

OpenStreetMap

Free world map for free citizens

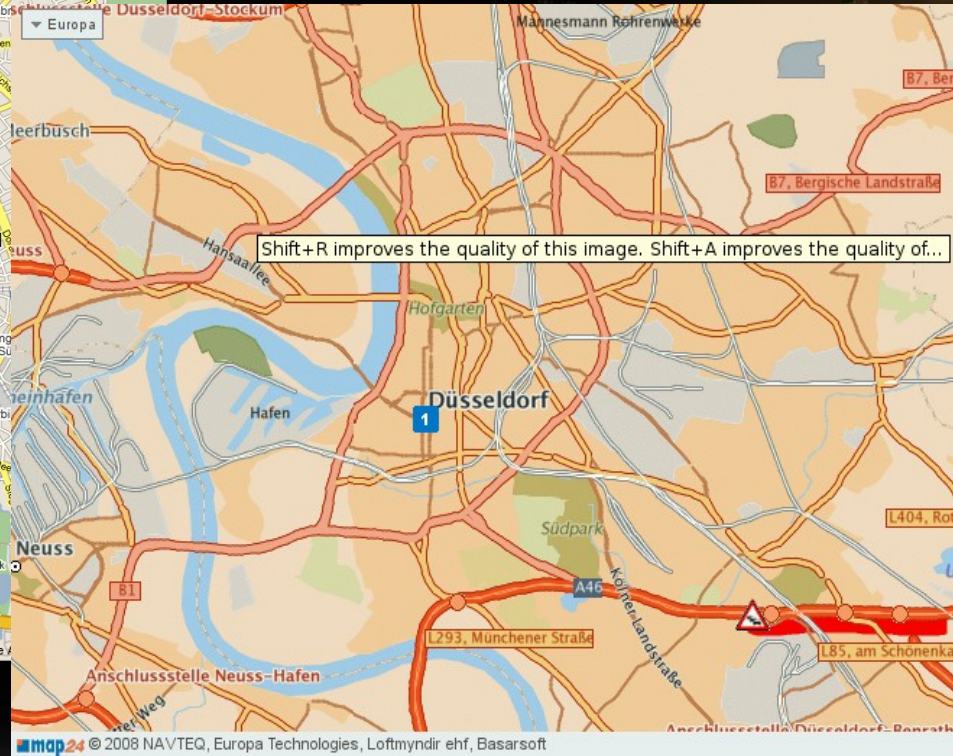
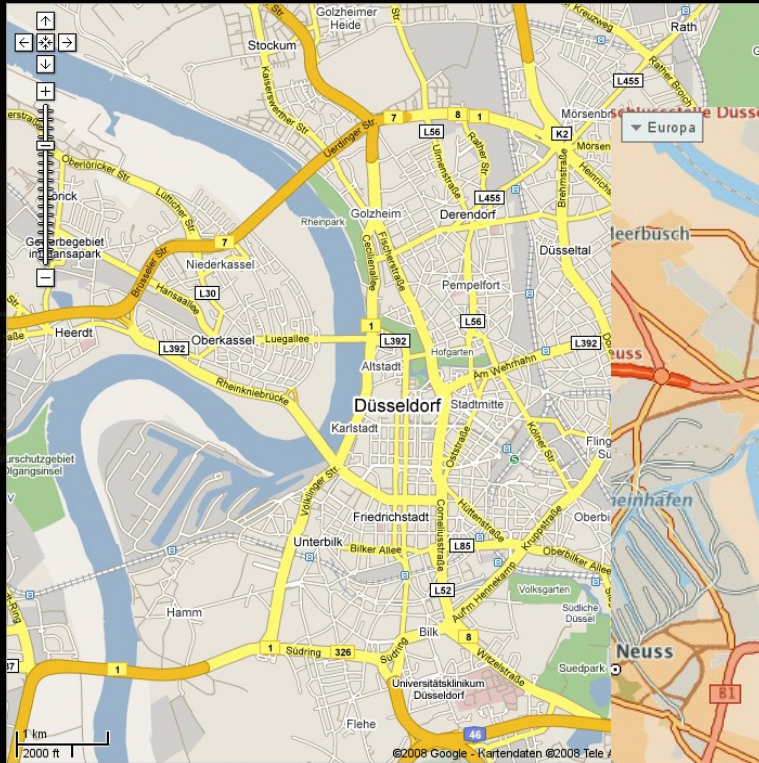


