

PROJECT REPORT

SMART WASTE MANAGEMENT SYSTEM FOR METROPOLITAN CITIES

TEAM ID:PNT2022TMID46746

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Project Report Format

1. INTRODUCTION

1.1 Project Overview:

Our waste generation is constantly growing to form a global garbage crisis. Even though we indulge in creating a more sustainable and greener, we still fail to handle our waste generation and management. Combining technology support with a vision of social, economic and environmental sustainability is the best way out of this problem. It is done in the following manner. The smart bin system undergoes a thorough system check and battery level monitoring in order to function efficiently. If the battery level is found to be low, it has to be recharged immediately, else it can proceed to the next step. The threshold level levels of the bin are indicated by multiple sensors attached to bin. If the garbage exceeds the level, then an alert message is sent to the garbage collectors as well as to the municipality or area administration. The area in which garbage is found to overflow is allocated to respective garbage collectors in the form of messages through GSM system. Once the waste bin is emptied, an information update is sent to the municipality and server is updated. This is how the waste from bins can be efficiently handled and managed using technology which in turn keeps the environment clean and healthy.

1.2 Purpose:

We amalgamate technology along with waste management in order to effectively create a safe and a hygienic environment. Smart waste management is about using technology and data to create a more efficient waste industry. Based on IoT (Internet of Things) technology, smart waste management aims to optimize resource allocation, reduce running costs, and increase the sustainability of waste services. This makes it possible to plan more efficient routes for the trash collectors who empty the bins, but also lowers the chance of any bin being full for over a week. A good level of coordination exists between the garbage collectors and the information supplied via technology. This makes them well aware of the existing garbage level and instigate them whenever the bins reach the threshold level. They are sent with alert messages so that they can collect the garbage on time without littering the surrounding area. The fill patterns of specific containers can be identified by historical data and managed accordingly in the long term. In addition to hardware solutions, mobile applications are used to overcome the challenges in the regular waste management system, such as keeping track of the drivers while they are operating on the field. Thus, smart waste management provides us with the most optimal way of managing the waste in an efficient manner using technology

2. LITERATURE SURVEY:

2.1 Existing problem:

Waste management has become an alarming challenge in local towns and cities across the world. Often the local area bins are overflowing and the municipalities are not aware of it. This affects the residents of that particular area in numerous ways starting from bad odour to unhygienic and unsafe surroundings. Poor waste management - ranging from non-existing collection systems to ineffective disposal -causes air pollution, water and soil contamination. Open and unsanitary areas contribute to contamination of drinking water and can cause infection and transmit diseases. Toxic components such as Persistent Organic Pollutants (POPs) pose particularly significant risks to human health and the environment as they accumulate through the food chain. Animals eating contaminated plants have higher doses of contaminants than if they were directly exposed. Precipitation or surface water seeping through waste will absorb hazardous components from landfills, agricultural areas, feedlots, etc. and carry them into surface and groundwater. Contaminated groundwater also poses a great health risk, as it is often used for drinking, bathing and recreation, as well as in agricultural and industrial activities. Landfills and waste transfer stations can attract various pests (insects, rodents, gulls, etc.) that look for food from waste. These pests can spread diseases through viruses and bacteria (i.e., salmonella and e-coli), which are a risk to human health.

2.2 References:

PAPER 1:

TITLE: IoT Based Waste Management for Smart City

AUTHOR NAME: Parkash Tambare, Prabu

Venkatachalam**PUBLICATION YEAR:** 2016

DESCRIPTION:

In the current situation, we frequently observe that the trash cans or dust cans that are located in public spaces in cities are overflowing due to an increase in the amount of waste produced each day. We are planning to construct “IoT Based Waste Management for Smart Cities” to prevent this from happening because it makes living conditions for people unsanitary and causes unpleasant odours in the surrounding area. There are numerous trash cans scattered throughout the city or on the campus that are part of the proposed system. Each trash can is equipped with a low-cost embedded device that tracks the level of the trashcans and an individual ID that will enable it to be tracked and identified.

PAPER 2:

AUTHOR NAME: Mohammad Aazam, Marc St-Hilaire,
Chung-Horng Lung, Ioannis
Lambadaris

PUBLICATION YEAR: 2016 **DESCRIPTION:**

Each bin in the Cloud SWAM system that Mohammad Aazam et al suggested has sensors that can detect the amount of waste inside. There are separate bins for organic, plastic/paper/bottle/glass, and metal waste. This way, each form of waste is already divided, and it is known how much and what kind of waste is collected thanks to the status. Different entities and stakeholders may benefit from the accessibility of cloud-stored data in different ways. Analysis and planning can begin as soon as garbage is collected and continue through recycling and import/export-related activities. Timely garbage collection is provided via the Cloud SWAM system. A timely and effective method of waste collection improves health, hygiene, and disposal.

PAPER 3:

TITLE: Arduino Microcontroller Based Smart Dustbins for Smart

Cities **AUTHOR NAME:** K. Suresh, S. Bhuvanesh and B. Krishna

Devan **PUBLICATION YEAR:** 2019 **DESCRIPTION:**

In this paper, a technique for cleaning up our surroundings and environment is described. The Indian government just began work on a smart city initiative, and in order for these towns to be smarter than they already are, the garbage collection and disposal system must be improved upon. Self-Monitoring Automated Route Trash (SMART) dustbins are intended for use in smart buildings such as colleges, hospitals, and bus stops, among other places. In this study, we have employed the PIR and Ultrasonic sensors to detect human presence, the Servomotor to open the dustbin lid, and the Ultrasonic sensor to detect the level of rubbish. Signals between two trash cans are transmitted using a communication module, and the GSM module sends the message to the operator.

