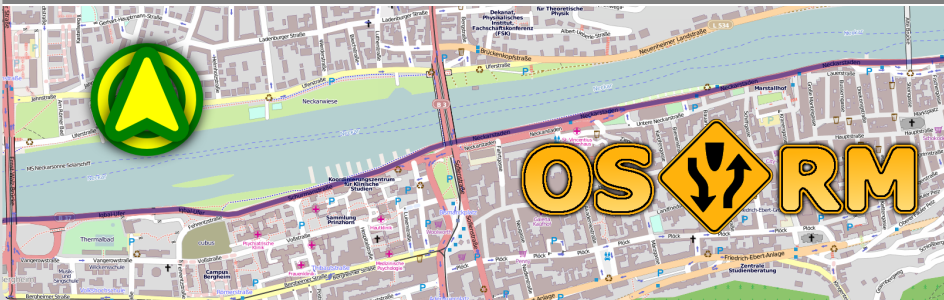


Routing with OpenStreetMap Data

Christian Vetter & Dennis Luxen

Nokia Gate5 GmbH & Karlsruhe Institute of Technology



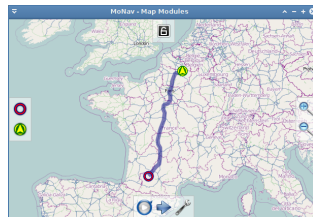
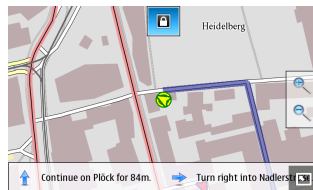
-Part I- MoNav





What's MoNav?

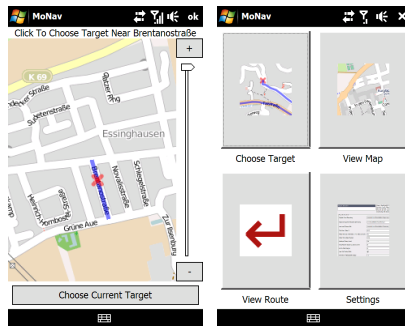
- Routing software for
 - Mobile Devices
 - Desktop PCs
- Fast Route planning
 - <200ms on mobile devices
- Route planning service

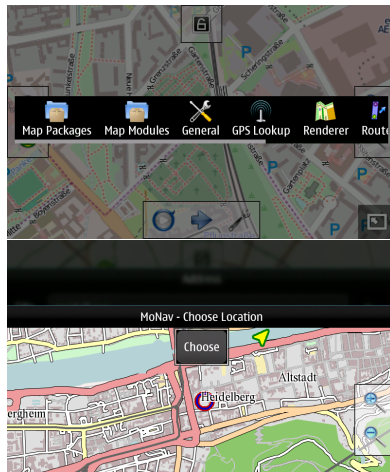
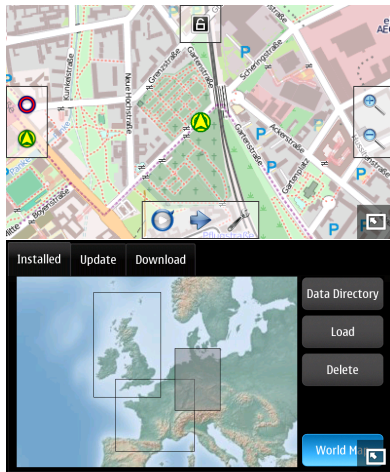




MoNav 0.1

- Fast route planning
- Address search
- Tile renderer
 - 4 GB for Germany
- Rusty UI

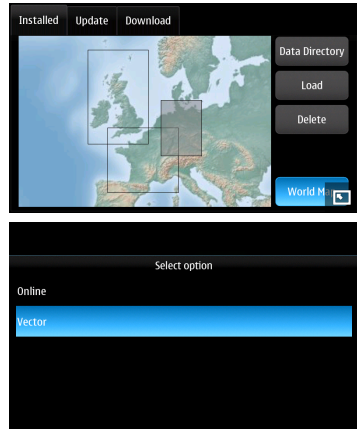






Map Management

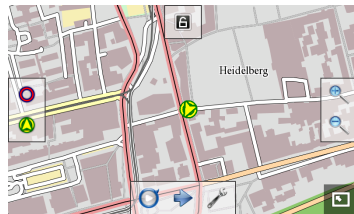
- Support for multiple map packages
- Easy selection of individual maps
- Automatic map download
- Automatic updates





