBMP provides this service for free as a government entity, and their compliance is based on building better community relations and fulfilling their Swachh Bharat mission.

VI. Feedback

Three days after the prototype event, we returned to the site with a translator. We approached neighboring homes and construction workers, asking their input on the recent cleanup event and sharing a QR code to our social media pages. We found a much more positive response about the feasibility of our idea compared to asking people before the event took place. As mentioned in the financing section, there is an understandable lack of trust when no real results are available.

Two citizens living adjacent to the site invited us into their homes to talk about their problems with waste management. They explained how the blackspot would attract mosquitos in the rainy season and smell. They were grateful it was cleaned up and wanted to keep it from coming back. It had never been cleaned before. They also explained how mostly the wealthy residents of large apartment buildings nearby dump their waste either as they go to work or in the middle of the night. This could be because they have no land on which to compost their wet waste. One construction worker on an apartment building adjacent to the site told us his crew had been keeping an eye on it to make sure no one begins dumping there again. Shivakumar, a resident who is building his house next door, was also telling people not to dump. He was very excited about championing a future cleanup campaign and organizing his friends and family to join. The left picture below shows Shivakumar using the QR code to follow us on Facebook.

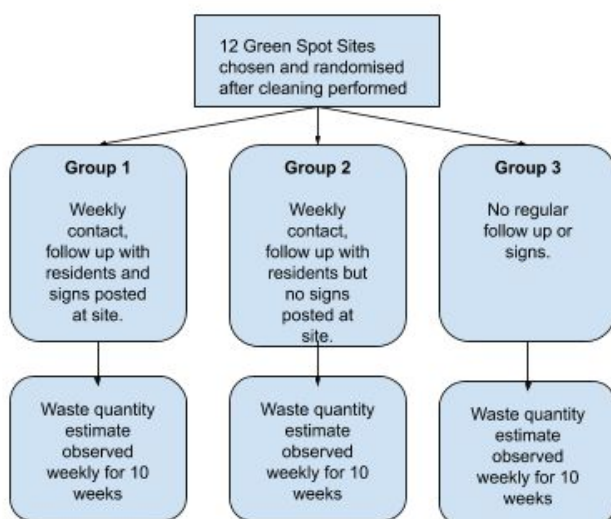


In addition to speaking with residents, we also observed the site for an hour. The middle photo shows only small wrappers and bits of trash were dumped there in the past three days. The right photo was taken around 20 minutes after arriving. Someone had walked by while we spoke with Shivakumar and ignited a smaller, new pile of trash that had started nearly 15 feet away from where we cleaned. This demonstrates the need for continual monitoring by neighbors and coordination with the BBMP to ensure trash collection services are improved in areas where a blackspot has been cleaned.

VII. Randomized Control Trial










A randomized control trial can be used to quantify the effect that follow up interaction with residents living near blackspots can have on the prevention of waste reaccumulating after a cleanup event.

Hypothesis	Regular interaction with local residents and signage after a waste cleanup will reduce amounts of future littering.
Population of Interest	Residents that live within a residential block of a site that has been cleaned by this service will be the population of interest. At each site we will attempt to engage with five members of the community living nearby, which will provide a sample population of 60 residents in total.
Intervention to be Studied	Group 1: Weekly resident contact and signage posted at the site. Group 2: Weekly contact and no signage at the site. Group 3: No weekly contact after cleaning and no signage.
Comparator Intervention	Sites that are cleaned by BBMP without citizen engagement can be tracked in parallel to this RCT. Additionally, cleanups performed by the NGO the Ugly Indian have been audited and can be compared to this RCT.
Outcomes to Evaluate	1. Amount of littering at cleaned blackspot site after cleanup 2. Time passing before new litter occurs at site after cleanup
Time for intervention/outcome	Waste accumulation will be observed for ten weeks and the amount at each site will be counted and recorded. After the RCT is completed the amounts of waste that accumulate at each site and the time for waste to reaccumulate can be analyzed to assess the effectiveness of signage and regular community follow up contact.



Site	Week 1 (kgs)	Week 2 (kgs)	Week 3	Etc.
Site 1				
Site 2				
Site 3				
Site 4				
Site 5				
Site 6				
Site 7				
Site 8				
Etc.				

