



TECHNIK
HOCHSCHULE MAINZ
UNIVERSITY OF
APPLIED SCIENCES



OSM im Einsatz für #CodingDaVinci?

Nutzung der Karten, Daten und Dienste

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Coding da Vinci Rhein-Main - 28.10.2018
Map data © OpenStreetMap contributors

Motivation & Ziel

OpenStreetMap (OSM)

Wer hat schon einmal etwas von OSM gehört?

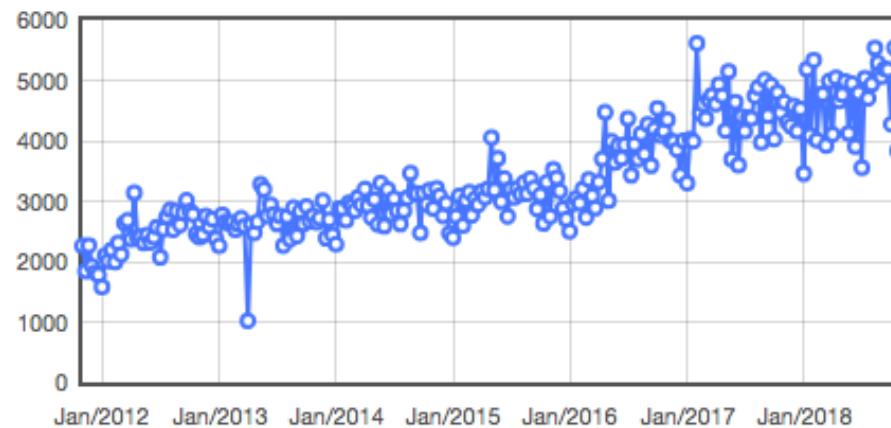
OpenStreetMap



Jeder kann sich beteiligen.
5 Mio. Mitglieder erschaffen
eine freie Geodaten-Datenbank.

Aktivität

No. of daily active members overall



Edits per country Oct. 24th 2018

No.	Country	Total Σ	4845	2487746	484352	149567
		Members	Created Nodes	Modified Nodes	Deleted Nodes	
1	Germany	552	54255	27710	6989	
2	United States	445	338987	45702	12106	
3	France	279	79835	25824	5159	
4	Russia	252	101931	15437	11800	
5	India	171	68094	9584	2117	
6	Italy	163	22244	4871	1063	
7	Poland	160	24833	7059	4265	
8	United Kingdom	159	34464	6753	1781	
9	Indonesia	148	369535	13158	7295	
10	Ghana	132	72436	61013	982	

<https://osmstats.neis-one.org>

Beitragen?!

