

Emergency Management System Using Android Application

Rehka Jadhav, Jwalant Patel, Darshan Jain, Suyash Phadhtare

*Department of Information Technology
G. H. Raisoni Collage of Engineering & Technology,
University of Pune, Pune*

Abstract- Communication during disaster time is very crucial for both rescue team and victim. Emergency never comes with prior intimation. The System is intended to function in case of emergencies in society. The emergencies include Fire, Medical Emergencies, accident and External Emergencies (Earthquake, Floods, Strom). In this paper we present Emergency Management System (EMS), which enables smart phone based ad-hoc communications at disaster times over Wi-Fi. The person in an emergency or anybody at the emergency site will call the EMS at avail service. Location Coordinates are sending on each request. The system works on the principles of client-Server system, wherein the server responds to the requests of the Clients. We have Implemented the EMS Client Application, Rescue Application and Server. The Client and Rescue Application was Implemented as an Android Application. The Sever is implemented as a Web Based Java Application. We tested the System using several real Android Phones with GPS on phone, clients communicating over Wi-Fi.

Keywords: Ad-Hoc, Android, Java, GPS, EMS

I. INTRODUCTION

When disaster strike, traditional communication and cellular access points may no longer be available, denying communication when it is most needed. Recent Disasters such as Uttarakhand Flood, and many more in past such as Indian Ocean, Gujarat Earthquake have caused unprecedented damage and massive loss of life, and unveiled the necessity of immediate ad-hoc communication solutions for rescue forces and personnel. The research community has invested in the construction of management systems for communications at rescue areas, designing effective systems that provide timely access to comprehensive, relevant, and reliable information that is critical to humanitarian operations, as well as operations management.

Various emergency handling services are present worldwide to cater to the emergencies faced by the common man. The USA has its own such system by the name 911. At present, India does not have a such similar well-defined emergency-handling approach. EMS is developed keeping in mind the lack of any such system in India. It is loosely based on 911 system, but suited more to india. EMS is responsible for leading the department in providing a properly planned and organized emergency management force, capable of responding to public emergencies.

The person in an emergency or anybody at the emergency site will call EMS at avail the service. The common man can make use of this system in case of any emergencies. The system works is such a way, that victims will receive help in the form of police, fire, ambulances or fire-brigades depending on the situation. This system drives to and responds to emergencies promptly.

II. RELATED WORK

System 1-0-8 / 1-0-0: System 108 is a free telephone number for emergency services providing integrated medical, police and fire emergency services in Indian states. System 100 is emergency service number in India for calling police. When an emergency is reported through 1-0-8, the call taker gathers the needed basic information and dispatches appropriate services.

UbAlert - Disaster Alert: UbAlert-Disaster Alert android app for emergency provide Street map, Report an event and submit a photo or video, share events by email or post links to face book and twitter, provide feedback regarding credibility of post to prevent fraudulent posts.

III. FLAWS IN CURRENT SYSTEM

Limitations of system 1-0-8/1-0-0 are, All the basic information required such as caller name, location, type of emergency is collected orally. Typical response time in metros when the police station in nearly is 30min. India has different emergency numbers like system 100 for police, system 102 for medical and system 101 for fire so, lack of unified approach. All these system have very low response time and low efficiency. Also if emergency is occurred in other states of India then problems like language barrier and unknown area to victim can occur. There is no use of GPS in these systems.

Limitations of UbAlert-Disaster Alert are, there is no need to use social networking site at time of emergency because due to posting of video and pictures lot of time will consume and prompt rescue operation will be delayed. Due to social networking site rumors will be spread. So, main aim of emergency system will not meet to itz goal of saving life of people.

IV. FEATURES OF EMS

- [1] EMS system uses GPS for location tracking.
- [2] Authorized person will be responsible for rescuing the victim.

- [3] Report can be generated Area wise, Issues wise, Location wise, and Priority wise.
- [4] Location tracking will be done in Network mode also if the GPS is disable.
- [5] EMS system is useful in any type of emergency that would occurred in society.
- [6] EMS system is very cost effective as compared to other emergency system.
- [7] Admin will be able to send the emergency number

V. ARCHITECTURE

EMS drives to and responds to emergencies. It serves as the head for emergency preparedness. It also plans, organizes and mobilizes the emergency rescue efforts of the agencies (i.e. Public Health, Mental Health, Public Works, Police department, Fire department, Volunteer agencies etc.) during emergencies. In the end , it compiles data and prepares a variety of records and reports. Along with this it prepares public information materials i.e. analyses the services and materials required for emergency preparedness, response and recovery operations, and suggests for the development of the same. The EMS overview is been illustrated in Figure 2. The EMS system consists of a Web server and smart phone based application, these currently implement as an android app. The app operate in two modes. Network mode and GPS mode.



