# **Waste Management System**

The Internet of Things (IoT) is a concept in which surrounding objects are connected through wired and wireless networks without user intervention. In the field of IoT, the objects communicate and exchange information to provide advanced intelligent services for users.

This project deals with the problem of Waste management in cities, where the garbage collection system is not optimized. This project enables the organizations to meet their needs of smart garbage management system. This system allows the user to know the fill level of each garbage bin in a locality or city at all time, to give a cost effective and time saving route to the truck drivers.

#### **Stakeholders**

A list of possible stakeholders of the system and brief description of their needs, business rules, possibilities and connections with others is presented below:

- City administrations need understanding of the big picture, generating reports, control over pricing, etc.
- District administrations are interested in controlling the process of waste collection, checking quality of service (all waste collected, all in time, waste collected cleanly, waste transported to special places), quick and legal ways for solving disputes and problems.
- Municipalities can also deploy and maintain smart city infrastructure like capacity sensors in waste bins and wireless networks for data transferring.
- Waste trucks owning companies need platform for organizing and optimization of their business process in general without serious investments in developing, deploying and supporting their own system. Such system must include effective dynamic routing based on IOT data for the truck fleet. Besides, controlling drivers and tracking the fleet is also an important issue.
- Waste truck drivers need navigation system for fulfilling their tasks. Another issue is reporting problems and passing them to the operators in the office instead of thinking how to solve the problem, this can sufficiently save time of a driver and vehicle. Drivers also need evidence that their work was done correctly and cleanly.
- Managers of dumps and recycling factories can publish their possibilities or needs in acquiring certain amount of waste for storing or recycling.
- Staff that is responsible for trash bins in the current yards needs communications with waste management companies and truck drivers.
- Citizens want to have better service, lower cost and having easy accessible reports on what has been done and how much it cost

## (Some) Main Features

Municipalities will be able to search for dustbins. The result will be based on the criteria the user inputs. There are several search criteria and it will be possible for the administrator of the system to manage the options for those criteria that have that.

The result of the search will be viewed either in a list view or in a map view, depending on what criteria included in the search. The list view will have one list item for each dustbin matching the search criteria and show a small part of the dustbin information so the user can identify the dustbin.

Municipalities will be able to either select a dustbin as target destination or get information how to get there, or view the information of a specific dustbin.

### In short:

- Can View the Map View status of the Dustbins
- Can view the Dustbin Details Dustbin ID, Threshold Value, Location
- Can View the Details of all the Drivers located in their Area
- Can Update the Dustbin and Drivers Details

The web portal will provide functionality to manage the system and the dustbin information. It will also provide information about the system, for example show when there is a new update.

## In short, he/she:

- Can control all the Functionalities
- Can controls the Permissions of Different Users
- Can Provide Access to new Users in other Modules

#### Drivers

- Can View the Map View status of the Dustbins
- Can view the Dustbin Details Dustbin ID, Threshold Limit, Location
- Informed Through Text Message when Threshold Limit Exceeds













