Mobile Application Interface to Register Citizen Complaint

[1]Dhaval Gherwada, [2]Vipul Shah, [3]Deep Shah, [4]Prof. Harsh N. Bhor

[1,2,3]**B.E IT Student, KJSIEIT, Sion, Mumbai, [2]Asst Professor, KJSIEIT, Sion, Mumbai, Maharashtra, India**
[1]**dhawal.g@somaiya.edu, [2]vipul.shah@somaiya.edu, [3]deep.shah@somaiya.edu, [4]hbhor@somaiya.edu**

Abstract — **The day to day operations and functioning of the city is taken care by local governing bodies which is known as Government Authorities. Among many other things one of the most important responsibility of the Government Authorities is to manage and solve the complaints that the residents of the city might have. Now in order to maintain the large city requires that the Government Authority need to be aware of any problem or shortcoming either through (sensors/ CCTV cameras) or by allowing the citizens to complaint about these problems. The second option is usually preferred because it gives the proper valid information. A mechanism to accept the complaints from citizens of the city 24×7 times would be expectation from both the citizens of city and the Government Authorities(GA). The GA generally allows its citizens to register their complaint through several mediums. [6] The chief modes of complaint registration is (a) by visiting the nearest Citizen Facilitation Centre (CFC) established by the Municipal Corporation where an officer listen to the complaints and asks some information and fills it in an electronic form. (b) By calling a contact centre, where the complaint is registered by a call centre agent by typing the complaint into electronic form, or (c) By filling in online complaint registration form i.e. through web portal. In this paper we purpose an Android Application Mobile interface which can be used to lodge complaints. The main idea is to make use of the existing web infrastructure and to provide an easy, cheap and quick mode of complaint registration. The proposed system will enable the citizens of city to lodge complaints anytime, anywhere.**

Keywords— Mobile Application, Android, Citizen Complain, Interface, App.

I. INTRODUCTION

Municipal services or city services refers to basic services that residents of a city expect the city government to provide in exchange for the taxes which citizens pay.[5] Basic city services may include sanitation (both sewer & refuse), water, streets, schools, food inspection, fire department, police, ambulance, and other health department issues and transportation. City government often operate or contact for additional utilities like electricity, gas and cable television. Mumbai city government also provides a lighthouse services.[2] The available municipal services for any individual municipality will depend on location, history, geography, statues and tradition. Provided services may vary from country to country or even within a country. Services may run directly by a department of the municipality or by sub-contracted to a third party.

There has been broad research in the area of e-services for municipal use.[8] The idea is to understand the benefits, usability and utility of services that are provided by a city government using latest and better technologies. The city government of Mumbai which take care of the upkeep of the city is one of the more tech-savvy CG (City Government).[1] There are several departments within the CG to handle different aspects of the city upkeep. It is important for the city government to know about the problems as and when they arrive in to existence of the city. So that the problem areas can be solved quickly and efficiently. For easy handling of the problems, the city is divided into wards. The Mumbai CG has 24 wards. Any complaints belonging to or originated from a ward is only handled by the officers of that ward. Complaint redressal (Resolving process) gets delayed significantly if the complaint is routed to a different ward other than the corresponding ward. Efficient functioning of all the functionality and services in the area under the city government depends on the citizen participation. City government of Mumbai allows the citizens to register their complaint using various interaction mechanism. [2] And a correctly routed complaint is then handled by the corresponding departmental authority in that ward. Once a complaint is registered by the citizens, an appropriate ward authority is notified about the complaint for action. The citizen complaining is notified about the status of the complaint. Citizen can lodge complaints related to solid waste management, drainage , storm water drain, roads & traffic factories, license issues, water supply, pest control, building encroachment etc. by methods enlisted below:- (a) By visiting the nearest Citizen Facilitation Centre(CFC) established by Municipal Corporation belonging any of the

24 ward of Mumbai CG where a agent listen to complaints and asks some additional information and fills it in an electronic form which is then stored in a central database.(b) By calling a contact centre, where the complaint is registered by a call centre agent by typing the complaint into electronic form which is then stored in a central database. (c) By filling online complaint registration form in CG's Web portal from any computer connected to Internet, either from home/office/cyber café. [6]

In all the methods described above the complaint is stored in central database which is accessible to all the wards of the city government to handle the complaints more efficiently.[5] This makes the complaints more accessible. The status of the complaint is available to person who has placed the complaint through the portal to see 24×7. While all of these modes have been made available for the citizens to lodge complaints, the participation by the citizens has been poor in case of (a) & (b) because these modes requires more time for different reasons. But these modes of complaint registration system have poor active citizen participation because of the forum to register complaints. The web portal (figure 1) has hand a large number of users though the usage of computers with Internet connectivity is not very high in India.

