

Wireless Smart Child Tracking System for Indian Parents

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Abstract--- Mobile devices are increasingly relied on but are used in context that put them at a misuse place. Thus considered an approach that exploits spontaneous track of the mobile usages of the children. This is especially for parents who want to track their child activity. For such parents they are keep track their children in the way how they are misusing the mobile. Smart Child Tracking System (WSCTS) is a monitoring tool intended for the care-taking children usage. It is composed of two units; one that is carried by the child and a second one functioning as a supervision unit (similar to client / server relationship). The "unit" can be a variety of devices including, but not limited to, cell phones, PDAs etc. Each unit will communicate with supervisor directly or by-directly. Supervisor will keep a record of children about their online / offline status. Hence, supervisor can understand is somebody left the group or not. WSCTS will understand approximately a child is far away from his supervisor. Hence, head of the group can keep track children remotely. The objective of this WSCTS was to track each and every child in 10-25 age groups throughout the country, prepare the data base, use the parent's findings through on-line "WIRELESS SMART CHILD TRCKING SYSTEM" software and update it annually with a little effort. The key objective of this WSCTS Project is to monitor of the children activity. Frequent monitoring of children dashboards helps the parents and monitoring in focusing on the children where they are and what they are doing.

Index Terms: GPS, GSM, Tracking System.

I. INTRODUCTION

To have a comprehensive data base of children from 10-29 years. It covered each & every household of the state and a computerized database of all the children of 10-29years, with their SMS, call history, voice call, location, the reasons for out of house and other indicators, using the GPRS (General Packet Radio Service), GSM (Global System for Mobile Communications) and cloud computing technology. The objective of this WSCTS was to track each and every child in 10-29 age groups throughout the state, prepare the data base, use the findings through on-line "WIRELESS SMART CHILD TRCKING SYSTEM" software and update it frequently with a little effort.

There were several uses of this "WIRELESS SMART CHILD TRCKING SYSTEM" using the data generated from the child mobile usage. Some of these are:

1. Tracking each and every child in 10-29 age groups through unique CHILD CODE.
2. Tracking each and every SMS way communication from child mobile unit through unique CMC.
3. Tracking the location of the child just clicking the one single button
4. Tracking each and every voice call communication from child mobile unit through unique CMC
5. Tracking the internet usage of the child mobile.

6. Checking the child if he/she reached the school or not and alert will indicate to parents if child has away from school/college

It is composed of two units; one that is carried by the child and a second one functioning as a supervision unit (similar to client / server relationship). Each unit will communicate with supervisor directly or by-directly. Supervisor will keep a record of children about their online / offline status.

II. EXISTING METHOD

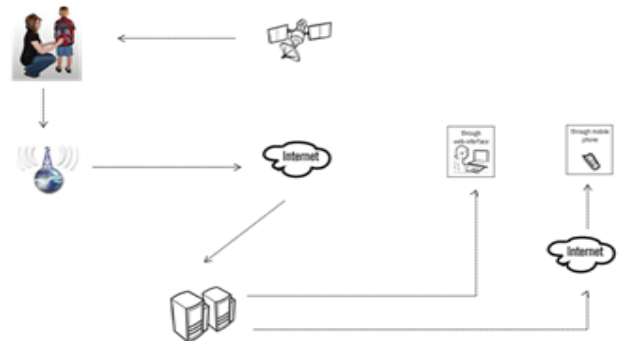


Fig. 1: Existing System

1. In the existing work, most of the child tracking device system need extra device to track the child. These devices can support only limited functionality.
2. In order to have additional features like GPRS, external memory card plug-in etc. The device configuration requires additional device and network elements.
3. When no internet connection, the parents cannot track the child.
4. The user can access his mail from mobile only through GPRS. Such mobiles are costly and the GPRS connection charge is also costly.
5. The server PC is connected with external GSM modem through serial cable or USB cable.
6. When the internet is not available, the child mobile data is send to the WSCTS GSM modem so that parents can receive the child details without any internet connection.
7. There is no need of GPRS and service cost is also less (SMS cost).

