

# Managing Social Complaint using Mobile Application with Real-time Tracking

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**Abstract** - In modern times, it is becoming difficult for the public to communicate with government organizations to register their complaints about facilities like Water resource problem, sanitation problem, health security problem, food security problem, pothole problems etc. Public has to stand in long queues to register their complaint, and there is a lot of paperwork to follow which is a time consuming process. There is still no guarantee that the complaint would be addressed by the concerned authority. We approach this problem with the assumption that a digital grievance management system might pressurize the government make their functioning faster and more efficient. The government has initiated digital system under "Digital India" scheme in 2015. So, we have to work towards the idea behind digital India to make it successful. This app provides a reliable system which registers all complaints over internet. This app classifies the grievances according to their corresponding departments, e.g. Fire brigade department, sanitation department, finance department, women and child welfare, water resource department, electrical departments and others. GPS technology is used to extract the exact location of the complaint, the related data is stored in Google's real-time Firebase Database. Objective of this system is to neglect the barriers between government organizations and the public.

**Key Words:** Android, Grievances management, Google firebase, GPS, Internet, cloud Computing, AES ,

## 1. INTRODUCTION

India is second largest democracy with a population of over 1.3 billion and growing. The government is working hard to develop such a populated country, but it's not easy as it involves a lot of complications. Some such complications are public health and sanitation, water supply, drainage issues, etc. If someone is facing problems related these, they have to go to their city's municipal corporation and stand in a queue and do all the paperwork. Even then there is no guarantee of the complaint being looked upon by the staff, it might get lost in all the paperwork. The titular app is an android application which lodges social complaints with the push of a few buttons beating all the uncertain and tedious work required in traditional methods.

Now-a-days android OS is getting more and more popular. It is estimated that android holds a market share of 82.18% in India. Almost everyone, whether poor or rich, has a smart phone with android OS which makes android the best platform for such application. It also uses Google's Firebase

database which is a real-time database suiting our needs in this project.

This app makes everything digital and the work of the government departments transparent to the government officers and the public which helps in easing the auditing process of any department. Along with English, it supports Marathi also for the people who do not understand English. It is integrated with Google maps so it is easy for anyone to locate the affected site.

## 2. HISTORY AND BACKGROUND

### A. System by Mumbai MC to fix potholes

There is a system which was launched by Mumbai MC on June 13, which was designed to minimize the number of potholes in Mumbai. In this system there were 230 android mobile phones which were given to the citizens with this app embedded, from these phones the complaint about potholes had to be made. But this operation was not very successful as there were restricted number of people to use this app and many of them who had this app also did not registered the potholes as they might not have found this app very user friendly and intuitive. The court then suggested that the civic body form a three-layered scheme wherein citizens can register their complaints either online, on the phone or through social networking websites. The court was hearing a public interest litigation (PIL) on the poor condition of roads in the state and the recent incidents of bikers' deaths due to pothole-ridden roads.

The drawbacks of the system were that it was only designed for potholes. The area of application was restricted to a city. The application was available in only 230 android phones which were given to the citizens. It could not put an impact overall as it was not efficiently used.

### B. www.voiceofcitizen.com

The objective of this Portal is to provide Citizen an ability to report their inconveniences and problems related to MCGM's public work management. This is an attempt by MCGM to bring transparency into the operation of corporation. With the first release we are bringing in Pothole Reporting Feature. Prediction of human collision avoidance behavior by lifelong learning for socially compliant robot navigation, IEEE 2014

### C. Fix my street in Canada

In Canada, a same type of site is currently in working at [www.fixmystreet.ca](http://www.fixmystreet.ca) for Canadian Citizens which is maintained by non-profit organisation [visibleGovernment.ca](http://visibleGovernment.ca). Although this site is only for complaints about potholes, graffiti, garbage and street lights.