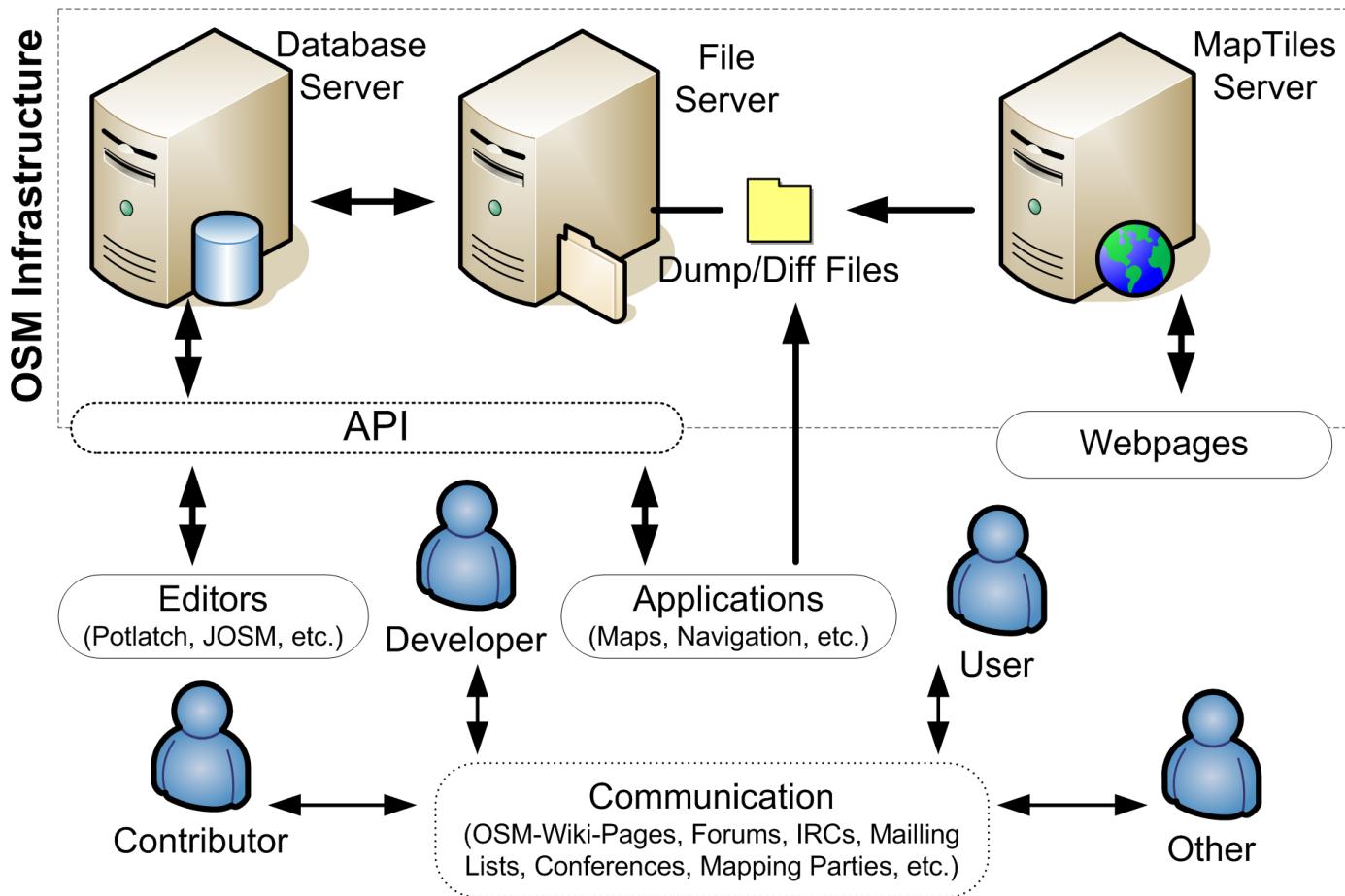
The screenshot shows the registration page of the OpenStreetMap website. At the top, there is a navigation bar with links for "Bearbeiten", "Chronik", "Export", "GPS-Tracks", "Benutzer-Blogs", "Urheberrecht", "Hilfe", "Über", "Anmelden", and "Registrieren". The main title "Registrieren" is displayed above a large graphic of a globe with binary code and a map icon. Below the graphic, there are fields for "E-Mail-Adresse:" and "Bitte wiederhole die E-Mail-Adresse:". To the right of these fields is a text block explaining the nature of OSM: "Frei und editierbar. Im Gegensatz zu anderen Karten wurde OpenStreetMap komplett von Leuten wie dir erstellt. Jeder kann sie verbessern, aktualisieren und erweitern, sowie für jeden Zweck verwenden." Further down, there are fields for "Benutzername:" and "Passwort:", with a note below stating: "Dein öffentlich angezeigter Benutzername. Er kann später in den Einstellungen geändert werden." The registration form is set against a light gray background.

<https://www.openstreetmap.org/user/new>
LearnOSM → <https://learnosm.org>

Vorteile

1. „Freie“ Geodaten
2. Jederzeit „aktuelle“ Geodaten
3. Für „jede“ Region der Welt
4. Erstellung „beliebiger“ Karten
5. Daten für Ortsbezogene-Dienste/Analysen
6. Beliebige Datenexporte:
DB-Dumps, Shapefiles, Garmin ...