Fig 1. Admin Android App User Interface

General users:

There are three kind of user as follows:

User Application

Admin Application

Web Based Application for Reporting

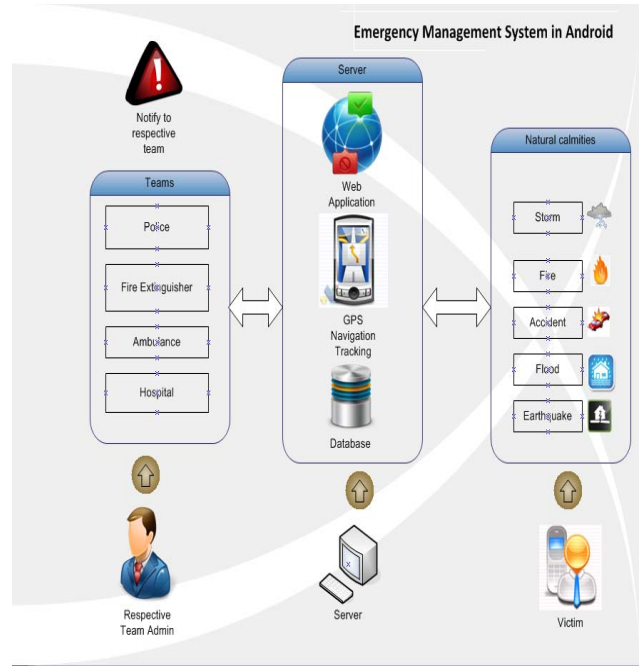


Fig 2. Architecture of EMS

VI. DESIGN AND IMPLEMENTATION

User Application:

User Raise the issue in case of any emergency from his Android Application with description and nature of issue severity. User's location tracking is done with the help of GPS is OFF then location tracking is done in Network mode. All the details of user like Title, Description, Priority and Current location report is send to the server for further assistance. Server respond location based Emergency Contact Nos to the user application.

Admin Application:

Admin gets notifications n his Android application with Emergency Issues. Admin can also view the person details and his/her location that has raised the issue. Admin can view the optimal path on Google map with marker to reach the victim who raised the issue in case of emergency. After resolving the issue, admin can marked the issue as resolved with certain comments.

Web Based Application for Reporting:

Web Application is useful for generating the reports such as, Area wise issues report, Priority wise issues report, Location wise issues report.

VII. FUTURE WORK

We are implementing this application using Ad-hoc network currently. If resources permit, we can implement this using cloud computing techniques as a future work. This would give a leverage to global access by expanding the scope of the application from an ad-hoc network to, say WAN.

CONCLUSION

This paper gives an architecture which will help the people in the any emergency using it's android smart phones by providing the help by rescue team. It responds to public emergencies and EMS system fulfills the requirement of ad hoc communication between skilled personnel for disaster times when no other means of communication exist.

REFERENCES

- [1] Osnat (Ossi) Mokryn Dror Karmi Akiva Elkayam Tomer Teller\Help Me: Opportunistic Smart Rescue Application and System", " 2012 The 11th Annual Mediterranean Ad Hoc Networking Workshop (Med-Hoc-Net).
- [2] D. Horowitz and S. Kamvar, "The anatomy of a large-scale social search engine," in Proceedings of the 19th international conference on World wide web. ACM, 2010, pp. 431–440.
- [3] J. Fajardo and C. Oppus, "A mobile disaster management system using the android technology," WSEAS TRANSACTIONS on COMMUNICATIONS, vol. 9, no. 6, pp. 343–353, 2010.
- [4] A. Pietilainen, E. Oliver, J. LeBrun, G. Varghese, and C. Diot, "MobiClique:middleware for mobile social networking," in Proceedings of the 2nd ACM workshop on Online social networks. ACM, 2009, pp.49–54.
- [5] B. Van de Walle, G. Van Den Eede, and W. Muhren, "Humanitarian information management and systems," Mobile Response, pp. 12–21, 2009.
- [6] T. Catarci, M. de Leoni, A. Marrella, M. Mecella, B. Salvatore, G. Vetere, S. Dustdar, L. Juszczak, A. Manzoor, and H. Truong, "Pervasive software environments for supporting disaster responses," IEEE Internet Computing, pp. 26–37, 2008.
- [7] N. Tolia, M. Satyanarayanan, and A. Wolbach, "Improving mobile database access over wide-area networks without degrading consistency," in Proceedings of the 5th international conference on Mobile systems, applications and services. ACM, 2007, pp. 71–84.
- [8] J. Su, J. Scott, P. Hui, J. Crowcroft, E. De Lara, C. Diot, A. Goel, M. Lim, and E. Upton, "Haggle: Seamless networking for mobile applications," in Proceedings of the 9th international conference on Ubiquitous computing. Springer-Verlag, 2007, pp. 391–408.
- [9] P. Currión, C. Silva, and B. Van de Walle \ " Communications of the ACM, vol. 50, no. 3, pp.61-65, 2007.
- [10] J. Scott, P. Hui, J. Crowcroft, and C. Diot, "Haggle: A networking architecture designed around mobile users," IFIP WONS, vol. 2006, 2006.