Offline Vector Rendering

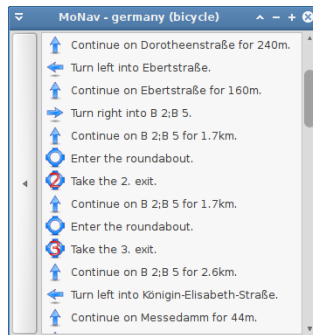
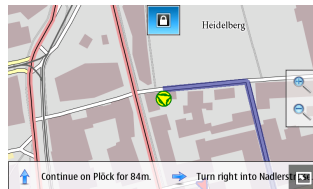
- Small amount of data
- DPI independent
- Currently two modules in progress:
 - libosmscout Renderer
 - Qtile Renderer





Turn Instructions

- Text based instructions
- No: "Do a U-Turn!"





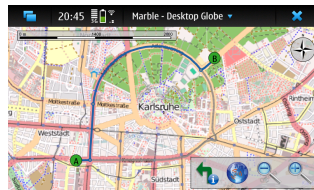
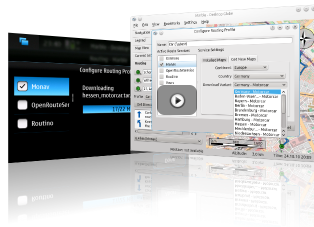
PBF Support

- Binary OpenStreetMap Format
- Based on Googles Protocol Buffers
- Reading 10 times faster
- Smaller files
- Same information as OpenStreetMap XML files
- MoNav: Early support for PBF (September 2010)



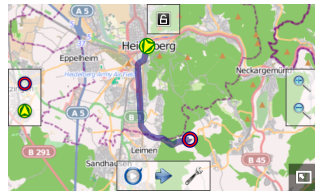
MoNav as background service

- MoNav is GPL
- Distinct Routing Service
 - also GPL
 - But: Interface is LGPL
- Used by:
 - KDE's  **MARBLE**



Bilder von: <http://nienhueser.de/blog/>

- ... and many more improvements
- User:
 - 0.3 Released
 - Download and use
- Developers:
 - Routing service as LGPL
 - Still looking for developers and testers



-Part II- Open Source Routing Machine





What's OSRM?

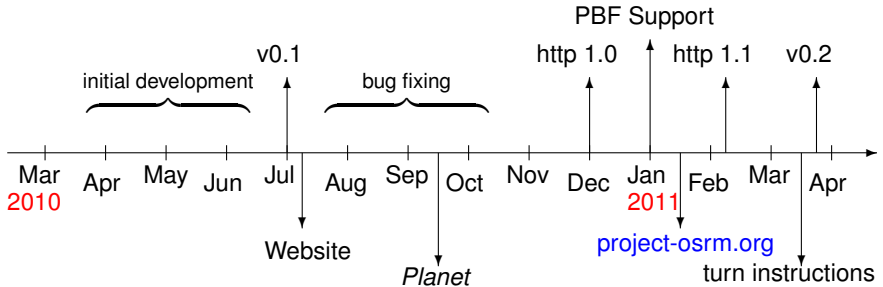
Server-based Routing Engine

- Common algorithmic base with Monav
- Fast (<100ms incl. network)
- AJAX web GUI
- approx. 7.000 lines of C++





Die first 12 months





The past 6 months

- Ajax GUI by Pascal Neis
- Draggable Routes
Beta: draggable via points
- Permanent Links
- GPX/JSON output (KML deprecated)
- Compression of transferred data
- Route generalization

Online Demo

- <http://map.project-osrm.org>
hosted by Geofabrik.de





The past 6 months

- Ajax GUI by Pascal Neis
- Draggable Routes
Beta: draggable via points
- Permanent Links
- GPX/JSON output (KML deprecated)
- Compression of transferred data
- Route generalization

Online Demo

- <http://map.project-osrm.org>
hosted by Geofabrik.de





The past 6 months

- Ajax GUI by Pascal Neis
- Draggable Routes
Beta: draggable via points
- Permanent Links
- GPX/JSON output (KML deprecated)
- Compression of tranferred data
- Route generalization

Online Demo

- <http://map.project-osrm.org>
hosted by Geofabrik.de



Lots of public attention: 250.000 routes in first two weeks



Demo

Demo online:

<http://routingdemo.geofabrik.de>

OSRM

Berlin Alexanderplatz Search
Hamburg Search

Get Link

Shortest information about your Way from 1,457 to 1,457 km
Distance: 365.82 km - Duration: 3 h 5 min

