Design and Implementation of real time vehicle tracking system using GPS

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Abstract- *GPS tracking has many uses in today's world; the system can be used for tracking many things unlike car, buses, children or any other equipment. This paper gives detailed information about reliable and accurate real time tracking system using global positioning system and also global system for mobile communication (GSM) provide communication services which was designed and implemented successfully in early years. The system track the location of a portable unit and sends the position to the tracking server. The Global positioning tracking system includes portable tracked device attached to an any equipment, vehicle or any person and the tracking center where the location of person is observed The tracked device receives its location from the GPS and transmit these location as text message via GSM module to the tracking server, tracking server is nothing but simply a personal computer which having many interface programs to shows the location on Google maps using Google Maps application programming interfaces. The testing of the system shows that the system which we implemented are being accurate, real time, low-cost, real time and suites for various applications.*

Keywords- Global Positioning System, Vehicle tracking, Real-time systems, web application, mobile device.

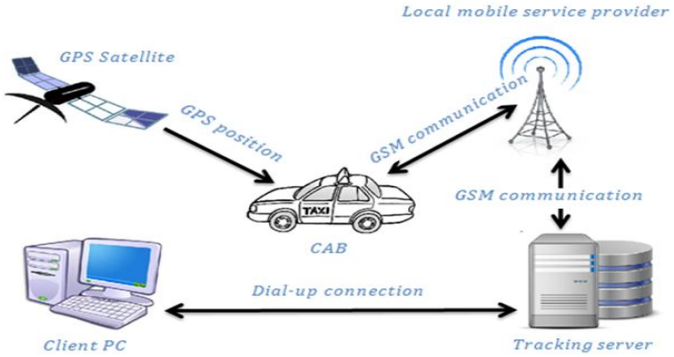
I. INTRODUCTION

The Real Time vehicle tracking system and Passenger Information system is a s system that shows real-time locations of the vehicle. Now a days there are increasing demands for the tracking devices. Tracking devices can be a life saving devices at the time of disasters.

We can use this tracking system to keep track of peoples. Tracking provides some important services like, find out location of stolen Assets, keep track of employers to monitor where they are and what they are doing all times during the workday, to control movements of smaller children when they go missing and also use for many other purposes. Location based services needs the development of more reliable and accurate positioning tracking systems. Many services like Google Maps are provided for people .Although such services offer useful information for travellers.

II. OVERVIEW OF THE SYSTEM

A Location-dependent Service (LDS) is an information service which can accessed with mobile devices via mobile network and utilize the geographical position of the mobile device.



As shown in the above figure there are different components of the Real time Navigation system.

Like

1. CAB
2. EMPLOYEE
3. SATELLITE
4. TRACKING SERVER
5. OFFICIAL WEBSITE(client pc or mobile)
6. MOBILE SERVICE PROVIDER

Initially CAB is connected to the SATELLITE after starting the CAB the Satellite will access the location of the CAB then the actual processing between the satellites and tracking server for interchange between both of them. The Employees can connect to the CAB for accessing location of the CAB using there Employee id and Password entering into the Official Website. After connecting to the Official website Employee will get the location via text message through service provider which can update location coordinate within 3 minutes.

III. IMPLEMENTATION OF THE SYSTEM

This device which designed contain Garmin 18-5 HZ GPS receiver having a capability of differential GPS (DGPS). A microcontroller unit and GSM modem as shown in fig.1.

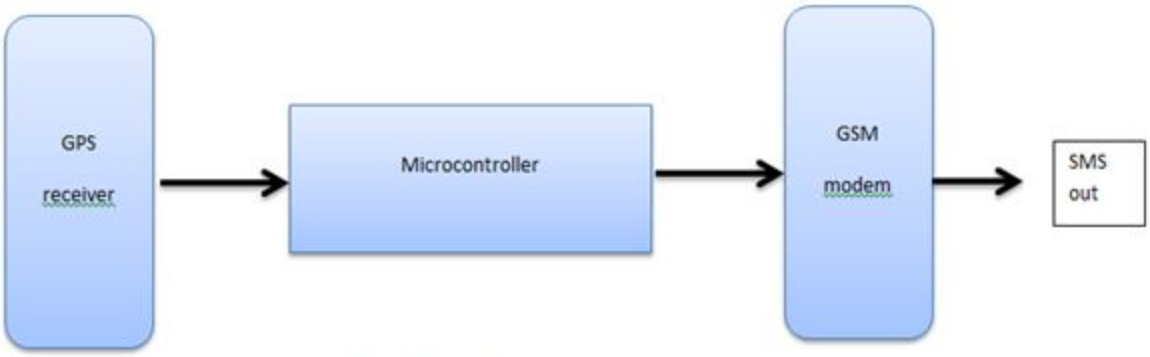


Fig.1 Mobile tracking device design

The GPS receiver receives the location coordinates from satellites in NMEA (National marine electronics association) format containing important information . The microcontroller further does some operations on location information in order to the algorithm stored in microcontroller, and extracts the exact information about longitude and latitude, then order the GSM modem through serial communication to send SMS containing correct information about the longitude and latitude of the vehicle .

