

Incident Reporting System Using GIS

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Abstract— an emergency is a situation that poses an immediate risk to health, life, property or environment. Most emergencies require urgent intervention to prevent a worsening of the situation, although in some situations, mitigation may not be possible and agencies may only be able to offer palliative care for the aftermath.

Also a deficiency identified in a public facility should be dealt with immediately and with proper efficiency. E.g. if a traffic signal is not functioning it should be immediately brought to notice to the concerned authority. During any emergency normally the people around try to manage a quick response but it still takes time for them to call and arrange for help.

This paper presents about integrated application-software which will be used to report an incident or accident immediately and also keep the log of activities which in turn helping public and the authorities to deal with problems and emergencies During any emergency normally the people around try to manage a quick response but it still takes time for them to call and arrange for help. We are looking for an application which will help the users to contribute towards the society and in turn helping themselves and the authorities to deal with problems and emergencies. Style sheet, as illustrated by the portions given in this document.

Keywords- incident reporting, keeping log of data, report processing, responding to request.

I. INTRODUCTION

Human resource and property is always of immense support for a developing country like India. Transportation of a patient to hospital in emergency seems quite simple but in actual it is pretty difficult during peak hours. A significant operation for the handling of emergency incidents is the routing of responding vehicles to incident sites and then to the closest appropriate hospitals. GIS technology can support emergency responders to provide efficient response in quick response time through solving the steering problems.

The purpose of coordinated incident management system is to provide structure and coordination in management of incidents. It improves efficiency and effectiveness in management response. A need was identified to develop a integrated system whereby different agencies, departments could work together towards common goal in efficient manner.

For example in case of accident personal from agency may called upon to help with the response without any delay in service. Also a deficiency identified in a public facility should be dealt with immediately and with proper efficiency. This system will acts as interface between the agencies and the one who notify an incident. And at the same time the log of happening activities will be kept for further investigation study. Through the use of GIS the response team also gets the optimized path to reach to the place of incident to avoid the delay. Queries will be solved based on the severity, urgency, need.

The mobile has become very important in today's life. To develop a web portal which will facilitate all the emergency standards to locate the nearest emergency responder. To suggest a shortest route from emergency spot to the recovery point using network analysis. Any common person can make use of the application to deal with the incident and in case of critical situations to arrange a quick response to minimize damage. Most emergencies require urgent intervention to prevent a worsening of the situation, although in some situations, mitigation may not be possible and agencies may only be able to offer palliative care for the aftermath. So through this application we provides mean to notify and respond an incident in efficient manner. Because of this an rescue become agile, efficient and organized This is an attempt to put forth the concept and present its importance in today's world where everyone is continuously on the run.

II. PRESENT SYSTEM

Today different incident reporting systems are present. But all these systems are specific for specific cause. For example there are systems for road accident reporting, fire reporting etc. no integrated system is there. So here we are proposing an integrated reporting system. This system is designed for all

kind of incident and emergency reporting system. Like other present systems this system also works on time critical basis. But in unlike present system this system provides integrated approach to report an incident. This system also has a provision to keep log of all the reported incidents which helps in analysing the cause of incident happened. Also if in any case investigation of any incident has to done then also the report of incident useful which is kept in log of system.

This system will works in coordinated manner with all the departments, agencies which is not there in present system. This system alerts the respective department about the incident to take the appropriate action to remedy. Present

systems seem to be very specific about their functionality and scope. Thus in this system more focus is on to rectify the limitations of present system. Unlike other present system the interface of the system is kept simple and user friendly so that it is easy to everyone to use it.

III. ROLE OF GIS

GIS is mainly used to locate/track objects. Many a times it happens that observer present at the place of incident may not know the correct address of the area. Because of that it is difficult for him to notify an incident to the respective authority. In case of emergencies it further worsen the condition if he gives the wrong address so as to get the help and even the response team may not knows the every place so it takes a time to reach to the place of incident. It is question of death and life in case of emergencies. So With the help of GIS when observer notifies about incident his location is automatically tracked by the application and send back to the server for further processing. It also saves time which is important in case of emergencies. Also with the help of GIS and A* algorithm shortest/optimized path is also suggested for the response team to reach to the place of the incident as quickly as possible and it also acts as navigator.

IV. NEED OF APPLICATION

Currently different incident reporting tools are available in digital as well as manual format. Most of systems are designed for particular purpose like for forest fire, road accident reporting etc. But no system is available which integrates all these things. So we are integrating all these into one system. Also the paper works is reduced as this system also keeps the log of all the data in secure way. As data is stored in digital

format so it is easy to retrieve later when needed for investigation or study purpose.