Citizen Complaint Portal

Fig.1 Screenshot of Existing Complaint Registration portal

On the other side the mobile phone usage is very high and is growing in India in general.[9] It becomes really helpful and easy for people to provide an easy to use mobile phone based interface to lodge their complaints using their mobile devices. If the citizens are given easy, cheap and yet effective mode of lodging their complaints the active citizen participation can be evoked easily. In this paper we will propose Mobile Application Interface to enable the citizens

to register complaints and seek response from city government. Figure 2 shows rough idea of the proposed system.
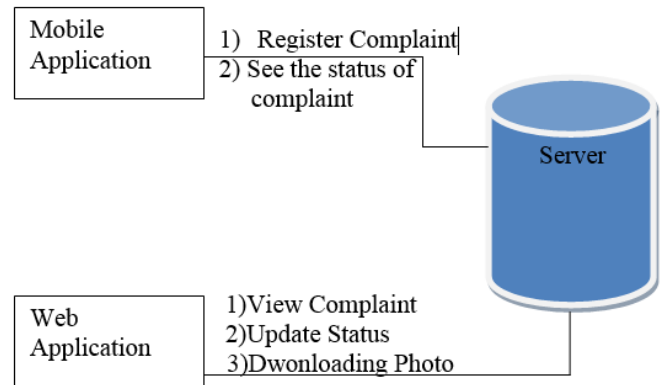

Fig.2 Overview of proposed system

The advantages of this system is:
   (a) It requires no change in the already existing web portal to lodge complaints.
   (b) Doesn't require the citizens to remember any specific information to lodge their complaints.

The mobile channel makes active citizen participation possible because of the higher usage of mobile phones in India.

II. SYSTEM BACKGROUND

The web portal interface (Figure 1) to help citizen complaints is a most important initiative of the City Government. The web interface consists of essentially following types of information (a) a set of drop down list boxes where the user need to select list of predefined options. The interface consists of some of the mandatory fields that need to be filled. Those mandatory fields are:

1) Type of complaint (Example: Traffic, Water leakage etc.)
2) Complaint Description (Description about the problem)
3) Address or location (Name of the region where the complaint is applicable).
4) Landmark (a description of the nearest location).
5) Ward (User needs to be aware of the ward name before lodging the complaints. Usually they are unaware of ward name)
6) Personal Information (Name, Contact No. etc.)

The optional inputs required by the interface are Address, Age, type (Example: Student, Employee) of the person lodging the complaint. Once all the information is given the web portal interface display the complaint number on screen. This complaint number can be used to query the status of the complaint at a later stage.

The web portal while allowing the users to lodge complaint has some serious constrains. The user is restricted to choose from among the list of predefined drop down list.

This poses a major problem in the sense that the user tries to fit his complaint intone of the predefined drop downs. This results in a wrong fit and the complaint being directed to the wrong department which in turn affects the time taken to resolve the problem. The second major constraint is the need for the user to be aware of the ward number, additionally the user needs to have access to networked computer. The mobile interface proposed in this paper tries to overcome these issues to provide an easy to use Interface.

III. SYSTEM ARCHITECTURE

The proposed mobile application interface emulates the functionality of the web portal based complaint filing system. The architecture of the system is shown in figure 3. The users use the mobile phone and do not need to access the web portal interface directly to file their complaint. The user runs the Application and can lodge complaint. Once all the information about complaint is entered by the user the application sends the information to server in a compatible format [as a HTTP (Hyper Text Transfer Protocol) request] to the server. Then the response from the server is fetched and is parsed to determine complaint number. The complaint number is then received by the user. This complaint number is then can be used by the user to generate the status of their complaint. But here the complaint is only registered when all the mandatory fields are filled.