III. PROPOSED METHOD

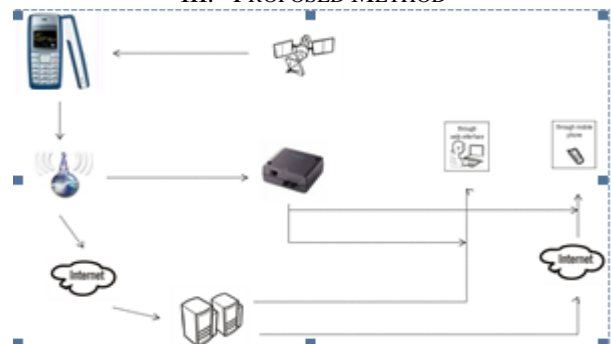


Fig. 2: Proposed method

- The proposed work aims at providing benefit for the parents without any extra installation for the child tracking.

IV. SYSTEM ARCHITECTURE

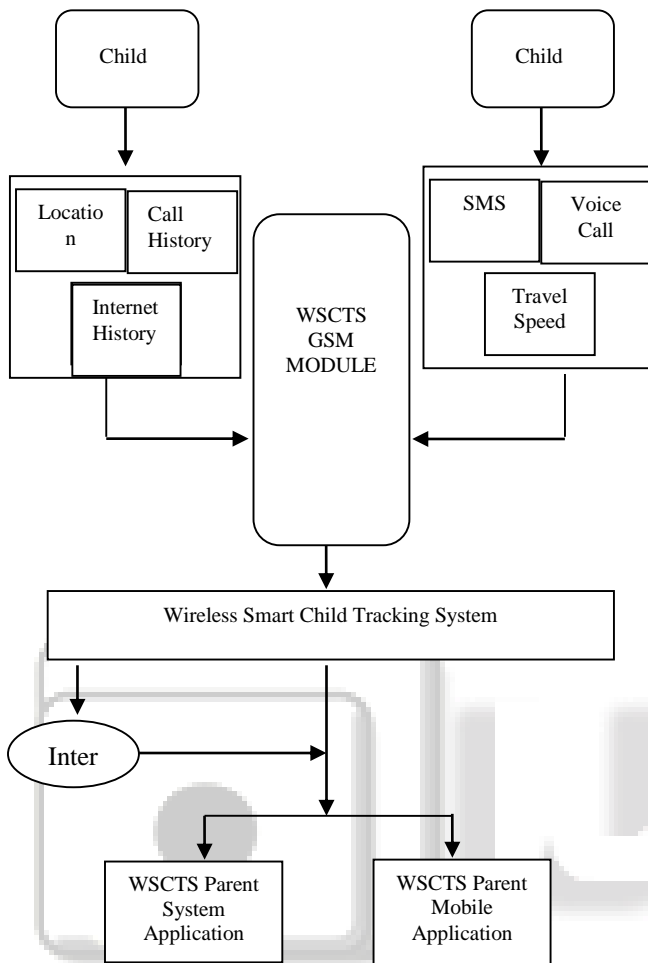


Fig. 3: System Architecture

V. INDICATION OF THE SCHEME

Wireless smart child tracking system is a 21st Century solution for monitoring and protecting children from potential threats. It is your comprehensive parental monitoring solution because it can monitor cell phone activities. Once installed, the WSCTS monitoring software is completely undetectable by the user and will begin recording the child's cell phone and computing activities. You can view the collected data from anywhere with Internet access by logging into your WSCTS user account.

Your loved one will never know their cell phone is being monitored because WSCTS Mobile Phone Spy Software remains completely hidden from the user. Once installed, you can secretly monitor their cell phone activities 24/7 from your WSCTS user account. Whether you are parent looking to protect your children or an employer looking to monitor company cell phones.

With children using cell phones for just about everything these days, you need comprehensive Parental Monitoring Software that can keep you informed of their activities. WSCTS is the last parental monitoring solution you'll ever need because it includes the advanced

surveillance tools you need to protect your children from potential threats, including:

- Location Tracking
- Call Recording
- Internet History
- Text Log
- Contact Details
- Reverse Phone Look-Up

There are a million reasons why you might want to monitor kids and employees on their Android smart phones and for each and every one of them, Mobistealth is your All-In-One Android Spy Software solution. Once installed, Mobistealth remains completely hidden and begins instantly sending information directly to your user account, such as

- Real-Time Location of User Even When GPS is not working (in buildings, etc.)
- Call Details and Complete SMS Data
- Browsing History
- Pictures or Videos Sent or Received
- Recordings of Actual Calls on Target Phone

WSCTS Android Spy Software remains completely hidden from the user while you have FULL access to ALL of their activities via your online account. To get started, all you need to do is download our Android Spy App to the phone that you want to monitor. Once installed, you can then access all of the data via your WSCTS user account from anywhere on the planet.

