# Alert Based Trash Management System Using RFID Technology

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**ABSTRACT**

As the population is increasing day by day, the environment should be clean and hygienic. Waste management is a real time issue in Chennai, use of intelligent waste containers, which detect the level of load and triggers a data update to the central data using IOT. In most of the cities the overflowed garbage bins are creating an unhygienic environment. This will further lead to the arise of different types of unnamed diseases. This will degrade the standard of living. To overcome these situations an efficient smart garbage management method has to be developed. Various designs were proposed and have advantages as well as disadvantages. This paper is a survey based on Smart Garbage Management in Cities using IOT. This survey involves various smart garbage management ideas that can be easily implemented.

**Keywords:** Sensors, Microcontroller, GSM, GUI, IOT, Internet

## I. INTRODUCTION

"Due to rapid increase in population, disorganization of city governments, a lack of public awareness and limited funding, garbage management is becoming a global problem. Due to the lack of care and attention by the authorities the garbage bins are mostly seem to be overflowing. It has to be taken into care by corresponding authorities and should think what method can be done to overcome this. This survey paper shows some effective solutions.

Internet and its applications have become an integral part of today's human lifestyle. It has become an essential tool in every aspect. These researches led to the birth of a sensational gizmo, Internet of Things (IOT). Communication over the internet has grown from **user - user interaction to device – device interactions these days.** The IOT concepts were proposed years back but still it's in the initial stage of commercial deployment. IOT can be used to provide a platform for smart garbage management.

Some of the commonly used methods are implemented using sensors and microcontrollers. The details of each bins are monitored by the authority with the help of GUI. Effective actions will be taken if the corresponding authority is not concerned regarding the cleaning of bins.

The implementation of smart garbage management system using sensors, microcontrollers and GSM module assures the cleaning of dustbins soon when the garbage level reaches its maximum. If the dustbin is not cleaned in specific time, then the record is sent to the higher authority who can take appropriate action against the concerned contractor. This system also helps to monitor the fake reports and hence can reduce the corruption in the overall management system. This reduce the total number of trips of garbage collection vehicle and hence reduce the

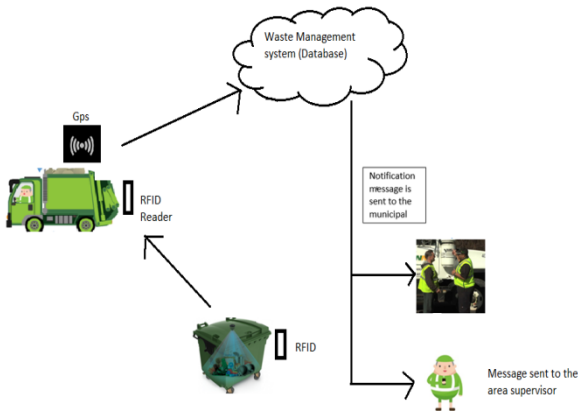overall expenditure associated with the garbage collection. It ultimate helps to keep cleanness in the society.



**Figure 1.** Flow diagram

## II. LITERATURE SURVEY

The garbage management Min cities has to be effectively and efficiently implemented. The various proposals were put forward and some of them already implemented. But it cannot be considered as an effective one. So a survey was done among different proposals and this survey paper includes survey among different methods for smart garbage management in cities using IOT.

Garbage management is introduced [1] as follows. A dustbin is interfaced with microcontroller based system having IR wireless systems along with central system showing current status of garbage, on mobile web browser with html page by Wi-Fi. Hence the status will be updated on to the html page. There by to reduce human resources and efforts along with the enhancement of a smart city vision. Considering the need of modern technology, the smart garbage bin can expensive but considering the amount of dustbin needed in India, there for they used based sensors to reduce its cost and also make it efficient in applications. And at the sender side they used only a Wi-Fi module to send and receive data. But because of

the use of weight sensor for detection of amount of garbage in dustbin. It will only detect the weight of waste; not how much level it is of. The message can be sent directly to the cleaning vehicle instead of the contractor's office. Thus garbage bins are managed.

A Geographical Information System (GIS) transportation model for solid waste collection that elaborates plans for waste storage, collection and disposal has been proposed in [2] for the city of Asansol in India. An enhanced routing and scheduling waste collection model is proposed for the Eastern Finland, featuring the usage of a guided variable neighborhood thresholding metaheuristic. The aim of the research was to develop an optimal schedule for trucks on defined collection routes. The data from the bins are processed in the DSS and if it is correct it is sent to organizers of waste collection in this particular place and to the road police. The truck driver doesn't waste time for waiting, he/she goes to the next point and the route is dynamically recounted. When the problem is solved the system recounts the route for one of the available trucks and the waste from unlocked bin is collected. It is combined with dynamic routing algorithms to maximize the efficiency of waste collection.

