Hazards Reporting Based On Real-time Field Data Collection Using Personal Mobile Phone.

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Abstract- *Hazard is any source of potential damage,harm or adverse health effect of something or someone,so we can say that the hazard is a unavoidable risk.so prevention of hazard is important fact. We are going to develop system to report a hazard to respective authority,because we don not have any system to report hazard.By this system user can report any problem from anywhere at any time.Important task of the Reporting is Data Collection.Report is send to the respective authority in the form of Geo-Spatial data.The Geo-spatial Data is used to Indicate the Data along with the geographic component.This means that the data set have location information tied to them such as geographical data in the form of coordinates,address,city,or ZIP code.User report to the organization by using the same data and organization solve that problem.*

Keywords:-*Web-Based GIS System, GeoSpatial Data Collection,Smart Phone,Global Positioning System(GPS), Android Application Package(APK),Software Development Kit(SDK).*

1 Introduction

Nowadays,each and every person have freedom to live and aim to make smart city. If city affect from any hazard. Hazard is any source of potential damage,harm or adverse health effect of something or someone and it is condition with the potential to cause injury, illness, or death of personnel, damage to or loss of equipment or property; or mission degradation. If any people survive in hazard area. So people have to compliant regarding for hazard to particular responsible authority. To work on that hazard. Now days mobile and information technology have become an integral part of our lives. A new area where mobile is useful for gathering hazardous locations, of public area, information as they are not readily accessible at any point.

Thus, we will try to make all the information related to the hazardous areas available on the Android Application to the various organization like Police, Municipal Corporation, News Papers, etc. People can compliant regarding hazard problem to responsible organization using android application. By capturing the image and the location of the area and is sent to the server and inform to responsible authority. Then the respective authority is responsible for allocating the problems to their respective employees and then it is solved by these employees. The notification of the problem solving is sent to the mobile of the user and authorities. The System generates the ratings Negative and Positive to the work solved within days on basis of work solved between mention days it will rate Positive or Negative.

1.1 Goal

The Goal of system to relief from hazard problems and make free of hazard city. This system encourage people to take action on hazardous areas and solve hazards problem as soon as possible from responsible authority.

1.2 Objectives

In hazard reporting system design two modules for common user (android application) and organization (web portal). They have set with some specific function. If common user submit any hazard compliant on android application. Systemsend user hazard compliant to on organization web portal. System according to compliant set responsibility to particular department and department set employee to work on that compliant in time limit. If organization complete work in time. System send message to common user and generates positive negative rates on his work.

2 Literature Survey

Recently, the use of mobile communication devices, such as smart phones and cellular phones, in field data collection is increasing due to the emergence of em-bedded Global Position Systems (GPS) and Wi-Fi Internet access. Accurate, timely and handy field data collection is required for disaster management and quick re-sponse during emergencies. In this article, we introduce a web-based GIS system to collect [2] the field data from personal mobile phones through a Post Office Protocol POP3 mail server.[1] The main objective of this work is to demonstrate a real-time field data

collection method to students using their mobile phones to collect field data in a timely and handy manner, either in individual or group surveys at local or global scale research. Geospatial data collection is one of the important tasks for many spatial information users.

Geospatial data collection may include remote sensing data, field data and other in-house GIS data conversion processes (i.e. scanning, geofencing, digitiz-ing, etc.).[4] Among them, field data collection is one of the first steps for spatial information users, especially for geographers, geologists, biologists, crop scientists, ecologists, etc. Field data collection is required for several reasons, such as col-lecting Ground Control Points (GCPs), ground [7] truth data collection for result validation, collecting soil contaminated sites, plant or animal species, and gathering public opinions for retail market analysis in order to analyze the spatial distribution patterns of objects and information on their associated attributes.[6] Accurate field data collection is also necessary for adequate spatial data analysis and proper deci-sion making.

 Traditional field data collection (i.e. pen-and-paper based) is a time consuming and bulky task. For example, we need to prepare basemaps, collect an ancillary dataset, and other paperwork.

