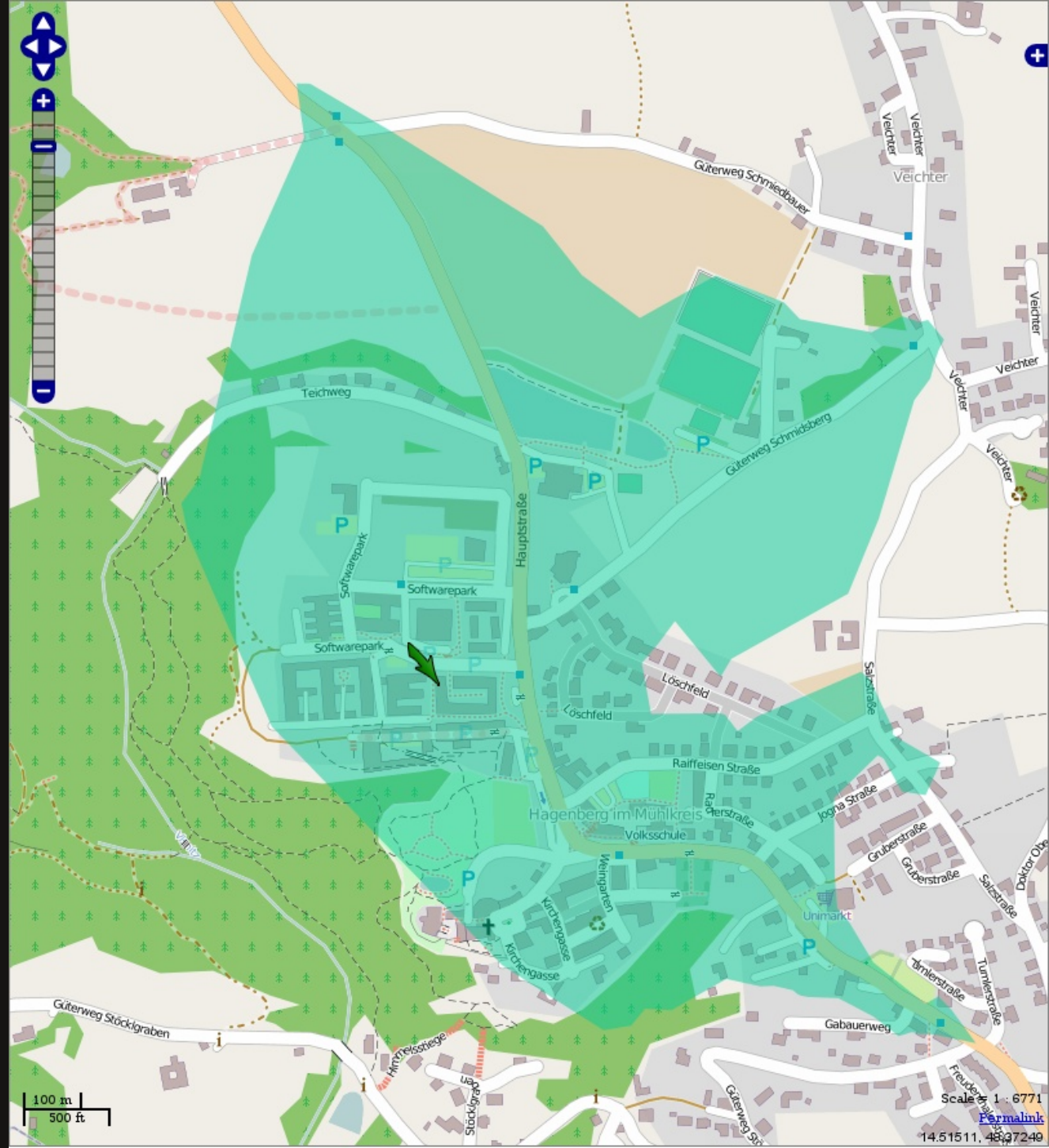


OpenStreetMap

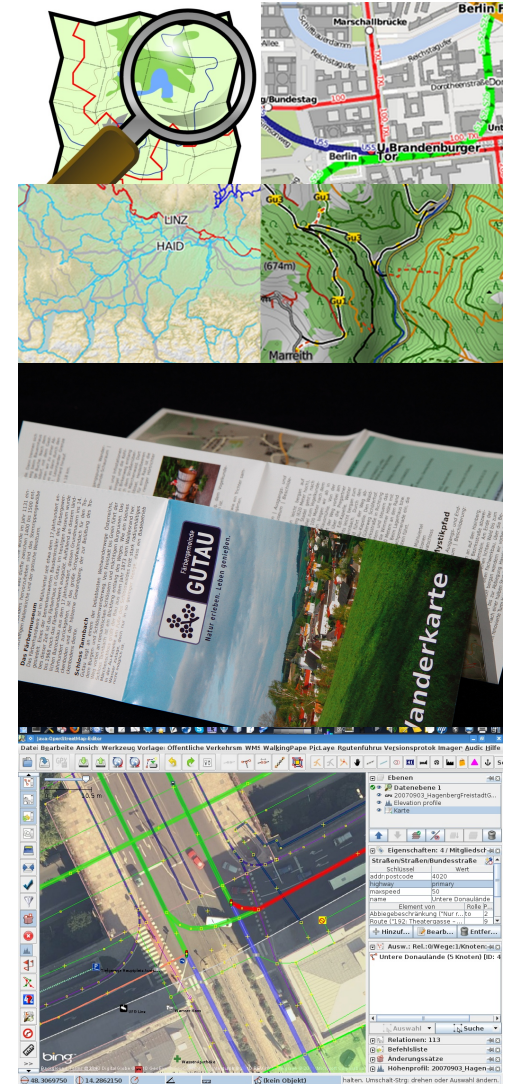
Holger Schöner

FLL - 24.01.2011



Overview

- OpenStreetMap - Pick your favourite Role
 - As User
 - Maps, Navigation
 - As Mapper
 - Data, Editors
 - Sources
 - Current State
 - As Developer
 - Database
 - Tools
 - As Artist
 - Rendering for Print/Web
 - As a Philosophy
 - License, License Switch
 - Organisations, Politics and Business



