

B1 - Das Arbeiten mit OSM Daten

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Inhalt dieses Abschnitts

- Vorstellung des Openstreetmap (OSM) Projekts
- Welche OSM-Daten sind erhältlich?
- Vorstellung von Forschung die mit OSM-Daten durchgeführt wurde

OpenStreetMap Projekt

<http://www.openstreetmap.de/>

OpenStreetMap.org ist ein im Jahre 2004 gegründetes internationales Projekt mit dem Ziel, eine freie Weltkarte zu erschaffen. Dafür sammeln wir weltweit Daten über Straßen, Eisenbahnen, Flüsse, Wälder, Häuser und vieles mehr.

OpenStreetMap

Wikipedia - OpenStreetMap

OpenStreetMap (OSM) ist ein kollaboratives Projekt um eine editierbare Weltkarte zu erzeugen.

street png maps osm svg google maps screenshot tile cambridge openstreetmap.org api openstreet



OpenStreetMap – Wikipedia
de.wikipedia.org



DE Browsing - OpenStreetMap Wiki
wiki.openstreetmap.org



OpenStreetMap - Wikipedia
en.wikipedia.org



Openstreetmap: Die free Weltkarte richtig nutzen...
insights.info



Why would you use OpenStreetMap i...
geoawesomeness.com



The map you see on OpenStreetMap ...
blog.openstreetmap.org



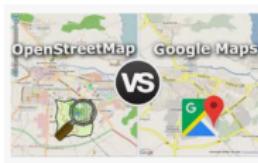
Vandalismusfall bei OpenStreetMap - Pro-Linux
pro-linux.de



OpenStreetMap - Wikipedia
en.wikipedia.org



Applications of OpenStreetMap - OpenStreetMap Wiki
wiki.openstreetmap.org

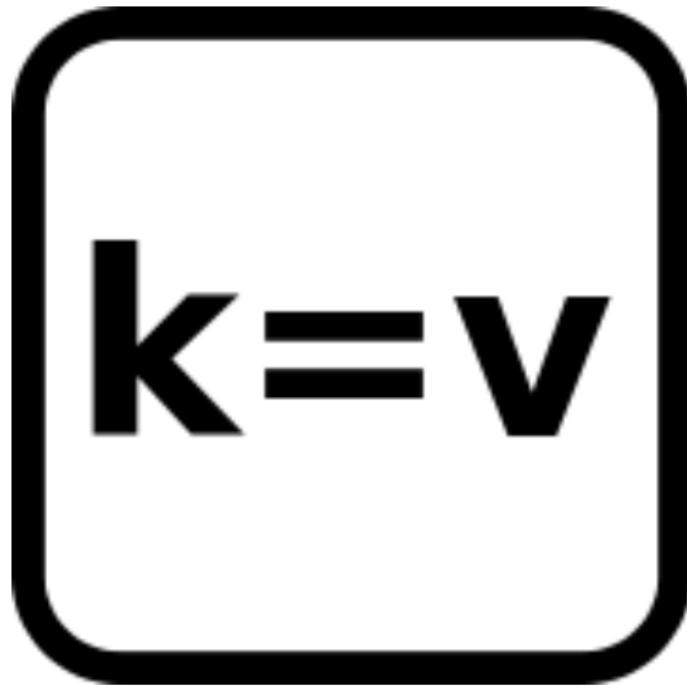


Google Maps vs OpenStreetMap: Which is the Best W...
monde-geospatial.com



OpenStreetMap Alternatives and Similar ...
alternativeo.net

Openstreetmap Tags



OSM Map Features

Amenity

Used to map facilities used by visitors and residents. For example: toilets, telephones, banks, pharmacies, cafes, parking and schools. See the page [Amenities](#) for an introduction on its usage.

Key	Value	Element	Comment	Rendering	Photo
Sustenance					
amenity	bar		Bar is a purpose-built commercial establishment that sells alcoholic drinks to be consumed on the premises. They are characterised by a noisy and vibrant atmosphere, similar to a party and usually don't sell food. See also the description of the tags <code>amenity=pub;bar;restaurant</code> for a distinction between these.		
amenity	bbq		BBQ or Barbecue is a permanently built grill for cooking food, which is most typically used outdoors by the public. For example these may be found in city parks or at beaches. Use the tag <code>fuel=*</code> to specify the source of heating, such as <code>fuel=wood;electric;charcoal</code> . For mapping nearby table and chairs, see also the tag <code>tourism=picnic_site</code> . For mapping campfires and firepits, instead use the tag <code>leisure=firepit</code> .		
amenity	biergarten		Biergarten or beer garden is an open-air area where alcoholic beverages along with food is prepared and served. See also the description of the tags <code>amenity=pub;bar;restaurant</code> . A biergarten can commonly be found attached to a beer hall, pub, bar, or restaurant. In this case, you can use <code>biergarten=yes</code> additional to <code>amenity=pub;bar;restaurant</code> .		
amenity	cafe		Cafe is generally an informal place that offers casual meals and beverages, typically, the focus is on coffee or tea. Also known as a <code>coffeehouse/shop</code> , <code>bistro</code> or <code>sidewalk cafe</code> . The kind of food served may be mapped with the tags <code>cuisine=*</code> and <code>diet=*</code> . See also the tags <code>amenity=restaurant;bar;fast_food</code> .		
amenity	drinking_water		Drinking water is a place where humans can obtain potable water for consumption. Typically, the water is used for only drinking. Also known as a <code>drinking fountain</code> or <code>water tap</code> .		