Warpstock Europe 2008
Düsseldorf, Germany
Roland Schmalenberg

Why OpenStreetMap?

We've GoogleMaps,

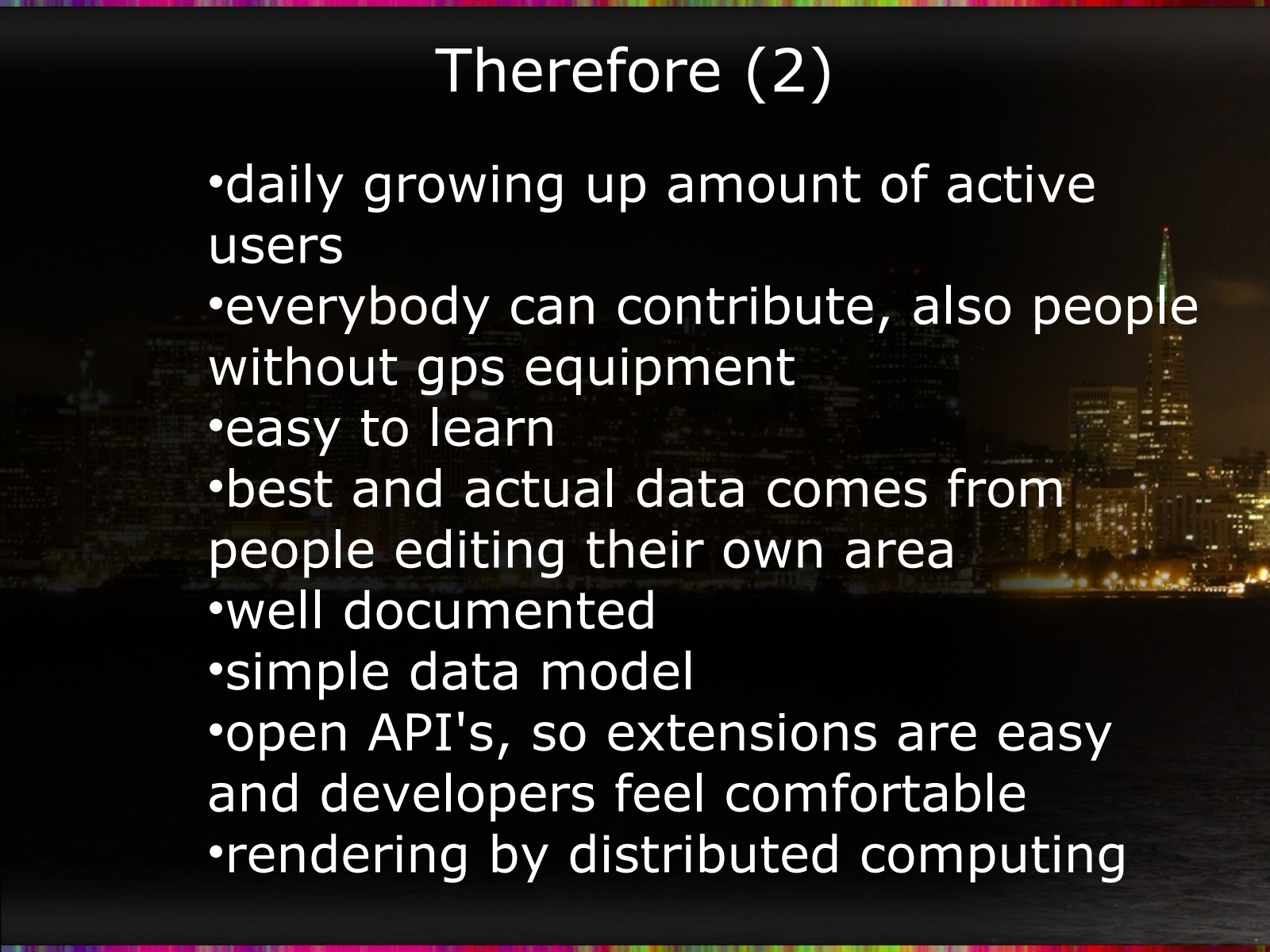
Map24 and others!?