The OpenStreetMap Project

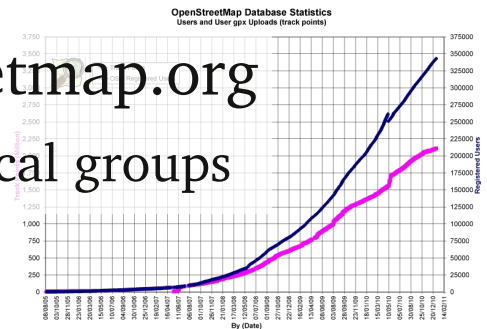
- Founded 2004, by Steve Coast in UK

”OpenStreetMap creates and provides free geographic data such as street maps to anyone who wants them. The project was started because most maps you think of as free actually have legal or technical restrictions on their use, holding back people from using them in creative, productive, or unexpected ways.”
- Since about 2006, infrastructure is in place for large scale mapping; since then an exploding number of participants

01/2011: 340,000 registered users, 12,000 active/m., 900 mil. nodes
- Very community oriented — wiki.openstreetmap.org

Wiki, email lists, irc, forums, mapping parties, local groups
- Creation of more formal organization

OSMF: Collection of donations, servers, ”support”, local chapters
Marketing, Press and legal contact — License change



OSM for Map-Users

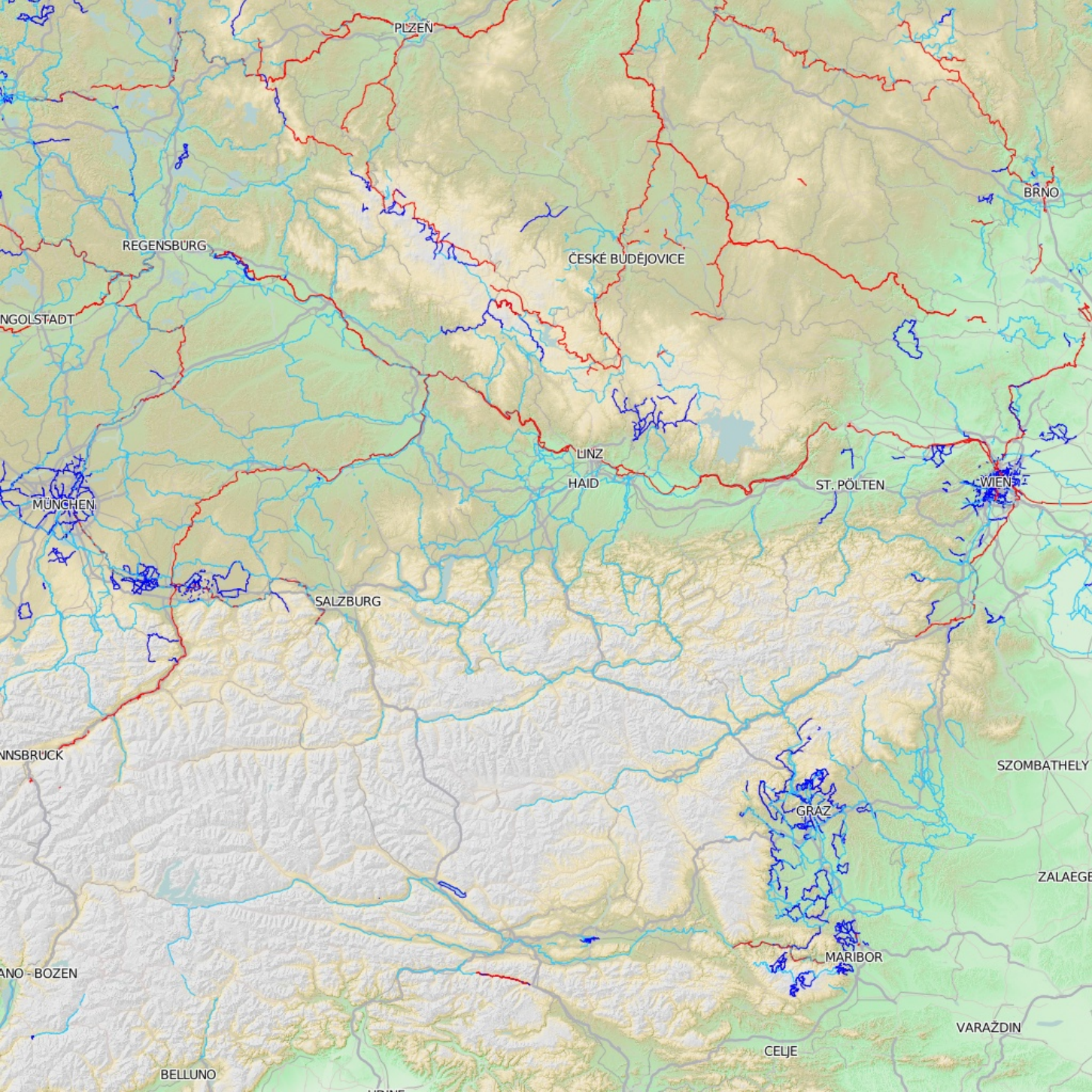
- **Maps**

- Different formats: Bitmaps, PDF, SVG, Vector-Maps (Shp, Img, ...)
- Various styles: Street maps, hiking, public transportation, railways, skiing, ...
- Liberal license
- Very fine details, but not homogenous
- Regions for which no other web maps are available/as detailed
- Very up-to-date

- **Navigation**

- Routing for different transportation modes (with appr. details)
- Web-routing
www.openrouteservice.org, www.yournavigation.org, maps.cloud-made.com, open.mapquest.com, ...
- Devices: iPhone, Android, Garmin, Skobbler, ...
- Correct the errors you spot quickly yourself