IV. SYSTEM DESCRIPTION

Mobile Application will help the citizen of a municipal corporation to register their complaints about day to day problems in their ward through a mobile application. Mobile Application will provide a common man to deliver his complaints and problems to municipal authority as well as let

Fig.3 Architecture of Proposed System [5]

the municipal authorities to address the issue as soon as possible. The application provides an interface to register one's complained and follow it up. The interface will be provided with camera module which help clicking up a picture of any generalized problem that people are facing and will upload this photo along with the complaint. The location of complaint is tracked by Global Positioning System (GPS). This module provides exact location of that particular issue. Thus complaint, once registered, will be redirected to specific department of Municipal Corporation for example; a complaint about traffic will be redirected to Traffic Control department. It is a single point web and mobile based complaint management system linking all departments in the organization could take administration efficiency to the next level. The system benefits the organization, employees and the citizen. One of the key features in is the provision for citizens /consumers /employees to lodge complaints/grievances using their mobile phones with a software application specially designed to file complaints.

There are basically following modules involved in a system:
1) Mobile Application :
Citizens will have mobile application .She/he can register a complaint related to specific zone where he/she finds a problem. Citizens can also embed an image with the complaint.
This application can provides a user friendly UI interface. Mobile application contains GPS tracking system too.
2) Communication Network :
Communication network is established in following areas by using some protocols: (a) Mobile application and server by using various protocols. (b) GPS satellite and mobile application. (c) Camera module and server.
3) Server :
It contains request acceptance and processing system. It will contain specific UI for each department of Municipal Corporation for example Police, Traffic control etc. which will solve specific complaint related to that department only.   Server module will accept the request and redirect it to department module after scrutinizing it.
Received request can contain: (a) Image (not mandatory) (b) Text (mandatory) (c) GPS location (automatically generated)
4) Global Positioning System (GPS):
Along with these request application will embed the location from which request are getting placed. This is going to work by GPS tracking system. GPS devices are
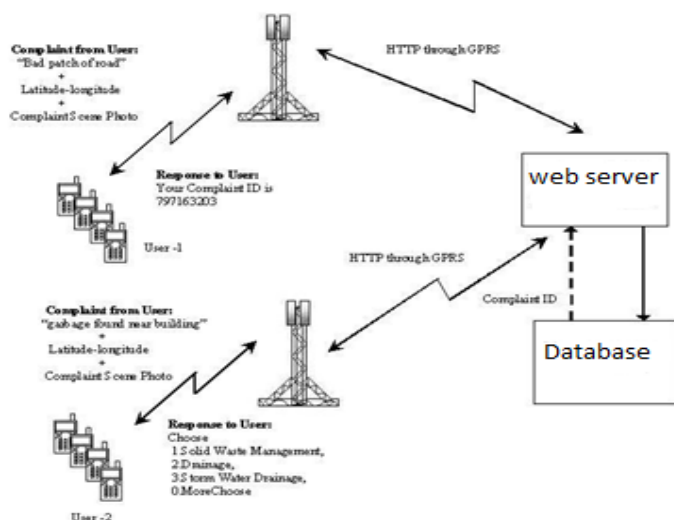
wireless and use satellites to enable users to detect the position of mobile on earth.

5) Camera :

Mobile application is connected to camera module so that one can embed images with the complaints.

The complete block diagram of the system is shown in fig.4. The users using the mobile application will enter all the information required to lodge complaints. If image related to complaint is available then the user can embed the Image too. And if user uses the GPS-enabled mobile then the respective location of the complaint site is also embedded in complaint. Once all the information gets available the application will render the request and send it to web server in compatible format. At the server side the required validation will be made on the complaint. And then in case of valid complaint, the complaint number is generated then the complaint number is provided as response to the citizen who has lodged the complaint.
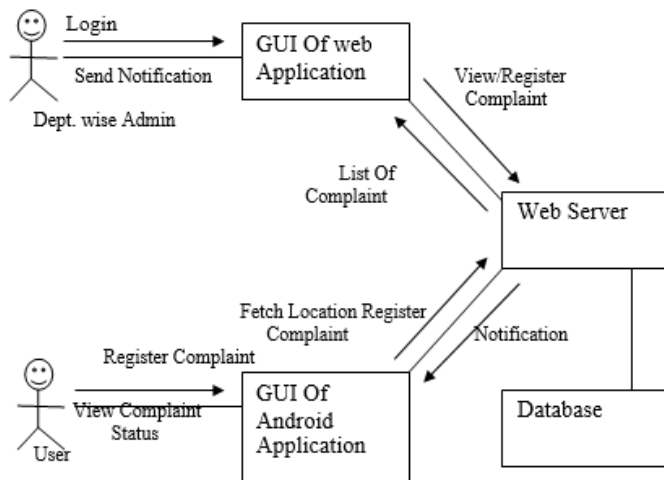