Get Link

The Roadside Instructions: [View PDF](#)

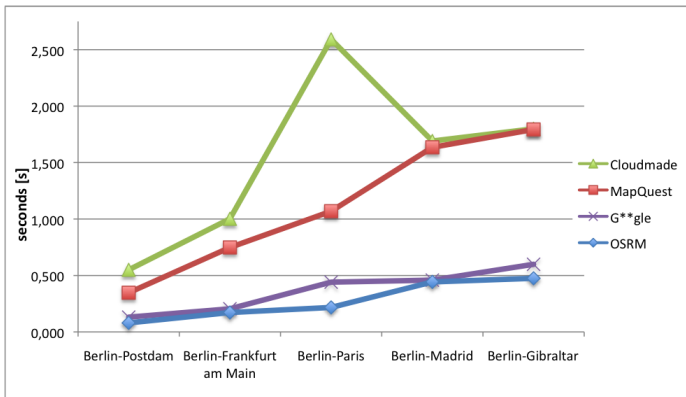
1. Head west on Litten for 80 m.
2. Turn sharp right on Chemnitzer Straße for 248 m.
3. Continue on In der Freiheit for 28 m.
4. Continue on Torstraße for 1 km.
5. Continue on Waldenstraße for 4 km.
6. Continue on L. for 6 km.
7. Continue on L. for 2 km.
8. Continue on Kiepenhauerstraße for 20 km.
9. Continue on Wittenstraße for 236 m.
10. Continue on Am Schwanengraben for 40 m.
11. Continue on B. for 1 km.
12. Continue on F. for 1 km.
13. Bear right at Am Lichten for 110 m.
14. Continue on Martin-Luther-Strasse for 550 m.
15. Turn left on L. for 50 m.
16. Bear right at Am Oldenburger Lichte for 375 m.
17. Bear right on Spandauerstraße for 45 m.
18. Continue on Wittenstraße for 180 m.
19. Continue on B. for 1 km.
20. Continue on D. for 70 m.
21. Continue on L. for 1 km.
22. Continue on Am Lichten for 120 m.
23. Continue on D. for 100 m.
24. Bear left on Otto-Erhard-Straße for 100 m.
25. Continue on D. for 120 m.

OSRM v1.1.1 - OSRM routing by [Geofabrik](#) - Decoder by [Geofabrik](#)



What does the public say

Found this on a blog:

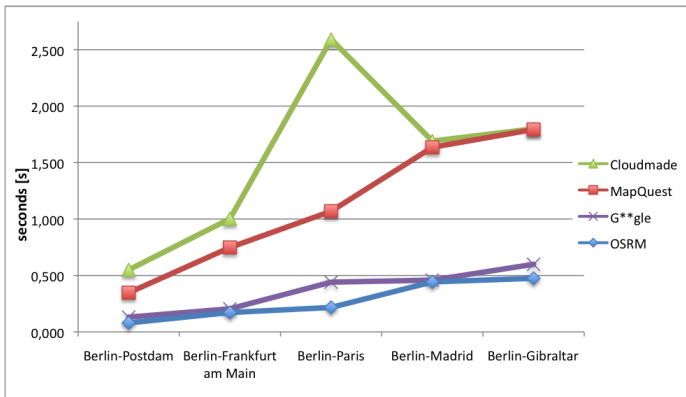


General testimony: Project is great, but ...



What does the public say

Found this on a blog:



General testimony: Project is great, but ...



What's coming next

- Less RAM
- Even faster speed
- Alternative routes
- Self-hosting Javascript
- Print support
- Route sketches
- Distributed preprocessing
- Turn penalties
- Turn restrictions
- Distance matrices
- Multiple metrics
- Reachability Analyses
- Round-Trips
- General API
- Support for mobile devices
- Real-Time updates





What's coming next

- Less RAM
- Even faster speed
- Alternative routes
- Self-hosting Javascript
- Print support
- Route sketches
- Distributed preprocessing
- Turn penalties
- Turn restrictions
- Distance matrices
- Multiple metrics
- Reachability Analyses
- Round-Trips
- General API
- Support for mobile devices
- Real-Time updates

But: This is still a spare time project, so things will take time.

Thank you for the attention!



Questions?

- MoNav: <http://code.google.com/p/monav>
0.3 Packages & Downloads: <http://monav.openstreetmap.de>
- OSRM: <http://project-osrm.org>
Online Demo: <http://map.project-osrm.org>