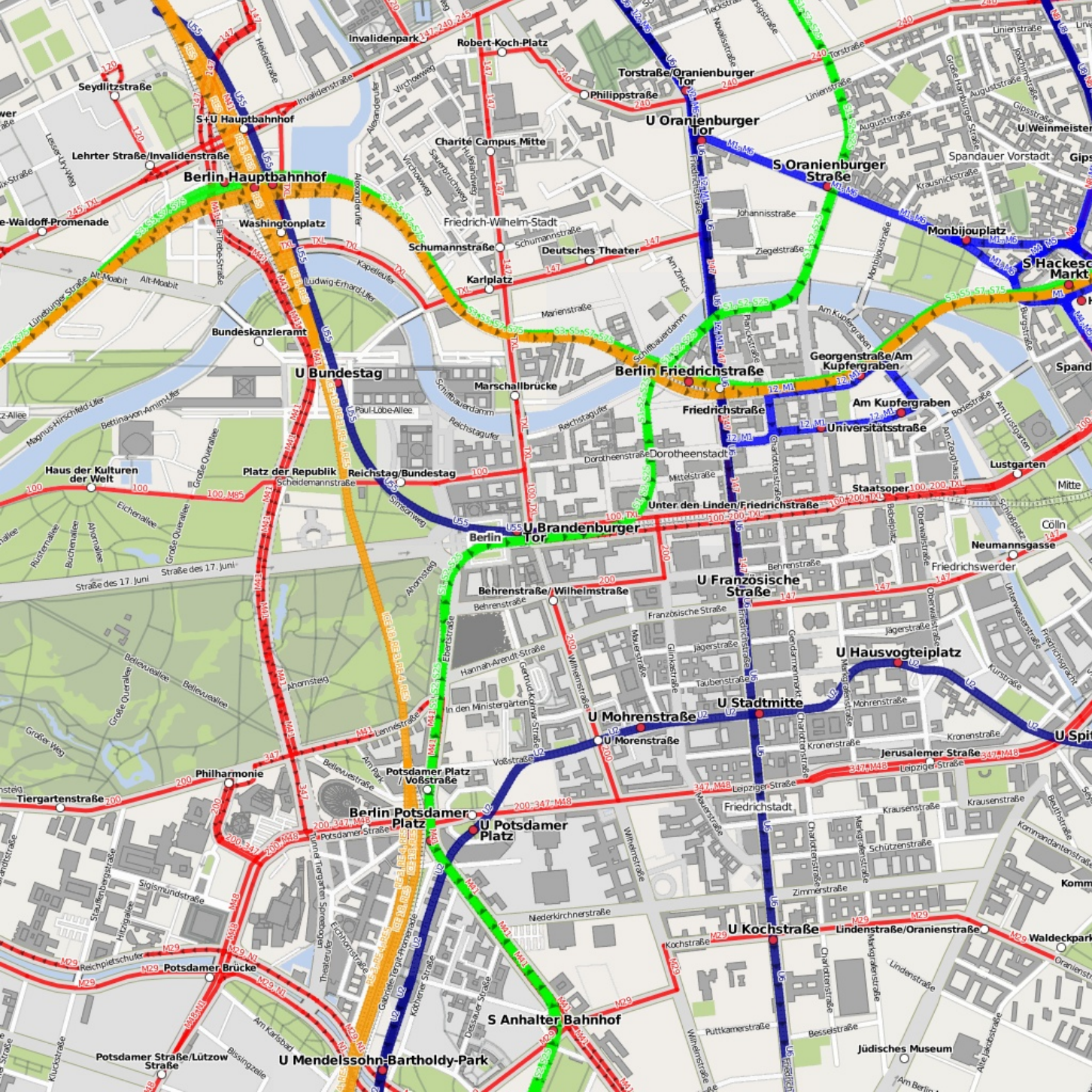


OpenCycleMap

opencyclemap.org

ÖPNVKarte

öpnvkarte.de



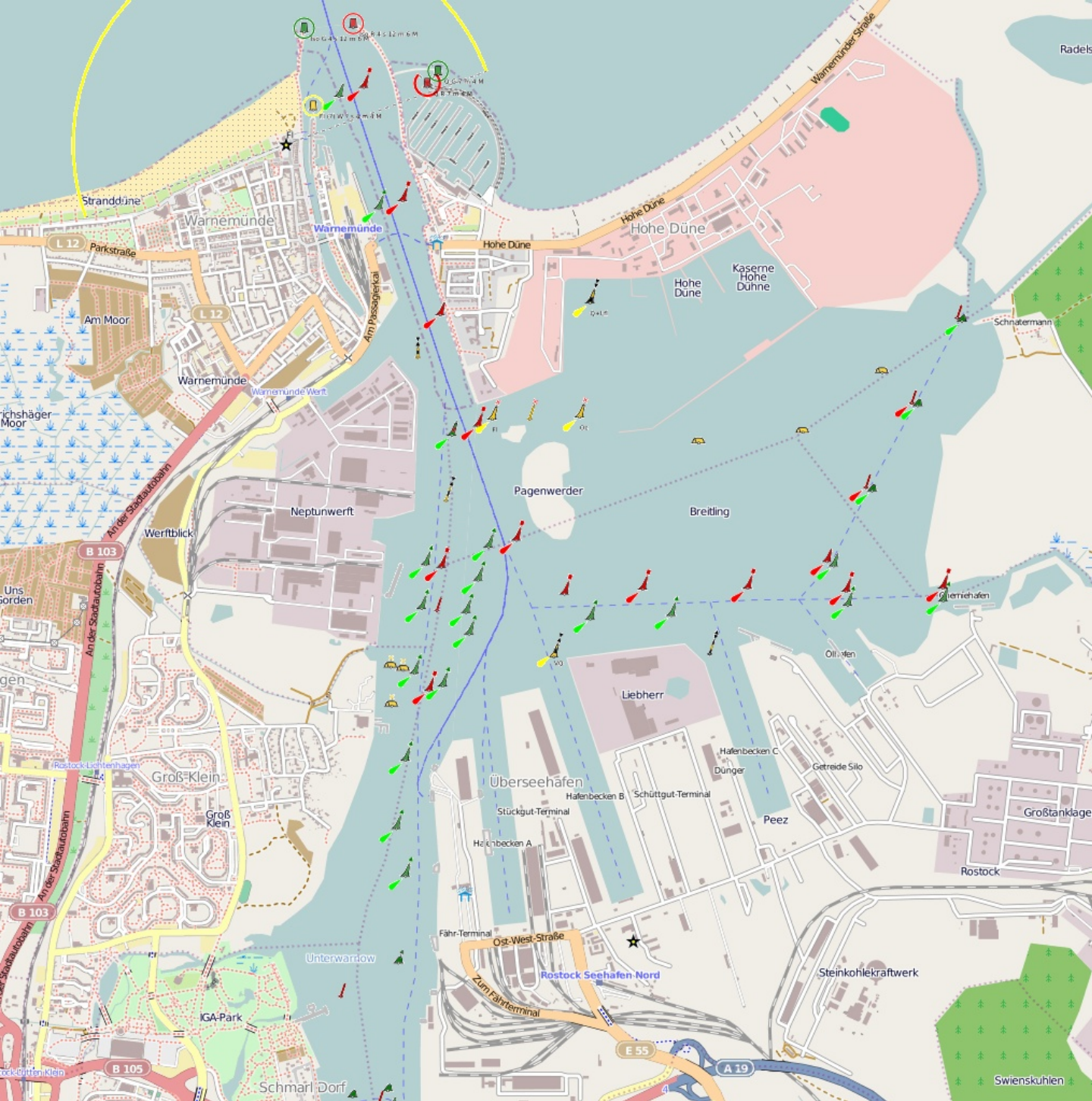
Wanderkarte

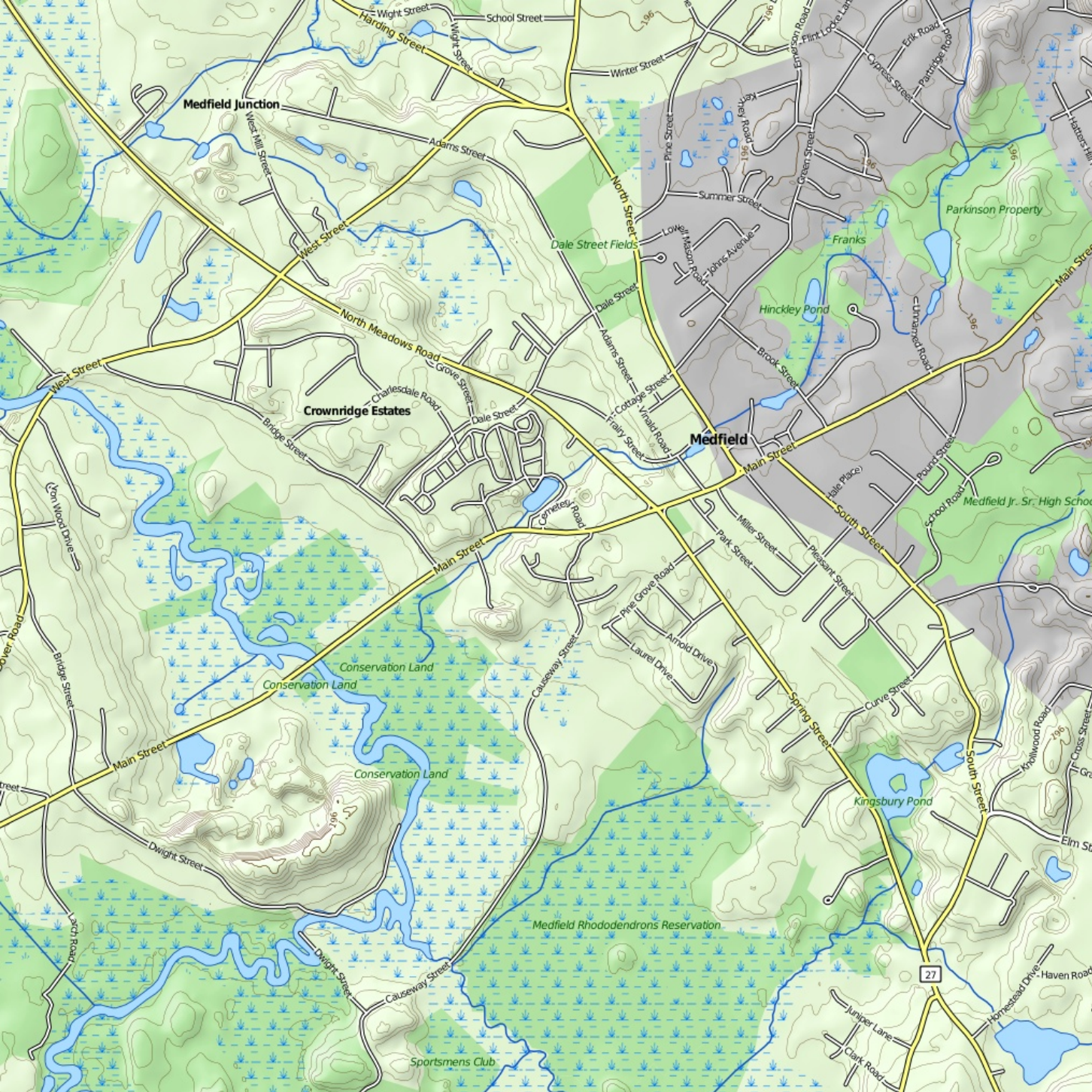
topo.geofabrik.de



OpenSeaMap

openseamap.de





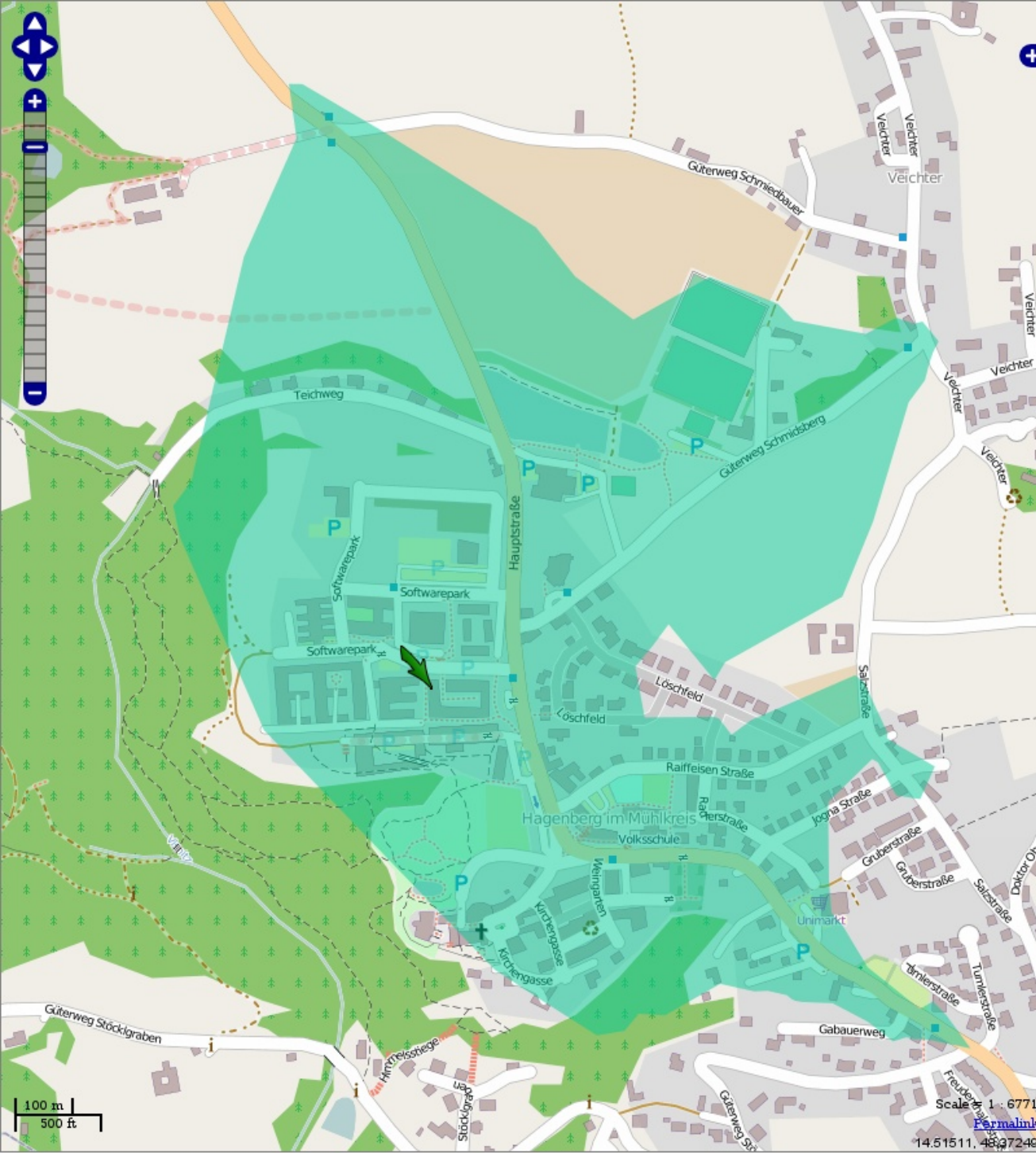
TopOSM

toposm.com

