TRAILTRACKER

The Next Generation of Physical Security Surveillance

Take Control of Your Personal Safety

A Surveillance Method and System Developed and Patented
by Greenline Analytics

US Patent No.: US 10,045,156 B2

Demo App, Summary and Prospectus Accessible at

http://trailtrackerdemo.com

1. EXECUTIVE SUMMARY

A Public Surveillance Utility Supported By A Subscription-Based Service That Allows Users To Identify And Track Anyone Anywhere

The technological innovation known as TrailTracker (Patent No.: US 10,045,156) constitutes a method and a system of indiscriminately collecting everyone's mobile phone beacon data in order to compile in a cloud-based archive a comprehensive portrait of each person's public movements, including identities, geographical trails, speeds and motions. Utilizing dedicated RF detectors and phones containing the crowd-sourcing app as the sensor grid, this surveillance service harvests only the unique unencrypted plaintext networking identifiers from the beacons regularly broadcasted by mobile phones (a default background process already performed by Android and iOS devices.) **TrailTracker does not detect or record encrypted communications like phone calls, text messages, contacts, phone numbers or user-entered internet traffic.** Employing advanced data analytics, other online sources of personal data, and synthesis with both maps and a variety of short-range and long-range video surveillance services, this security system generates tabular data, visualizations and personal profiles of everyone.

Anyone can download the free app to their mobile device to **create a "Guardian Angel" record of everyone near that device and access advanced "Call 9-1-1" features**. **Paid subscribers can** access the database to investigate specific GPS trails, view detailed personal profiles, and enable watchlists. Features include the capabilities to **track the detailed movements of anyone (known or unknown)** manually, **view detailed personal profiles** of anyone, **and enable text-message alerts** from proximity-based automated surveillance **of personally watchlisted individuals**, **groups or places** -- such as yourself, loved ones, registered drunk drivers, subjects of restraining orders, registered sex offenders, terrorist suspects, persons at risk of committing gun violence, other potential criminals, or high-crime areas. The watchlist also allows users to enable TrailTracker's built-in "hardware-free" **security alarm system for homes, schools, businesses and government offices that combines digital and video monitoring**.

By utilizing the watchlist, governments and law enforcement officers can multiply their manpower and warrantless capability for monitoring suspects and enforcing street traffic laws. By conducting a search, they can view **detailed crime-scene reconstructions** to investigate cases and acquire evidence acceptable for presentation in a court of law. Business owners can monitor employee behavior and augment inventory control. Advertisers like Amazon can assemble valuable individualistic marketing data on the verifiable habits and preferences of most people in order to refine targeted advertising capabilities. **Without violating any privacy laws or requiring substantial overhead costs to the service provider, the software-driven TrailTracker system can provide subscribers comprehensive physical security surveillance at a price that the average citizen can afford**. There exists no similar technology in the market of physical security surveillance; ownership of the patent equates to control of the new multibillion-dollar industry of mobile-phone-beacon-based physical-security mass surveillance (MOPS.)

2. WHAT DATA DOES TRAILTRACKER COLLECT?

Often transmitted every second that a mobile phone is powered on, plaintext networking beacons serve as a virtual bread-crumb trail tagged with a digital license plate. Data recorded by TrailTracker includes beacon-embedded serial numbers unique to an individual mobile phone, such as the Wi-Fi Media Access Control (MAC) address, the Bluetooth MAC address, the Temporary Mobile Subscriber Identity (TMSI), the International Mobile Subscriber Identity (IMSI), the International Mobile Equipment Identity (IMEI), along with other serial numbers identifying the device on a cellular network. This surveillance method also collects semi-individualistic information elements contained in these beacons that advertise certain attributes of the phone. Such data includes the specific Wi-Fi networks to which the owners have configured the originating phones to connect, the Bluetooth class of device, as well as advanced Wi-Fi networking capabilities, which collectively create a fairly unique digital signature.