PAPER 4:

AUTHOR NAME: Mohd Helmy Abd Wahab, Aeslina Abdul Kadir,

Mohd Razali Tomari and Mohamad Hairol Jabbar

PUBLICATION YEAR: 2014

DESCRIPTION:

Proposed a smart recycle bin that can handle the recycling of plastic, glass, paper, and aluminium cans. It generates a 3R card after automatically determining the value of the trash thrown away. The recycle system makes it possible to accumulate points for placing waste into designated recycle bins. By allowing the points to be redeemed for goods or services, such a system promotes recycling activities. The system keeps track of information on disposal procedures, materials disposed of, user identification, and points accrued by the user. To use the recycle bin, the user must tap his card to the designated RFID reader. Doors to recycling bins are opened, and rubbish is placed one by one.

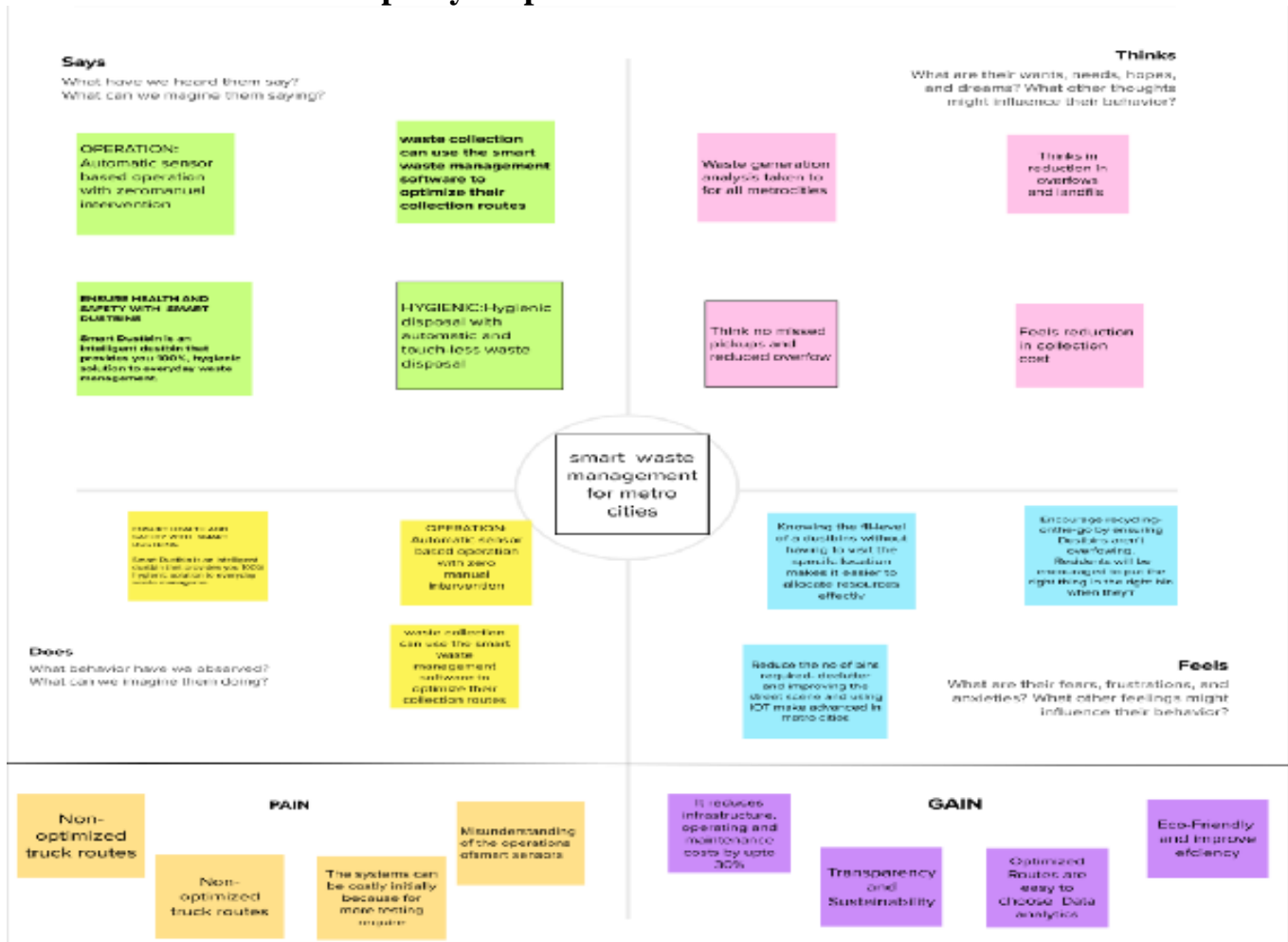
Problem Solution fit:

Problem Statement(PS)	I am (Customer)	I am trying to	But	Because	Which makes me feel
PS-1	Householder	Dispose the vegetable waste and other household waste	It increases the land pollution and contaminate ground water	To keep the surroundings clean and healthy.	Difficult
PS-2	industrialist	Dispose the chemical waste and recycle for future use.	It contaminates wildlife's habitats and endangers the life of people at large.	To avoid risk for both environment and human health.	Unpleasant.



3.IDEATION & PROPOSED SOLUTION:

3.1 Empathy map canvas:



3.2 Ideation & Brainstorming:

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

TP

You can select a sticky note and hit the pencil icon to start drawing.