This is not practical to use in real-time disaster information collection, which occurs in unpredictable places and requires a quick emergency response. However, recent developments in mobile communication Global Navigation Systems, the In-ternet and portable computational devices such as Netbooks or Ultra Mobile Personal Computers (UMPC) allow us to conduct field data collection in a timely manner.[5] Moreover, under the client-server setting for field data collection, a field user may take advantage of digital repositories prepared for data collection (i.e. basemaps, satellite images and other ancillary data), as well as information resources more generally available via the Web. For example, use of Web Map Service (WMS) to access Google Maps or Microsoft Bing Maps data from GIS applications via a HTTP interface.[3] It can provide Google Map or Microsoft Bing Maps image data to any GIS applications that can use a WMS service for raster data. This can eliminate the time for basemap preparation and other image processing tasks.[8]

In previous years people survive in hazardous areas. People complained against hazard problem to particular department but they have not given attention on problem. Procedure of solving complained problem is also taken long time period and result also not given good. People did not have any idea about his compliant status. Compliant procedure also take more time first we had to buy compliant form then fill, all procedure is too much hard. So observing all problem regarding hazard compliant and solving problem issues. Giving attention on this problem we will develop hazard reporting system. This system solve all previous problem and solve hazard problem fast.

3 Proposed System

This architecture shows overall description of our system.We need at least one android mobile device and a dedicated server to host the application.Dedicated Server is used tostore the data. Dedicated server should have MongoDB installed on it to handle the database part.

In hazard reporting system design two main modules:

1.Common User.
2.Organisation.

3.1 Common User:

Common Users uses Android application to report the problem.Before reporting,Registration in hazards reporting system is must and that registration is done by using android phones.After Being a part of system, User can login to the system and can send hazards report which contain Geo-Spatial data like image,data,audio,video along with location information.

The report contains geospatial data that means the Data along with the geographic component.This means that the data set have location information tied to them such as geographical data in the form of coordinates,address,city,or ZIP code.
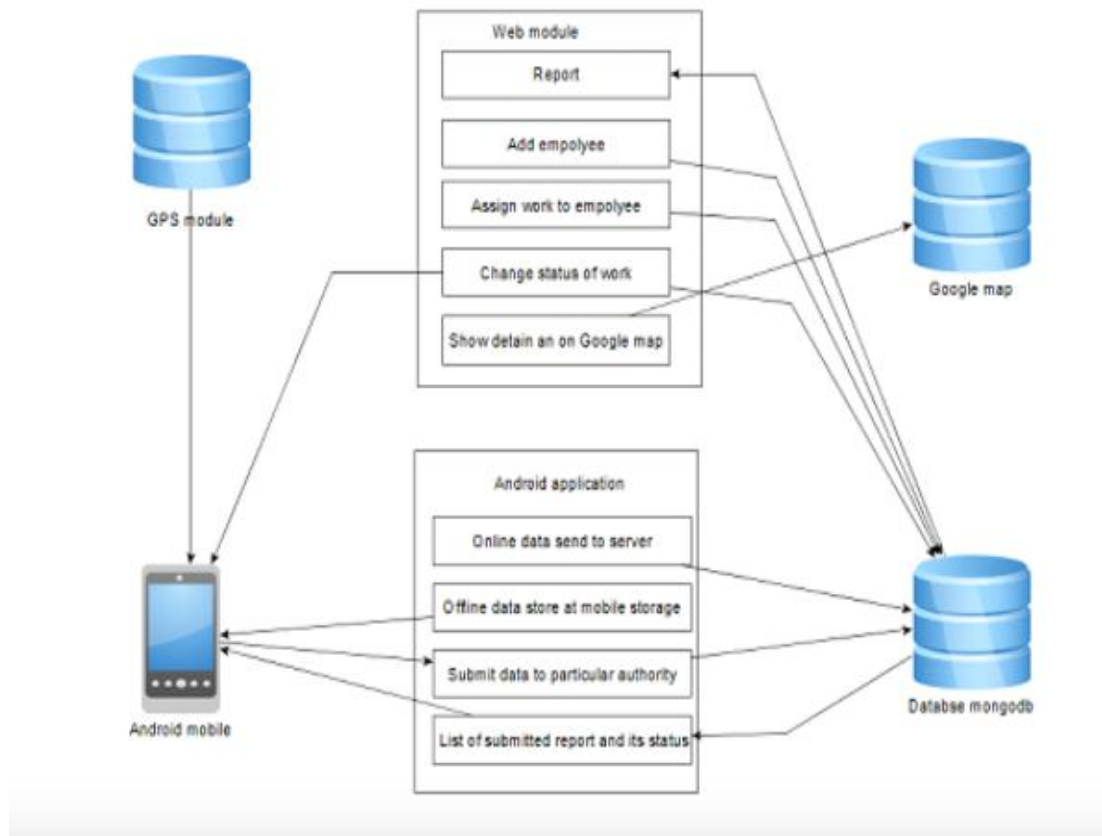
Figure 1: System Architecture

