Vehicle Tracking System

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Abstract: *In recent years, some travel agencies are using some technologies to track the vehicles. But it requires specific hardware to track the vehicles which are quite costly. In this proposed system we are replacing the hardware used for tracking with android phones to make it cost-effective and easy to implement using GPS (global positioning system) to track the vehicle using a server. As widely used devices like smartphones are used, low cost is required for implementing the system. In case of any misbehavior done by the driver of the vehicle, will be tracked at admin panel. Drivers mobile will be used in this system to track using GPS. The method used is very secure, reliable and cost-effective. Admin will hold all the report of the vehicle, like fuel entries made by the drivers, maintenance records, service records, last ride of every vehicle, route of the vehicle etc.*

Keywords: Android Application, GPS, Tracking, Fuel entries and maintenance forms.

1   Introduction

Now a days many people travel by using travel agencies vehicles and use their services, a problem then arises that the admin doesn't know the exact information about the vehicle maintenance state or the current location of the vehicle that is where our proposed system comes in action.

Our proposed system supports real-time tracking of travel agencies vehicles and it gives a way to use GPS services. The system uses GPS to track and locate the current location of any vehicles, it also tracks fuel entry forms and service and maintenance records of vehicles.

The current systems used for tracking are either costly for which each and every travel agencies cannot afford to implement the system or most of the travel agencies call the driver regarding the maintenance status of the vehicle and the current location of the vehicle. There may be chances of giving the false information to the admin by the driver or even some frauds or misuse done by the driver of the vehicle, so to keep the track of the vehicle we have proposed this project.

There will be specific ID provided for each vehicle's driver where the driver has to log in and the admin can track it by unique ID. Admin will get information like fuel details, maintenance details, and can take actions accordingly. Admin will confirm the start location and end location of the journey, which will be monitored by admin. Admin will pay salary according to the records of the journey of a driver through android app. Admin can fire or hire new drivers based on these records.

2   Literature survey:

Mainly [1], [2], [3], [4] are mainly focused and from them we have implemented the new type by trying to cover some disadvantages, [4] is a bit costly which we are trying to overcome by the elimination of hardware for tracking. We have studied all the basics of the information about GPS in [2] to solve tracking issue and to get more accurate location. The actual transmission between the driver's mobile phone and admin can be done using various constraints to compare them and making a good decision regarding what to use. We compared [2], [3], and [4] their uses, advantages and disadvantages used in contexts.

In previous system [1] hardware is used for the tracking which makes system quite costly we are overcoming this problem with the help of GCM technology and other methods. There are various methods followed through [1], [2], [3] for communication purpose. Communication between client and server constraint can be handled though various methodologies like GPRS, GCM etc.

3   Proposed work:

In existing system, there is an issue of time consumption while proposed system has tracking system which is given by GPS technology and it also uses GSM, Google map and GPS. In this paper, we explore the idea of [7] Mash up by integrating individual Web Services which can satisfy end users' requirements.

The implementation work is on Android5.0.4 (KitKat), API level 16 and above. It is supported on

most of the Android based mobile devices. Our system is designed for tracking and per on-site marketing personnel concepts.
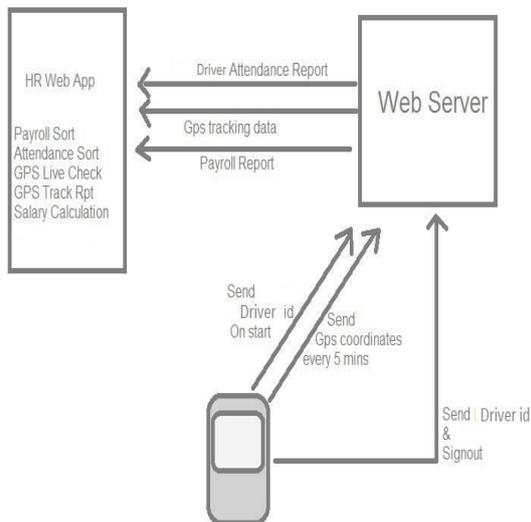
The system uses [7] web-based service which is hosted on a real time server to perform all the real time processing with consistency. The android device allows marketing agent to mark his attendance and then as soon as the app is started it also runs to continuously transmit the drivers GPS coordinates. GPS devices absorb the coordinates & shoot it to the server after fixed time, the server receives the

Information from device and stores it which has

It's unique ID. The server process the request and will show latest coordinates.

The system receives these coordinates and allows the Admin to check the coordinates of the user through a web application. The system also integrates person attendance tracking along with basic sort facility to the Admin. The system stores this data along with driver daily GPS tracking coordinates and shows it to the admin as and when desired using the admin login.

Our system allows for a robust marketing personnel tracking system using Restful web Service using android location tracking services.

The driver whenever make fuel entries he enters the data into the system where the admin can view every detail regarding the vehicles. The admin can even be reminded of maintenance dues, etc.

The admin is provided with reports along with attendance as well as GPS tracking reports as desired.

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3.1 System:

Our main system has 4 components; GPS tracking device (driver's mobile phone), server (admin) and database, GCM and client application as shown in the figure. The tracking system is by android phone that transmits position or location to the server through GPS or GCM network. The server is a PC which receives and monitors information and puts it into a database which can be accessed and searched using Google map.