Objekttypen in OSM

Es gibt prinzipiell drei verschiedene Objekttypen:

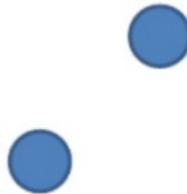
- nodes (points),
- ways (polygons and polylines)
- relations (logical grouping of all three object types to express real-world geographical relationships)

Hippolyte Pruvost and Peter Mooney: Exploring Data Model Relations in OpenStreetMap

OpenStreetMap objects

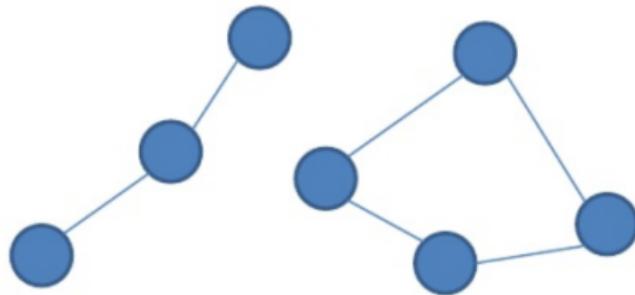
Martijn van Exel

- nodes and ways



Nodes

Points with (X,Y) and attributes

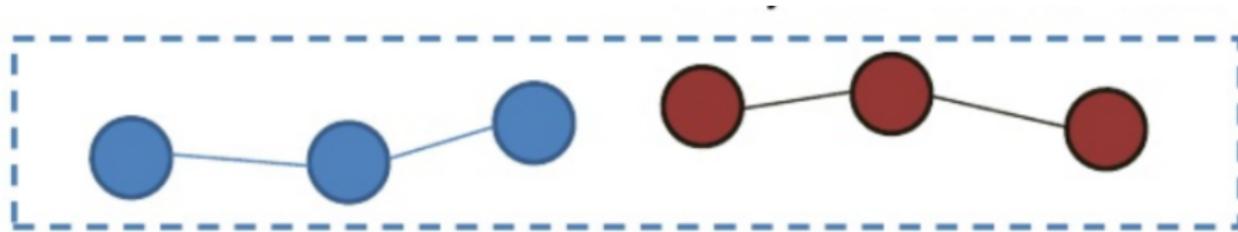


Ways

Ordered set of nodes. Polygons are closed ways, not a separate entity. Can have attributes.

OpenStreetMap objects

Relations



Relations

Groups of objects with a functional
or geographic relationship

Download von OpenStreetMap Daten - Metro extracts

- Ausschnitte von OpenStreetMap für einzelne Städte (**metro extracts**)

metro extracts

Each week, Metro Extracts automatically creates snapshots of [OpenStreetMap](#) data into manageable, metro-area files in a variety of formats for you to use. Download an extract from the list of popular extracts below to get started right away, or request a new extract of anywhere in the world!

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SEARCH FOR A CITY OR REGION

example: Los Angeles

SEARCH

POPULAR EXTRACTS:

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Dubai

ALGERIA

Algiers

ANGOLA

Luanda

ARGENTINA

Buenos Aires

AUSTRALIA

Adelaide

Brisbane



Download von OpenStreetMap Daten - Geofabrik

Geofabrik

- Über **Geofabrik** lassen sich aktuelle Ausschnitte (auch Shapefiles) herunterladen



GEOFABRIK // Start
geofabrik.de



GEOFABRIK // Start
geofabrik.de



Geofabrik on Twitter: "Free Geofabrik ...
twitter.com



GEOFABRIK // Routing
geofabrik.de



LearnOSM
learnosm.org



GEOFABRIK // OpenStreetMap-Ges...
geofabrik.de

Download von OpenStreetMap Daten - openaprs

Kartendaten (openaprs)

aprs mobile

places2play

pickleball usapa

pickleball screenshot

lambourn

app

iphone

w3drm



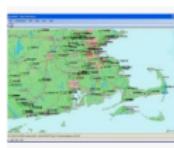
Creating APRS objects for repeaters u...



OpenAPRS iPhone (@open...



HB9EYZ - APRS (Windows & Android)



OpenAPRS download | SourceFo...



OpenAPRS - App Store



OpenAPRS 2.4.1 Free Dow...