The paper [3] proposed an advanced Decision Support System (DSS) for efficient waste collection in Smart Cities. The system incorporates a model for data sharing between truck drivers on real time in order to perform waste collection and dynamic route optimization. The system handles the case of ineffective waste collection in inaccessible areas within the Smart City. Surveillance cameras are incorporated for capturing the problematic areas and provide evidence to the authorities. The waste collection system aims to provide high quality of service to the citizens of a Smart City. System architecture aims to suit two main targets. First target

is providing software as-a-service (SaaS) products for customers. Mainly, these customers are private companies that are involved in waste collection, owning waste trucks, organize work of drivers, get contracts from municipalities and pass wastes to recycling organizations or city dumps. Second main target is developing a system, which makes possible mutually beneficial communication between all the stakeholders involved in the chain of supplying goods and utilizing solid waste in smart city. This paper presented a novel cloud-based system for waste collection in smart cities. The system aims to provide services for different kind of stakeholders involved in this area - from city administrations to citizens. Still, the design focuses mostly on providing SaaS services to commercial waste management companies.

## III. PROPOSED SYSTEM

Waste management is a real time issue in Chennai, use of intelligent waste containers, which detect the level of load and trigger a data update to the central data using IOT. Two different types of containers are taken Decay able and non Decay able waste. It alerts the local zonal office super wiser and the allotted truck for pick up through SMS. Delay in collection will also trigger a alert after couple of hours. If delay is more than 24 hrs. then the alert is trigged in central data and non-collection of garbage is recorded as report, with analysis for each zone / area. The same data will help in faster action, reduce in cost of waste collection, spreading of germs will be controlled, recycling will be faster and of quality.

The major developments, loose out due to the garbage which is uncleansed this leads to the under development of once country and city. This project will be a real time implementation and we be needed much guidance and help and thus will be implemented in the upcoming days .

Reduce, Reuse and Recycle are some important factors to be remembered in the survey. The proposed paper will be in advanced science technology which will deal with microchips, sensors and latest GPS and IOT aspects with smart bins. With well proofed bins and a collection activity which will act when full where an SMS will be automatically generated to the truck driver and the contractor , If not addressed on time an automatic SMS will be sent for each hour and will make the city clean accordingly . The collection and the report will also be sent via GPS or and SMS and thus its monitored. This will help the whole system to manipulate and work according as its programmed.
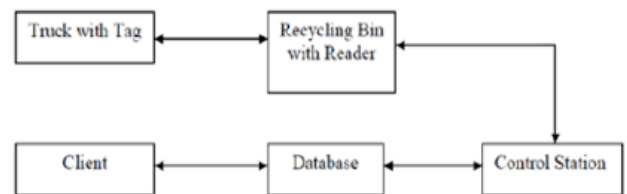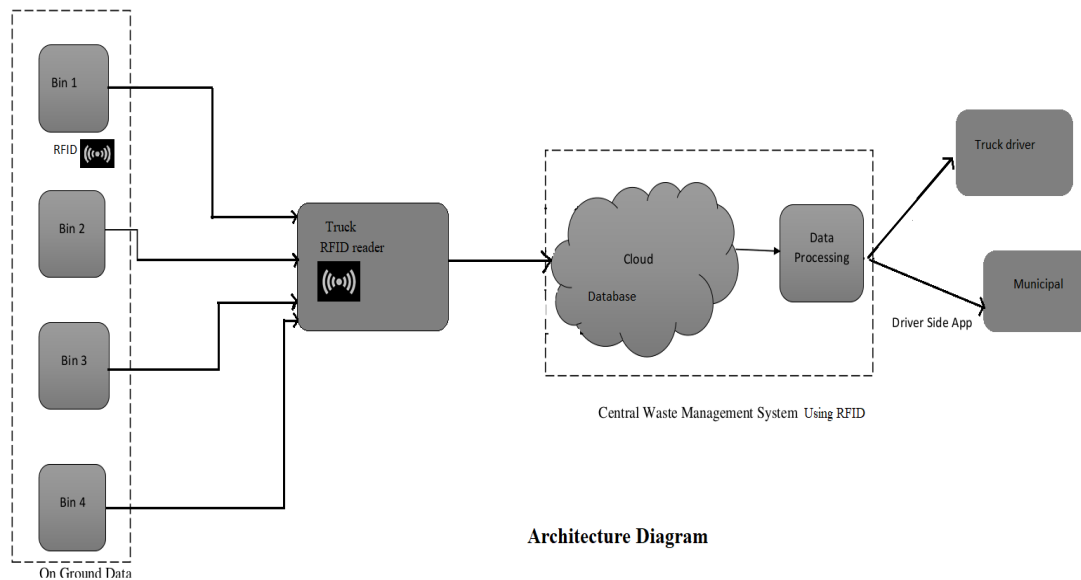