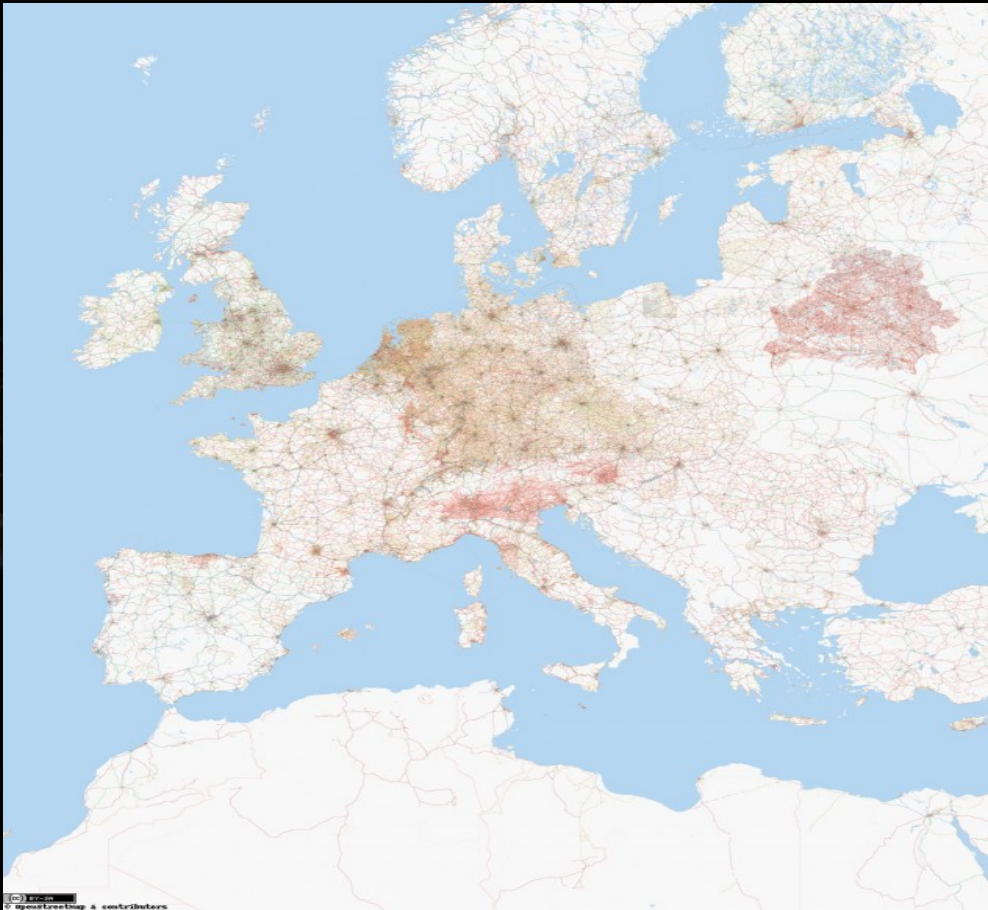
Therefore (1)

- contribution like wikipedia
- if something was missed, just add it
- data is owned by creator and can be used by all others
- licensed by creative commons share alike 2.0 (CC-BY-SA 2.0)
- no other restrictions, free in use, commercial too
- unbreakable, anyone can download the whole database
- daily growing up database and accuracies