Wireless Smart Child Tracking System (WSCTS) is a monitoring tool intended for the care-taking children usage. It is composed of two units; one that is carried by the child and a second one functioning as a supervision unit (similar to client / server relationship). The "unit" can be a variety of devices including, but not limited to, cell phones, PDAs etc.

Each unit will communicate with supervisor directly or by-directly. Supervisor will keep a record of children about their online / offline status. Hence, supervisor can understand is somebody left the group or not. WSCTS will understand approximately a child is far away from his supervisor. Hence, head of the group can keep track children remotely.

Whatever your reason for wanting to discreetly monitor a cell phone activity, WSCTS Cell Phone monitoring Software is your comprehensive and cost-effective solution. To secretly monitor cell phone activities of your kid's phones and relay the data to your WSCTS user account. The following features are included in one unit of the android spy includes,

- Call Recording
- Call Details
- Text Message Logging
- Web History
- Contact Details
- Location History
- GPS Tracking
- SIM Change Notification

VI. TRACKING SYSTEM

Generally a tracking system is used for the observing of persons or objects on the move and supplying a timely ordered sequence of respective location data to a model e.g.

capable to serve for depicting the motion on a display capability.

A. Tracking in virtual space

In virtual space technology, a tracking system is generally a system capable of rendering virtual space to a human observer while tracking the observer's body coordinates. For instance, in dynamic virtual auditory space simulations, a real-time head tracker provides feedback to the central processor, allowing for selection of appropriate head-related transfer functions at the estimated current position of the observer relative to the environment.

B. Tracking in real world

There are a myriad of tracking systems. Some are 'lag time' indicators, that is, the data is collected after an item has passed a point for example a bar code or choke point or gate. Others are 'real-time' or 'near real-time' like Global Positioning Systems depending on how often the data is refreshed. There are bar-code systems which require a person to scan items and automatic identification (RFID auto-id). For the most part, the tracking worlds are composed of discrete hardware and software systems for different applications. That is, bar-code systems are separate from Electronic Product Code (EPC) systems, GPS systems are separate from active real time locating systems or RTLS for example, a passive RFID system would be used in a warehouse to scan the boxes as they are loaded on a truck - then the truck itself is tracked on a different system using GPS with its own features and software. The major technology "silos" in the supply chain are:

C. Distribution/Warehousing/Manufacturing

Indoors assets are tracked repetitively reading e.g. a barcode, any passive and active RFID and feeding read data into Work in Progress models (WIP) or Warehouse Management Systems (WMS) or ERP software. The readers required per choke point are meshed auto-ID or hand-held ID applications.

However tracking could also be capable to provide monitoring data without binding to fixed location by using a cooperative tracking capability, e.g. an RTLS.

D. Yard management

Outdoors mobile assets of high value are tracked by choke point, 802.11, Received Signal Strength Indication (RSSI), Time Delay on Arrival (TDOA), active RFID or GPS Yard Management; feeding into either third party yard management software from the provider or to an existing system.

E. Fleet management

Fleet management is applied as a tracking application using GPS and composing tracks from subsequent vehicle's positions. Each vehicle to be tracked is equipped with a GPS receiver and relays the obtained coordinates via cellular or satellite networks to a home station. Fleet management is required by:

- Large fleet operators, (vehicle/railcars/ trucking/ shipping)
- Forwarding operators (containers, machines, heavy cargo, valuable shipping's)

- Operators who have high equipment and/or cargo/product costs
- Operators who have a dynamic workload

F. Attendance management

One such use of the RFID technology is in tracking IDs of students. Using GPS IDs would resolve the decreasing attendance in schools by monitoring the whereabouts of students when they did not attend class (Jensen, 2008). It is also used to efficiently check attendance. Perks of this tracking system is allowing students to check out library books buy food in the cafeterias (Jensen, 2008). The GPS IDs also act as a security measure to monitor any unwanted visitors or an emergency locator if a student cannot be found (Jensen, 2008). In the Spring Independent School District, students have been using for many years in check that students are staying in school during the day. Since they've instigated the system, attendance has increase thus schooling funding has increased as well (Jensen, 2008).

