IMAGINE IOT
PROTOTYPE CHALLENGE
The city of Chennai is divided into many sectors for administrative purposes and each sector administers multiple residential areas. Every sector has a garbage disposal unit that is headed by an Operations supervisor. The garbage disposal unit is responsible for daily collection of garbage deposited in the bins in every street and disposal. Each garbage disposal unit has a fleet of trucks with a driver and assistants who help load the garbage in the bins on to the truck.

The unit works every day to keep the city of Chennai clean. Despite the unit’s efforts, there are occasions when the efficiency was found below par resulting in complaints from residents. Consequently, the operations supervisor is looking for a solution to ensure timely disposal of garbage, improve efficiency of the garbage collection system and the resources participating in it.

The picture below shows a typical functioning model of the cleaning unit described above.
Persona

Name: Anand
Role: Operations Supervisor

About
- 48 years old, 25+ years of service with the Department of Public services, Chennai city.
- Reports to the Senior Manager, Public services.
- Highly regarded in the department for process improvement.
- Supervises 3 teams of cleaning squads covering 3 different sectors.

Responsibilities
- Anand is responsible for the cleanliness of 3 sectors assigned to him in the city of Chennai.
- He is expected to ensure timely disposal of garbage.
- Monitoring the operations of the cleaning squads and their performance.
- Periodic reporting of his department’s activities to the Senior Manager.

Needs
- Every day, Anand’s priority is disposal of garbage in time and so he needs a tool that would help him accomplish this.
- Locate and coordinate with his team for better efficiency in the process of garbage disposal.
- Anand needs to provide feedback on his team’s performance periodically and needs a tool that would facilitate this.

Pain points
- Unable to attend to overflowing garbage bins in time resulting in numerous calls and complaints from residents.
- Anand finds it difficult to locate his teams to coordinate with them in case one of his teams needs to be re-routed to another sector to substitute a team.
- Anand cannot differentiate between efficient teams and the ones that need improvement.
From the UX journey we can arrive at 3 points of view for our persona namely Anand. Let us have a look at them one by one.

1. As an operations supervisor, Anand needs a smart solution so that **timely disposal of garbage is ensured.**

2. Anand needs a credible technology to help him **locate and coordinate with his team.**

3. Anand needs a mechanism to **differentiate between efficient teams and ones that aren’t.**
Prototype

The proposed prototype makes use of Sensors, SIM based Communication channels and GPS to solve the above PoVs.

1. A level detection sensor is installed in the garbage bin. Once the bin is full, it emits a pulse that triggers a SIM card based communication back to the Hub at the Operations supervisor’s system.

2. GPS installed in the garbage truck sends location coordinates to the Hub at the operation supervisor’s system.

The Hub is integrated with the operation supervisor’s app to update information.

Let us now look at the mock-up screens addressing the Points of View.

PoV 1:

a. The following screen is the initial screen that Anand looks at in the morning. The app gives him weather update from his network and current date and time.

Anand looks at his screen and finds a push-notification (red dot) on sector 1 street 1.

b. Anand clicks on street 1 and this opens his next screen that shows more details.

Anand finds that the bin in street 1 is full and that the message was received at 9:05:20 AM. He is also able to view the team that is responsible for this area and he clicks on the ‘Assign’ button.

Anand can also view the truck location (blue dot) on the map.
c. On clicking the ‘Assign’ button Anand can see a drop-down list from which he assigns ‘Team A’.

![Drop-down list of teams](image)

d. The job is now assigned to ‘Team A’ and it reflects in the ‘Job details’ section along with the Status and time.

![Job details section](image)

PoV 2:

a. It is another day at the office and Anand is looking at his screen.

![Anand's dashboard](image)

Now that the job has been assigned to Team A, they would reach the place and empty the bin on to the garbage truck.

“No complaints from residents this time !!” “IoT rocks” 😊

Anand gets a push-notification on sector 3 street 2.
b. Anand finds that the Bin is full and the message was received at 9:12:35 AM. He also learns that Team C along with the truck are stuck at a place because the truck has a punctured tyre.

![Diagram of the Bin status and truck location]

The orange exclamation in the map shows there is trouble with the truck.

Since there is no way team C can get to the spot, Anand assigns team B to do the job.

Team B has now been assigned the job and the details are reflected in the ‘Job details’ section.

PoV 3: Anand also wants to look at the performance metrics of Team C and clicks on ‘Metrics’ box near team details (above screen) and it takes him to the following screen.

![Metrics screen for Team C]

Anand can view the metrics of Team C for the last 30 days.

It shows him details of no. of jobs fulfilled, responsiveness by backend calculations using (time of reaching the spot - time of job assignment).

Anand can also see how many ad hoc requests this team has fulfilled.

He now has metrics for ‘Evaluation’.