3.1.1. System building blocks:

i] GPS technology
Global positioning system (GPS) is a system which combines 24 satellite of the USA which primarily used in a military application and after that they allow it for commercial use. The satellite sends the signal of radio waves or short wave pulses to GPS receivers. The receiver receives signal from 3 servers at a time and calculate the distance and use 3 of them as triangle technique [1]. For computing 2D (latitude, longitude) ad for 3D with addition of altitude 4 satellite after that average speed is calculated and direction is calculated hence GPS is the key technology.

ii] GCM
Google cloud messaging for the open source android is a service provider which gives a way to send data from driver's android phone to server from the same connection. GCM service handles issue of delivery of messages to the driver's android app running on targeted android system. It doesn't charge any cost, doesn't have any limitation of message length.

iii] Google map
It is widely used by various people, it is very popular and free. It provides map by satellite images [5].Google map is extracted version of Google earth which describes the online map using the services of the web server and a web browser. The program provides the plug-ins for the actual community to show an object in this purposed program such as the examples of various things is: 3D sketch up software application. Google earth evolutes own program called KML (keyhole markup language) which is the subpart of the XML (extensibility markup language.)That is written describe how the primary objects are renders

KML- based object can collaborate with the maps of Google.

3.1.2. System design:
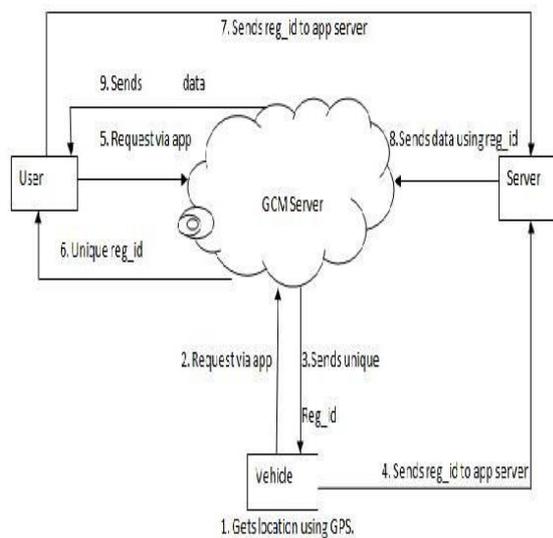
3.2. Implementation:

A] GPS tracking system:

This unit is based on Android phones, the basic requirement is 5.0.4 or more which can access GCM services. Driver mobile gets position using GPS. It will send details (Latitude, longitude, time) to admin through the use of GCM. Repeat the process after every fixed time.

B] GPS-tracking Firmware:

The firmware of GPS is build, it is compiled using open source compilers, contains a functions first function is initialized GPS device for the purpose of reading GPS. The second function is to initialize the unit OS GPS/internet/GPRS to setup constraints to warm up GPS engine. We have to do connection with Internet n/w & to connect GCM server via TCP/IP socket. The third thing is to initialize the MMC unit module into the SPI mode of the data Read/Write.

C] GCM server:

Once GPS module is connected to the Internet n/w, it sends Information about location to GCM server.
Server individually has 3 different functions. Receive to get information from GPS device, send data to the client device. Receive function opens a socket which is non-blocking to get data from various tracking units by time

D] Server (Admin):

Admin Receives the information or data from GCM server the storing the function & format the receiving

data into our database or DB. which is used or to provide actual -time query or problem response for the way or route of vehicles & the server sends the data to GCM server & GCM will send the location info to admin.

3.2.1. Hardware:

Server:
Processor 1.0 GHZ or more
RAM 2GB
Client device:
Android mobile
Processor 1 GHZ or more
RAM 1GB more

3.2.2 Software:

Server:
SQL server 2005
GPS enabled device
Client device: Android 5.0.4(KitKat)

3.3. Features
1) Load Balancing: Since the system will be available to the admin. The amount of load on server which will be available and managed by admin easily.
2) Easy Accessibility: Records can be easily stored and access other information respectively.
3) User Friendly: The Website and Application will provide user-friendly approach for all user.
4) Efficient and Reliable: Maintenance of all the database on the server, which will be accessible according to the user requirement with a very negligible maintenance cost will be quite efficient as compared to storing the customer data on the spreadsheet or physically in the record books.
5) Easy maintenance: Android Vehicle Tracking is design as the easy way. So maintenance is also easy.

3.4 Tools & Techniques:

GPS (Global Positioning System)
GCM (Google Cloud Messaging)

4 Conclusion

In proposed paper, we proposed a GPS tracking system which will track current actual position of vehicle & send it to the user who wants to shift by the vehicle. The system will reduce or compact the waiting time of the server. The server on request will

display the driver's current position of a vehicle on the Google Map. The technology of GPS (Global Positioning System) is allowing for changes in society. The graph of applications using GPS are constantly increasing. The cost of the receivers is dropping while at the same time the accuracy of the system is improving. This affects everyone with things such as faster Internet speed and safer plane landings.

5   References

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