Therefore (2)

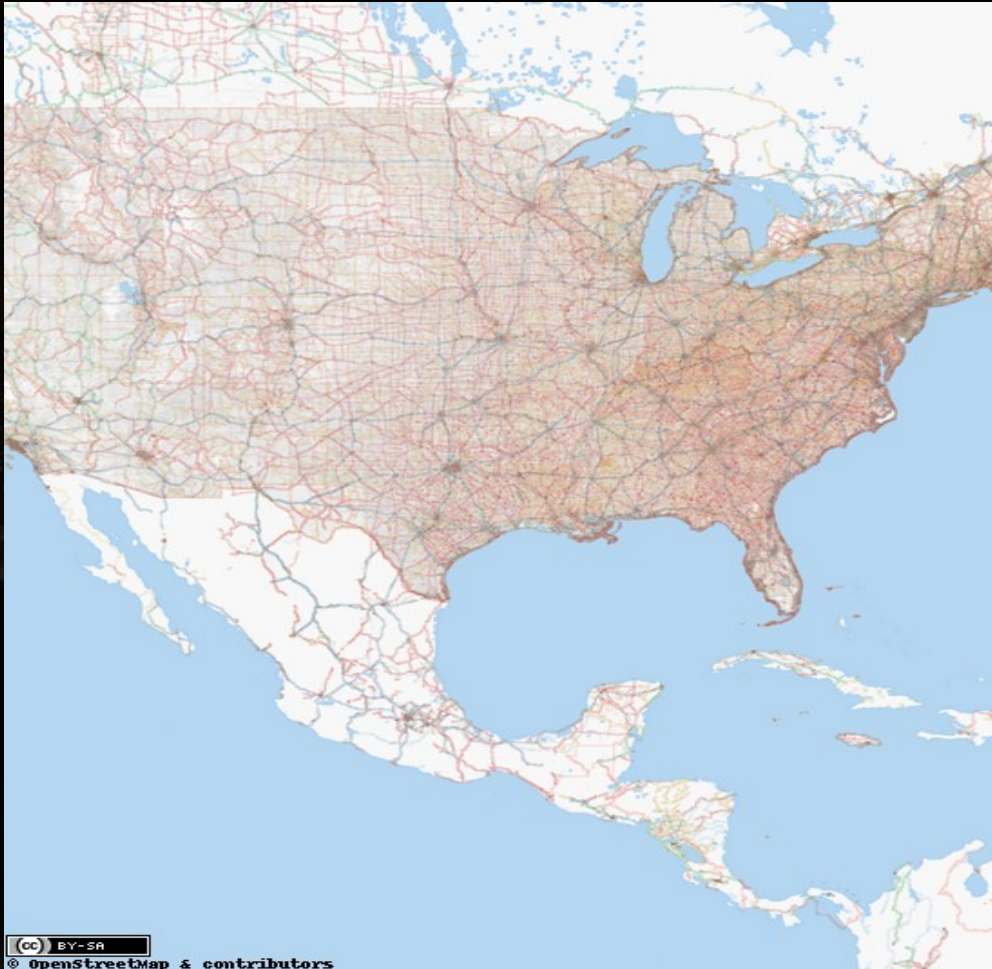
- daily growing up amount of active users
 - everybody can contribute, also people without gps equipment
 - easy to learn
 - best and actual data comes from people editing their own area
 - well documented
 - simple data model
 - open API's, so extensions are easy and developers feel comfortable
 - rendering by distributed computing
- 

Europe in OpenStreetMap (today)