NIVETHITHALS

GANGA.L

The proposed system would be able to automate the solid waste monitoring process and management of the overall collection process using IOT internet of Thing

Waste generation analysis to understand cities usages

Placing Ultrasonic sensor to detect level of bins

Load cell on bottom of bins

solar panels for power supply for IOT devices

Place Arduino board at left side of bins

KARISHENA.P

SARASWATHI.K

when bins fill alert message to the authorized person

Visual fill status indicators on top of bins

Enable GPS function to locate bins easier

using GSM in bins achieve wireless communication with bins and managing center

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

TP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Smart garbage maintenance server

Transparency and sustainable solution than normal garbage bin

Optimized trash collection route

Collect only degradable and nondegradable wastes

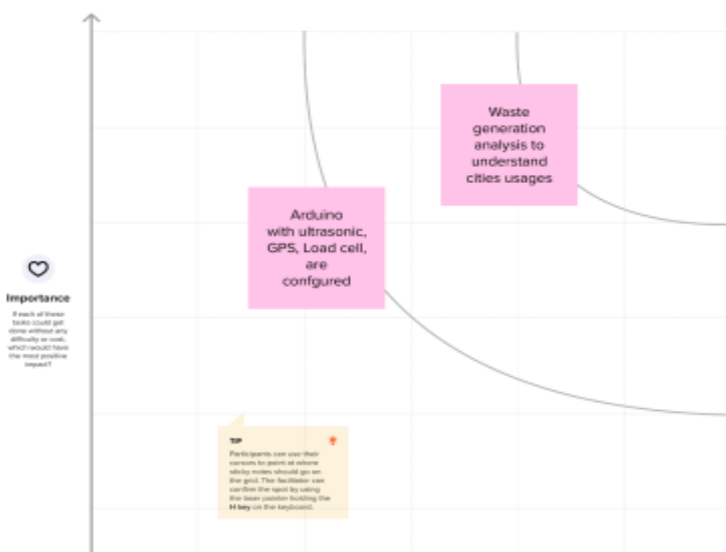
IOT alert authorized person when bins going to fill

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes



5

After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

- Share the mural**
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.
- Export the mural**
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward

- Strategy blueprint**
Define the components of a new idea or strategy.
[Open the template](#)
- Customer experience journey map**
Understand customer needs, motivations, and obstacles for an experience.
[Open the template](#)
- Strengths, weaknesses, opportunities & threats**
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
[Open the template](#)

[Share template feedback](#)

3.3 Proposed Solution:

S.NO	PARAMETER	DESCRIPTION
1.	Problem statement (problem to be solved).	1.To manage the waste in metropolitan cities using smart technique.
2.	Idea/ solution description.	1.To implement a smart bin built on a microcontroller based platform ArduinoUnoboard. 2. which is interfaced with GSM modemand Ultrasonic sensor ,which can gives the status of the waste present in the dustbin to the municipal authority.
3.	Novelty/uniqueness.	1.Immediate Transferring of data about each bin to the control room. 2.Accurate indication. 3.Weight of the trashes are indicated.
4.	Social impact/ customer satisfaction.	1.It reduces the overflow of trashes in the bin. 2.It Reduces the pollution. 3.It provides vibrant environment 4.Reduces the Breeding of disease vectors (mosquito, Housefly,cockroach ,microbes, Etc.,) 5. Easy collection and discharging of waste by the concern authority at regular intervals.
5.	Business model(revenue model).	1.The Waste are put in the bin by the public 2.The bins sense the level of trash. 3.It provides the indication of each stage of the waste dumped by using the LED. 4.Once the trash completely fills the bin 5.Information is provided to the control room. 6.The trash is collected and the bin will be emptied by the corporation.
6.	Scalability of the solution.	1.Well monitoring system with accurate indication. 2. Reduce the waste efficiently. 3.Easy maintenance. 4.Reasonable cost.

3.4 Problem solution fit:

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS The Municipality corporate employees who are responsible for waste collection are our users.	6. CUSTOMER CONSTRAINTS CC <ul style="list-style-type: none"> • Rough action of the user may damage the sensor • The product may have short lifespan • Proper network connection required • The one-time cost of installation will be higher 	5. AVAILABLE SOLUTIONS AS The maintenance and replacement of sensors is simple. By proper maintenance the lifespan of the product can be increased. It further reduces manpower requirements to handle the garbage collection process. Less amount of fuel consumed by vehicles because of optimal route planning.	Explore AS, differentiate

Focus on J&P, tap into BE, understand RC	2. JOBS-TO-BE-DONE J&P Monitoring amount of waste present. Alerting the respective people in charge of this. Provide shortest and a fastest way for the collection of the waste.	9. PROBLEM ROOT CAUSE RC Municipal Solid Waste Management is of critical concern and needs attention. The rapid urbanization and industrialization has led to increased solid waste generation, about 2.1 billion tonnes of municipal solid waste is generated annually around the globe. So the traditional methods of waste collection have become inefficient and costly. The main objective is to maximize waste collection and optimize the work for municipal corporations.	7. BEHAVIOUR BE Find the required sensors based on the requirement and get the expected results.

Identify strong	3. TRIGGERS TR The efficiency of the solution and the change to a better environment.	10. YOUR SOLUTION SL Our solution is to provide a smart waste management system where sensors are fixed inside the dustbins which collect the waste in the locality and alert the respective people to collect and segregate the waste. The system also provides route planning for the collection of the waste.	8. CHANNELS of BEHAVIOR CH <ul style="list-style-type: none"> 8.1 ONLINE The customers can view the levels of the bins and shortest path routing. 8.2 OFFLINE Customers need to process their regular waste collection techniques. 	Strong TR & EM
	4. EMOTIONS: BEFORE / AFTER EM Provides a better environment to the people living around the areas of the bins because it alerts the respective persons to take action and eliminates the possibility of overflow of the bins and hence cleanliness is always maintained.			