TrailTracker indirectly determines the precise locational origin of each detected beacon's transmission to within less than a meter through three-dimensional geographical triangulation employing four or more GPS-enabled local sensors that utilize locational methods such as wireless fingerprinting of areas and received signal-strength indication for the cellular, Wi-Fi and Bluetooth signals detected from mobile devices. TrailTracker does not read or record the GPS data of a mobile device that does not already function as a TrailTracker sensor. Collectively the Wi-Fi, Bluetooth and cellular beacons from mobile devices can transmit multiple times every second to several TrailTracker sensors in close proximity, allowing TrailTracker to ascertain through triangulation numerous highly precise geographical "bread-crumb" coordinates that help to produce an exceptionally accurate record of a geographical trail. TrailTracker collects the plaintext networking utility data from all mobile phones that, only when aggregated by numerous sensors and stored in a central archive, can illuminate the public movements of identifiable persons. TrailTracker amplifies this data collected by its sensors with various personal information from public databases and third-party data vendors.

3. HOW IS THE DATA COLLECTED?

TrailTracker employs millions of local sensors in the form of both dedicated RF scanning devices (cost = $500 per unit, range = 1.5 square miles) and smart phones with the free crowd-sourcing TrailTracker app installed. These two forms of detectors sense the regularly repeating unencrypted RF beacons transmitted from mobile phones, including unique serial numbers, recorded Wi-Fi networks and class of Bluetooth device. The app serves both as a portal to the database AND a crowd-sourcing sensor that works in the background on any smart phone with the free app installed. Subscription-based access open to anyone allows app users to utilize the portal to identify, track and monitor virtually any person carrying a mobile phone virtually anywhere. Aside from subscribers, nonsubscribers can also use the free app as a physical security surveillance sensor that will constantly monitor their surroundings 24/7 in order to provide law enforcement officers and civilian subscribers detailed data on the identities and GPS trails of everyone who passes in the proximity of the phone. Anyone with the app installed can enjoy a high degree of confidence that investigators will solve virtually every crime that occurs within the phone's proximity. Moreover, nonsubscribers will have a record of people's movements in their proximity that, when merged with records from other sensors, they can access in the future if they later decide to subscribe to the service. Although some dedicated sensors will also be utilized to gather the data too, the millions of smart phones that will have this free crowd-sourcing app installed will function as the primary sensors for this system. In other words, the vast majority of the hardware costs for the sensors has already been paid for in the initial cost of the smart phone by people who will download the app in the future. Customers who want the enhanced quality and reliability of surveillance provided by dedicated high powered sensors can purchase and deploy these specialty detectors themselves, in a simple process similar to installing an Internet router. TrailTracker amplifies the data collected by its sensors with various personal information gleaned from public databases and purchased from third-party data vendors.

4. WHAT DOES THE PROCESSED DATA INCLUDE?

Naturally, an enormous list of serial numbers tagged with time stamps and geographical coordinates would not constitute a digestible presentation of information for the average consumer, nor even for a professional investigator. TrailTracker extracts from this raw beacon data all information potentially relevant for a criminal investigation. TrailTracker then amplifies this processed data with related information on people's identities and movements acquired from other data collection services, free online personal-data archives, video surveillance collection companies, and a TrailTracker-based outsourcing private-investigator utility. In response to a subscriber's specific query, TrailTracker generates a simplified presentation of the relevant information from its database in a user-friendly chart complemented by visualizations on Google Maps, Google Street View and local video surveillance. Users can search based on a person's identity or a geographical location to view a detailed chart displaying the data collected from mobile phone beacon events, visualizations illustrating much of the data, links to detailed personal profiles of individuals, and an option to watchlist selected persons or places. Users can overlay TrailTracker data on private video surveillance systems or public feeds from partnerships with companies that conduct and resell long-range aerial video-surveillance, like the San Francisco-based startup Planet and Dayton-based Persistent Surveillance Systems. These sources provide subscribers with reliable 24/7 video feeds of populated areas generated by miniaturized satellites, low-flying drone swarms, standard commercial drones and camera-mounted Cessna aircraft. Visualizations aside, TrailTracker data includes:

> Name, home address, work address, serial numbers of used mobile wireless devices, beacon-event time, beacon interval, duplicate beacon interval, visit duration, device location, surveillance-zone center, zone radius, proximity to center, velocity, average speed, lingering, stop-and-go, rapid acceleration, overlapping, frequent trajectory deviation, frequent visitor, infrequent visitor, associates, signal loss, average signal loss, frequently visited sites, high-crime areas, known locations of CCTV video, and other personal information

5. HOW DOES A SUBSCRIBER USE THE SERVICE?

Demo App Accessible at

http://trailtrackerdemo.com

Anyone can download the free app to their mobile device to (1) create a "Guardian Angel" record of everyone near that device and (2) access advanced "Call 9-1-1" features that relay to the dispatcher all of this relevant data. Subscribers can utilize three principal additional features of this surveillance service: 3) investigate specific GPS trails of either (a) previously identified people or (b) unknown people at a given location and time, 4) view detailed personal profiles, and 5) enable auto-monitored watchlists for people or places. Users can adjust filters available for most of the search criteria to refine and simplify the search results, limiting the chart and visual displays to certain specific people, speeds, etc. The default search results page includes an interactive map showing the general location of the identified subjects of the search during the designated time frame, overlaid with color-coded circular markers indicating their precise positions and thinner lines representing their traveling locational trails. Alternatively, subscribers can view the GPS-trail overlays on Google Street View, video or in chart form. Subscribers can save or share with other subscribers their configured search results. Options to enhance the data within search results and personal profiles include interfaces with third-party personal-data brokers for purchasing additional data on identified individuals, as well as a TrailTracker private investigator outsourcing service that subscribers can crowd-fund to track designated individuals. An optional automated alert system linked to personally generated watchlists and whitelists permits subscribers to receive an audio-visual alert about persons or places of concern when either the tracked person (which can include the subscriber or another person from the whitelist) enters or departs designated geographical zones or personal proximity areas during designated time frames, or an unknown person trespasses or makes designated suspicious movements in a designated zone at a designated time. By default TrailTracker configures but does not enable such a personal security alert and a home security alert for the subscriber.

6. HOW CAN TRAILTRACKER HELP ME?

By precipitating the advent of the new industry of mobile-phone-beacon-based physical-security mass surveillance (MOPS), TrailTracker has the potential to illuminate crime scenes, monitor suspects, deter crime and empower citizens with a powerful new tool enhancing personal and public safety. The broad range of potential applications include

1. Guardian-Angel Proximity Monitoring (free)
2. Advanced "Call 9-1-1" Capabilities (free)
3. Home Alarm and Personal-Proximity Alarm
4. Locating and Monitoring Loved Ones
5. Automated Monitoring of All Criminal Suspects
6. Crime Scene Reconstruction: Everyone's Identities and Movements Recorded
7. Immigration Control: Pinpointing Illegal Crossings and Identifying Everyone
8. Rescue Operations In Disaster Zones And The Wilderness
9. Identification Despite Poor Visibility
10. Dissuading Criminals With a Daunting Surveillance Dragnet
11. Automated Street Traffic Surveillance
12. Marketing Research for Amazon's Targeted Advertising
13. Employee Monitoring and Inventory Control
14. Lie Detector: Immediately Corroborate Claims About Locations and Travels
15. Military Surveillance: Tracking Targets, Identifying Belligerents