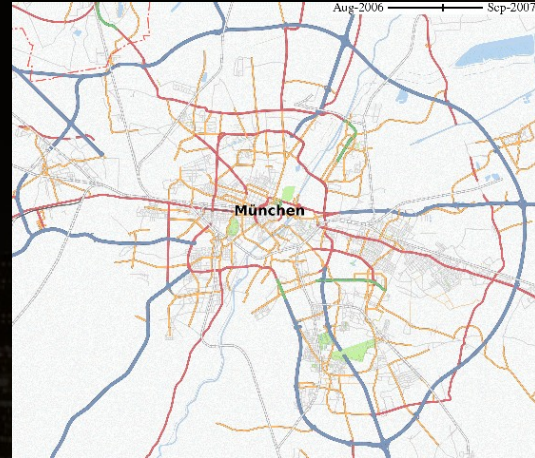
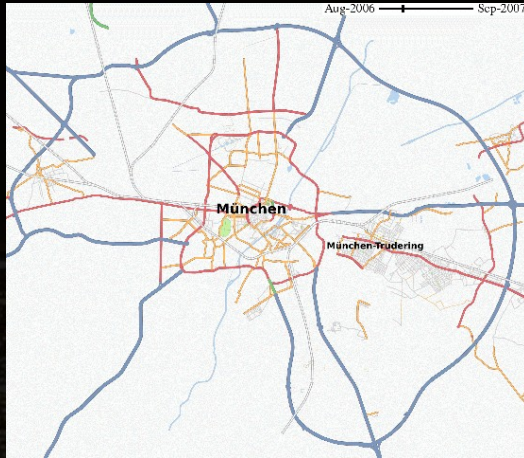
started 2004
in UK by
Steve Coast,
filled up
since 2005

North America in OpenStreetMap (today)



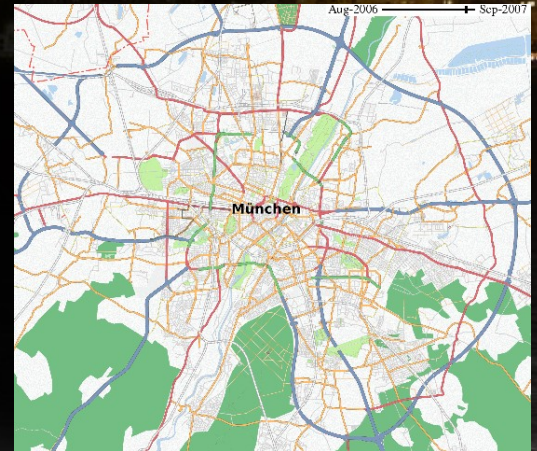
Snapshot
2008-10-06

History of mapping Munich in OSM



Development of
Munich's
map data

- 08 2006
- 11 2006
- 03 2007
- 07 2007



All you need for using ...


- on pc
 - web browser
- optional for users with request for displaying OSM maps on GPS devices
 - some small tools for converting data based on perl and python

All you need for contributing ...

- data editor
 - webbased editor "Potlatch" (Flash)
 - or standalone editor "JOSM" (Java)
- optional for data loggers
 - some GPS hardware
 - small tools for importing and processing logged traces (gpsbabel)
 - scratchpad, digital camera or voice recorder for remembering information
 - bicycle recommended

Potlatch

OpenStreetMap



The Free Wiki World Map

View | **Edit** | **Export** | **GPS Traces** | **User Diaries**


Welcome, [TheMappingRexxy](#) | [home](#) | [inbox \(0\)](#) | [logout](#)

Help & Wiki
[News blog](#)
[Shop](#)


Search [Where am I?](#)

examples: 'Alkmaar', 'Regent Street, Cambridge', 'CB2 5AQ', or 'post offices near Lünen'
[more examples...](#)

[Make A Donation](#)




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Punkt 23656746

 (no preset) ▼
note (0)211-557310 ✕
tourism hostel ✕

Navigation icons: Home, Back, Forward, Refresh, Print, Full Screen

Java OpenStreetMap-Editor (JOSM)

The screenshot displays the Java OpenStreetMap-Editor (JOSM) interface. The main window shows a satellite map of a residential area with a highway under construction, highlighted in green. The interface includes a menu bar (File, Edit, View, Tools, Audio, WMS, LiveGPS, Presets, Help), a toolbar with various editing tools, and a right-hand sidebar with several panels: Layers, Properties/Memberships, History, Current Selection, Authors, Command Stack, and Relations. The status bar at the bottom shows coordinates (51,2252; 6,7568) and a selected highway with 8 nodes.

