Emergency Services Platform

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Abstract- *In our country there are three major emergency services for the public namely ambulance, fire service and police. Currently these services work based on a telephone based system i.e the victims in need calls the respective emergency service by number and they will assist his/her problems. But tracking the victim's location via telephone is very difficult and time consuming process which results in delayed arrival of the respective services to the victim location, sometimes which also leads to victims death. So, here we are proposing a system which is basically an app which tracks the victim's location via gps service and sends the location to the respective emergency service provider. So by accessing the exact location the service provider can reach the victim much quicker which would result in less time consumption and a faster service.*

Keywords- Emergency services, Internet of Things , GPS

I. INTRODUCTION

Due to the huge population in our country the emergency services like Police,Ambulance and Fire Services undergo through a lot of pressure. These are very important services and their availability at all times is very essential. All these services are controlled by a centralized control system. In time of an emergency the victim needs to contact the required service via a helpline number who in turn transfers the request to the nearest service provider .

This whole process is very time consuming and can even lead to some critical situations. In this method the victim needs to tell his location or address via phone to the helpline. The helpline uses cellular tracking sometimes which is not so accurate . This leads to delays in arrival of the service which can even lead to victims death too in case of an accident or fire.

So , instead of contacting a helpline ,it will be very helpful for the victims if they can contact the officials near them directly. This reduces the delays in arrival times and with wide availability of smartphones now a days with everyone this can also be very easily implemented.

Our solution to this problem will be an application which detects the location of the victim using global positioning system service via satellites and sends the location of the victim to the nearest service provider.

As it includes all the necessary emergency services under one platform it will be very easy and convenient for the victims to request for a particular service. Just by tapping a button on the app it will connect you with the respective service and sends your location to the provider.

By collecting the live location from victim it will also be very easy and simple for the service provider to reach the victim. This will also ensure that the service will reach the victim in minimum time thereby minimizing losses.

II. RELATED WORK

Currently when a victim faces an emergency situation he/she needs to contact the respective emergency helpline number via phone. These numbers are 108 for Ambulance,100 for Police and 101 for Fire Service.

The helpline unit then transfers the message to the appropriate officers in the areas near to the user. The officers after receiving the information from helpline unit about the emergency and about the location of the emergency reaches out to the users in need.

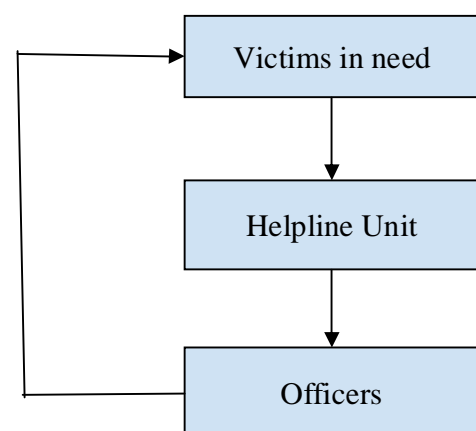A Schematic representation of the above process is given below

Fig 1: Overview

The existing location tracking systems does not have a light-weight backend.It involves data transfer via hypertext transfer protocol (HTTP) running on a central server which lacks scalability features. The data which is transferred from the end modules consumes a lot of internet bandwidth and is not so efficient. Location data which is transferred involves media like SMS,Email etc. These methods are not accurate and they consume a lot of time which should not happen in case of emergency.

The emergency request should be sent in real time and the backend should connect the officers with victims in minimal time .

The proposed solution eliminates the wait times considerably.

III. PROPOSED SOLUTION

In the proposed solution the emergency service officers will have a smartphone application or a location tracking hardware on their vehicles. This system will stream the location of the officer to the server continuously. The victims i.e., the people in emergency will have an application installed on their smartphones. When in emergency, by clicking a button in the app an emergency request will be generated. The request will fetch the victim's location and contact details and send them to the nearest officers related with that type of emergency. As the officers will get the live location and contact details,it will enable them to serve the victim in minimal time thereby reducing time delays.