3.5 Functional requirement

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIn
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User waste categories.	User decay User non-decay
FR-4	User dustbin	User size User capacity
FR-5	Eliminate unefficient picks.	Eliminate the collection of half-empty bins. The sensors recognize picks
FR-6	Plan waste collection routes.	The tool semi-automates waste collection route planning

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	1. IoT device verifies that usability is a special and important perspective to analyze user requirements, which can further improve the design quality. 2. In the design process with user experience as the core, the analysis of users' product usability can indeed help designers better understand users' potential needs in waste management.
NFR-2	Security	1. Use a reusable bottles 2. Use reusable grocery bags 3. Purchase wisely and recycle

NFR-3	Reliability	<p>1. Smart waste management is also about creating better working conditions for waste collectors and drivers.</p> <p>2. Instead of driving the same collection routes and servicing empty bins, waste collectors will spend their time more efficiently, taking care of bins that need servicing</p>
NFR-4	Performance	<p>1. The Smart Sensors use ultrasound technology to measure the fill levels (along with other data) in bin several times a day.</p> <p>2. Using a variety of IoT networks(NB IoT,GPRS), the sensors send the data to Smart Waste Management Software System, a powerful cloud-based platform, for data-driven daily operations, available also as a waste management app.</p> <p>3. Customers are hence provided data-driven decision making, and optimization of waste collection routes,frequencies, and vehicle loads resulting in route reduction by at least 30%.</p>
NFR-5	Availability	By developing & deploying resilient hardware and beautiful software we empower cities, businesses,and countries to manage waste smarter.
NFR-6	Scalability	Using smart waste bins reduce the number of bins inside town , cities because we able to monitor the garbage 24/7 more cost effect and scalability when we moves to smarter.

4. PROJECT DESIGN:

4.1 Data Flow Diagrams:

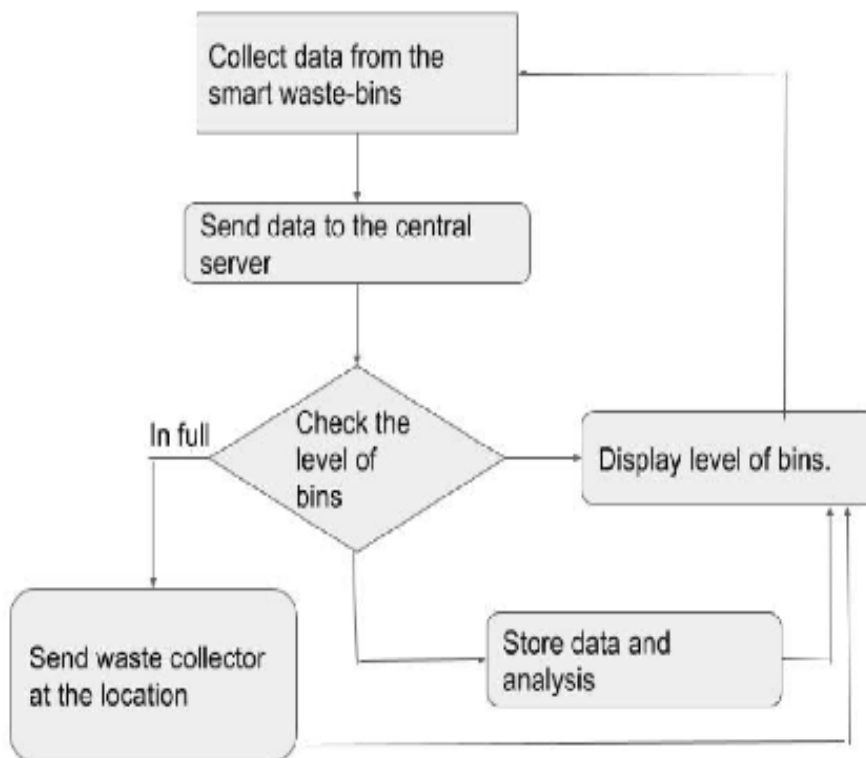
A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored. A smart waste management platform uses analytics to translate the data gathered in your **bins into actionable insights to help you improve your waste services**. You can receive data on metrics such as:

- The first test conducted is the situation where the garbage bin is empty or its garbage level is very low
- Then, the bin is filled with more garbage until its level has surpassed the first threshold **value, which is set to 80% then the first warning SMS is being sent, as depicted**
- The first notification SMS sent by the system, once the waste reaches the level of 85% full
- The second notification SMS sent by the system, indicating that bin is at least 95% full and **the garbage needs to be collected immediately**

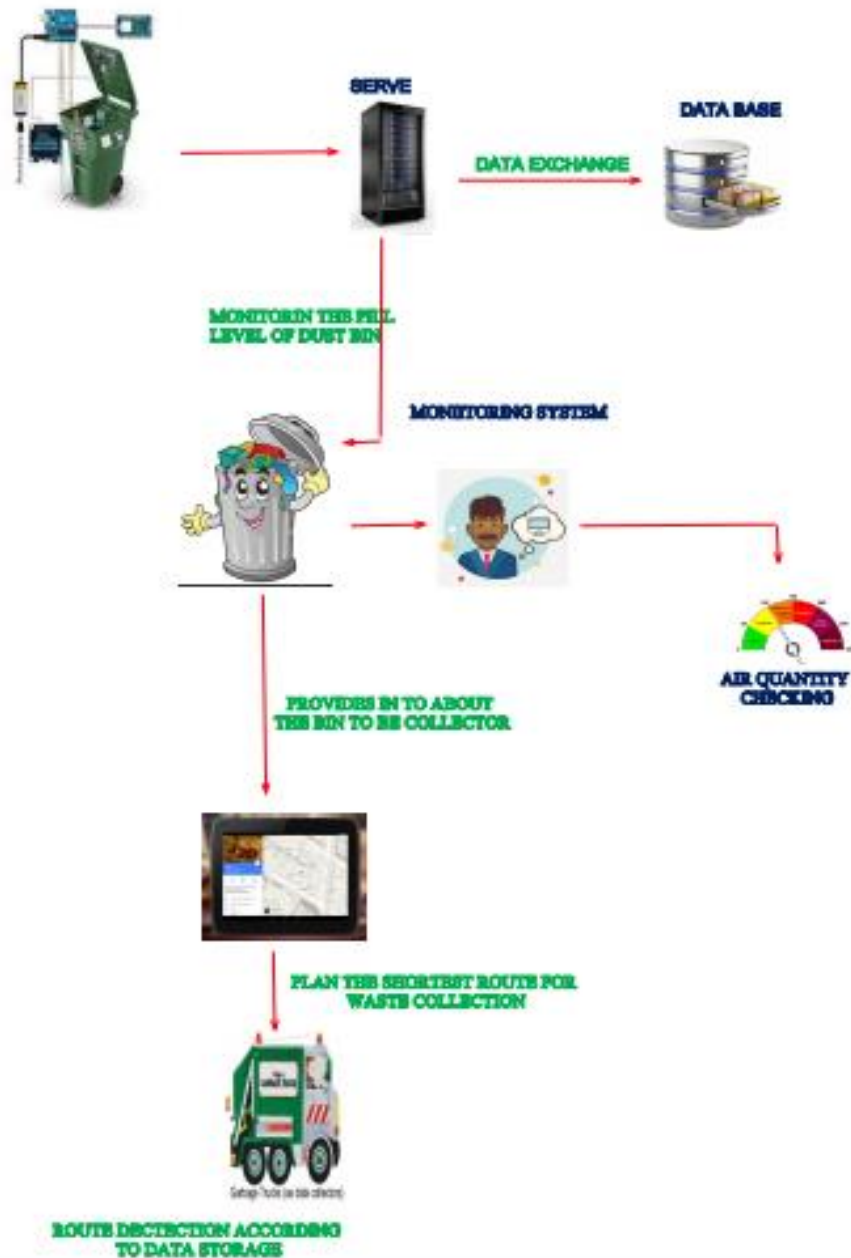
- Locations prone to overflow
- The number of bins needed to avoid overflowing waste
- The number of collection services that could be saved
- The amount of fuel that could be saved
- The driving distance that could be saved