Layers

- Data Layer
- Yahoo

Properties/Memberships

created_by	JOSM
note	(0)211-557310
tourism	hostel

History

Click Reload to refresh list

Current Selection

- 23656746 (51,2266610, 6,7573976)

Authors

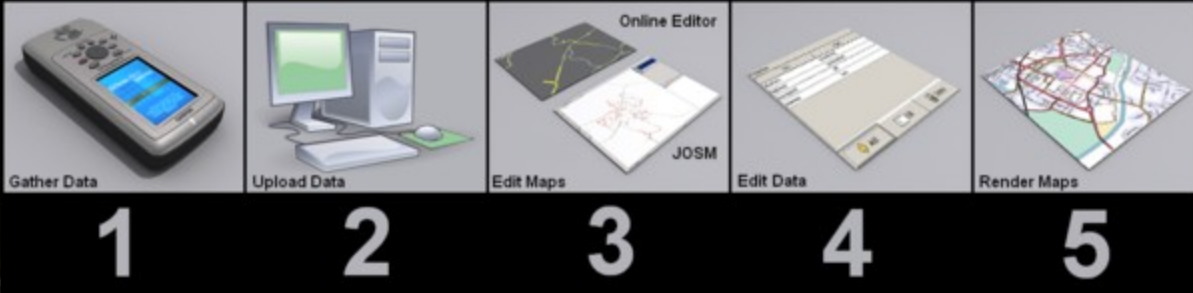
Author	# Objects	%
Glg11	1	100

Command Stack

Relations

Status Bar: 51,2252 6,7568 highway (8 nodes) Zoom in by dragging.

How to map white areas in principle ...