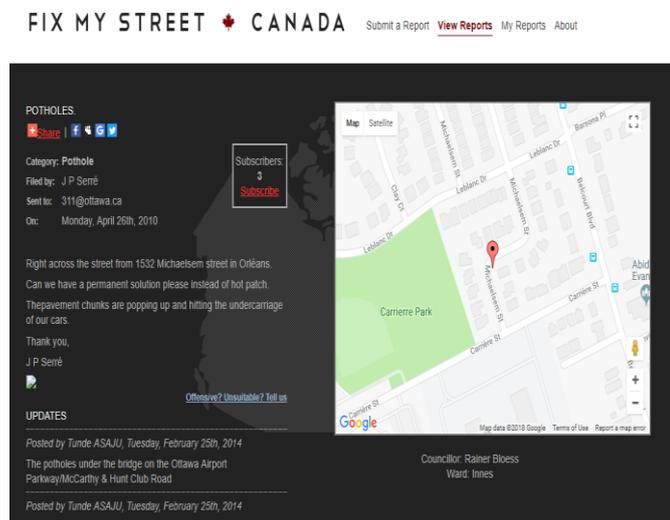


Fig 2.A- Snapshot of fixmystreet.ca

### 3. TECHNOLOGIES USED

#### AES (Advance Encryption standard)

AES (Advanced Encryption System) [7] is one of the most powerful symmetric key encryption algorithm. This app uses AES to store information on the cloud for better security. It is based on a design principle known as a substitution-permutation network, a combination of both substitution and permutation, and is fast in both software and hardware. Unlike its predecessor DES, AES does not use a Feistel network. AES is a variant of Rijndael which has a fixed block size of 128 bits, and a key size of 128, 192, or 256 bits. By contrast, the Rijndael specification *per se* is specified with block and key sizes that may be any multiple of 32 bits, with a minimum of 128 and a maximum of 256 bits.

#### Android Studio

It is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. The project has been developed in Android Studio.

#### Google Maps API

Google Maps [4] is a web mapping service developed by Google. It offers satellite imagery, street maps, 360° panoramic views of streets (Street View), real-time traffic conditions (Google Traffic), and route planning for traveling

by foot, car, bicycle, or public transportation. This API is used by the app to track location of the complaint.

#### Google Firebase

Firebase is a mobile application development platform developed by Firebase, Inc. in 2011, then acquired by Google in 2014.

Firebase provides a real-time database and backend as a service. The service provides application developers an API that allows application data to be synchronized across clients and stored on Firebase's cloud.

### 4. IMPLEMENTATION

#### A. Architectural Design

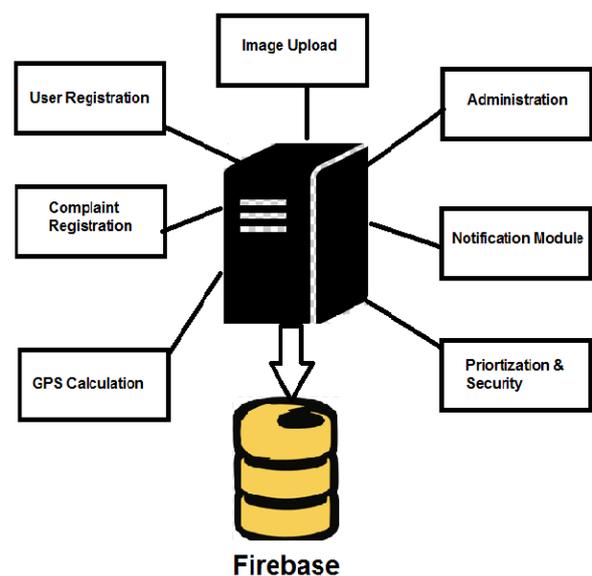


Fig -4.1: Architecture and Modules

- 1. User Registration:** This module will provide a form to the new user for creating an account. This module will be used to gather all necessary personal information of the user. Before registering the complaint user will have to provide his personal details like Name, Address, Contact Number, etc. This will be used for authenticating the user and the complaint registered by him. After collecting all the necessary information from the user a unique user ID will be assigned to that user.
- 2. Complaint Registration Module:** This module will provide a form to the user for registering their complaint. It will be mandatory for the user to fill all the fields provided in the form. This form will contain field regarding the complaint categories like complaint about road maintenance, electricity maintenance, water distribution system, garbage collection. The form a button to upload the image related to the complaint site

location. It will also contain a description section where user can provide extra information about the complaint. At the end of the form there will be button which will be used to detect the location of the user. After filling all these details the user has to click the submit button to register his complaint.

- 3. Image Upload Module:** This module will be used to upload the image related to complaint site. User can upload the image by capturing it from camera of the mobile phone or can upload it from gallery.
- 4. Database:** Firebase database will be used for storing the information received from all other modules. The database will contain different tables which will store all the information regarding the users, complaint data. It will automatically synchronize all devices as soon as some status updating is done for a complaint
- 5. Administration Module:** Administration module is used for monitor the entire system. It will take the information from the Database and will feed it to the complaint processing module.

Administration module will monitor the entire process of complaint registration like, how many complaints are registered, how many notification has been sent, how many complaints are resolved.

- 6. Notification Module:** Task of the Notification module is to take the information from the Administration module and then forward it to concern staff. The notification to the staff will contain the information like the location of the complaint, type of work they have to perform, and description about the complaint given by the user. It also notify updates of complaints to users.

## B. WORKING OF SYSTEM

### 1. Registration of User :

Initially, User have to Register by filling a small form and Verifying his/her email, mobile number for further processing.

### 2. Complaint Form Filling :

After Registration, User can login and fill up a form giving details about the complaint like the concerned department's name, location of the affected site, etc. The user will have to capture an image of the site of complaint and upload it on the app so as to provide an evidence for the complaint.