Infrastruktur



Neis & Zielstra (2014): Recent Developments and Future Trends in Volunteered Geographic Information Research: The Case of OpenStreetMap

Informationen & Kontakt

Wiki → https://wiki.openstreetmap.org/wiki/Main_Page

Help → <https://help.openstreetmap.org>

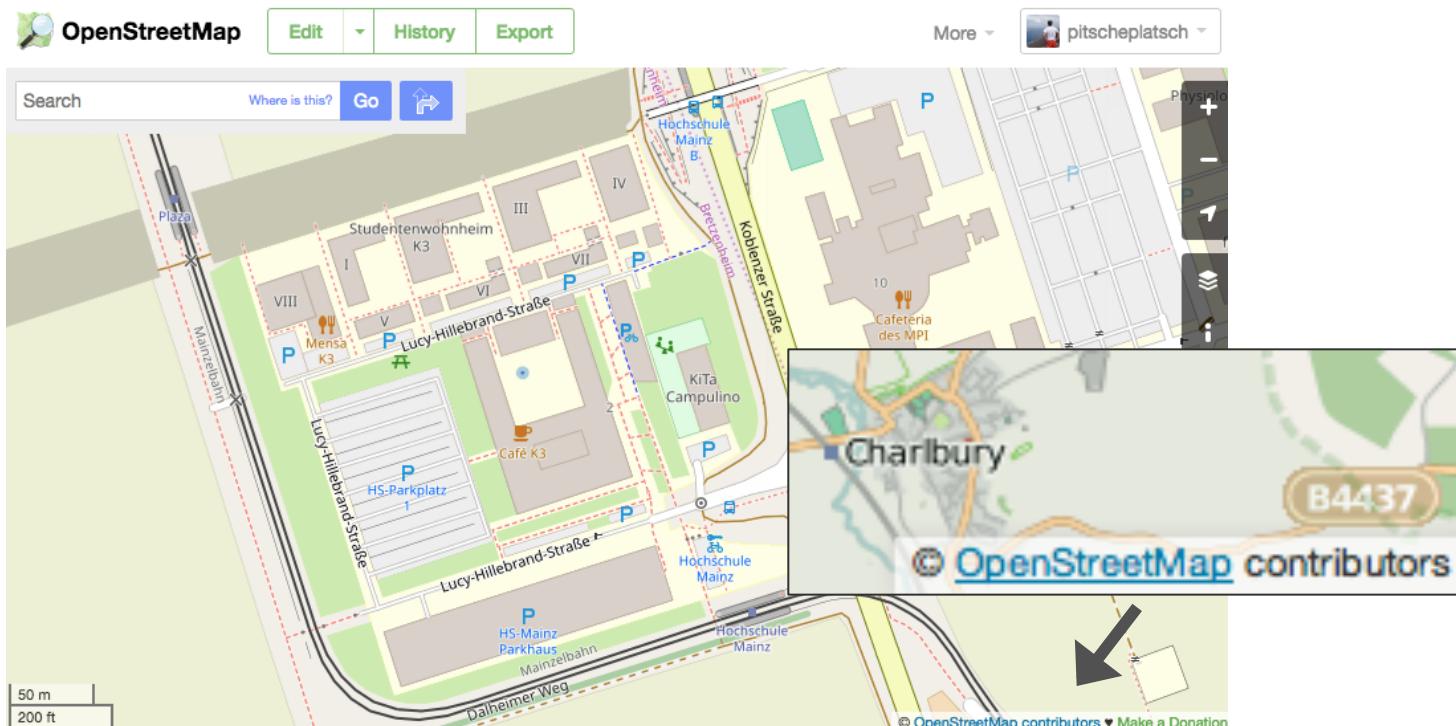
Forum → <https://forum.openstreetmap.org>

Mailing lists → https://wiki.openstreetmap.org/wiki/Mailing_lists

IRC → <https://wiki.openstreetmap.org/wiki/IRC>

Copyright

Wie auf die Urheberschaft hinzuweisen?