VIII. Business Model Canvas

 Key Partners T Local Government Supervisors, Truck Drivers, and Pounkarnikas (PKs) NGO Partners such as Hasiru Dala and The Ugly Indian Local Residents living near Black Spots Financial Partners such as MNCs with CSR funds or US based Nonprofits with grants	 Key Activities Provide Logistical Support at Cleanups Mobilize Volunteers Monitor sites after cleaning and communicate problems to Green Spot, use Soc. Media Provide operations funding sources	 Value Propositions Clean streets for residents of Bangalore, and connections with their local government officials Public Image boost for Local Governments through direct work with residents and social media publicity Outreach opportunities for partner NGOs with residents and the Local Government Officials	 Customer Relationships Positive community of citizens working together established through Social Media Page Co-creation of clean spaces from residents, NGOs, and the local government.	 Customer Segments Residents of Bangalore that support cleaning up their local neighborhoods MNCs and NGOs that have a mission of improving the quality of life for people of Bangalore
 Key Resources Strong, maintained relationships with BBMP Government Supportive and active community of local residents Access to funding to support staff salaries or support staff provided from an NGO partner	Cost Structure  Major costs are salaries for coordinators and direct expenses such as office, technology, and benefits. Minor costs for supplies for cleanups, marketing, and outreach	Channels  Social Media Events and Outreach Door to door outreach in neighborhoods Regular follow up visits to cleaned sites Direct WhatsApp connections and Social Media Page	Revenue Streams  Major costs require large funding from grants, CSR, or foreign contributions. The Ugly Indian and Hasiru Dala fund similar programs with this model. Minor costs can be covered by small donations of funds/materials	

IX. Green Spot Google Form

Green Spot Interest Form

Thanks for showing interest in our project to help clean Bangalore's streets. Please share your ideas!

*** Required**

1. Email address *

2. How would you like to help us? *

Check all that apply.

Volunteer to help Cleanup

Post a Black Spot for Cleanup (Continue form below)

Other: _____

Share a Black Spot

Please share your black spots to help us clean Bangalore!

3. Please upload a photo or video of the black spot in your area.

Files submitted:

4. Please provide any details you have about this black spot. What is the location? How long it has been here? Who dumps here? Anything else you know about this spot?