Fig.4 Block Diagram of Proposed System

A. Functional Description

The overall system is developed to reduce the work of users and government office employees. Overall system contains one Mobile Application and Web Application. Through mobile application people can register their complaint and can check the status of complaint (open or closed).In Web Application Complaints are view depending upon login for example if employee in BMC Office logged in then he can only see the complaints related to BMC Office and status of each Complaint

By using Web Application Employees can see the complaints and can take appropriate action .if complaint is resolved then he have to change the status of complaint i.e. closed. The figure 5 shows sequence diagram of the proposed system which is described as follows:
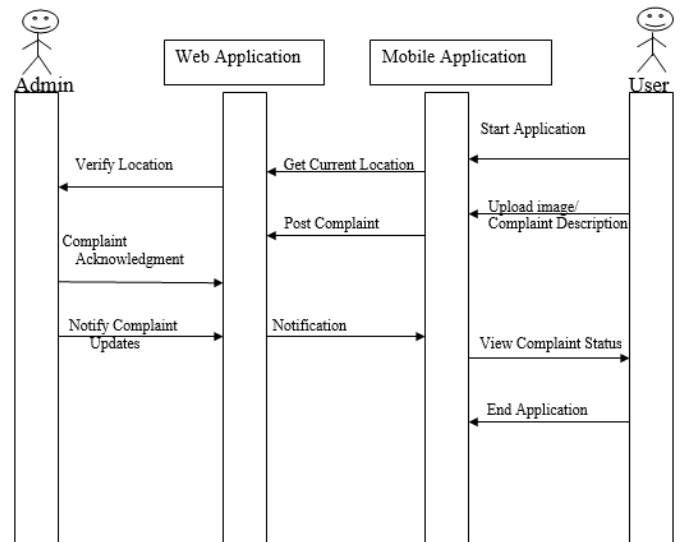

Fig.5 Sequence diagram of Proposed System

1) Complaint Using Android Mobile Phone:

The User will launch the complaint to the respective department using his/her Android mobile phone application, Once the complaint is launch, the complaint description, image, and the location in the form of latitude and longitude will be forwarded to the head of the respective department.

2) Complaint Notification:

After launching the complaint successfully the user will get the acknowledgement in the form of notification from the Complaint management system. The user can also check the status of the complaint regularly at any time and at any place using his/her android mobile phone application.

3) Location tracking module:

The application can be built in such a way that the corresponding location can be track by using the GPS module that is present in every android cell phone. [7]That means once the User launch's his/her Complaint the Admin on the server side will also get the current location from where the complaint is being launched, The location is fetch in the form of Latitude and longitude.

4) Department-wise Login:

Admin has been created based on the different Department in the database. The Admin within the different department can View the complaint that is being launched to that particular department

5) Complaints management and updating:

Admin based on the different department can view the complaints that is being launched to particular department. The Admin has the authority to open or closed the complaint. Then Admin can also reply to the user in the form of notification that is being created when the admin updates the complaint.

V. CONCLUSION

We have proposed and introduced a novel mobile application interface for the citizens to register their complaints about the city. The system is targeted to every citizen who can own mobile phone and is available all the time. The proposed system can use the existing web portal infrastructure of Mumbai City Government in the proposed complaint registration system. Thus the main idea of the proposed system is to provide the mobile application which will facilitate the citizens to register their complaint about day to day complaints in their locality through a mobile application. The web application at the other end will efficiently track and monitor the complaints thereby generating a quick response to the citizen. In The case when citizen register complaints, the system generates a contact number (actually generated by the backend system) and displays the complaint number to the user on his mobile phone. This complaint number will help the citizens to query the status of the complaint in future. In the case when system fails to register complaint, the system will ask the mandatory information to user. The proposed system also allows mobile users to send photograph of the scene which adds the authenticity in the proposed system and in some sense makes the complaint details complete. Along with the image the GPS module will also sends the real-time location information (which consists of longitude and latitude information) of the complaint site which provides accurate determination about the location of site. Thus the proposed system provides an easy, cheap and quick mode of complaint registration around the clock.

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