Government authorities also need this kind of incident reporting tool so that anyone can notify to different departments about the incidents for example if electricity pole is damaged. So the request is send to the respective electricity department to get is repaired early.

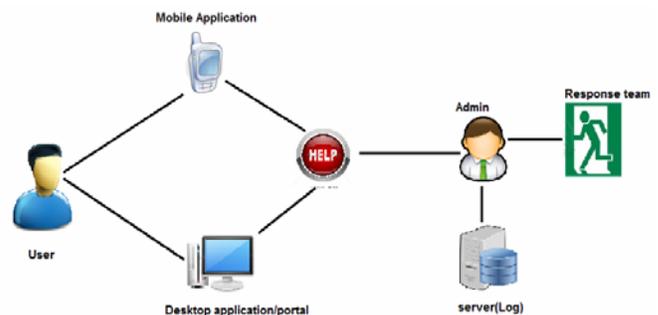
V. USEFULNESS OF APPLICATION

Today the use of android phones increases to alarming level. So the motive is to make application available to many people. Basically the main interface of the application is android based. This is connected to the server through internet. User use this application to notify an incident and send report to the server which is also then connected to desktop based application placed at respective departments to notify them about the incident happened and get back the Response. User also gets the conformation about the report that he sent in the form of mail or SMS alert. User also can check the status of the report that he sent. The interface of the application is user friendly and as per the HCIU standards.

VI. SECURITY ISSUE

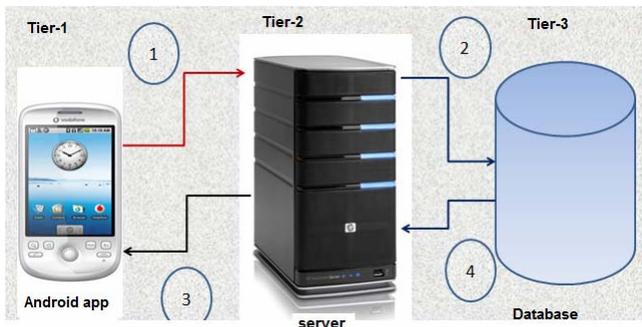
In such kind of application security is very essential. Many a times it may happen the user may gives false information it causes unwanted use of public or private resources which are used to send response and to solve the queries. So in this application we provide a unique ID to the user so that he securely log in to application using ID and password. The data which is to send is also in encrypted form so as avoid the misuse. Also the current location of the user is mapped automatically using GIS so that location identity is also served.

VII. ARCHITECTURE



This system architecture mainly contains two parts client i.e. mobile application and server. In this client i.e. mobile application and desktop application acts as a interface from which the request is send in the form of incident details. When report is sent from client it is also stored into the local database so as to avoid data loss when internet connection is weak. As soon as connection gets established data stored into local database is sent to the server. At server side the request is processed and passed to the respective departments so that they gets the notification about the query. When request in the

form of incident report is stored into the database at server side. As soon as the request arrives at the server side the conformation is send to the client in the form of mail or SMS alert.



This is basically 3-tier architecture as shown above. In tier-1 there is android application or desktop application as a client. In tier-2 there is server which does the processing of the data and is vital part of system. In tier-3 there is MySQL database for storing and retrieving a data.

VIII. CONSTRAINTS

- [1] This system needs internet connection to connect to the server.
- [2] Mobile phone should have android operating system (gingerbread 2.1) to run an application.
- [3] Mobile phone should be GPS enabled for location tracking.
- [4] Mobile phone should have a camera to take a photo of incident happened for visualization.

IX. SCOPE

- [1]The application right now provides a facility to handle emergencies through a mobile interface built on a single OS.
- [2]The scope is currently limited to ‘Pune City’ with respect to location based analysis.
- [3]This application will help to handle any kind of incident which requires help in a hassle free manner and also will analyse the incident to reduce

X. APPLICATION

- [[1] This System is used to notify any incident to concerning department, authority to take immediate action.
- [2]It is also used to navigate the response team in minimum possible time.
- [3] As it keeps the log of activities so it can also be used to maintain log of incidents for further investigation finding
- [4] This application will help to handle any kind of incident which requires help in a hassle free manner and also will analyze the incident to reduce.

XI. CONCLUSION

This application will provide a communication medium for the public to indicate to the respective authorities about the emergencies or incidents identified. A very useful real-time Application for time-critical incidents. The authorities can respond quickly and in an efficient way to solve the problem.

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