OpenRouteService

openrouteservice.com

Reachability in 1min



OSM for Mappers

- **Data**

- XML- or Google Protocol Buffers based, PostGIS
- Topological information (connected/disconn. intersections)
- 3 object types: nodes, ways, relations; tags for each object type

- **Editors**

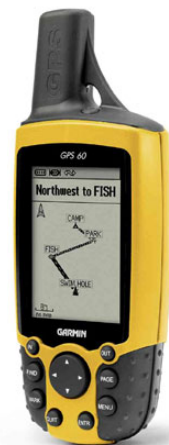
- Online: Potlatch 1/2, POI Editors, Spezialthemen (Seezeichen, ...)
- Offline: JOSM, Merkaartor, ESRI Plugin, QGis Plugin
- Devices: iPhone, Android, Java, ...
- Quality Tools: OpenStreetBugs, MapDust, OSM Inspector, keepright

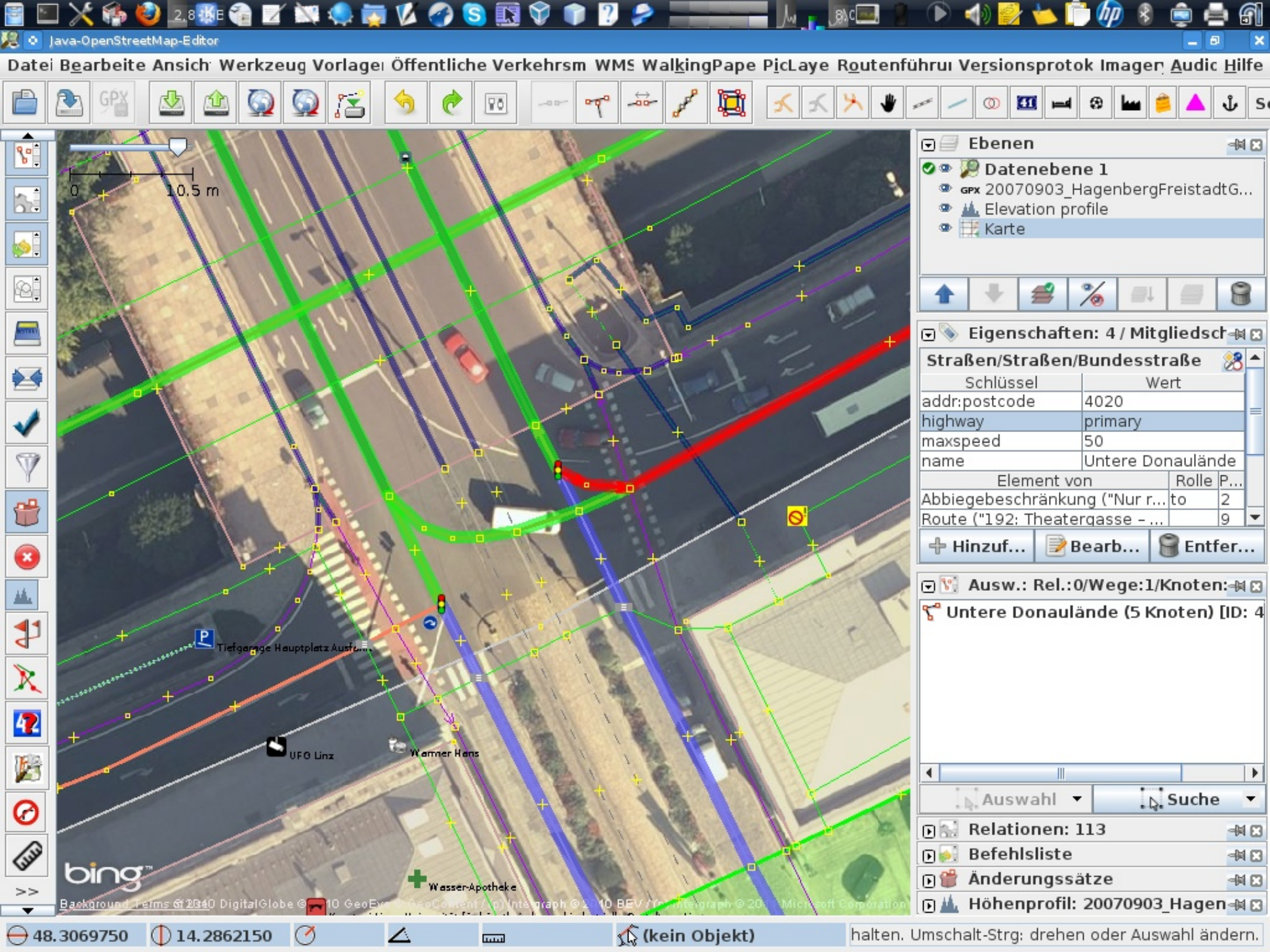
- **Sources**, compatible license important!