Data flow diagram:

FLOW DIAGRAM:



4.2 Solution & Technical Architecture:



4.3 Userstories:

User type	Functional Requirement (EPIC)	User story Number	User story/Task	Acceptance criteria	priority	Release
Admin (who manage web server)	login	USN-1	Ass an admin,I gave user id and pass word for ever workers and manage them.	I can manage web account/dashboard	medium	Sprint-2
Co admin	login	USN-2	ASa Co admin.I am manage garbaget filling alert I will post	I can manage garbage monitoring	high	Sprint-1

			location and garbage id to trash truck			
Truck driver	login	UNS-3	A struck driver,I am follow the route sebd by CO admin to reach the filling garbage.	I can drive to reach the garbage filled route in pulled to	medium	Sprint-2
Local garbage collector	login	UNS-4	As a waste collector, I am collect all there trash from garbage and load into garbage truck and send them to landfillt	I can collect trach and pulled to truck and send off	High	Sprint-2
municipality	login	UNS-5	As municipality, I am check the process are happening In disciplinemanner without any any issues.	I can manage all these process going good.	High	Sprint-2

5.PROJECT PLANNING & SCHEDULING:

5.1 Sprint Planning & Estimation:

PHASE	TITLE	DESCRIPTION
Ideation Phase	Literature Survey & Information Gathering	Literature survey on the selected project & gathering information by referring the, technical papers, research publications etc.
	Prepare Empathy Map	Prepare Empathy Map Canvas to capture the user Pains & Gains, Prepare list of problem statements
	Ideation	List the by organizing the brainstorming session and prioritize the top 3 ideas based on the feasibility & importance.
Phase-1	Proposed Solution	Prepare the proposed solution document, which includes the novelty, feasibility of idea, business model, social impact, scalability of solution, etc.
	Problem Solution Fit	Prepare problem - solution fit document.
	Solution Architecture	Prepare solution architecture document.

Phase-2	Customer Journey	Prepare the customer journey mapsto understand the user interactions & experiences with the application(entry to exit).
	Functional Requirement	Prepare the functional and Nonfunctional requirementdocument.
	Data Flow Diagrams	Draw the data flow diagrams andsubmit for review.
	Technology Architecture	Prepare the technology architecturediagram.
Project planning phase	Prepare Milestone & ActivityList	Prepare the milestones & activitylist of the project.
Project development phase	Project Development - Delivery of Sprint-1, 2, 3 & 4	Develop & submit the developedcode by testing it.

5.2 Sprint Delivery Schedule:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Login	USN-1	1.As a Administrator, I need to give user id and passcode for ever workers over there in municipality. 2.As a Co-Admin, I'll control the waste level by monitoring them vai real time web portal. Once the filling happens, I'll notify trash truck with location of bin with bin ID	20	HIGH	GANGA
Sprint-2	Dashboard	USN-2	As a Truck Driver, I'll follow Co-Admin's Instruction to reach the filling bin in short roots and save time	20	LOW	NIVETHITHA
Sprint-3	Dashboard	USN-3	As a Local Garbage Collector, I'll gather all the waste from the garbage, load it onto a garbage truck, and deliver it to Landfills	20	MEDIUM	SARASWATHI
Sprint-4	Dashboard	USN-4	As a Municipality officer, I'll make sure everything is proceeding as planned and without any problems	20	HIGH	KABISHENA