OpenAPRS - App Store

OSM Planet file

Datenbanklösungen

- Bei den eben vorgestellten Möglichkeiten geht es vor allem um das Herunterladen kleiner Ausschnitte.
- Wenn größere Datenmengen benötigt werden, sollte man eine Datenbanklösung nutzen.
- **PostgreSQL** hat den Vorteil, dass es Open-Source ist.

Download PostgreSQL

- Hier ist eine Einführung in PostgreSQL zu finden

The screenshot shows the Aqua Data Studio 15.0.0 interface. The left sidebar displays a tree view of a PostgreSQL 8.4.1 database named 'ivan'. Under 'Databases', 'public' is expanded to show tables like 'amay_1', 'bi_table', 'booltest', etc. Under 'Tables', 'orders' is selected, and its 'Columns' are listed. The main window shows the 'Alter: Table: orders' dialog. The 'General' tab is selected, displaying fields for 'Database' (ivan), 'Schema' (public), and 'Name' (orders). Below this is a table with columns for 'Column Name', 'Data Type', 'Length', and 'Allow Nulls'. The 'money' column is currently selected, showing its properties: path (40), point (200), polygon, serial, smallint, text, time, and timetz. A dropdown menu for 'Column' is open, listing various data types. At the bottom of the dialog, tabs for 'Constraints', 'Storage', 'Comments', 'Permissions', 'Preview SQL', and 'Messages' are visible.

Column Name	Data Type	Length	Allow Nulls
1 orderid	int4		✓
2 customerid	char	5	✓
3 employeeid	int4		✓
4 orderdate	timestamp		✓
5 requireddate	timestamp		✓
6 shippeddate	timestamp		✓
7 shipvia	int4		✓
8 freight	money	path point polygon	✓
9 shipname	text	40 200	✓
10 shipaddress	time		✓

pgAdmin

- Sehr empfehlenswert: Arbeiten mit **pgAdmin**
- Beispiel: um Verknüpfung zu einer Datenbank herzustellen - Doppelklick auf den Server in pgAdmin

PostGIS für PostgreSQL

- **Installieren** der PostGIS Erweiterung:

```
CREATE EXTENSION postgis;
```



Programm zum Import der OSM Daten in PostgreSQL- osm2pgsql

- Läuft unter Linux deutlich besser
- so könnte bspw. ein Import in PostgreSQL aussehen:

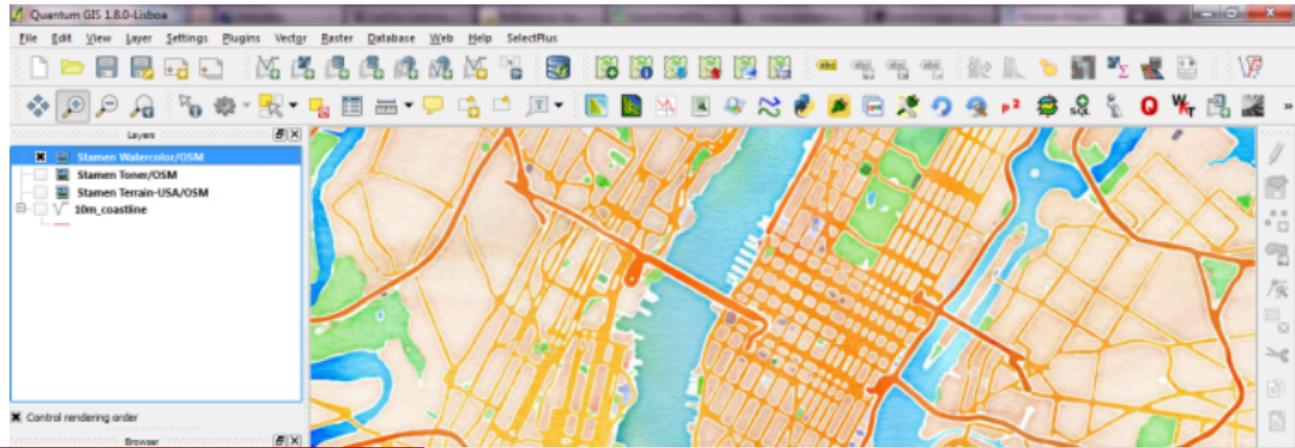
```
osm2pgsql -c -d osmBerlin --slim -C -k berlin-latest.osm.pbf
```

Verbindung zwischen R und Postgresql

```
install.packages("RPostgreSQL")
```

```
library("RPostgreSQL")
```

- **Github Verzeichnis** zum Paket ## Nutze bspw. QGIS um Shapefiles zu extrahieren
- Plugin OpenLayers



Links

- **Wiki zum Download** von Openstreetmap Daten
- **Openstreetmap Blog**
- Liste möglicher Datenquellen für räumliche Analysen (weltweit und in **Deutschland**)
- **SALB** - Administrative Grenzen

<http://wiki.openstreetmap.org/wiki/SALB>