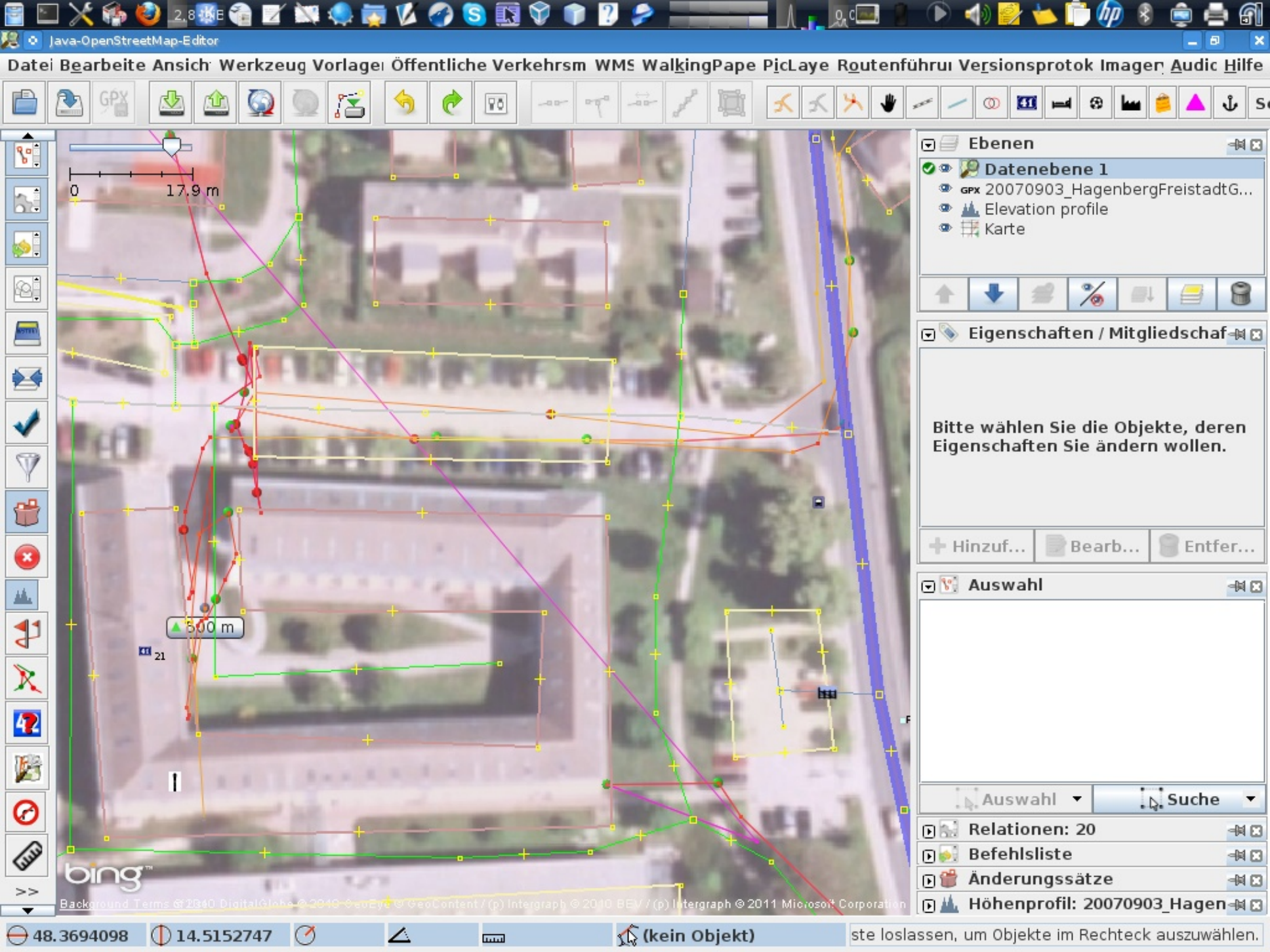
- GPS, aerial images, out-of-copyright maps, data imports, knowledge

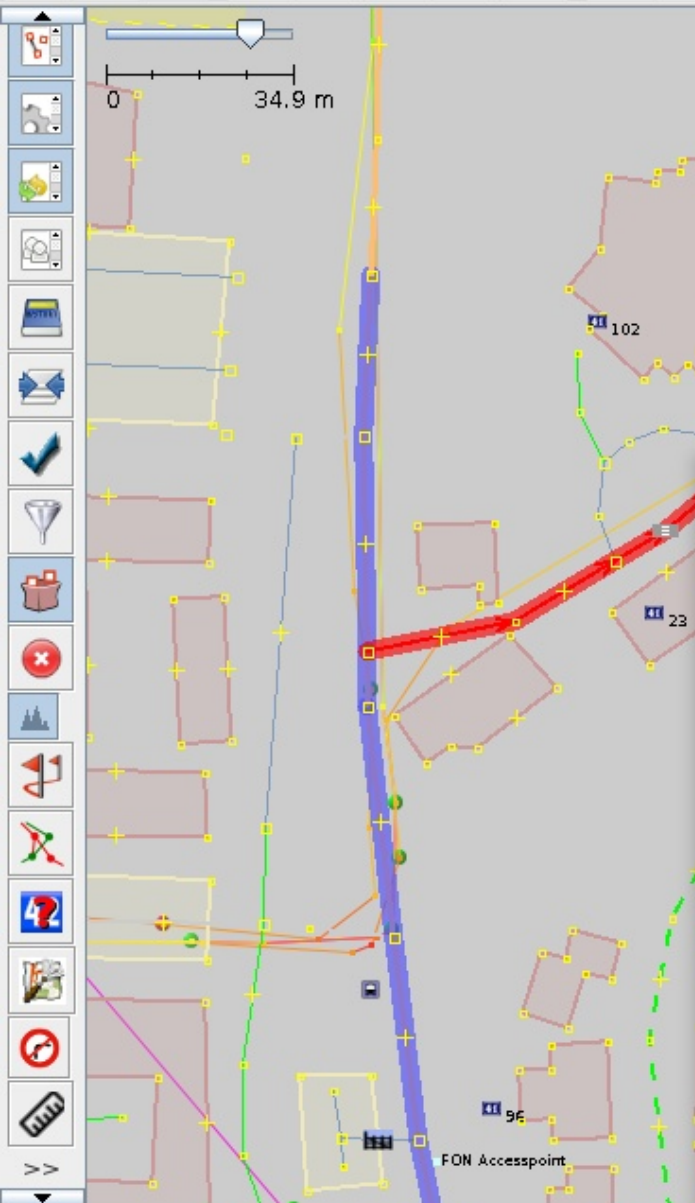
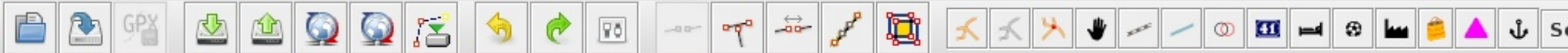
- **Current State**