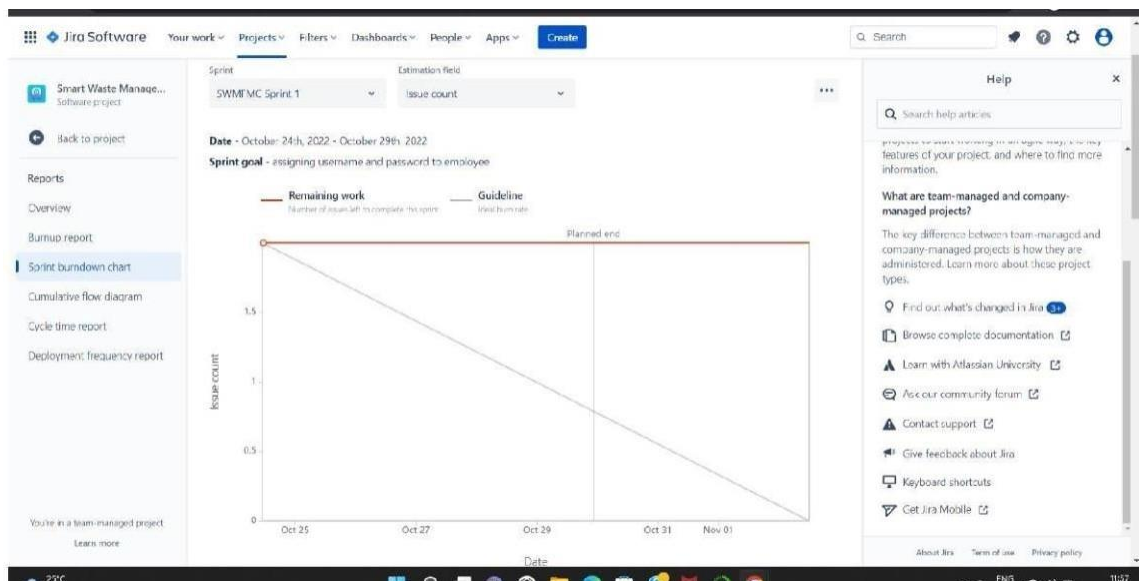
Project Tracker, Velocity & Burndown Chart:

Sprint	Total Story Points	Duration	Sprint StartDate	Sprint EndDate (Planned)	Story Points Completed (Planned EndDate)	SprintRelease Date (Actual)

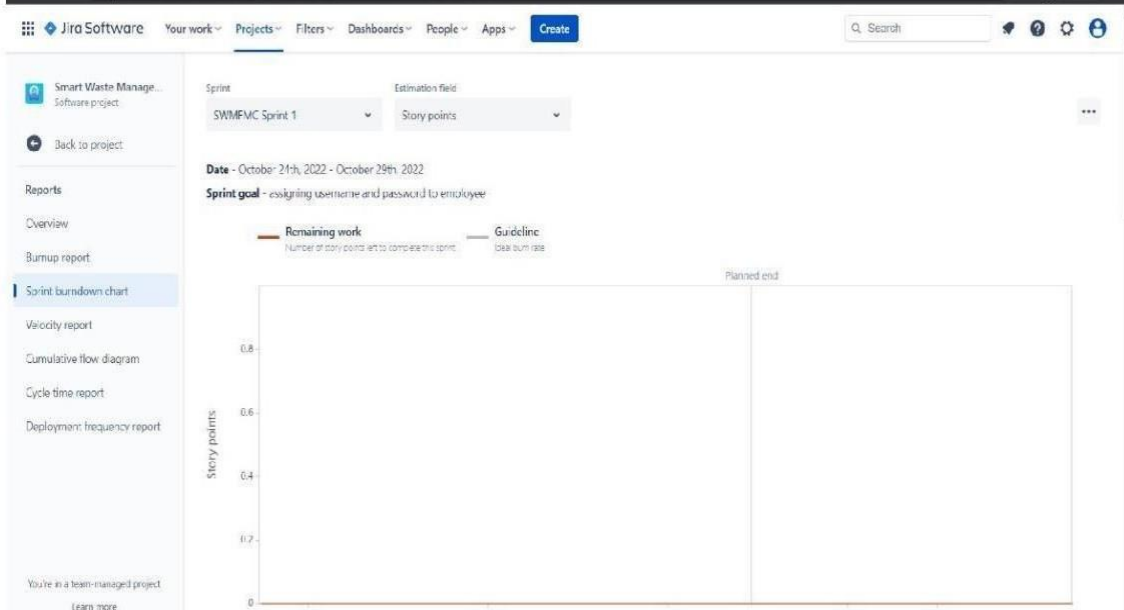
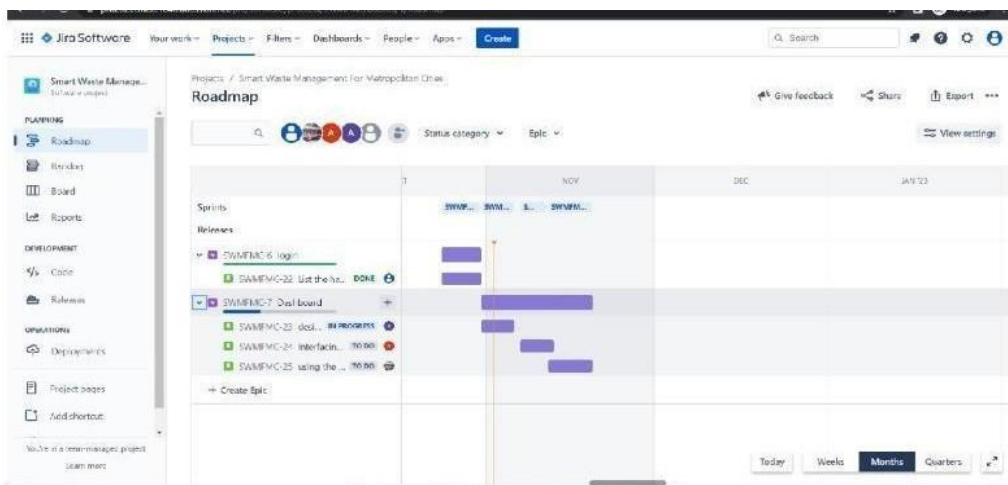
Sprint-1	20	6 Days	22 Oct 2022	27 Oct 2022	20	06 Nov 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	30	07 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	49	08 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	50	09 Nov 2022

5.3 Reports from JIRA:

Burnout Chart:

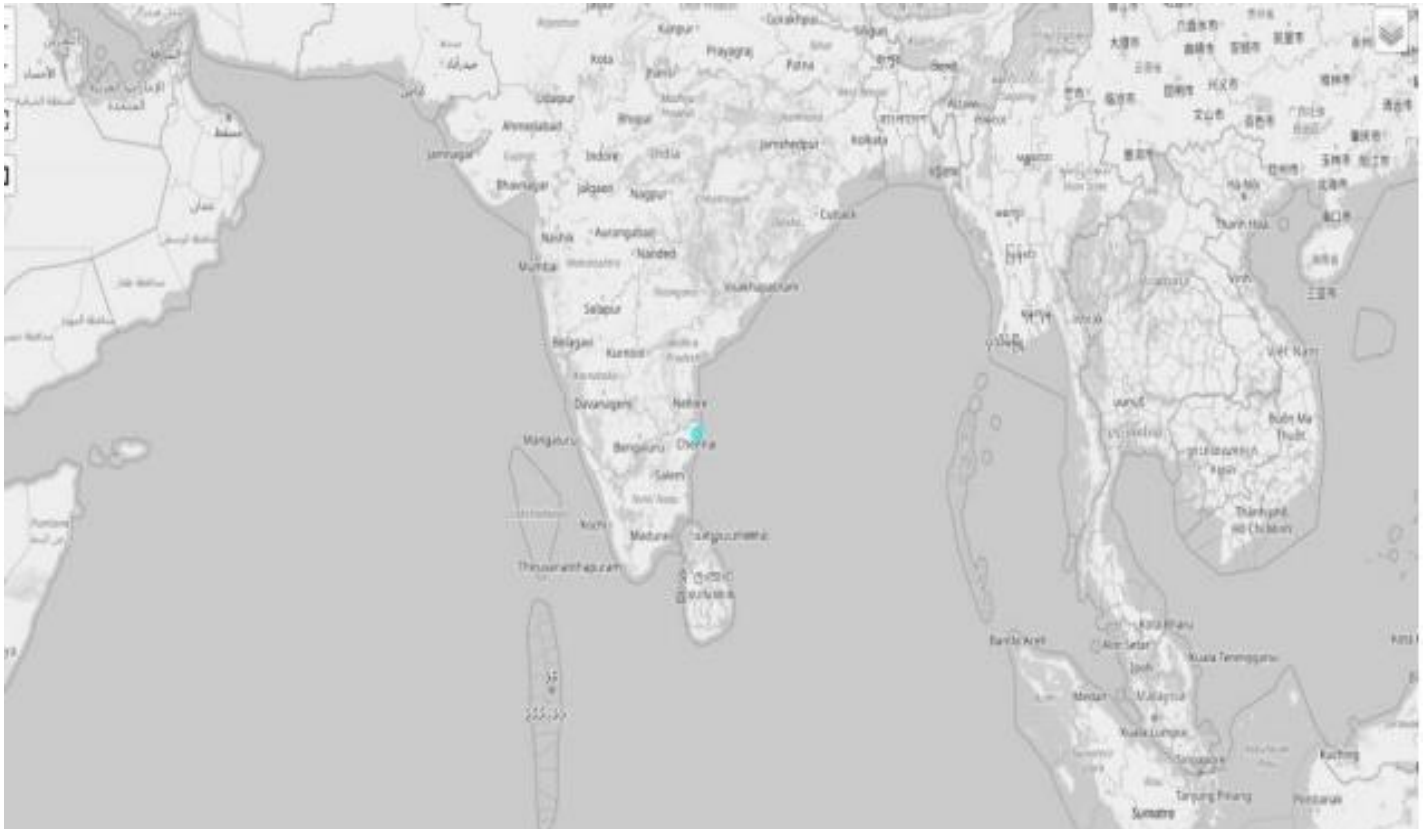


Road map:



6. CODING & SOLUTIONING:

6.1 Feature 1- LOCATION TRACKER:



6.2 Feature 2- LIVE UPDATE ON COLLECTED DATA:

11:30

Smart Waste Management

Monitoring layout

BIN 1

Location

Thanjavur

Distance

7

Load cell

11.5

Risk Warning: collect now

7.Testing:
7.1 Testcases:

TEST CASE ID	FEATURE TYPE	COMPONENT	TEST SCENARIO	PREREQUISITE	STEPSTO EXECUTE	TEST DATA	EXPECTED RESULT	ACTUAL RESULT	STATUS	COMMENTS	TC FOR AUTOMATION(Y/N)	BUG ID	EXECUTED BY
LOGIN PAGE_TC_001	FUNCTIONAL	HOME PAGE	VERIFY THE USER IS ABLE TO SEE THE LOGIN/SIGN UP WHEN USER CLICK ON MY ACCOUNT BUTTON		1. ENTER URL AND CLICK GO 2. VERIFY LOGIN/SIGN UP	https://169.51.204.219.30	L0gin page is visible	Working as expected	PASS	Successful			KABISHENA

7.2 User acceptance Testing:

^{1.} Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the [ProductName] project at the time of the release to User Acceptance Testing (UAT).

