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SAFE (Social and Feasibility Endurance)

Android Based Complaint Management System

Prof. Shikha R. Agarwal

Kiran Lingoji, Sai Deshmukh, Rutuja Admane, Pallavi Ghule

Department of Computer Engineering
All India Shree Shivaji Memorial Society's Institute of Information Technology, Pune.

Abstract - *Smart cities ought to be constructive in efficient energy management, environment sustainability, water supply, sanitation, and mobility management. But through survey, it is evident that cities lack proper complaint making system. In rural areas, these problems are very characteristic. Also, there is very less mass participation, as it is a very bulky and sometimes complex process.[1]So, we have developed an android based efficient complaint management system which uses GPS and Data Mining Technologies. We call it as SAFE (Social and Feasibility Endurance). In this, we use android phones to make complaints and help government to work on those expostulations. For this image capturing technique is used. Today, Android smart phones are used by majority of the population. Also internet facilities are easily available to masses. So, SAFE will be the pioneer for the government body in decision making process. People will be able to register complaints directly to the government officials using android application.*

Keywords*-GPS, Data Mining, Image Capturing, Complaint Solving Systems, Android App, Information Communication Technology.*

I. INTRODUCTION

Evolution of smart phone users will be one of the important aspects for developing smart cities. Secondly people are intelligently ignoring hard work and preferring smart work. Such kind of smart system development is inspirational objective for developers. We are targeting very common enigma countenance by people which will the part of these smart cities. Problem is belonging to not only people but also faced by local government management systems.[2] This problem is dealing with grievances. When problems like water leakage, road accident, electricity issue materialize in our area we generally ignore it as it is circadian. We are also apprehensive of wastingour time to make complaint registration to respected government department because that process in existing system is very lengthy and sometimes becomes very complex also. So we are here with simplest way to solve this complaint management problem.

Our solution pacts with the android technology. Remonstrance and to decipher the process is basic aim of our frame of reference SAFE. SAFE is all in one solution for making all type of complaints to their respected government departments. SAFE uses GPS for locating the area of complaint. It also guides government officers for decision making. SAFE operates in three junctures. Phase one is registration of complaint, phase two is solution by government, and third phase is to repeat complaint system.

In SAFE we are currently focusing on Police Dept., Electricity Dept., and Municipal Corporation etc. here server is special purpose system which is used to handle exceptional complaints.[3]Complaint server is central server for all supplementary server. Complaints will be distributed by this server to all sub-server. This management is done at server side as it gives better performance and it becomes efficient to deal with data at centralize position. Now dealing with database with large number of photos, multiple logins and multiple government departments and moreover we have GPS positioning and Decision making mechanism to define systems implementation.

II. PHASES OF SAFE

A. **Phase 1**: Complaint Registration. Roster your grievances

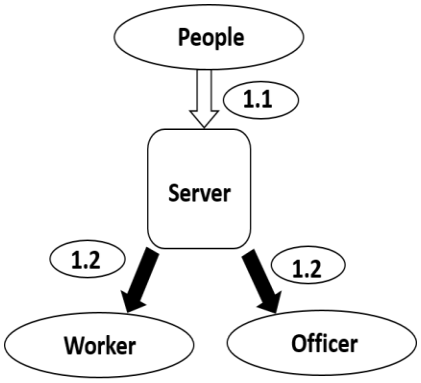


Fig. 1

1.1 Registration of complaint: This is initial step where people have to identify problems, their categories andtake photo using SAFE. By clicking on 'send' button, complaint registration process is wrapped up. Using internet, complaint with its address will be forwarded to central server.

1.2 Complaint's ultimate terminus: Complaint will get forwarded to government officer and the supervisor responsible. Backend server contains details and mechanism to contact the officials. Server is centralized to all the complaints. It will forward complaint to local department's server.

B. **Phase 2**: Elucidation of Problem by Government

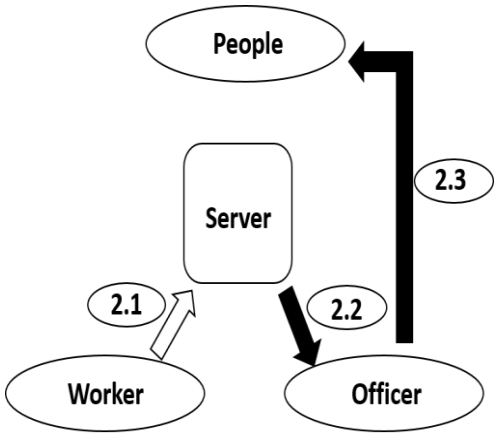


Fig. 2

2.1 **Workers confirmation of solved problem**: After solving problem supervisor or worker can use any android to login to the SAFE and take photo of the work status and send it to server. If any problem occurred during working, worker can give argumentation from SAFE. Server will identify the department and officer who are dealing with that particular problem by identifying the area, address and workers details.