- Cities/rural areas, Germany/Europe/USA/Africa, GeoImage/Bing









Ändere 1 Objekt

Ortsstraße bearbeiten

Name:

Optionale Attribute:

- ☐ Einbahnstraße
- ☐ Brücke
- ☐ Tunnel
- ☐ Senke
- ☐ Straßendamm
- ☐ Beleuchtet

Ebene:

Oberfläche:

Breite (Meter):

[Mehr Informationen zu dieser Vorlage](#)

Ebenen

- ☒ Datenebene 1
 - ☒ GPX 20070903_HagenbergFreistadtG...
 - ☒ Elevation profile
 - ☐ Karte

Navigation icons: up, down, zoom in, zoom out, etc.

Eigenschaften: 2 / Mitgliedsch

Straßen/Straßen/Ortsstraße

Schlüssel	Wert
highway	residential
maxspeed	30

Element von	Rolle	P...
Route (16071, 41 Elemente, u...		14

Ausw.: Rel.:0/Wege:1/Knoten:-

Straße (8 Knoten) [ID: 5.579.366]

Auswahl Suche

- ☒ Relationen: 20
- ☒ Befehlsliste
- ☒ Änderungssätze
- ☒ Höhenprofil: 20070903_Hagen...

OSM for Developers and Data Analysts

- **Data(-base)**

- PostGIS DB ca. 200GB, xml.bz2 14GB
- topological or rendering optimized database
- updates available every minute/hour/day, planet every week
- import of planet into database: 1.5 day - 1 week

- **Tools**

- osm2pgsql (C): import into PostGIS, updates
- osmosis (Java): swiss army knife: convert, cut, sort, update
- mkgmap (Java): convert to Garmin img
- diverse converters into SVG, Shp
- diverse libraries for parsing OSM data (Java, C++, Ruby, ...)
- PostGIS: spatial SQL queries, basis for analysis/rendering/exporting
- webdesign: OpenLayers, ...



OSM for "Artists"

- **Rendering Engines**

- Mapnik (C++/Python)
- Osmarender (xslt/Perl)
- Maperitive (.Net)

- **Style Development**

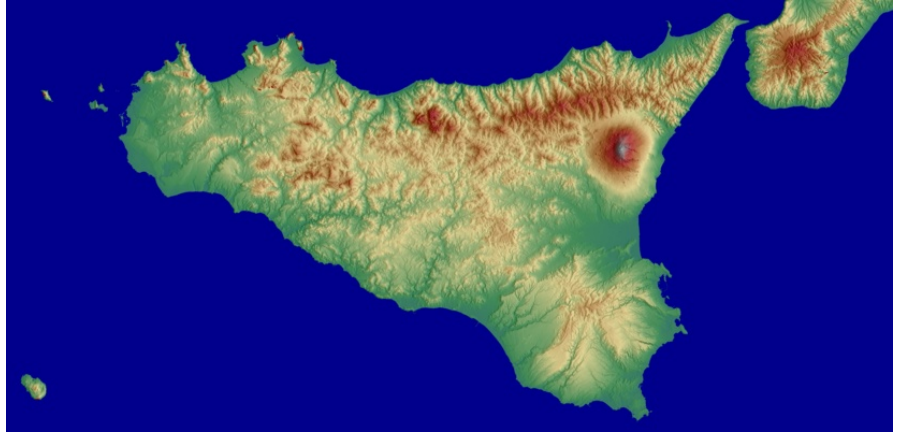
- Preprocessing - cleaning, normalizing, merging
- Raster background - hillshading, relief (e.g. NASA SRTM DEM data)
- Technical challenges: Speed, layering (roads), label priorities, buffers
- Artistic challenges: Colors, tradeoff details/readability, map scale