^{2.} Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	10	4	2	3	20
Duplicate	1	0	3	0	4
External	2	3	0	1	6
Fixed	11	2	4	20	37

Not Reproduced	0	0	1	0	1
Skipped	0	0	1	1	2
Won't Fix	0	5	2	1	8
Totals	24	14	13	26	7

1. Test Case

Analysis:

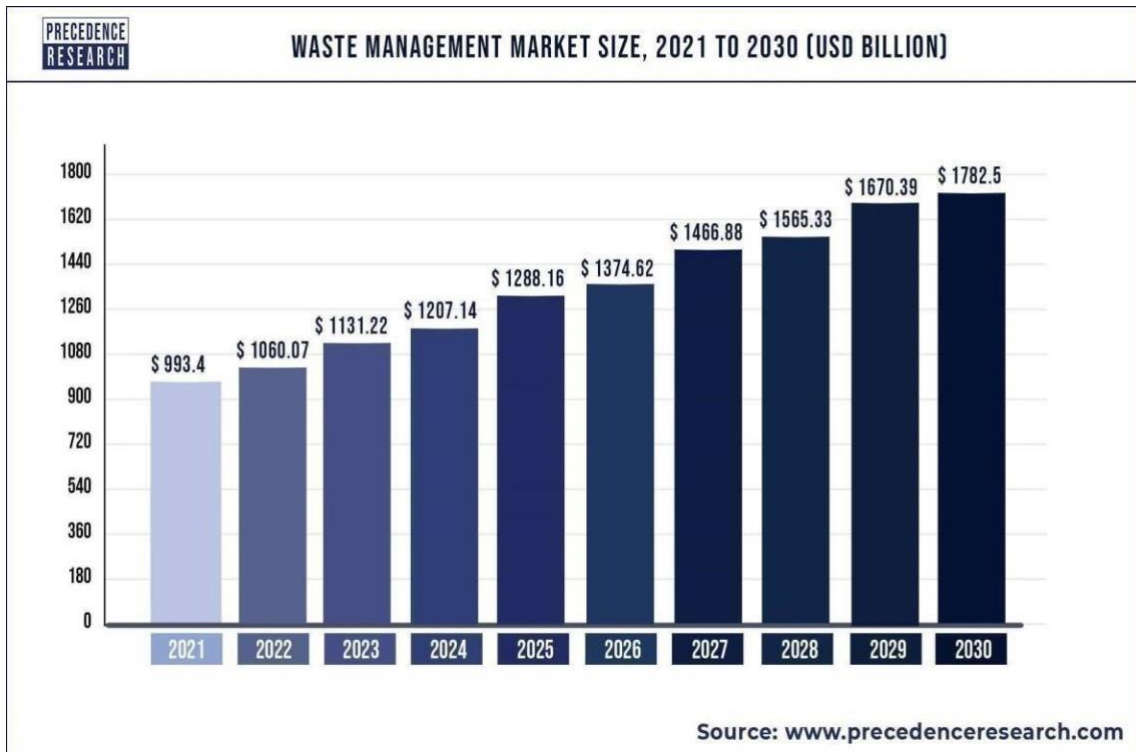
This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Print Engine	7	0	0	7
Client Application	51	0	0	51
Security	2	0	0	2
Outsource Shipping	3	0	0	3
Exception Reporting	9	0	0	9
Final Report Output	4	0	0	4
Version Control	2	0	0	2

9.RESULTS:

9.1 Performance Metrics:





10. ADVANTAGES & DISADVANTAGES

ADVANTAGES:

- Reduction in Collection Cost
- No Missed Pickups
- Reduced Overflows
- Waste Generation Analysis
- CO2 Emission Reduction

DISADVANTAGES:

- System requires a greater number of waste bins for separate waste collection as per population in the city.
- This results into high initial cost due to expensive smart dustbins compare to other methods. Sensor nodes used in the dustbins have limited memory size.

11. CONCLUSION:

A Smart Waste Management system that is more effective than the one in use now is achievable by using sensors to monitor the filling of bins. Our conception of a "smart waste management system" focuses on monitoring waste management, offering intelligent technology for waste systems, eliminating human intervention, minimizing human time and effort, and producing a healthy and trash-free environment. The suggested approach can be implemented in smart cities where residents have busy schedules that provide little time for garbage management. If desired, the bins might be put into place in a metropolis where a sizable container would be able to hold enough solid trash for a single unit. The price might be high.

12. FUTURE SCOPE:

There are several future works and improvements for the proposed system, including the following:

1. Change the system of user authentication and atomic lock of bins, which would aid in protecting the bin from damage or theft.
2. The concept of green points would encourage the involvement of residents or end users, making the idea successful and aiding in the achievement of collaborative waste management efforts, thus fulfilling the idea of Swachh Bharath.
3. Having case study or data analytics on the type and times waste is collected on different days or seasons, making bin filling predictable and removing the reliance on electronic components, and fixing the coordinates.
4. Improving the Server's and Android's graphical interfaces

13. Appendix:

```
data= {'dist':distance,'load':loadcell}
if loadcell < 13 and
loadcell > 15:
    load = "90 %"
elif loadcell < 8 and loadcell > 12:
    load = "60 %"
elif loadcell < 4 and loadcell > 7:
    load = "40 %"
else:
    load = "0
%"
if distance < 15:
    dist = 'Risk warning:' 'Dumpster poundage getting high, Time to
collect :) 90 %'

    elif distance < 40
and distance >16:
    dist = 'Risk warning:' 'dumpster is above 60%'
    elif distance < 60
and distance > 41:
    dist =
'Risk warning:' '40 %'     else:
    dist = 'Risk warning:' '17 %'

    if
load == "90 %" or distance == "90 %":
    warn = 'alert :' 'Risk Warning: Dumpster poundage getting high,
Time to collect :)'
elif
load == "60 %" or distance == "60 %":
    warn = 'alert :'
    warn = 'alert :' 'Risk Warning: Dumpster poundage getting high,
Time to collect :)'
elif
load == "60 %" or distance == "60 %":
    warn = 'alert :'
'dumpster is above 60%'     else :
    warn = 'alert :' 'No need to collect right now '
if distance <20:
    warn=['alert':'NEED BIN CHANGE!!!!!']
def
myOnPublishCallback(lat=10.939091,long=78.135731):
    print("Chennai")
    print("published distance = %s
" %distance,"loadcell:%s "
%loadcell,"lon = %s " %long,"lat = %s"
%lat)
    print(load)
print(dist)
    print(warn)
```

GitHub Link:

<https://github.com/IBM-EPBL/IBM-Project-44357-1660724321>