<https://www.openstreetmap.org/copyright>

OSM Usage policy

Map Tiles

<https://operations.osmfoundation.org/policies/tiles/>

API

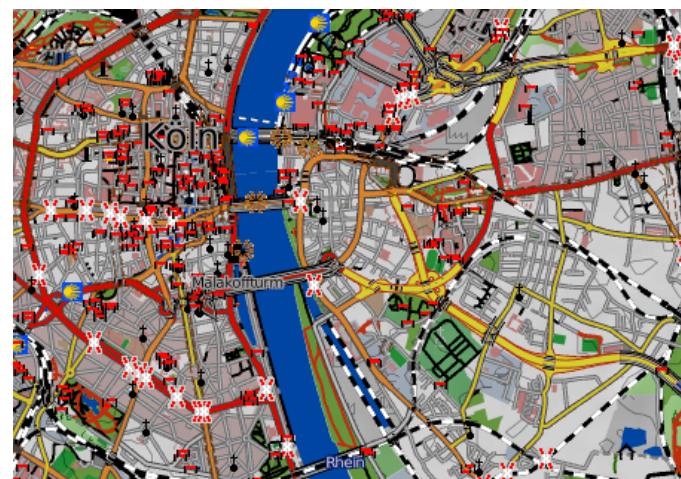
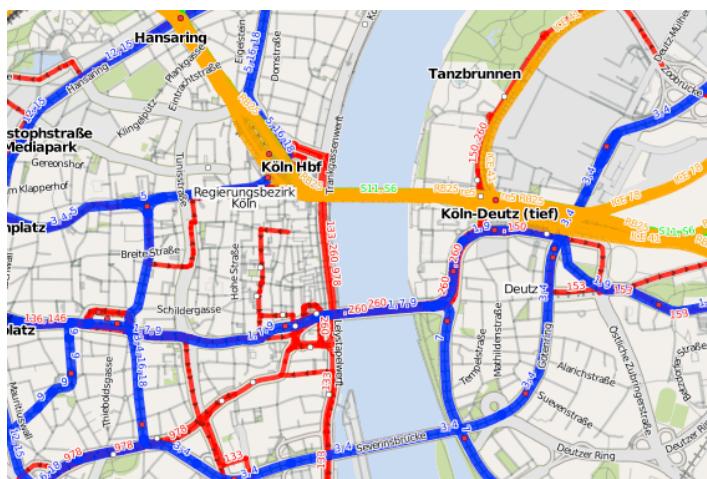
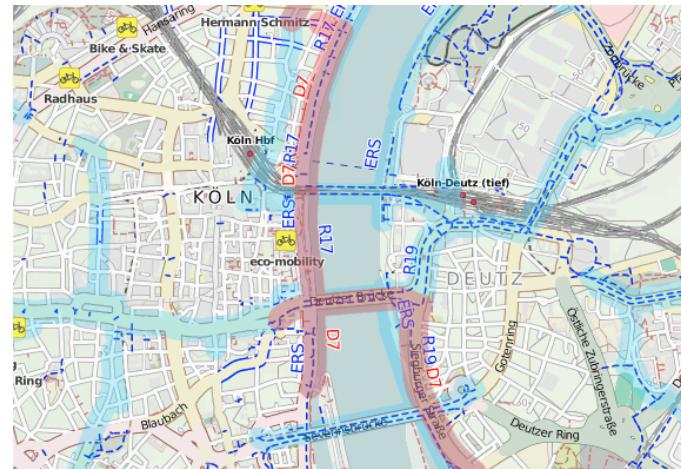
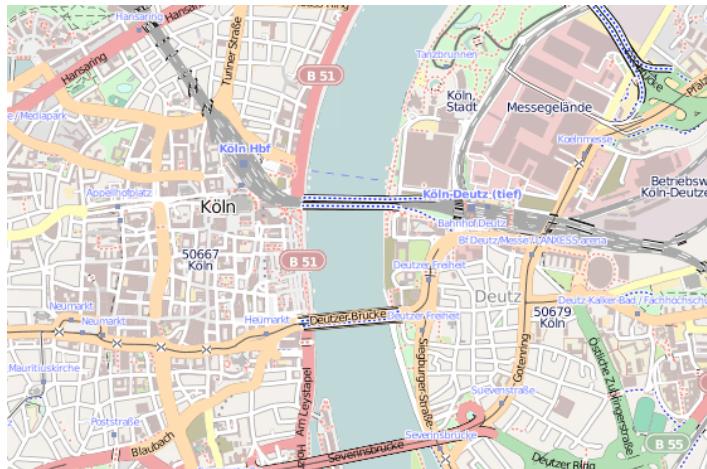
<https://operations.osmfoundation.org/policies/api/>

