

# TrackLab & GPS tracking

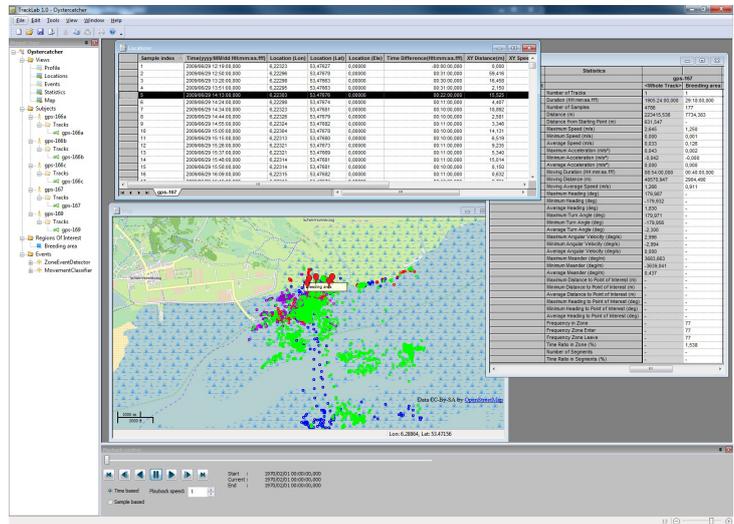
## Integrated solution for movement analysis

We all use location systems in our every-day lives, varying from navigation systems to GPS trackers. The abundance of location and tracking systems offers you an immense amount of data at low cost.

- But how do you use this data in professional applications or research projects?
- How do you extract meaningful information from this data?
- How do you enable other systems to interact with the data?

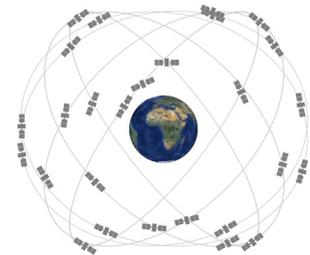
We now have the solution that answers all of those questions: **TrackLab!**

TrackLab is the ideal software tool for all your studies using GPS, enabling to you track human movement in a city, animals in the wild or farm animals on a pasture. TrackLab lets you import the GPS data in real-time or offline allowing you to choose the research method that best suits your needs. We collaborate with a number of developers of professional GPS tracking systems. The output of their systems is 100% compatible with TrackLab. Besides these selected hardware solutions, you can use different tracking systems because of the GPX and CSV import functionality of TrackLab.



### WHAT DOES IT DO?

TrackLab is our brand-new software tool for recognition of and analysis of spatial behavior and the design of interactive systems. It allows you to work with any number of subjects, in any spatial context, tracked by any type of positioning system. It uses the GPS data as input, which can be processed in real-time as well as offline. The collected data can be visualized, processed and analyzed. Furthermore, you can create interactive systems based on the generated data, which is available real-time.



### COLLECTING DATA

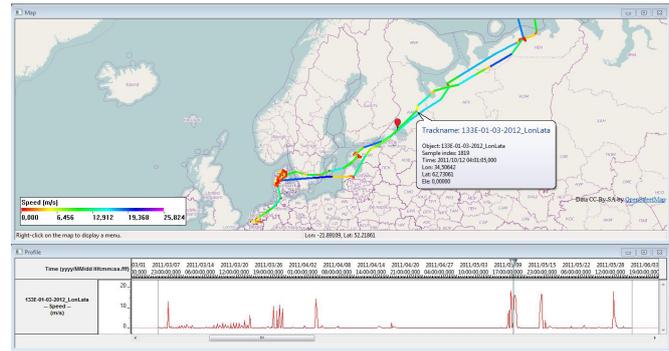


The Global Positioning System (GPS) is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the earth where there is an unobstructed line of sight of four or more GPS satellites. GPS is widely used in various applications, of which navigation is one of the most common applications. With the increasing availability of GPS trackers, GPS is now also applicable in research on movement of different subjects. You can, for example, use GPS to track wildlife, farm animals or humans during their outdoor activities.

GPS systems can store the location data or broadcast the data real-time. In urban areas, where sufficient network connections are available, it is possible to broadcast the data real-time. In rural areas with limited network connections, it is more convenient and cost-effective to store the GPS data on the device itself.

## IMPORTING AND VISUALIZING DATA

TrackLab allows you to import location data collected with the GPS system. Depending on the system you choose, the data can be imported real-time or offline. TrackLab supports the standard data format for GPS, GPX, as well as other file types in CSV format. The imported tracks can be visualized on a map within the TrackLab software on OpenStreetMaps or bitmaps, such as a detailed map with detailed vegetation or elevation information. The software allows you to visualize tracks of multiple objects simultaneously.



Visualizations include various trajectory styles and heatmaps. Furthermore the software offers track smoothing and can automatically remove outliers, improving the quality and reliability of your data.

## USER-DEFINED REGIONS AND CLASSIFIERS

Within TrackLab you can define regions of interest, to compute zone-related statistics or to automatically detect when a subject enters or leaves a specific zone. Besides detecting spatial events, you can define movement classifiers, e.g. to automatically label behavior as standing still, walking and running based on the speed of the subject.

## REAL-TIME FEEDBACK

Events related to zone-related behavior or user-defined movement classes can be saved in a log file or sent out in real-time, e.g. to a smartphone. This real-time feedback allows you to directly gain insight in the location and movement of the test subjects. Furthermore, it allows you to use this information as input for external application. You can for example present stimuli or trigger events based on the location and movement of your test subject.

## ANALYSIS

TrackLab provides you with a range of statistics relevant for analysis of location and movement, including various speed and distance variables. Statistics can be calculated for complete tracks or for specific zones or movement classes. The analysis parameters include distance and time (distance moved, speed), location (time in zone, distance to point), path shape (heading, turn angle, meander) and movement behavior (speed based classification) parameters.

## INTEGRATED AND FLEXIBLE SOLUTION

The combination of TrackLab and the GPS tracking system can be supplied to you as an integrated solution, including on-site installation and training. By doing so, we provide you with a turn-key solution ready to be used in your research. Furthermore, TrackLab is available as a stand-alone software tool, allowing you to select a different GPS tracking system or to keep on using your current system.

Beside GPS, TrackLab is compatible with a broad range of tracking solutions. When you decide to conduct a study at a location where GPS does not work, simply contact us for advice on a suitable tracking solution and keep on using TrackLab.

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