3.2 Organization:

Organization uses web portal as well as android application.to get authenticate and authorized the users or employees at the organization side need to get register.After registration assign roles to every member.for example Police,News Paper,Higher Authority etc.

show all the complaints of users,Identify each complaint.after identification assign work to employee according to complaint.after working change the status of the complaint and notify to the user every time.all things that is notifications of problem,graph generation and positive-negative ratings are done by web portal.and android application is used to give the confirmation in the form of image.

4 Mathematical Model

Let U is the set of complete system
U = {........
Let S is the set of all issues
S = {S1, S2, S3, ..., Sn}
Let D is the set of solved issues
D = {D1, D2, ... , Dn}
Let F is the set of unsolved issues
F = {F1, F2, ... , Fn}
Let G is the set of government departments
G = {G1, G2, ... , Gn}
Let L is the set of locations of issues
L = {L1, L2, ... , Ln}
Let M is the set of all media documents related to issues
M = {M1, M2, ... , Mn}
Let K is the set issues with no media

K = {K1, K2,... , Kn}
So here,
U = {S, D, F, G, L, M} Mathematical Representation of the system using Set theory

5 System Features

5.1 Functional Requirements

• System should support android handset.
• System should monitor the user location periodically.
• System should properly interact with the server.
• System should run as a background service on server.
• System should support auto start on server side.
• System should be able to generate push messages.

5.2 External Interface Requirements
5.2.1 User Interfaces

• Login Form.
• Survey Form.
• Image Upload Form.
• Sync Settings Form.
• Google Map View.
• Master Form.

6 Technical Specification

6.1 Advantages

• Central platform for reporting issues.
• Geographical view of issues.
• Use of MongoDB accepts unstructured data

6.2 Dis-Advantages

• Need of internet connection is compulsory to transfer the data.

6.3 Applications

• This application can be used by government to check the issues in the territory.
• This application can be used by people to report their problem to the government authority.

7 Implementation and Result Set

In this system,we are going to develop a Reporting System where common users can report to that system based on the problem or hazards.and the authorized persons take action on that hazards.

The problem or hazard send to organization is in the form of Geo-spatial data,that means the data contain geographical information like zip code,pin code etc.So in short the data send to the organization along with the location.

Hazard Description	Department	Action taken on Hazards
Reporting of Potential Hazards	Health & Safety	Solved /Unsolved
Reporting of Accidents	Police	Solved /Unsolved
Reporting of Corruption	News paper	Viral the problem
Reporting of Fire	Fire	Use fire brigades
Reporting of No Electricity	Municipal	Solved/Unsolved
Reporting of most critical problem	Higher Authority	Solved /Unsolved

8 Conclusion

In hazard reporting system design two main modules:

1. Android Application and SQLite)
2. Web portal using MongoDB.

They have set with some specific functions:

user uses android app for collecting Geospatial Data.
After Collecting data,that data is stored into android application by using SQLite.The data captured from android will be shown on Google Maps using Google Maps API v3.Then System send user hazard compliant to an organization i.e web portal.According to compliant system set responsibility to particular department and department set employee to work on that compliant in time limit. If organization complete work in time. System send message to common user and generates positive negative rates on his work.

9 Acknowledgment

10 References

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