The proposed solution is very useful because of its capability to handle a growing demand and ease of implementation. For data processing the system uses big data and a very light messaging system for enabling data communication. Thus, it is equipped to meet the needs of victims in a country like India where huge population usually results in system failures at high demand times.

The system will also have a database which stores the data of users who already registered on the app, so that it is not necessary for the users to enter the data every time
they trigger a request.

IV. IMPLEMENTATION

Currently HTTP protocol is used to communicate the location data with the servers. In our solution we replace it with a better and light weight protocol known as Message Queue Telemetry Transport (MQTT) which reduces the

internet bandwidth consumption at the data collection end. The solution involves two steps- First one is collecting location data of officials via MQTT and sending it to MongoDB cluster. In second part the user triggers REST API with his/her location. This location is compared with the locations in the database and the nearest official will be assigned to the user.

Collecting real time location data from every official is a very strenuous process, this can be solved by having a smartphone application for the officials too .The officials can login into the officials app using a unique user id and password. It will also have an option to turn off live location of the officer when he is off duty.

The application which the user has will have three cards in it for ambulance, police and fire service. The user when in need will have to click on the respective card, of the type of service needed.

Clicking on the card triggers an emergency request to the respective officials nearby. The live location of the user is captured and the respective service which is requested arrives to the location .
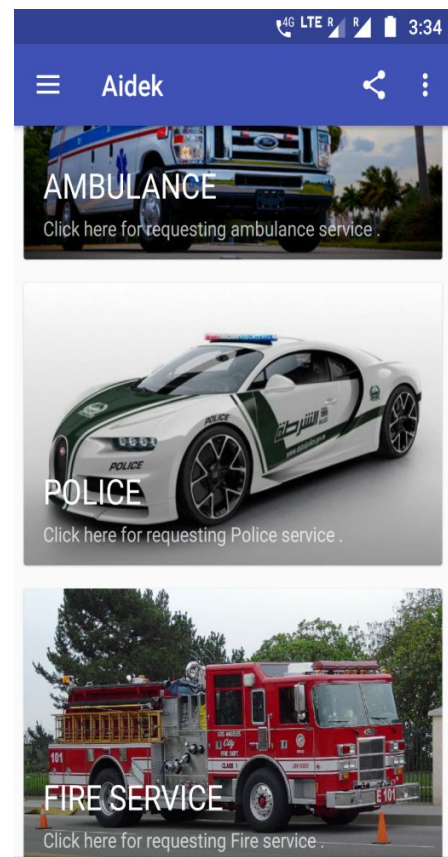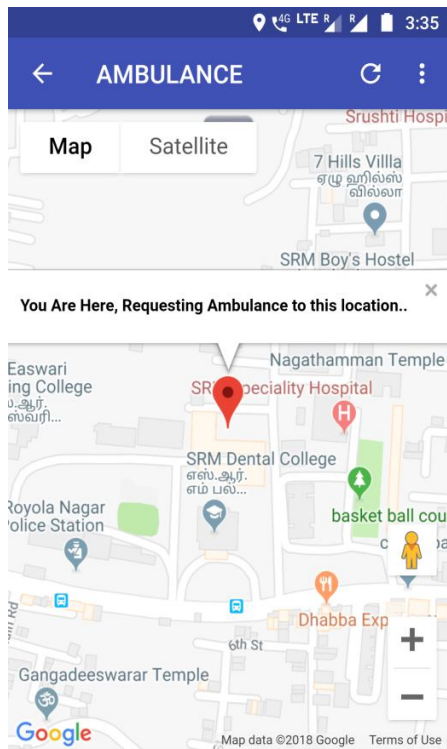

Fig 2 : ScreenShot 1

Fig 3: Screenshot 2

V. CONCLUSION AND FUTURE SCOPE

Thus by implementing the above solution we can ensure that the users will be served within the stipulated time without any sorts of delays thus ensuring a better chance of problem solving and thereby a better living.

We can still improve the limitations of the above application by adding more services to the existing application. By ensuring there will be no wait times in requesting services. By expanding the application's availability to every nook and corner of the country.

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