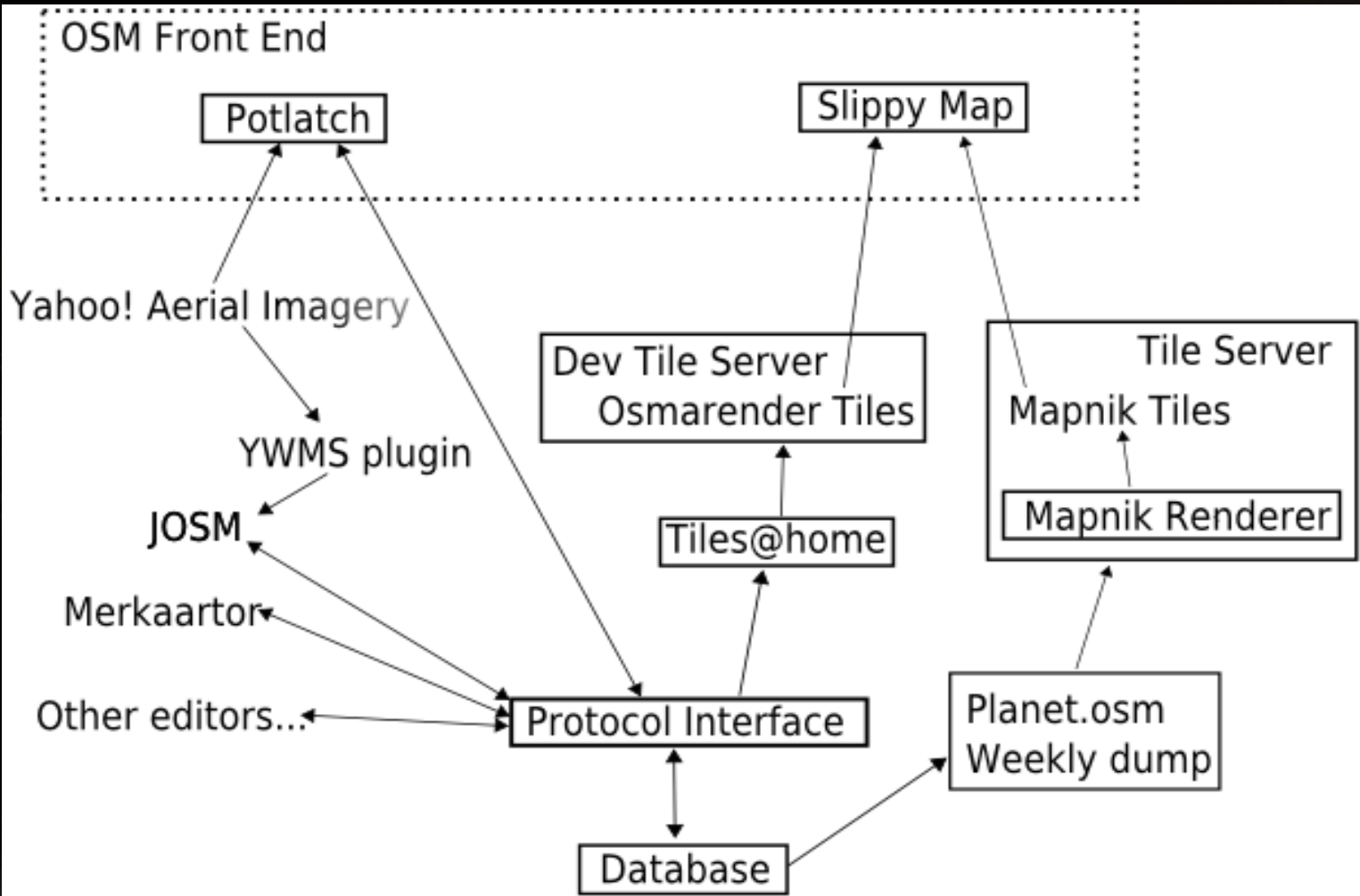


- 1.get/loan data logger equipment, take a ride around, log trace and useful information (street names, directions ...)
- 2.import gps trace to pc, convert to gpx format, upload gpx file to OSM backend
- 3.edit the map, draw the ways and points of interests using your trace
- 4.tag them with your information
- 5.let the system render the new map and check the result

Tips for beginners ...

- search at <http://wiki.openstreetmap.org/> for
 - "beginners"
 - "good practice"
 - "events"
- join meetings and Mapping Parties
- meet OpenStreetMappers in your area
- read the wiki documentation
- check the forum at <http://forum.openstreetmap.org/>
- if no answers, ask this forum
- use IRC at <irc://irc.oftc.net/osm>

System overview



Data model

very simple, main object elements are:

1.nodes

2.ways

3.relations

each set of elements are hold in two tables:

- current (keeps the latest revision)
- master (keeps all revisions)

current tables are used for drawing the map

Data model (1)

nodes

- * id (auto_increment in current_nodes)
- * latitude
- * longitude
- * visible = 1|0 (0 for 'deleted' nodes)
- * tags = semicolon-separated key/value pairs (e.g. 'type=pub;name=The Bull')
- * timestamp = time of last edit
- * user_id = user id of last editor
- * tile

ways

- * id (auto_increment)
- * visible = 1|0 (0 for 'deleted' ways)
- * timestamp = time of last edit
- * user_id = user id of last editor
- * version

Data model (2)

way_nodes

- * id = way id
- * node_id
- * sequence_id = order in list
- * version

way_tags

Unlike nodes and segments, ways hold their tags (key/value pairs) in separate tables.

