

Magnalox: Live Tracking Overview



What is "Live Tracking"?

Live tracking (also known as "Near Realtime Tracking") means, that the latest position of a person or item can be traced while underway. A mobile device usually connected to GPS sends its positions to a central server, which in turn creates a map or position display.

Magnalox.net creates a display for Google Earth which updates itself in short intervals. The tracked position is shown on a three dimensional globe within seconds after the position has been transmitted. Google Earth is freely downloadable [»here](#).

Course, speed, elevation, timestamp and an adjustable number of the latest track segments are also displayed after clicking the flag marking the latest position. If you have already Google Earth installed, download [here](#) a static snapshot or open an animated simulation [here](#) (click in Google Earth on the folder to open it).

Magnalox.net provides all software and services required to achieve live tracking.

How does it work?

A PDA or smartphone transmits the latest GPS positions in adjustable intervals to the magnalox server using a mobile internet connection. The server saves them and converts them into a Google Earth "network link".

[Loxtrax](#) is the application required on the PDA or smartphone. It is a complete GPS navigation application freely [available](#) running on the PDA. It supports Moving Maps, POIs, track-display and -recording etc.

If no internet connection is available, the PDA buffers the positions. It starts uploading beginning with the latest position first when a connection to the magnalox server is available again.

The recorded tracks can be edited and annotated with texts, images, links, maps, audio, video etc just like every other magnalox.

What hardware is required?

No specialized hardware is required,

every PDA/smartphone running under Windows Mobile 2003 or later is suitable.

To transmit the data, the PDA needs a mobile internet connection. This is usually achieved by a cellphone taking over the role of a modem. The latest generation of smartphones has all required components (PDA, GPS and cellphone) on one small device.

The internet connection can be set up using GSM, UMTS, 3G networks, satellite phones, Bluetooth, WLAN or whatever is supported by the PDA.

The system works world wide, only the PDA's dial-up connection must match the wireless networks locally available.

Integrated hardware, meaning PDAs with built-in GPS or GSM or all-in-one solutions (GSM, GPS and PDA in a single device) are also suitable.

Most PDAs which used for street navigation and which are supporting Bluetooth can be used too.

Even old hardware like Fujitsu Siemens Pocket Loox 720 PDA running under WM 2003 SE and a Nokia 3660 cell phone were tested successfully.

What software is required?

On the PDA:

- The [loxtrax](#) software package, fast and easy to install via setup.exe or directly on the PDA via a .cab file.

The whole PDA software needs less than 140 kilobytes memory on the PDA. No runtime - libraries or other frameworks are required.

On the PC:

- The [Google Earth](#) application (the free version is sufficient)
- An [Internet- Browser](#)

Google Earth is available for Windows, Mac OS and Linux PCs.

All software required is freely available. The maps and street maps from Google Earth are also free.

What are the costs?

Private users can use the software and service from magnalox.net for free. Only fees for mobile internet access may apply, depending on the network, country and plan.

Compared to web browsing over a mobile phone, magnalox' live tracking needs only a fraction of the data volume usually required for mobile web browsing.

[GPRS](#) for example is a very cost efficient way to achieve mobile internet access because it is volume- and not time-based. This means, the connection can be held active during pauses where no transmission takes place without extra costs.

A standard GSM network supplier in Germany charges less than an Eurocent per position sent, cheaper plans for larger volumes are available. In other countries like Austria it can be even less expensive.

Is it complicated to use?

No, it requires only a few, easy to understand settings on the website and in the PDA to set up Online Tracking.

No further user interaction for operation is required once it is configured. The system even recovers from being turned off without user interaction.

It displays an easy to understand log of it's latest activities on the PDA.

The whole system can be operated completely wireless, no cabling is required. A suitable PDA usually weights less than 200 grams. Smartphones like the [Mitac Mio A701](#) are very compact.

Am I monitored?

No. The system is meant to increase security in sports like paragliding, hiking, horse-riding etc. The magnalox staff is not monitoring incoming data except for technical reasons in rare cases.

Additionally, the system can be very useful to present races or regattas to a larger audience over the Internet or in public viewing areas.

System Overview:



Features:

- continuous position updates in user definable intervals
- increases security for many outdoor-activities
- visualizes races and regattas for larger audiences
- easy to operate, can remain in the backpack
- works with most PDAs/smartphones running on WM 2003 or later
- uses mobile internet access: cheap and available in most areas
- can transmit positions over GSM, UMTS, 3G, WLAN, Satellite Phones, world wide coverage
- can transmit data over GPRS: volume-based and inexpensive, often less than a Cent / position
- generates low data volumes: fast and inexpensive
- worldwide access to tracks from wherever internet is available
- robust design: when interrupted, data is buffered until a connection to the internet is available again
- uses Google Earth as viewer application, displays the track on 3D satellite maps and street maps
- Google Earth runs on Macs, Linux and Windows
- full GPS navigation tool on the PDA with moving maps, POIs, tracks etc included. Supports VGA-displays and landscape orientation
- very small memory footprint: requires less than 150 Kilobytes on the PDA, easy and quick to install
- can run on many existing street-navigation PDAs
- can run on Windows Mobile Smartphones having a GPS integrated
- recorded tracks can be refined with GPS logs for very detailed tracks when back at home or in hotel
- tracks can be commented by viewers
- tracks can be displayed also in a web-browser, on Google Earth or on Google Maps
- tracks can be interactively displayed in web-browser with elevation, speed and pulse profiles in a timeline
- recorded tracks can be edited and enriched with texts, photos, maps, tags, audio, video etc on the web
- tracks can be supplemented with pulse data recorded using standard equipment from manufacturers like Polar, Garmin, Suunto
- modular concept: many hard- and software-configurations are possible
- no single-use devices required:
 - PDA can be used as MP3 player, photo album, email, organizer, web browsing etc.
 - most Bluetooth enabled mobile phones can be reused
 - most GPS mice can be reused
- inexpensive hardware: PDA with integrated GPS is for less than € 300, GPS mouse is for less than € 100 available
- existing hardware can in many cases be reused
- lightweight: less than 190 grams for a PDA
- replaceable batteries in many devices, even recharging over solar cells is possible
- runs on totally wireless configurations using Bluetooth: GPS + phone in the backpack, PDA in a pocket
- user definable colors, update intervals, number of waypoints in Google Earth
- password protected position data upload
- is easy to understand, displays an easy protocol, uses files as metaphors, no complicated symbols
- is flexible: customer-specific versions up to customer-specific portal websites on demand