5. What is the best days and times for you to help in a cleanup?

X. *Green Spot Checklist for Planning/Cleaning/Monitoring*

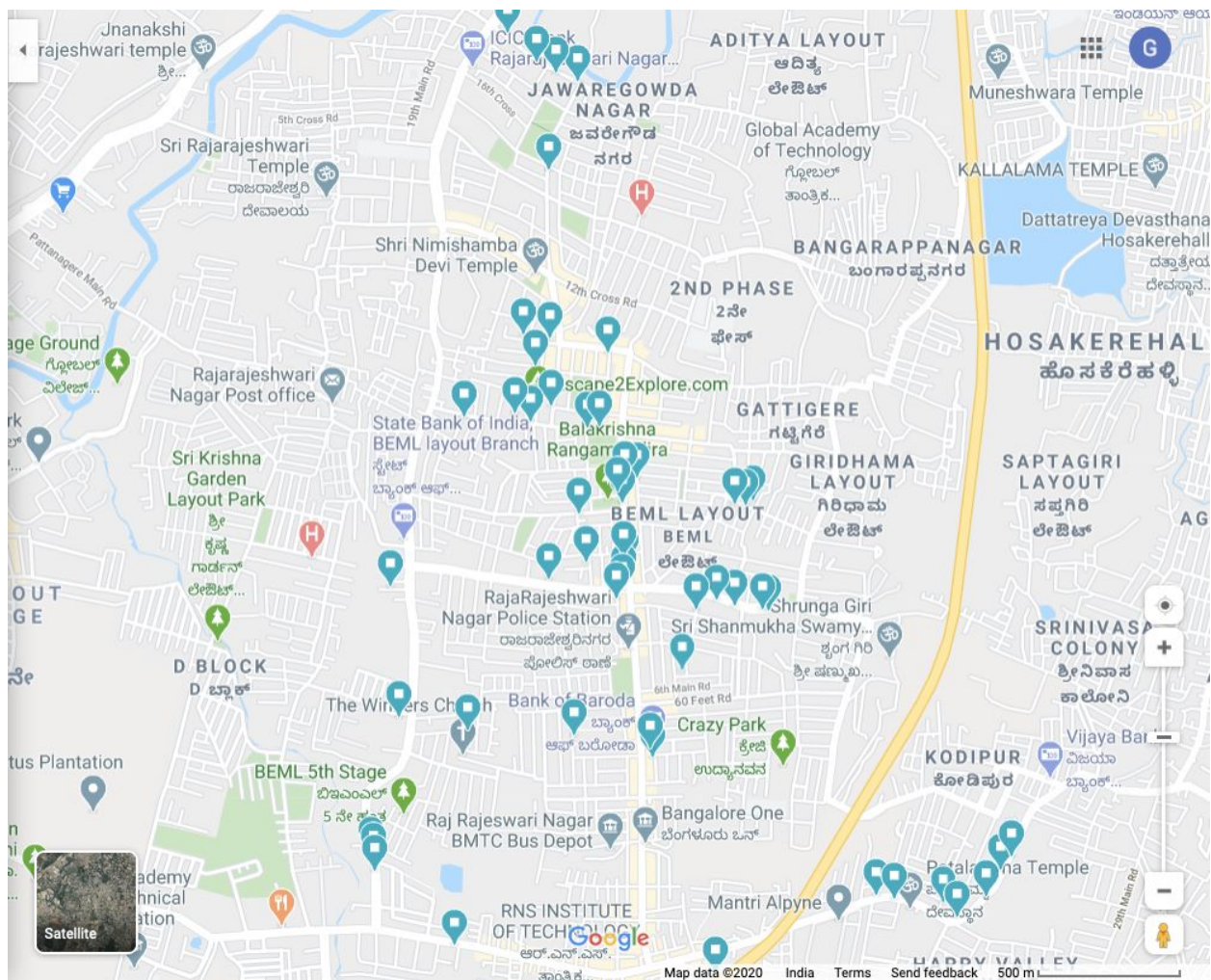
This form will be processed by the Field Coordinator after receiving a cleanup request.

Activity	Day	Person Responsible
Google Form Received		
Confirm Form Data with Submitter, Add to Internal Google Map	1	
Contact BBMP Supervisor for Cleaning Date	1	
Confirm Date with Submitter and Publish Date on Social Media	2	
Contact NGO Partners to Share Event	2	
One Week Prior		
Confirm Cleaning Date with BBMP on Day 7, Day 10, Day 13	7	
Social Media Event Post on Day 7, Day 10, Day 13	7	
Confirm Cleaning Date with Respondent Volunteers on Day 10, Day 13	10	
Prepare Supplies for Cleaning Day	13	
Cleaning Day		
Bring Supplies to Cleaning Site	14	
Perform cleaning alongside volunteers	14	
Post signs, create art on site	14	
Share Flyers, Social Media, and Contact Information with attendees	14	
Thank all attendees and Solicit Feedback	14	
Recover Supplies from cleaning, confirm waste taken to Musting Point	14	
Visit Residents living nearby and share flyers and solicit feedback	14	
Post Cleanup Photos to Social Media	14	
Monitoring Activities		
Send Thank You email to attendees and share Social Media	15	
Add Volunteers to Email List	15	
Share Cleanup Photos with NGO Partners and Government	15	
Contact Residents Nearby Site to check Status	16	
Green Spot Follow Up Visit	16	
Share Feedback with Govt. and NGOs as needed	16	
Contact Residents Nearby Site to check Status	21	
Green Spot Follow Up Visit	21	
Share Feedback with Govt. and NGOs as needed	21	
Long Term Monitoring Activities		
Contact Residents at Green Spot	28	
Green Spot Visit/Contact Govt. and NGOs as needed	28	
Contact Residents at Green Spot	35	
Green Spot Visit/Contact Govt. and NGOs as needed	35	
Contact Residents at Green Spot	60	
Green Spot Visit/Contact Govt. and NGOs as needed	60	
Further Resident Contact/Visits as needed	90+	

XI. Green Spot Internal Site Map

Internally Green Spot will track the locations of all the blackspots submitted for cleaning, and monitor how different sites change over time. During the prototyping phase, a map of 55 blackspots was developed using geotagged photos and Google Maps.