7. HOW COSTLY, UNIQUE AND PROFITABLE IS THIS ENTERPRISE?

For the relatively small expenditure of $50 million in the first year and $30 million per year in subsequent years to develop and maintain the physical surveillance service, the unique proprietary TrailTracker method and system offers the potential for billions of dollars in profits per year to the company licensed to sell the service. The costs amount to a relatively minimal investment due to TrailTracker's identity as a service that (1) chiefly functions on software-driven mechanisms devoid of physical infrastructure owned or maintained by the company, (2) partly outsources to services directly paid for by subscribers (in addition to the subscription fee), and (3) represents a high-publicity technology that may not require substantial additional advertisement. Moreover, federal grants for homeland security and law enforcement innovations may assist with the modest development and maintenance expenditures. Revenue generated from subscription fees to individual subscribers, corporate and government contracts, data-mining partnerships with companies like Amazon as well as sales of dedicated sensors can also help to offset remaining costs. With the potential to create and dominate the new industry of mobile-phone-beacon-based physical-security mass surveillance (MOPS) through exclusive U.S. proprietary rights to the foundational method and system for that industry as well as an absence of proprietary barriers to business in other countries, the company licensed to sell the TrailTracker service may encounter only minimal market competition. Moreover, the likelihood that this company will accumulate a vast database of virtually everyone's historical movements everywhere indicates that no other future startup company, including any that infringe on the patent, will have the capability to offer a comparable service that can rival the historical length and geographical depth of the data available through TrailTracker. The subscription-based service's general utility to society and individual utility to average citizens could, as indicated by the model of the Amazon Prime service, easily generate billions of dollars in revenue on a yearly basis.

8. IS THIS A PROVEN TECHNOLOGY?

The TrailTracker prototype successfully identified the home addresses of car thieves caught on camera in West Hartford, Connecticut in 2015 and 2017. While this technology represents an innovation in the field of physical security mass surveillance, the foundational technology for TrailTracker has existed as a bedrock of several industries for many years. Examples include

- GPS navigation and tracking
- Internet traffic routing
- Cyber-security
- Department-store marketing research
- Inventory management
- Mobile phones
- Cloud-based data storage
- Personal data brokers
- Street traffic analysis

Google in particular has engineered many of its services on this cornerstone. By repurposing and expanding existing mobile internet technologies, TrailTracker utilizes proven tech to create the new industry of mobile-phone-based physical-security mass surveillance.

9. WHAT ARE THE PRIVACY CONCERNS?

The TrailTracker surveillance sensors record only the unencrypted plaintext networking identifiers contained within the beacons regularly broadcasted by mobile phones. The recording includes a time-stamped geographical approximation of the site for each beacon's origin based on the quantifiable electromagnetic characteristics of the radio beacon detected by multiple sensors. TrailTracker does not detect or record encrypted communications of any kind, nor does it detect or record unencrypted personal communications that may include phone calls, text messages, contacts, phone numbers or user-entered internet traffic. Identifying people's residences in the tradition of the White Pages, TrailTracker's sensors also simulate digital private investigators that take note of every mobile phone user's regularly broadcasted digital license plate along with its moment-to-moment location. There exists no reasonable expectation of privacy for the unencrypted radio transmissions of network beacon data that TrailTracker does record, the only raw data collected by TrailTracker. The practice of collecting the unique identifying networking serial numbers of wireless devices constitutes an industry-standard requirement for internet technologies. Smart phones regularly intercept such packets of data from nearby wireless devices and relay that information to Google and Apple. Some of the optional capabilities featured by the TrailTracker service constitute tools that the company licensed to sell the service may choose to incorporate or excise based on privacy considerations, including: the assimilation of vast records of aerial video surveillance, detailed personal-data profiles, and the outsourced private investigator service. Both the method and the purpose of TrailTracker's personal-data collection policy continue the traditions established by societal precedents that include data mining by websites and apps, video surveillance, private investigators, the Edward Snowden revelations, and the existence of the Internet despite its inception of a new age of crime and existential threats. TrailTracker's privacy policy has justification from a persuasive legal foundation protecting both the collection of unencrypted networking beacon data and those personal-data collection services that provide critical societal benefits.

10. GREENLINE ANALYTICS

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Career Retrospective

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> Malone's methodical approach to trying cases has served the state well over the years, **said Chief's State's Attorney Kevin Kane**, the only member of the division who has served longer. "John's steady, reliable, dedicated, and hardworking," Kane said. "He's a role model for other prosecutors. He's thorough in case preparation and analysis. He's always willing to take on hard cases and do as much work as it takes to do it well."