

# **GPS Tracking and its Applications**

Being able to pinpoint the location of a device on planet Earth raises some interesting ideas and applications. Primarily, GPS (Global Positioning System) was intended to be released to the consumer market as a way to aid navigation.

However, since the price of the GPS technology has fallen, many companies have found new ways to apply it. Indeed, the price of associated technologies has also fallen dramatically since the inception of GPS, which has led to many innovations, amongst them “GPS Tracking”.

## **How GPS Works**

Before we look at GPS Tracking in detail, we first need to establish what it is about GPS that makes this such a unique and useful technology.

The principle behind GPS is that receivers are able to use the technique of “trilateration” to calculate their coordinates on Earth by measuring the time taken for signals from various satellites to reach them.

The GPS software will account for any irregularities in the signal strength and clock differences between itself and the GPS satellite network by using signals from four separate satellites to improve accuracy.

Usually the coordinates are then used to locate the GPS device on a map, which is either displayed to the user or used as a basis for calculating routes, navigation, or as input into mapping programs. For example, specific coordinates can be stored as waypoints allowing the user to retrace their steps by calculating the direction and distance to each waypoint that they have stored.

## **GPS Tracking**

In fact, it is this use which represents the simplest form of GPS tracking. The user is able, using a portable GPS device, to keep a track of where they have been, in order to be able to either retrace their steps, or follow the same path again in the future.

When combined with other technologies such as GPS phones, this also gives the possibility for other users of GPS to follow in the footsteps of the initial user; which can be a useful application of GPS tracking for field activities.

Where GPS tracking comes into its own, however, is when it is combined with other broadcast technologies such as radio. GPS watches, for example, can be fitted with a GPS receiver which is capable of calculating its position, whilst also broadcasting that using a miniature radio transmitter.

The signal is relayed to a central command centre equipped with GPS software systems which can track the position of the wearer, and either store it as a path, or relay that information to a third party.

That third party could be an anxious parent, or the police. In fact there are a variety of GPS phones and wristbands which are sold in conjunction with a service which enables third parties to find out where their charges are at any time of the day or night.

### **GPS Vehicle Tracking**

This is particularly useful when using GPS units attached to vehicles which have distinctive identification such as chassis numbers. The same principle applies as for a GPS tracking device designed to be worn by a human, except that the GPS is integrated within the vehicular electronics.

This serves two purposes. On the one hand, it provides the driver with an integrated GPS system, without the necessity to purchase a car navigation system, or a PDA-based GPS system, whilst also offering the possibility to relay that information via a radio or mobilephone transmitter.

In fact, these systems have already been tried in the field, primarily as a vehicle locator in the event that the vehicle to which the GPS vehicle tracking system is attached is stolen. The police, once informed, can find out from the control centre where the vehicle is, and proceed to track it physically.

A useful consequence of being able to use GPS vehicle tracking to locate a vehicle is that the manufacturer can also use the information to alert the driver as to when they near a service centre.

If, along with the GPS coordinates, the system relays telemetry information such as the status of the engine, time since the last service, or even information not relating to defects, the receiver of this information can make a decision as to what kind of alert to pass on to the driver.

### **Coordinated Tracking**

This also opens up the possibility to allow for coordinated vehicle tracking, in which GPS tracking is used to share location information between several vehicles, all pursuing the same end goal.

It is an approach that has been used successfully in conjunction with GPS fishfinder units which help fisherman to locate, track and catch schools of fish. These units are more sophisticated than the average GPS unit, having other features such as depth gauges, tide time information and so forth.

The basic GPS functionality is the same however, and units can either share that information with each other, or a central point. The central point can also be one of the fishing vessels, and it has on-board computer systems capable of reconciling all the locator information along with a map, thus allowing the different vessels to coordinate their actions.

This also has military applications, of course, where units can share, in real time, information about their location, even when line-of-sight is no longer possible. In the past, this was done by relaying often inaccurate map co-ordinate estimations; now the locations can be called in with high absolute accuracy.

### **Consumer GPS Tracking**

Despite its' hitech military and commercial fishing applications, as well as use in aviation GPS, the principal application of GPS tracking will be in providing an enabling technology to augment existing systems.

These systems will include cell phones and vehicles, usually in conjunction with a central point of service designed to keep track of the location. The reason for this is to keep the cost of the actual GPS unit down as much as possible in order to supply a useful technology to consumers at an attractive price.

About the Author: Guy Lecky Thompson is a successful freelance writer offering guidance and suggestions for consumers regarding [GPS tracking](#), [GPS](#), [GPS maps](#) and [tracking devices](#) (<http://www.1st-at-gps-tracking.com/>). His many articles give information and tips to help people save money and make smarter decisions.