When a user uploads a photo to the Google Form, the location coordinates can be added to the map. This map is available to share openly through Google Maps with the general public, and is a valuable resource for follow up analysis and monitoring efficacy.



Green Spot Initial Map of Trash Sites

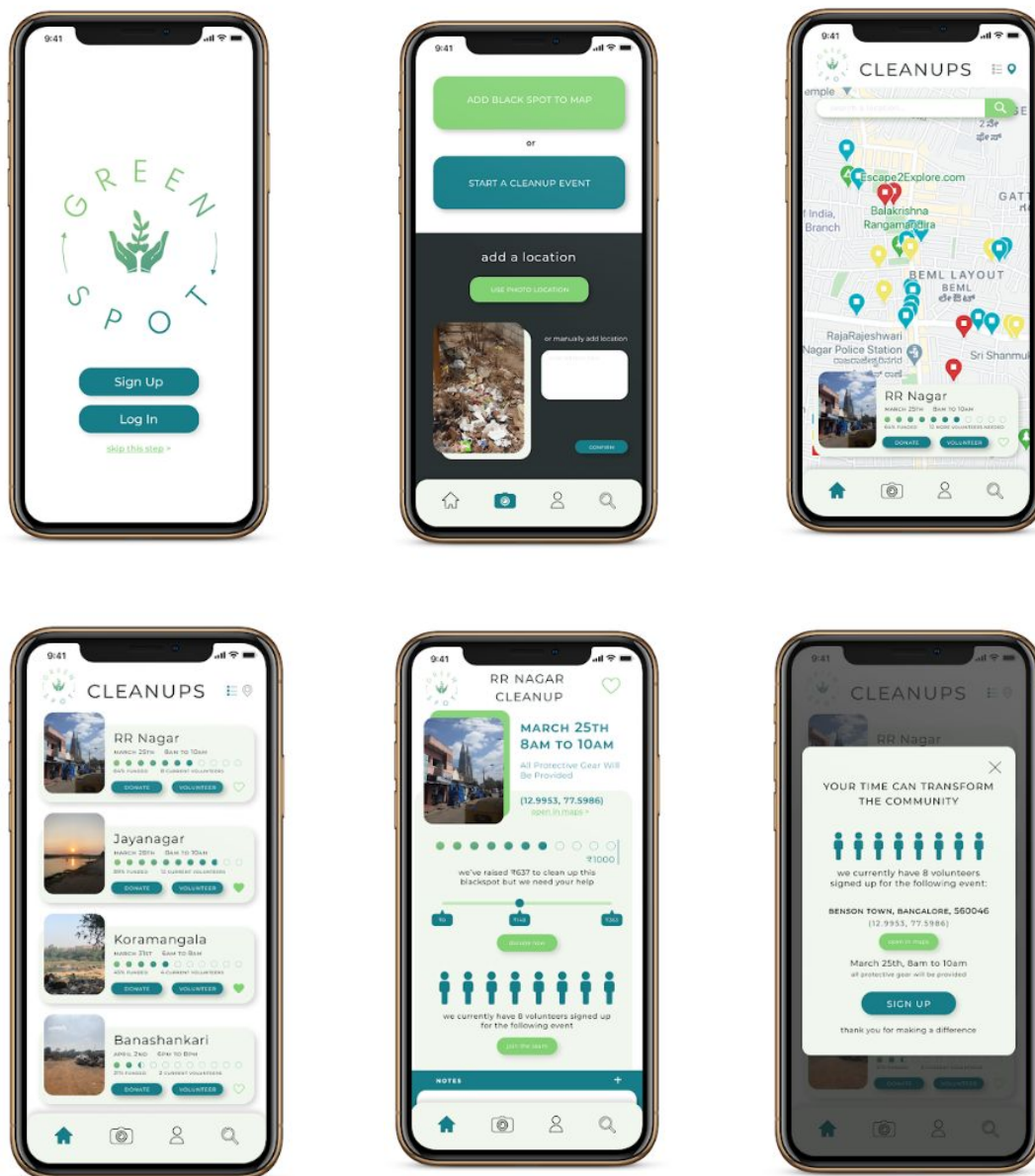
XII. Job Descriptions for Field Coordinator/Business Development