### 3. Complaint ID Generation:

A unique complaint ID for each complaint will be generated for each complaint to distinguish between the complaints. The ID will be the complaint location co-ordinates. This will be very helpful for the case when several people are lodging

the same complaint. When the same complaint gets registered twice the app will not accept the complaint and give a message saying already registered.

### 4. Deciding the Priority of the Complaint:

Every complaint will be associated with a number of support counter. Anyone who is affected by the problem can support the complaint. The more the number of support the more is the severity of the complaint and the higher up it will be on the feed.

### 5. Notification and Processing of the Complaint:

Once the complaint has been lodged then according to its category a notification to the respective department will be sent. In the department the complaints will be ordered according to their severity and will be processed accordingly.

### 6. Processing of the Complaint:

Processing is done in back end at Firebase database server hidden from the user. The staff member are periodically notified by the firebase server about the complaint.

### 7. Status Updating of the Complaint:

Every complaint will be associated with a status which will show the status of the complaint like pending, serving, served or lodged. The status will be marked according to the process done on the complaint. As soon as the staff members take care of the complaint they can update the status and everyone affected by it will be notified about the update.

### 8. Generation of the Alert Message:

If any complaint is pending for more than the allocated time for processing, then an ALERT message will go to the Admin so that an immediate action can be taken for it. A timer will be set for every complaint on the expiration of which the ALERT message will be sent to the admin

### 9. Verification of Problem Resolution:

The person who has registered complaint has taken out time from his busy schedule and did registered that complaint for the efficient working of public services, therefore it's the responsibility of the system to appreciate his effort and notify him about the work performed by that department in resolving the complaint. In complaint resolve notification, the system will collect response from the workers who were appointed for solving that complaint. The response will contain all the information regarding the complaint which was resolved containing details about its type, date and time of resolve, the location of the place from where it was resolved. This collected response will be stored in a centralized server. The system administrator can monitor this data to check the working efficiency of its department and workers who were allocate the job. The collect data will

be forwarded to the respective user who has registered the complaint

### C. SPAM DETECTION

There can be some users who might keep on registering the same complaint again and again. Depending upon the data collected from user the system is generating a Complaint ID. All the ID generated by the system will have a unique format. The ID format has been designed in such a way that the registered complaint can be tracked for Spam. For Example, if same user registers too many complaint again and again then system can detect such user from the allocated user ID. Such user could be blocked from registering complaints again on the system.

If someone tries to register a fake complaint by giving a fake image, the staff members can use their good judgment to see for image forgery being thoroughly familiar with the city. Nonetheless, the support option helps here anyways. A fake complaint cannot get a lot of supports since no one would recognize it as a true complaint, pushing the complaint downwards in the priority queue and then eventually the complaint will be rejected.

### 5. RESULT AND ANALYSIS

It will help as an interface between the citizen and the various government authorities. The complaints can be lodged easily in a matter of minutes and status of the complaint can be checked with alert messages given to the staff on serious issues. Hence, social problems will be reduced, making the city take its steps towards the digital India initiative. It can be applied to solve various government related grievance issues such as Water resource issues, sanitation issues, health security issues, food security issues, pothole issues and the likes.

### 6. CONCLUSION

We successfully presented an architecture of an Android app which uses Google Fire-base a Secure Real Time Database to maintain Complaints of the Citizens. In big countries like India, where the cities are growing faster day by day, an application like this will be very useful to manage the cities properly, help out the people in need immediately and will reduce the load of filing complaints in offices. Active participation of citizens in keeping their cities clean, tidy and a better place to live. This app will boost "Digital India" and "Smart City Campaign" and now people who registered their complaint can get real time status of it. It will bring transparency in working of public departments like Municipal Corporations, Nagar Palikas, and Gram Panchayats which will reduce Corruption. Citizens can give feedback about the Govt Work which will lead to better communication between Government and Citizens.

### REFERENCES

- [1] Chung-Ming Huang, Chia-Ching Yang, ChunYu Tseng, Chih-Hsun Chou. ASandip Kendre Centralized Traffic Control Mechanism for Evacuation of Emergency Vehicles Using the DSRC Protocol.Laboratory of Multimedia Mobile Networking De-partment of Computer Science and Information Engineering National Cheng Kung University, Tainan, Taiwan, R.O.C
- [2] Sunil Kumar Kopparapu.(2008). Natural Language Mobile Interface to Manage Citizen Complaints.TCS Innovation Lab - Mumbai
- [3] Voice Enabled Android Application for Tracking complaint and Pothole Notification System Using GPS and
- [4] Google Maps Javascript API v3. Internet:developers.google.com/map/web/I.
- [5] Google Firebase Internet:https://firebase.google.com/
- [6] Pimpri Chinchwad Municipal Corperation SMS and Web-Based Complaint Monitoring System July 2012.
- [7] Advance Encryption Standard Internet:https://en.wikipedia.org/wiki/Advanced\_Encryption\_Standard

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