Electronic Vehicle Key Tracking System (VKTS) Using Integrated GPS Technology and Smart Phone Navigation Application

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Abstract - An efficient electronic key tracking system can help in tracking the location of keys which in case are misplaced or lost from any place at any time. The idea proposed in this paper is about having an electronic vehicle key with non-detachable GPS locating device embedded in a micro controller and a Navigation Application that will monitor the position and location of the key. This non detachable electronic key with GPS locator will be manufactured by automobile companies and it will be included in additional accessories. This designed electronic key will be using Global Positioning System (GPS) technology and Google API to get the longitude and latitude coordinates associated with the key to get the precise location of the key. A smart phone application can help to keep the track and monitor the location of the key. The smart phones application can make use of Google Maps to display the precise location of the keys. In case of vehicle-theft, the user will be able to continuously monitor the location of the key and using the smart phone navigation can get the estimated time and distance to reach the location of the key on receiving emergency alerts or messages. In cases where the user forgets the key or misplaces them and if there is no mobility of the vehicle a reminder message will be sent to the user about the location of the key.

Keywords: **Vehicle key tracking; micro controller chip; GPS, GSM electronic keys; Google API, smart phone application.**

I. INTRODUCTION

Electronic keys, an idea which was primarily introduced in the '90s for vehicles such as cars or trunks , are a convenient way to remotely access your vehicle from a short distance, sparing you the time and trouble of inserting a key into ignition and turning it on. This scenario is similar for automobile of any type or size. Losing your electronic keys or misplacing them can be a stressful experience. Highly demanded need of information in this current situation requires availability of fast and accurate information service. One example is information about position. All this time information about position which can be obtained using a positioning tool which is easy to use, fast, and accurate is required.

The Global Positioning System (GPS) tracks the current position of any object in the form of latitudes and longitudes coordinates. This information related to the coordinates can be sent to remote server using smart phones or any computer connected to the web. The web based key tracking system is designed using a combination of embedded microcontroller chip and latest communications technologies such as smart phones, GPS, GSM, GPRS. The system encompass of key tracking devices, the centralized server based system and a web-based application. Through the key tracking, users will have the facility of determining the location geographically and other relevant information related to it. The web based system allows the user to browse location using Google navigation and interact with database server for key tracking details. The developed web application can support different operating system platforms and thus aid in getting the accurate details using the internet access.

The mobile data consumption in India is growing at the unprecedented rate. The availability of high-speed data connectivity is one of the primary reasons behind exploded data consumption in India. Fig 1 infers that on an average around 50 percent of the population uses navigation services on a regular basis in everyday life.
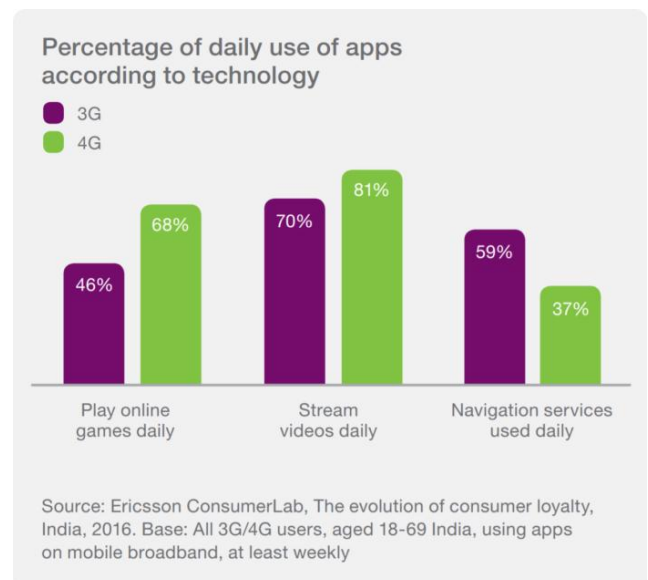

Fig 1. Fig: Growth of Smart phone navigation services.

The basic idea of this electronic vehicle key tracking system is to get the precise and accurate location of the misplaced or lost vehicle key through the aid of GPS technology and smart phone navigation application considering the time and distance to reach the location as primary factor. The electronic key tracking system proposed in this paper has following important factors to

be considered to be implemented as a whole.

- Electronic vehicle key with embedded micro controller chip which has integrated GPS module.

- Smart phone navigation application or any such web application such as Google Maps to keep track of the transmitted coordinates and location

- Database server to store and manage the information related to the location of the key.

II. RELATED WORK

The ideology of vehicle tracking system has proved to be a vast area for research and development since a decade. Many ideas have been put forward related to this topic. Tareq Monawar [1] proposed a vehicle tracking system which track the vehicle and offers to incareerate in a minimum period of time[1].

Tiyo Budiawan [2] system of coordinates response providers via SMS. This system uses aGPS sensor to detect vehicle position in the form of latitude and longitude coordinates. Those users who are using smart phone just send SMS with a some format given by the system. An Application will send SMS to the user containing location information. Users can locate where these locations via Google Map services .This System uses the main components which include a GPS module with EG-T10, Siemens M35 whith mobile phone,

ATmega162 micro controller, and LCD experimental results were conducted at a certain distances, at various conditions, several number of operators, and number of displaced position.[19]

III. PROPOSED METHODOLOGIES

1. Electronic Vehicle Key

   This Type of vehicle key initially will be a normal key after attaching an sensor based electronic device then will become an electronic vehicle key , which is embedded of GPS locating device

2. GSM/GPS Embedded Tracking Device

   This is embedded with GPS Locating device which will be fit in to the vehicle key.

3. Smart Phone Navigation Application

   The smart phone mobile application will be developed to tack the system using API Services of the Google Map.

   This smart phone application is used to track the key of the vehicle.

Fig: Procedural /Architectural Diagram of Electronic Vehicle Key Tracking System (VKTS)

IV. HARDWARE SPECIFICATIONS

- ❖ Vehicle Key

- ❖ Smart Phone

- ❖ Electronic Chip with GPS (Tracking) Locating Device GPS Locating Device.

V. SOFTWARE SPECIFICATIONS

- ❖ Operating system   : Windows 7 Ultimate.

- ❖ Coding Language   : Smart Phone Application with ASP.Net with C#

- ❖ Front-End   : Visual Studio 2015

- ❖ Database   : Sql Server 2012

- ❖ Other Advance Technologies : Ajax , Javascript ,CSS

VI. ADVANTAGES AND APPLICATIONS

En Electronic Vehicle Key Tracking System(VKTS) that has been introduced here can be used for variety of applicatons like in day to day regular applications also –

1. Misplaced Key Finding

2. Vehicle Key Tracking

3. Palmtop, Laptop, PDA, and Handheld.

4. Location Based Services enabled devices

5. Automatic SMS Alerts will be send to the user if you forgot your key with your vehicle for more than 30 minutes.

6. Instant Search is always a great place to start. Lost your car keys and you don't remember where you have lost it with the help of VKTS , you can easily find the exact location of your key.

VII. CONCLUSION AND FUTURE SCOPE

In conclusion, I am pretty confident that I have learned and introduced the main concepts of tracking of device. I hope this web based key tracking will be more popular in future and will be used by most of organizations once it is accepted by the user then it can be impliment by any orgnization which using physical keys for storing / using for some other purpose.it will be generlised key tracking device in future.

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