Position Title	Field Coordinator
Time	Full Time - 40 hours per week, Work weekends, days off during week
Qualifications	<p>Fluency in Kannada and English, Hindi desirable Previous experience working in project management or waste management Google Suite proficiency, including Sheets, Docs, Calendar Strong communication skills and professionalism at all times Strong work ethic and desire to clean Bangalore Energetic and engaging with residents and NGO partners Bachelor's degree in related field desired but, exceptions for outstanding candidates</p>
Duties	<p>Coordinate cleanup dates and logistics with BBMP and NGOs Meet residents near cleanup location prior to an event to discuss the local challenges Track Cleanup Events using Planning Checklist Keep cleaning supply stocked and bring materials to cleanings Contact Volunteers for Cleanup Events Lead Cleanup Events and engage with attendees Manage a map and spreadsheet database of sites Maintain ongoing contact with past volunteers and residents near cleaned sites Help develop a community of changemakers around public dumping Track progress and total amounts of waste removed, provide reports regularly</p>
Salary	45,000 INR/month

Position Title	Business Development Lead
Time	Full Time - 40 hours per week
Qualifications	<p>Fluency in Kannada and English, Hindi desirable Previous experience working in project management or waste management Experience with Social Media Marketing preferred Google Suite proficiency, including Sheets, Docs, Calendar Strong communication skills and professionalism at all times Strong work ethic and desire to clean Bangalore Energetic and engaging with residents and NGO partners Bachelor's degree in related field desired but, exceptions for outstanding candidates</p>
Duties	<p>Serve as Point of Contact for Volunteers and Google Form Respondents Create outstanding Social Media content including Events and cleaning posts Manage email list of past volunteers and maintain regular contact Research and create new funding and partnership opportunities through grants, CSR, and partnership with NGOs. Coordinate with Field Coordinator to attend Cleanups and perform Outreach Oversee and monitor program expenses and incoming revenue Develop bookkeeping, or contract a bookkeeper as needed</p>
Salary	45,000 INR/month

XIII. Future Mobile App Concept

As Green Spot scales, there is opportunity to develop a Mobile App to perform the service and develop the community for cleaning up and mapping blackspots. An app can be used to map blackspots and begin a cleanup campaign, as well as track past cleanup and organize with volunteers. Below are concept screenshots of an app we have designed:



XIV. *Funding Sources to Pursue for Startup Capital*

Below is a list of possible sources for funding Green Spot can pursue to generate startup capital. Funding opportunities are a Google search away, and can be researched by the Business Development Manager in partnership with UW students as part of their job.

Funding Source	Details	Contact
UW Based Funding Opportunities	The University of Washington has a large amount of possible funding opportunities, and is likely the most accessible source for immediately funding the startup capital costs. The Global Innovation Fund is the most applicable source of possible funding to make the project a reality, as it can include travel costs and per diem for students to help set up Green Spots in the future.	UW Global Innovation Fund UW Research Co-Motion
UNHCR Funding Sources List	UNHCR has outlined 10 of the largest funding sources for community and humanitarian innovation. This list was compiled in 2015 and not all ten funds align with the mission of Green Spot, however some funding can be pursued from this group. This will require either partnership with an NGO to be established or formation of an NGO for Green Spot.	Website Link
Social Innovation Academy	<p>Social Innovation Academy outlined eight foundations that provide funding for social innovation that can be pursued by Green Spot. Each foundation has specific requirements that can be pursued as the organization is developed. This will also require either an NGO partner or the formation of an NGO, as well as compliance with the Foreign Contribution Regulation Act (FCRA) to receive foreign contributions for an Indian based project. FCRA rules can be found here:</p> <p>https://www.ikigailaw.com/fcra-registration-process-note/#acceptLicense</p> <p>FCRA Applications are processed here:</p> <p>https://fcraonline.nic.in/home/index.aspx</p>	Link
Corporate Social Responsibility	Many multinational corporations operating in India offer CSR funds as outlined in this report. Some examples are linked in the contact column. This funding requires an NGO partner in most cases, a Statement of Qualifications (SOQ) in response to a Request for Proposals (RFP) to receive funding.	Tata Group Axis Bank HDFC Many More

XV. Trash Prevention Signage

Signage posted at Green Spots is on A2 sized laminated posters where signage is allowed to be posted.