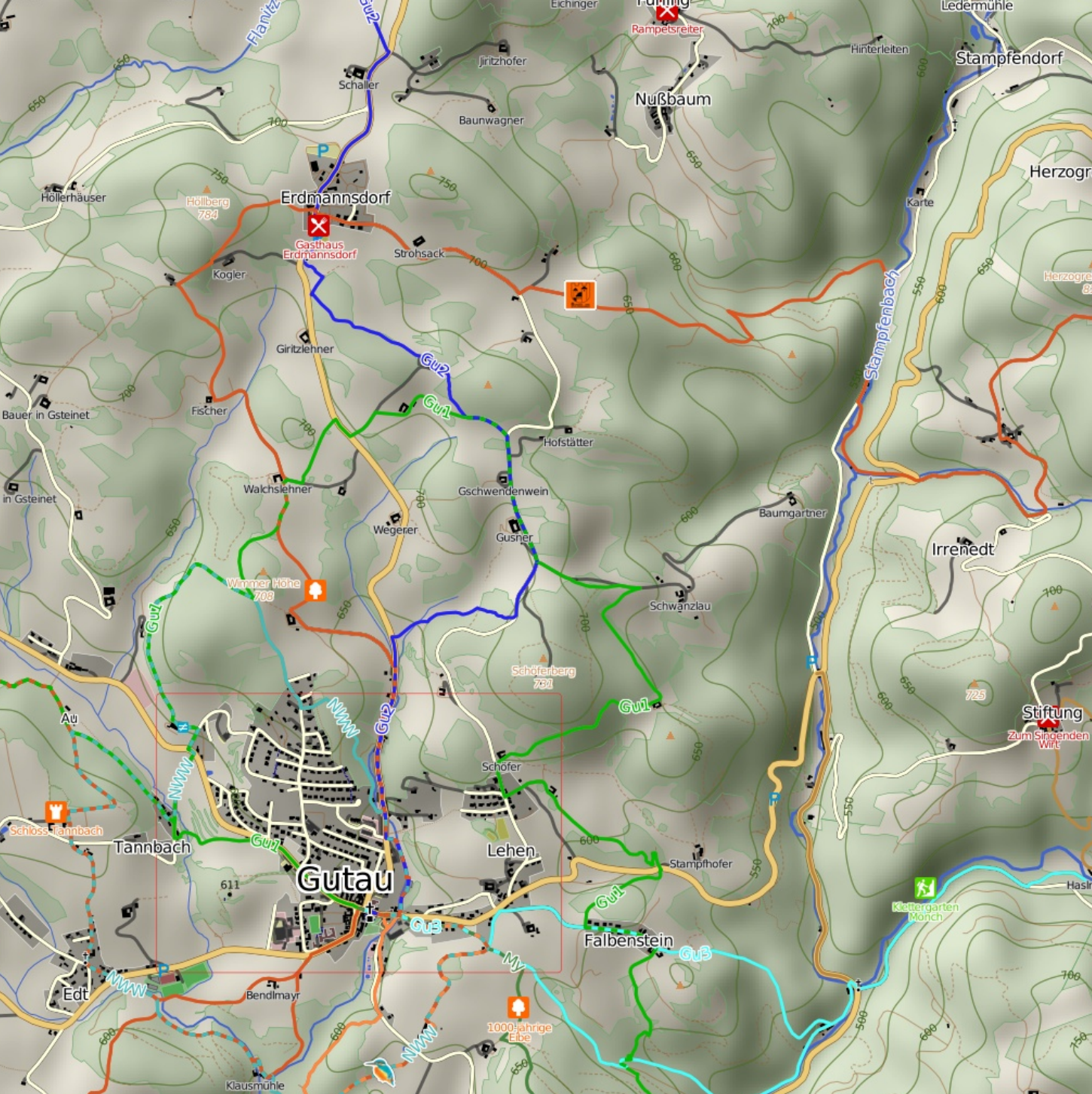
- **Webdesign**

- Tile service, usability, appearance, legend

- **Layouting for Print**

- Resolution, layouting, color management, readability





Gutau Hiking Map

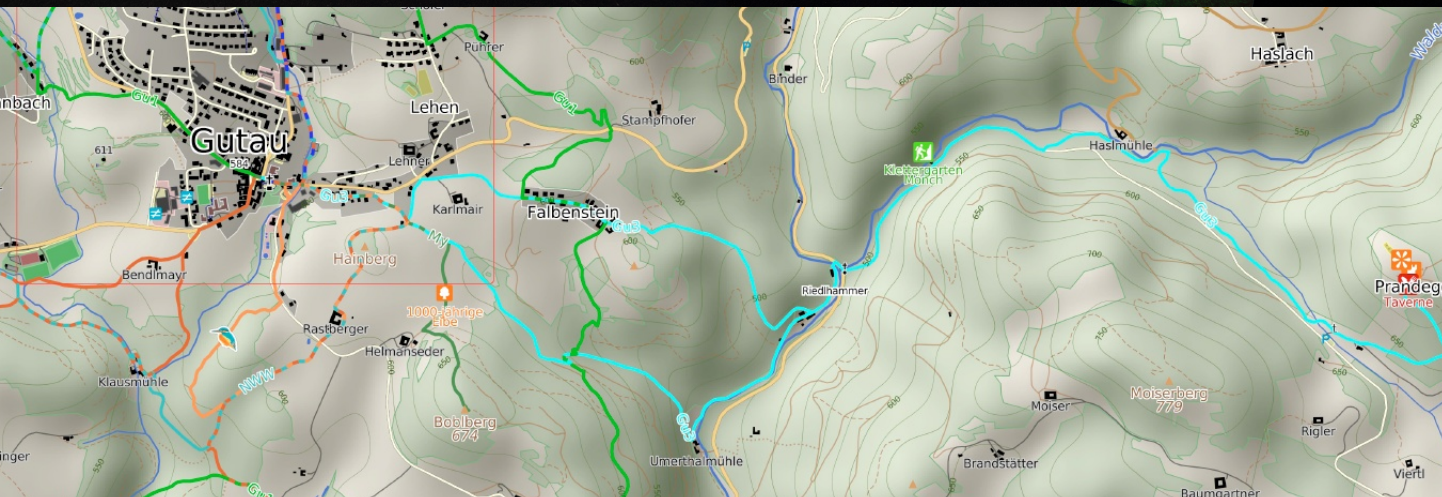
base color
hillshade
transparent areas
elevation contours
roads, water
buildings
hiking routes
POIs
labelling

rendered for
offset printing



Wanderkarte Gutau

[www.ancalime.de/
gutau.html](http://www.ancalime.de/gutau.html)



"Philosophical" Aspects

- **License** (this section might be somewhat "colored")
 - CC BY SA 2.0: Attribution and Share-Alike
 - ODbL, DbCL, Contributor Terms
 - License Switch not finally decided, but in preparation, new contributors can only join when dual-licensing contributions
 - Some loss of data not dual-licensed by original authors might occur
 - Advantages: Usage of "products" not restricted, better protection, improvements in db must be made available
 - Really free would mean "Public Domain" or similar
- **Organisations, Politics and Business**
 - OSM Foundation, local chapters, FOSSGIS e.V., OpenStreetMap Austria
 - Yahoo, Skobbler, MapQuest, Bing, data donations by public sector
 - Several new and established small companies: Cloudmade, Geofabrik
 - And lots of informal discussions (not to mention fights ...)



Links

- OSM: <http://www.openstreetmap.org/>
- OSM Wiki: <http://wiki.openstreetmap.org/>
- Map of Gutau: <http://www.ancalime.de/gutau.html>

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