**Figure 2.** Block diagram

**Architecture Diagram**

**Figure 2**

## IV. MODULES

1.SETTING UP GARBAGE CAN WITH RFID Setting up the garbage can with a RFID in the inner side of the garbage can.

2.RFID DETECTS THE RFID READER
The RFID detects the reader when the truck goes near the garbage can.
Range:6m, Depends on the reader, and working environment.
Operating Frequency:860-960mhz.

3.GPS FUNCTIONING
We connect the location via google maps using GPS and thus it sends the data to the database. To generate a auto message we contact the service provider which in turn will send automatic message through the database created.

4.WASTE MANAGEMENT DATABASE SYSTEM (CLOUD )

The database is programmed by using php and my sql queries  Back end Technologies

### PHP:
PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages. Thus helping to create proper forms for the data sent .

### MySql:
MySQL is an open-source relational database management system (RDBMS). To create the backend application to store the data.

5.MESSAGE SENT TO TRUCK MANAGER, AREA SUPERVISOR
A service provider provides automatic message sending options .
A notification message is sent to the Area supervisor and Truck driver by GPS

6.REPORTS GENERATED TO THE MUNICIPAL
A feed or report is thus generated automatically according to the queries coded in the backend by sql.

The report is generated to the municipal which shows the whole data stored in a databases.

## 7.DATABASE BEING CHECK

Database is thus stored and it can be checked and thus a report is generated for the governments purpose.

## 8.NOTIFICATION MESSAGE FOR AREA MANAGER IF GARBAGE NOT COLLECTED

A automatic message can be sent from the database with the help of the service provider.

And thus a message is sent every 3 hours if garbage not collected to the area supervisor.

## 9.NOTIFICATION MESSAGE SENT TO TRUCK MANAGER, NOT COLLECTED GARBAGE WASTE.

A message is forwarded by the area supervisor to the truck driver from the database.

A notification message is sent and action will be taken.
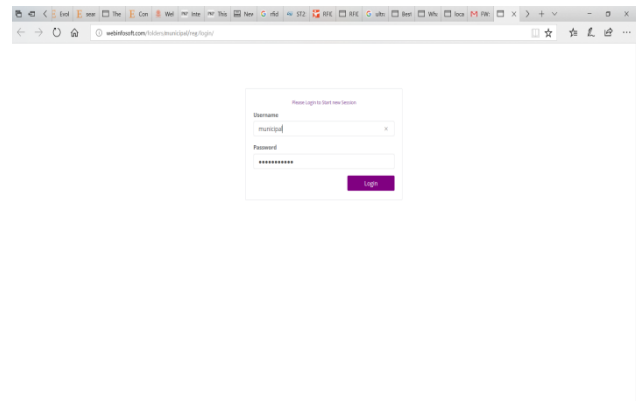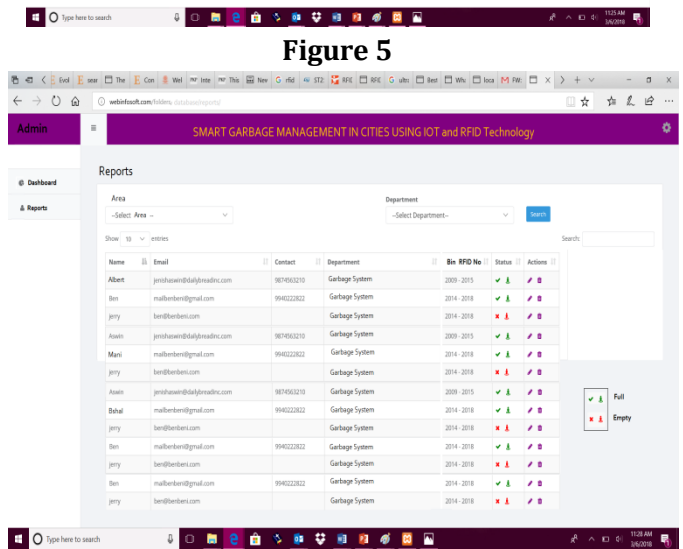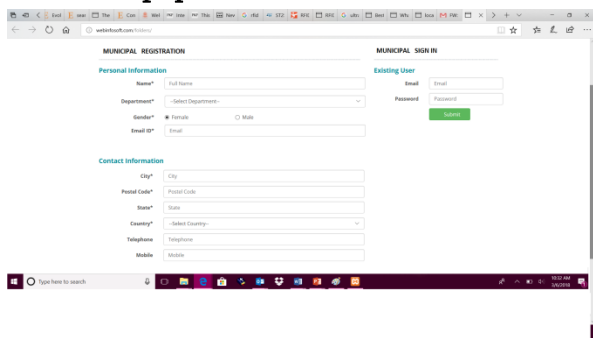
## V. OUTPUT (sample)