- * id = way id
- * k = key
- * v = value
- * version

Data model (3)

gpx_files

- * id
- * user_id
- * visible = 1|0 (0=deleted; 1=not deleted)
- * name = filename as given to the server
- * size = number of GPS points in file
- * latitude = latitude of first GPS point in file
- * longitude = longitude of first GPS point in file
- * timestamp
- * public = 1|0 (0=private; 1=public)
- * description
- * inserted = 1|0 (0=awaiting insertion; 1=inserted)

gpx_file_tags

- * gpx_id
- * tag
- * id (auto_increment)

Data model (4)

gps_points

- * gpx_id = id of GPX track file
- * latitude
- * longitude
- * altitude
- * trackid
- * timestamp
- * tile

users

- * id
- * email
- * display_name
- * pass_crypt = password (MD5 encrypted)
- * active = 1|0
- * timeout = time when current login times out
- * token = validation string for activating account
- * creation_time
- * visible = true|false
- * home_lat = your location

Data model (5)

users ..

- * visible = true|false
- * home_lat = your location
- * home_lon = your location
- * home_zoom = default zoom level
- * within_lon = preference for how near you 'nearby users' are
- * within_lat = preference for how near you 'nearby users' are*
- * data_public = 1|0, whether you've declared all your edits

public

- * description = description of yourself
- * preferences = freeform text prefs field, not yet used?

friends

- * id
- * user_id
- * friend_user_id

Example gpx-file: waypoints

```
<?xml version="1.0" encoding="UTF-8"?>
<gpx
  version="1.0"
  creator="GPSBabel - http://www.gpsbabel.org"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://www.topografix.com/GPX/1/0"
  xsi:schemaLocation="http://www.topografix.com/GPX/1/0
  http://www.topografix.com/GPX/1/0/gpx.xsd">
  <time>2008-06-01T21:10:14Z</time>
  <bounds minlat="50.392115777" minlon="6.791837113" maxlat="53.642539624"
  maxlon="13.321990035"/>
  <wpt lat="52.959290715" lon="10.572619764">
    <name>002</name>
    <cmt>002</cmt>
    <desc>002</desc>
    <sym>Waypoint</sym>
  </wpt>
  <wpt lat="53.642539624" lon="11.389192650">
    <ele>65.254761</ele>
    <name>003</name>
    <cmt>003</cmt>
    <desc>003</desc>
    <sym>Waypoint</sym>
  </wpt>
</gpx>
```

Upcoming project: OpenRouteService

Search 53111 Bonn
e.g. 'Bonn Meckenheimer Allee' or Postalcode '53111'

Map [more](#)

Routing

Pick

Startpoint

Endpoint

[more options](#)

Search for Points of Interest (POI): [Directory Service](#)

Calculates reachable regions in given time: [Accessibility Analysis](#)

RouteSummary **Extras:** [RouteLink](#)

Total-Time: ~ 45 minute(s)

Total-Distance: ~ 77.4 km

Nr.	Route-Instruction	Distance
1.	Start ...	0 km
2.	Fahre geradeaus auf Celsiusstrasse	0.4 km
3.	Fahre links auf Brüser Damm	0.4 km
4.	Fahre halb rechts	0.7 km
5.	Fahre halb rechts	71.8 km
6.	Fahre halb rechts auf Südring	0.1 km
7.	Fahre halb links auf Merowingerstrasse	0.7 km
8.	Fahre halb links auf Friedrichstrasse	0.8 km
9.	Fahre links auf Herzogstrasse	1.8 km
10.	Fahre halb links	0.7 km
11.	Fahre geradeaus auf Düsseldorfer Strasse	0.0 km
12.	Ziel erreicht! Düsseldorfer Strasse	0 km

Scale = 1 : 108K [Permalink](#)

developed by University of Bonn

Links

- <http://www.openstreetmap.org/>
- <http://wiki.openstreetmap.org/>
- <http://www.informationfreeway.org/>
- <http://www.opencyclemap.org/>
- <http://www.openpistemap.org/>
- <http://www.openrouteservice.org/>
- <http://sautter.com/map/>
- <http://openstreetbugs.appspot.com/>
- <http://richard.dev.openstreetmap.org/upload.cgi>

For developers

- <http://svn.openstreetmap.org>
- <http://trac.openstreetmap.org>

OpenStreetMapper@work





Questions?

