# OSGeo Journal

The Journal of the Open Source Geospatial Foundation Volume 1 / May 2007

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# Project Spotlights

# QLandkarte

*by Oliver Eichler*

There are many great open source tools like GPSBabel[1] and GPSMan[2] to manage and manipulate your private geo data, but none of them makes use of Garmin's proprietary vectorized maps. QLandkarte fills in the gap and lets you visualize these maps together with the geo data from your Garmin GPS receiver. It uses Troll Tech's Qt 4.2 library as the GUI toolkit and the Proj4 library for all 2D projections.

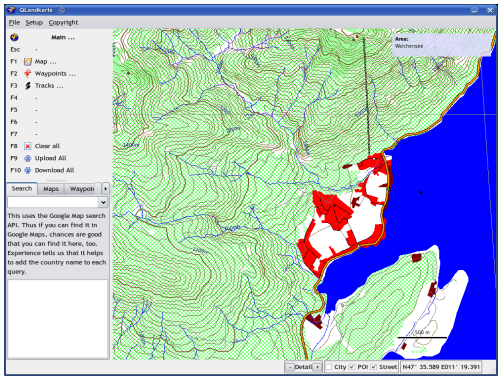

Figure 1: QLandkarte after start-up

## Features

- Supported devices:
  - GPSMap 60CS, 60Cx, 60CSx
  - eTrex Legend C
- Import map collections (needs *.tdb file, basemap and map tiles)
- Load single map tiles (*.img Format)
- Display map and object information close to cursor
- Search for places via Google Maps
- Search for geocaches via www.opencaching.de
- Maps:
  - Upload maps to device
  - Download map selection from device
  - Load / save map selection from / to GPX files
- Waypoints:
  - Upload / download waypoints
  - Create / move / edit waypoints
  - Load / save waypoints from / to GPX files
- Tracks:
  - Download tracks

[1] http://www.gpsbabel.org
[2] http://www.ncc.up.pt/gpsman/

  - View track information and elevation profile
  - Combine / split tracks
  - Purge / remove track points
  - Load / save tracks from / to GPX files
- Print maps to PDF or paper

## Overview

Figure **??** shows QLandkarte right after program start. Function and cursor modes can be switched by keyboard or mouse selection in the top left menu. User data will be listed in the tabs below.

There are three main function modes: maps, waypoints and tracks. The key assignment in each of these modes is displayed in Figure **??**. Keys F1 to F4 have static functions assigned that let you navigate your map. A dynamic zoom is done by scrolling the mouse wheel.

Each main mode has its own dialog in the tab widget, listing the available user data. Selected data can be removed with the DEL key as a general rule.

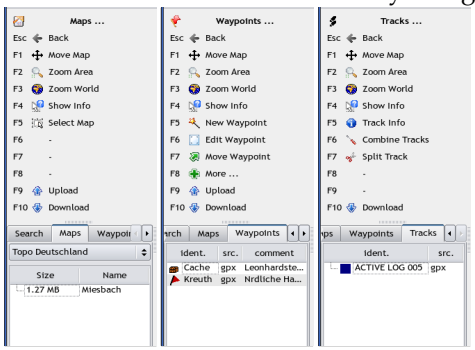


Figure 2: Function Modes

### Map Mode

In 'Map Mode' the current map collection can be selected from the combo box at the tab widget's top. To upload map tiles to the device they have to be selected by point-and-click in the map view area. Selected tiles from all collections are listed in the tree widget.

### Waypoint Mode

Figure **??** presents the waypoint properties dialog. Next to the usual fields like symbol, name and position, a distance for proximity alarms and a link to a web page can be given. The link is active and will open a browser.