Recently, debates over the Fourth Amendment have come up. Conservative students wish to keep their privacy and forbid to wear tracking devices, especially hackers can break into these systems to find out students' information. Since many schools, such as those in the Spring Independent School District, require students to wear the tracking IDs, students argue that it is an immediate violation of their privacy (Jensen, 2008). Yet, the Fourth Amendment is not violated in these cases since students are not tracked in their homes (Warner, 2007). Each school's decision over GPS IDs varies as states develop laws against these IDs in schools and as students protest for their privacy rights.

G. Mobile phone services

Location-based services or LBS is a term that is derived from the telemetric and telecom world. The combination of A-GPS, newer GPS and cellular locating technology is what has enabled the latest "LBS" for handsets and PDAs. Line of sight is not necessarily required for a location fix. This is a significant advantage in certain applications since a GPS signal can still be lost indoors. As such, A-GPS enabled cell phones and PDAs can be located indoors and the handset may be tracked more precisely. This enables non-vehicle centric applications and can bridge the indoor location gap, typically the domain of RFID and RTLS systems, with an off the shelf cellular device.

Currently, A-GPS enabled handsets are still highly dependent on the Location-Based Service (LBS) carrier system, so handset device choice and application requirements are still not apparent. Enterprise system integrators need the skills and knowledge to correctly choose the pieces that will fit the application and geography.

H. Operational requirements

Regardless of the tracking technology, for the most part the end-users just want to locate themselves or wish to find points of interest. The reality is that there is no "one size fits all" solution with locating technology for all conditions and applications.

Application of tracking is a substantial basis for vehicle tracking in fleet management, asset management, individual navigation, social networking, asset management, or mobile resource management and more. Company, group

or individual interests can benefit from more than one of the offered technologies depending on the context.

I. GPS applications

GPS has global coverage but can be hindered by line-of-sight issues caused by buildings and urban canyons. RFID is excellent and reliable indoors or in situations where close proximity to tag readers is feasible, but has limited range and still requires costly readers. RFID stands for Radio Frequency Identification. This technology uses electromagnetic waves to receive the signal from the targeting object to then save the location on a reader that can be looked at through specialized software (Warner, 2007).

J. Real-time Locating Systems (RTLS)

RTLS are enabled by Wireless LAN systems (according to IEEE 802.11) or other wireless systems (according to IEEE 802.15) with multi iteration. Such equipment is suitable for certain confined areas, such as campuses and office buildings. RTLS require system-level deployments and server functions to be effective. RTLS systems are affordable and accurate for industrial and yard applications. RTLS systems are not appropriate for all indoor applications.

K. Cloud computing

Cloud computing is a concept used to describe a variety of computing concepts that involve a large number of computers connected through a real-time communication network such as the Internet. In science, cloud computing is a synonym for distributed computing over a network, and means the ability to run a program or application on many connected computers at the same time. The phrase also more commonly refers to network-based services, which appear to be provided by real server hardware, and are in fact served up by virtual hardware, simulated by software running on one or more real machines. Such virtual servers do not physically exist and can therefore be moved around and scaled up (or down) on the fly without affecting the end user - arguably, rather like a cloud.

The popularity of the term can be attributed to its use in marketing to sell hosted services in the sense of application service provisioning that run client server software on a remote location.

L. Hosted services

In marketing, cloud computing is mostly used to sell hosted services in the sense of application service provisioning that run client server software at a remote location. Such services are given popular acronyms like 'SaaS' (Software as a Service), 'PaaS' (Platform as a Service), 'IaaS' (Infrastructure as a Service), and 'HaaS' (Hardware as a Service) and finally 'EaaS' (Everything as a Service). End users access cloud-based applications through a web browser, thin client or mobile app while the business software and user's data are stored on servers at a remote location. Examples include Amazon web services and Google App engine which allocate space for a user to deploy and manage software "in the cloud".