2.2 **Use of image captring by officer to solve the problem***:* Server sends the photo to that officer and officer will check work status. If officer is satisfied by the obligation he can proceed for feedback phase. If not, then he can take appropriate action against worker or work. From the photo and reasons given by worker, officer will also get a clear intimation about severity of that problem. This process is time bounded. If task is not completed in definitive time period like a week or two then SAFE will proclaim officer about that problem.

2.3 **Work status notification to people**: After finishing complete task officer will give feedback with photo to the person who had registered that complaint. This process is also handled through the server itself.

C. **Phase 3**: Repeat Complaint System

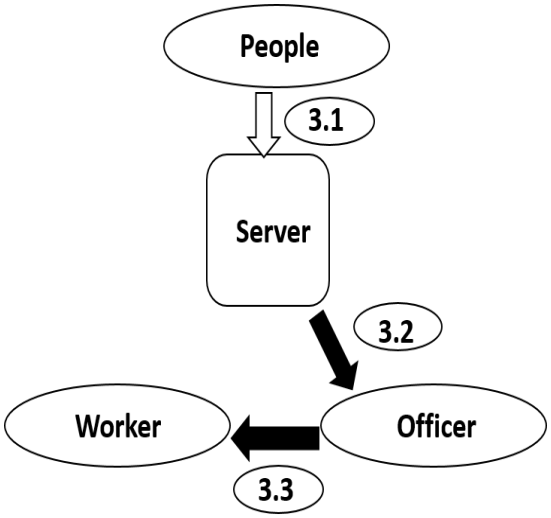


Fig. 3

3.1 **Complaint's ultimate terminus**: People will send feedback or they can make repeated request to check the problem through SAFE. This is pragmatic for people to give any suggestion to officer. First that request will be sent to the server and server will verify repeated request. We will discuss that repetition avoidance afterwards.

3.2 **Request forwarded to the officer**:After verification from the server that requested complaint will be forwarded to concerned officer. Officer will search solution of that problem again if necessary.

3.3 **Worker and Officer solve the problem together**:Officer can take help of worker to understand the problem again so that he can make proper decision. This facility in SAFE will increase co-ordination between worker and officers. This is simple work flow of SAFE. There are another facilities and components of SAFE which make system realistic.

III. ADMINISTRATION AND TASK PROTECTION[4]

SAFE system is dependent on three basic elements i.e. people, officers, workers.

People*:*

While discussing on SAFE we identify its privacy protection mechanism. When particular person registers complaint in any government office he obtains some proof of successful registration of complaint. So for that SAFE provides login so that it will keep track of the complaints registered by that person. SAFE database will store all the data about it and session tracking too.

Officer*:*

Officers are very relevant and crucial factors of SAFE as they are most responsible part of SAFE. We consider that one officer is allocated to one government office or some defined zone. So there will be number of workers under him to maintain that area. So officer will also be responsible to add and remove worker. Officer login is administrated by higher authority like district collector so that transparency in system will be sustained.

Worker:

Worker will use login provided by their respected officer. This different logins increase span of the system as users can login through different phones. This removes limitation of compulsion of android phones for everyone. There is one more element i.e. servers internal structure for their communication. For manually program server we are going to use Servlet. Servlets are preferred as we are much familiar with it.

IV. REMOVE REDUNDENCY

[5]Now we will discuss how we are impelling to remove redundancy of the complaints. It is impossible to ignore multiple attempts by distinct individuals for same complaint at different instants. So SAFE uses locations from where that

complaint had been registered. We have our own location management scheme to locate the complaints origin. We are introducing GPS BASED POSITION-RADIUS CALCULATOR which calculates radius of 5m to 10m from current active GPS device by taking its latitude and longitude values.