### Database - php



**Figure 3**
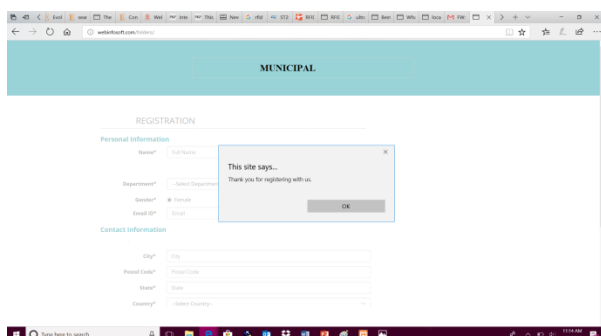


**Figure 4**



**Figure 5**



**Figure 6**
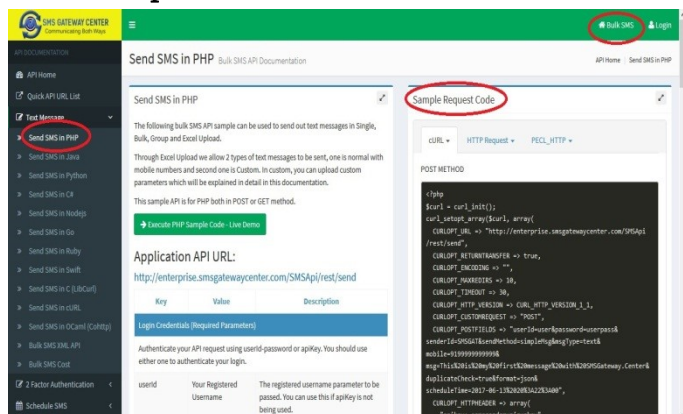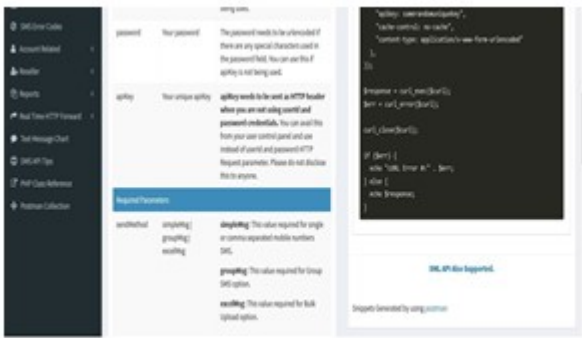
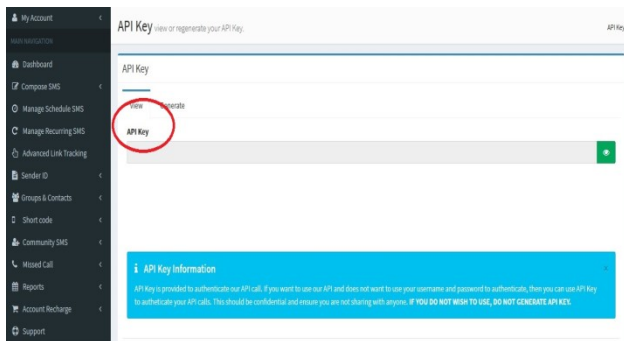### Bulk SMS options :



**Figure 7**

**Figure 8**



**Figure 9**

## VI. CONCLUSION

This survey has been performed for collecting the details of smart garbage management methods and to find out effective methods which are useful for providing hygiene environment in cities. This will need corresponding help and the city can be made efficient and effective, it will be informed to the corresponding authority, if it was found ignored then the details will be forwarded to the higher authority to take necessary actions. Thus a hygiene and clean environment can be provided. This survey helps in identifying all possible smart garbage management methods that can be implemented to make city clean. This waste management can be further implemented on various sectors and large scale when successful.

## VII. ACKNOWLEDGMENT

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