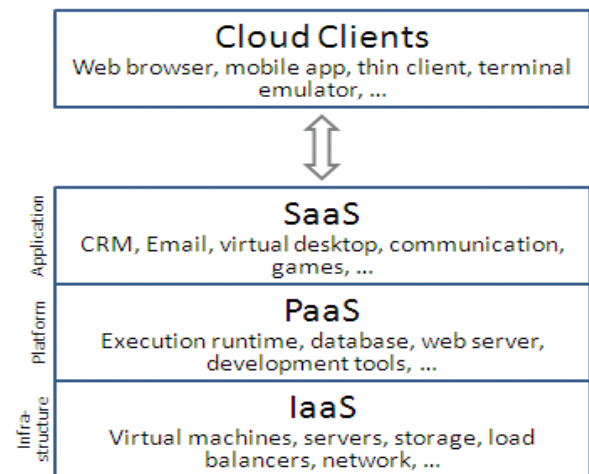


Fig. 4: Cloud Clients

M. GSM Modem

GSM (Global System for Mobile Communications, originally Group Special Mobile), is a standard set developed by the European Telecommunications Standards Institute (ETSI) to describe protocols for second generation (2G) digital cellular networks used by mobile phones. It became the de facto global standard for mobile communications with over 80% market share.

The GSM standard was developed as a replacement for first generation (1G) analog cellular networks, and originally described a digital, circuit-switched network optimized for full duplex voice telephony. This was expanded over time to include data communications, first by circuit-switched transport, then packet data transport via GPRS (General Packet Radio Services) and EDGE (Enhanced Data rates for GSM Evolution or EGPRS).

Subsequently, the 3GPP developed third generation (3G) UMTS standards followed by fourth generation (4G) LTE Advanced standards, which are not part of the ETSI GSM standard.

"GSM" is a trademark owned by the GSM Association. It may also refer to the initially most common voice codec used, Full Rate.

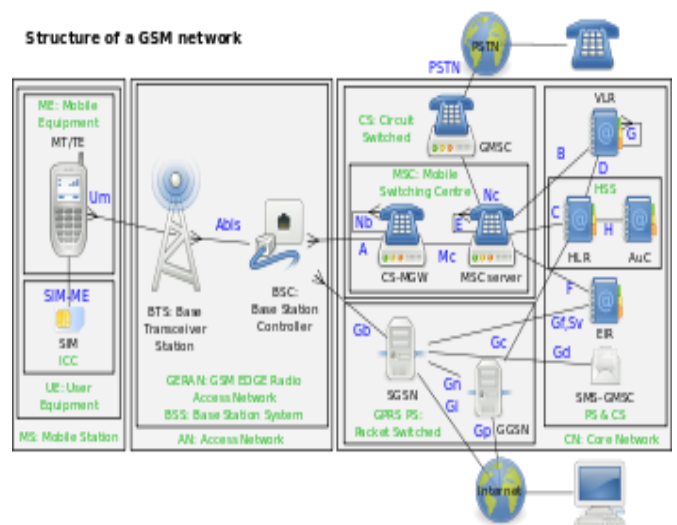


Fig. 5: The structure of a GSM network

N. GSM service security

GSM was designed with a moderate level of service security. The system was designed to authenticate the subscriber using a pre-shared key and challenge-response. Communications between the subscriber and the base station can be encrypted. The development of UMTS introduces an optional Universal Subscriber Identity Module (USIM), that uses a longer authentication key to give greater security, as well as mutually authenticating the network and the user, whereas GSM only authenticates the user to the network (and not vice versa). The security model therefore offers confidentiality and authentication, but limited authorization capabilities, and no non-repudiation.

VII. CONCLUSION

Thus the proposed system eliminates the problem of tracking the child without internet. This service for mobile phones compared with existing system provides a service with reduced cost equivalent to the existing service where there is no extra installation on the child mobile and user need not get connected to GPRS network to track the child.

VIII. FUTURE ENHANCEMENT

In the future to improve our tracking system features to hide the tracker application in the child device and improve the performance of the system. To enable multiple child track system, that is the main scope for the future enhancement. Due to lack of SMS facility in the Indian networks are planning to improve the GSM modules so that we response ASAP.

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