V. GPS BASED POSITION RADIUS CALCULATOR

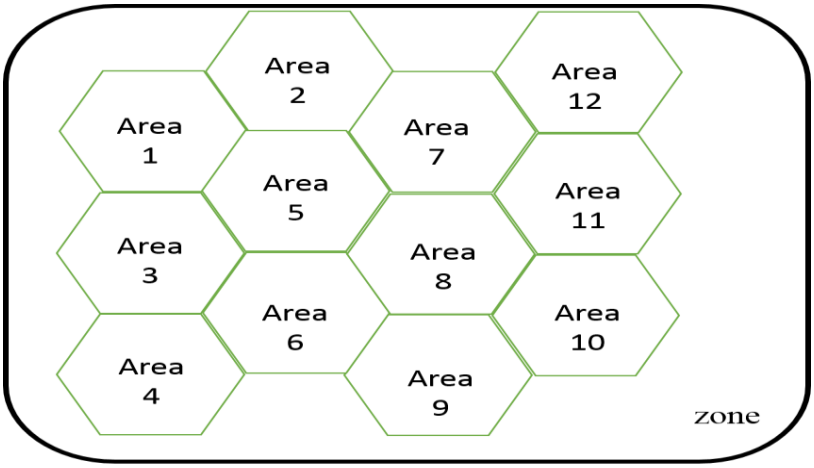


Fig. Area and City section
Each Area-1 or more worker & Each zone -1 Officer

Fig. 5

[6]This is simple structure where specific zone is divided into different spheres of the city. From phones GPS device we will consider 5m or 10m distance depending on the camera quality of the phone. After fixing this value we will divide area into multiple circular sectors. Concluding with the following steps to compare and avoid address collision may occur due to circular sectors.

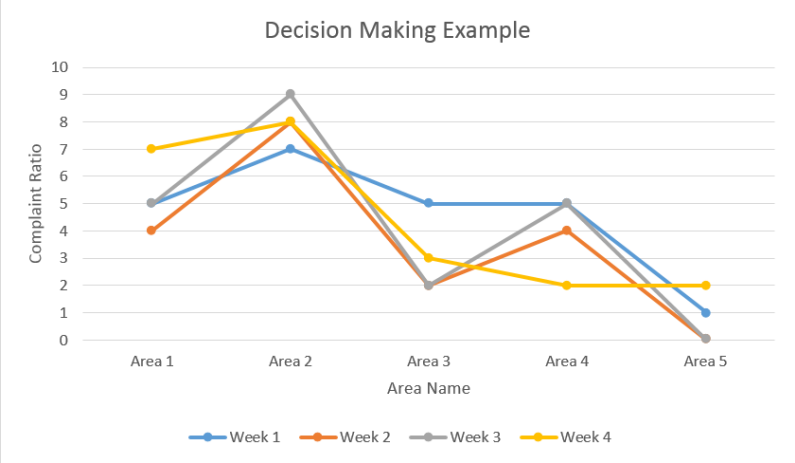
1) Generation of latitude and longitude values from mobile GPS system.
2) We will calculate exact 5m or 10m distance and convert it in its latitude and longitude distance.
3) By using mathematical formulae we will calculate all possible values within that radius of 5m to 10m.
4) Moving on a circle with radius R=5m from a point A to a point B such that there is an angle r=0.1570 between A and B covering a distance of d=10m. We can move along a meridian, i.e. keep the longitude fixed and subtract/add r from/to lat in order to obtain the minimum/maximum latitude of all points within the query circle with center:

M= (lat, lon) = (1.3963, -0.6981) … (1)
latmin = lat - r = 1.2393
latmax = lat + r = 1.5532 From (1)

5) Compare these values with another circles boundary values and take care that both values should not cross each other. So that collision can be avoided.

VI. DECISION MAKING AND DATABASE

[7]Database of SAFE will upsurge in size as it is dealing with photos but because of it is distributed in various government offices database management become easy. SAFE database manages all session information of different users. The Database language we are going to use will be MYSQL for its initial stage. MYSQL is openly available structures query language that we understand well. It is easy for us to manage multiple tables and write different logical queries on structured database so that we can apply different data mining techniques.[8]Now we will converse about decision making and suggestion arrangement in SAFE. SAFE will provide facility to guide government bodies to take decisions about big problems like no. of accidents at same place or in an area in a month. So there will be suggestion of speed breaker or bridge so that accidents can be avoided. We are providing feature to make simple graph on basis of week, area and complaint ratio per area. According to complaint ratio officers allocated for that area will get notification about this. In a same way we can apply this for yearly pattern too. Following figure shows how to manage multiple areas for a month with rating to the complaints. We are rating complaint on basis of time required to solve it.



VII. CONCLUSION

Main goal of SAFE is to provide common interface for different type of complaints in existing hardware facilities that smart citizens uses in their day to day life. [9]Auto address with photo gives severity of the problem. Decision making system and people support with their suggestions help government officers to reduce difficulties to solve problems. From up-to-date data analysis large problems with solutions can be identify. SAFE with different servers at different offices and central server system speed up working of SAFE.

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