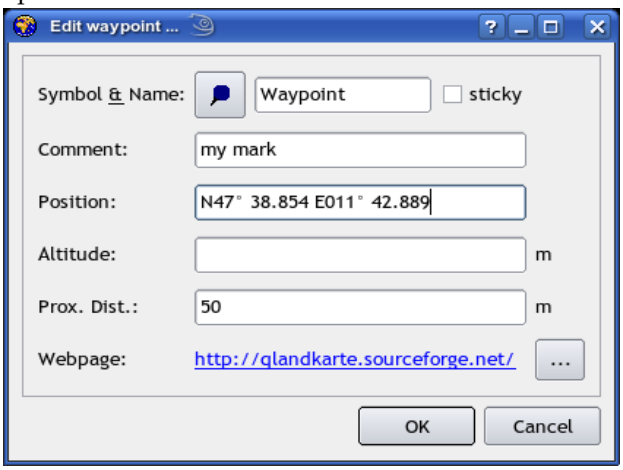


Figure 3: Waypoint Properties

A double click in the waypoint list will center the map around the selected waypoint. The 'Move Waypoint' mode is quite complex and should get special attention. A left button click on a waypoint will glue it to the cursor. Additionally a rubber band will span between the initial position and the current one, displaying the distance together with the forward and backward azimuths. See Figure **??**. In this state it is possible to switch the mode to the map navigation functions, allowing the user to move the map to the desired destination area. Once back in the 'Move Waypoint' mode the waypoint can be dropped by a second left button click or the operation is escaped by a right button click.

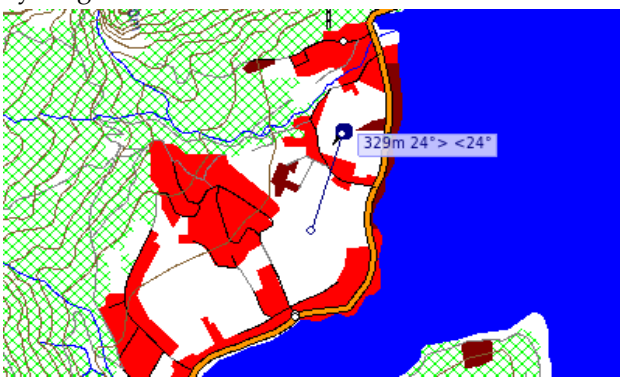


Figure 4: Moving a Waypoint

### Track Mode

In Figure **??** QLandkarte operates in 'Track Mode' . The track info view has been raised. A double click

in the track list will zoom the map view to fit the selected track. The track is displayed as bread crumbs on the map, as elevation profile and as table. All three views are linked together, thus if a track point is selected in one of them, it will get highlighted in the other ones, too. The visibility of track points can be toggled with the DEL key in the table view. This will gray shade the points in the table and prevent them from adding to the the track.

Multiple selected tracks can be combined into a new one. The current selected track can be split at any point. QLandkarte will not destroy the original data. It will create two new tracks as copy of the original one.

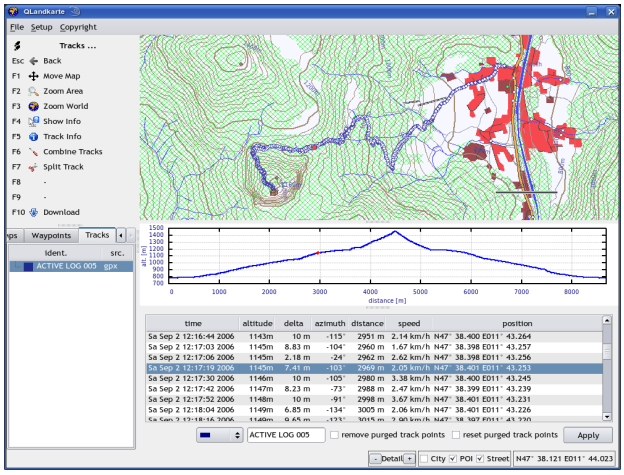


Figure 5: Track Info View

# Development

The project has reached a stage satisfying the original itches of the author. This does not necessarily imply that it is a mature and full featured application.

QLandkarte still misses support for many Garmin devices. It provides a plug-in system for devices to allow a decentralized development by several unit owners. Writing a driver is easier than it sounds. There is a small tutorial on QLandkarte's homepage.

Another vacant task would be porting QLandkarte to other platforms like Windows or Mac. It shouldn't be too much of a problem for any little endian platform. However there has to be much work done for big endian platforms as the IMG data is stored in little endian format and the decoder addresses the data directly for performance sake. Thus a big endian port should compensate the performance penalty for byte shifting by optimizing the decoder code.

Interested developers are welcome to discuss all this and send their patches on the QLandkarte's user mailing list.[3]

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[3] http://sourceforge.net/mail/?group_id=183501

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**Acknowledgements**
Various reviewers & the GRASS News Project

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**ISSN 1994-1897**