

Vehicle Monitoring Using Telematics System

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Abstract — This paper introduces a Telematics in vehicle technology which uses GPS, cell phone technology and internet together for vehicle application. This paper also discuss about role of a Telematics system in location technology which provides a means to link the automobile to satellite based positioning technology via wireless connectivity. It also provides a practical applications and the way of communication occurs in vehicle through Telematics.

Keywords— Telematics, Android, On Board Diagnostic (OBD), ELM 327, CARiQ.

I. INTRODUCTION

Telematics is wireless communication system designed for the collection and dissemination of information that particularly refers to vehicle-based electronic systems; vehicle tracking and positioning; online vehicle navigation; and information systems and emergency assistance. The Telematics system within the car is comprised of a OBD unit that is connected via Bluetooth to the android device and android device wirelessly connected to a central server. Android device communicates location-specific information to a central server. Telematics has two basic principles:

Technology (Geographic position)

A. Two-way communication capabilities (wireless)

B. Location

The OBD is connected to the Engine Control Unit (or the on board computer), which enables enhanced services such as remote engine diagnostics and automatic airbag. Telematics is hot topic in industry today with articles appearing in various trade publications. This report will include a brief history of Telematics how a Telematics system functions and its practical applications. The purpose of this report is to provide information that can be used to determine the impact of Telematics on the independent automotive service and repair industry.

CARiQ is India's first M2M platform focused on vehicle to infrastructure (VXI) solutions. CARiQ is SAAS based hardware independent platform that can work with hardware

vendors of your choice. A set of hardware available to get quickly started and in due time we can add our own hardware to the platform or work with many of the hardware vendors who are already integrated into our platform. The platform works across different components to bring a unified experience to the user that is seamless and robust. The main building blocks of the solution are hardware device, Android device, gateway server. Hardware Device is fitted to the vehicles that will be monitored. Android Device gets data from OBD reader and transmits it to gateway server.

Gateway servers perform two critical functions. These collect data from the installed hardware units. The data collected from various vehicles is stored centrally in a MySQL database. All reporting, alerts, and analysis is derived from this central repository of information. Monitoring and alerting engine is system is responsible for monitoring and generating alerts as required and configured by the platform users. User Interface is really simple and cool UI to get you started with managing you fleet. The same data can be accessed securely over API's as well if you want to build your own applications or integrate our platform into your existing systems. We also have iOS and Android applications to show data over mobile devices.

C. Background Details

The automotive industry has come a long way since invention of the steam-powered automobile. Over two centuries of continuous industrialization as well as increasing disposable incomes across the globe have created a huge market for the industry. It has spawned an environment conducive for the growth of other industries and thus become a crucial cog in the development of economies worldwide. The automotive industry is past the gloomy days of 2008-09 with improved consumer spending strongly reflected in auto sales across geographies and OEMs. The number of automotive OEMs has increased, demonstrating the growing opportunity, and markets are brimming with strong competition. Markets, especially in developed countries, are saturated. To add to the changing nature of the industry, customer demands across geographies are considerably different result? Automakers must seek new business models that go beyond selling their

latest models. With a huge number of their vehicles already in the hands of customers, the opportunity for automakers is in after sales revenue streams. Essentially, the model needs to be based on continued spending on the same vehicle rather than a singular focus on driving consumption of new vehicles. This explains the renewed focus on telematics by the automotive OEMs. Telematics enables OEMs to wirelessly gather a wide range of data, from geo location and usage patterns to maintenance needs and performance information. Through telematics gateways, OEMs have the opportunity to track their customers even after the sale of the vehicle. Telematics also enables OEMs, their partners and independent content creators and aggregators to deliver content such as maps, weather forecasts, traffic conditions, news, stock quotes, social updates, message sand entertainment to the automobile.

II. PROBLEM STATEMENT

Design and Development of a complete automotive Telematics System that reads data from a GPRS data transmission device, interprets it and relays it in an effective and easy to use GUI. Data is either generated in the vehicle unit and gets relayed to the back office systems. This communication takes place either through the cell phone or the unit fitted in the vehicle itself. The communication and location mapping for the vehicle happens through a network of cellular towers and satellite systems.

III. STATE OF ARTS

This existing technology just allows us to get location details using GPS. Since the satellites are positioned at a high altitude, a GPS receiver is in contact with at least 5 GPS satellites at any time. Therefore GPS receivers never fail to detect the location of a vehicle. By using TDOA, the distance between the calculated and actual locations (the amount of deviation or location error) is 1 to 10 meters with 95% confidence level. However there is no service that provides user profiling and tracking activities [5].

IV. PROPOSED SYSTEM

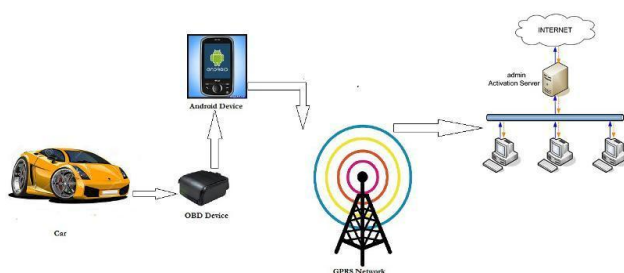


Fig.1 Vehicle Monitoring Using Telematics System

POD device is fitted into the standard OBD port of car. POD will collect data from OBD port. Now the different types of Android devices will receive the data via Bluetooth interface

from POD device. This collected information will be stored on server using Android device.

V. APPLICATION

There are numerous applications, services, software packages and hardware under the Telematics banner.

Currently there is no “all-in-one-solution.” Today’s driver may have multiple independent systems all wirelessly connected to his or her vehicles: cell phone, OnStar emergency service, Blackberry and a tag for automated highway toll collection.24 some current or future applications of automotive telematics include4:

A. Vehicle tracking: That monitors the location, movement, status and behaviour of a vehicle or fleet. This is achieved through a combination of a GPS/Global Navigation Satellite System (GNSS) receiver and an electronic device [usually comprising a Global System for Mobile Communications (GSM) and General Packet Radio Service (GPRS) modem] installed in each vehicle [2].

These components communicate with the user (dispatching, emergency or coordinating unit) and computer- or Web-based software. The data is turned into information management reporting tools in conjunction with a visual display on computerized mapping software. Advanced vehicle localization systems for public transport may employ odometer instead of GPS/GNSS.

B. Trailer tracking: That follows the movement and position of an articulated vehicle’s trailer unit. It uses a location unit fitted to the trailer and a method of returning the position data via mobile communication network or geostationary satellite communication for use through either computer- or Web-based software.

C. Satellite navigation: This technology uses GPS and an electronic mapping tool to enable the driver of a vehicle to locate a position, then route and navigate a journey.

D. Mobile data: That employs wireless data communications by using radio waves to send and receive real-time computer data to, from and between devices used by field-based personnel. These devices can be fitted solely for use while in The vehicle (fixed data terminal) or for use in and out of the vehicle [5].

E. Intelligent Transportation Systems: include automated highway and traffic control systems, the integration of private and public transport and tolling technology for bridges, highways and urban areas [3],[4].

VI. CONCLUSIONS

The automotive industry is at different stages of growth across geographies but given the market dynamics, Automotive

OEMs will, sooner rather than later, embrace Telematics fully across markets. Irrespective of the challenge, hovering on the horizon, information technology service providers have ample opportunities to create a leadership position in this space though multiple technology and domain offerings. This application is very useful in real word using which we can save the fuel and money contributing to cleaner environment.

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