IV. TRACKING CENTERIMPLEMENTATION

1) A PHP code has been written to connect to MYSQL database for getting longitude and latitude.
2) PHP code is write to convert the longitude and latitude from degree decimal minute format to decimal degree format according to display them on Google maps on our local web server
3) The two pieces of PHP code is integrate into one program.
4) A small JavaScript code is included to connect to Google maps. Embed a map and control it.
5) The PHP and JavaScript codes are all assemble in one PHP file and executed in the browser.

The tracking center data flow is shown in fig.2

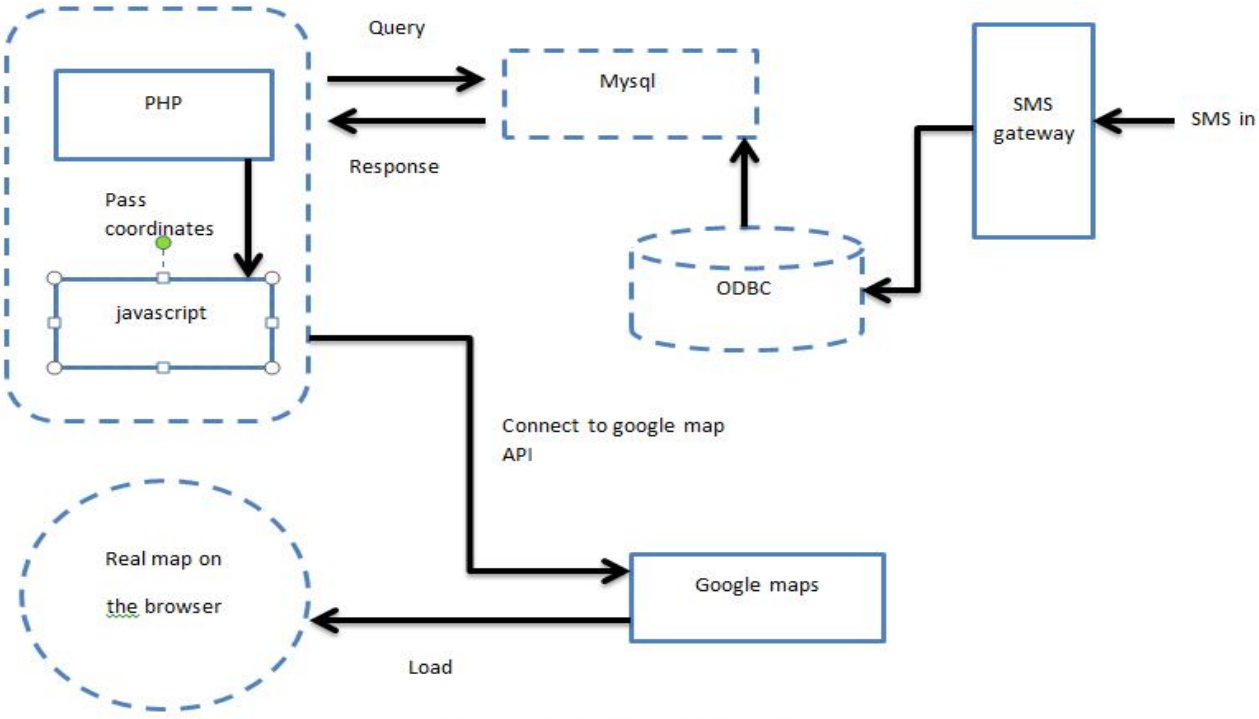


Fig. 2 Data flow of overall tracking

V. DISCUSSIONS AND CONCLUSIONS

It provides more security than other system and from the remote place we can access the system. After the completion of project, a GPS tracking system has been successfully implemented and designed . All objectives were accomplished with a reasonable degree of quality and reliability . The system has successfully received GPS signals, processed and transmitted it to the tracking centre. In the tracking centre the coordinates are displayed correctly on Google maps, which refresh automatically every 10 seconds to get the new location. The system can be evaluated by its accuracy and delay.

REFERENCES

[1] Design and implementation of an accurate real time GPS tracking system ISBN: 978-1-4799-3166-8 ©2014 IEEE

[2] GPS/GSM Enabled Person Tracking System Copyright to IJIRSET DOI: 10.15680/IJIRSET.2015.0403028

[3] GPS Vehicle Tracking System, International Journal of Emerging Engineering Research and Technology Volume 2, Issue 7, October 2014, PP 71-75

[4] D'Souza.C, Hounsell N.B and ShresthaB.P "Using Automatic Vehicle Location Data for Evaluation of Bus priority at Traffic Signals", IEEE Road Transport Information and Control,2012.

[5] What is PHP, URL: http://www.techrepublic.com

[6] Michaelkofler, "The definitive guide to MYSQL5, third edition", New York 2005, (PAGE 3, 4, 5, 6, 7).

[7] Official Google Map API website, URL http://code.google.com/apis/maps/faq.html/