Adress-Suche

<https://operations.osmfoundation.org/policies/nominatim/>

Maps

Karten



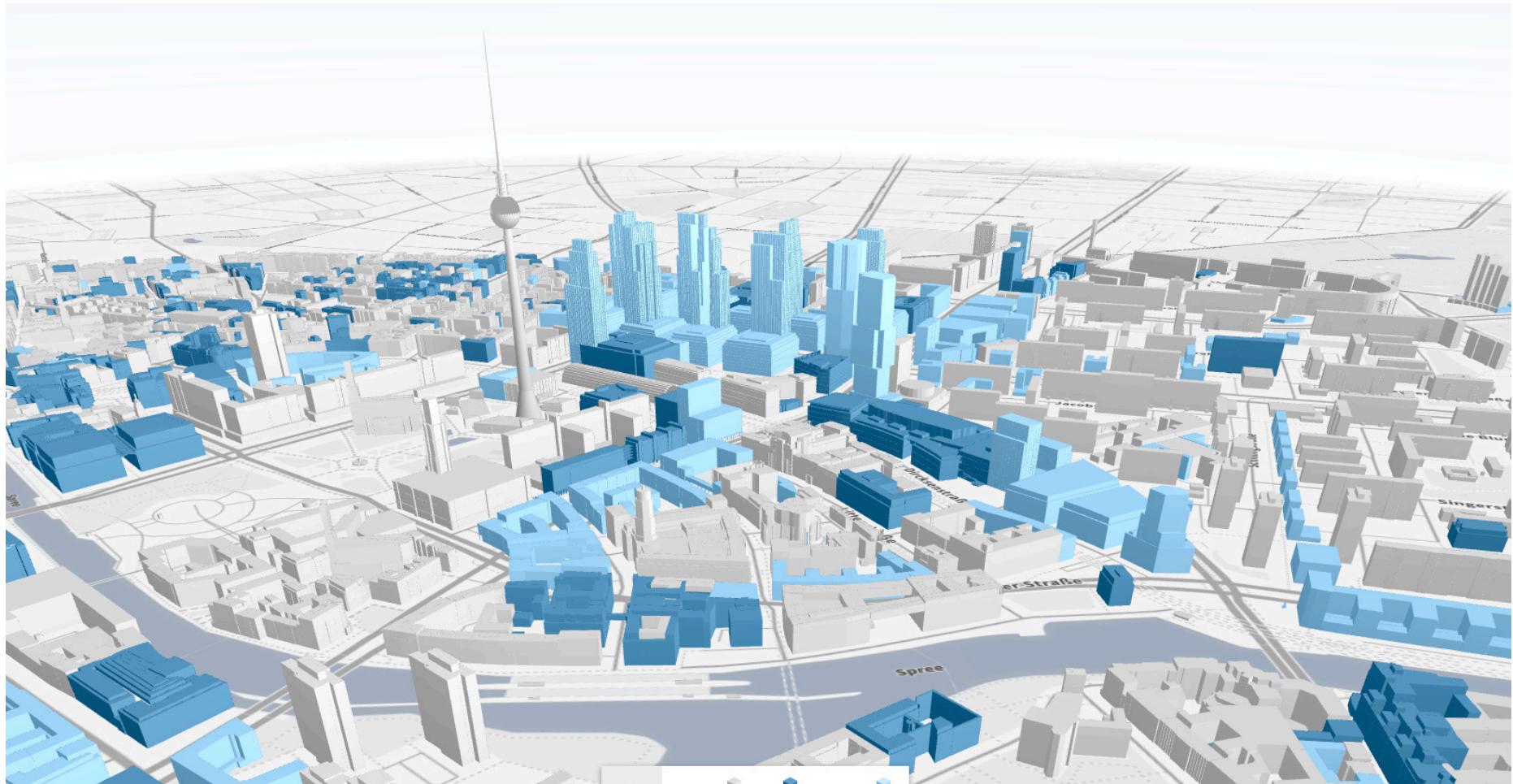
https://wiki.openstreetmap.org/wiki/Tile_servers

Stamen Toner & Watercolor



<http://maps.stamen.com>

3D



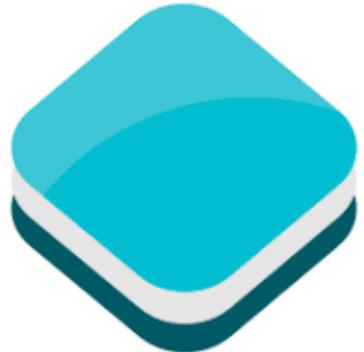
<https://blog.webkid.io/3d-maps-with-osmbuildings>

Bibliotheken



Leaflet

<https://leafletjs.com>

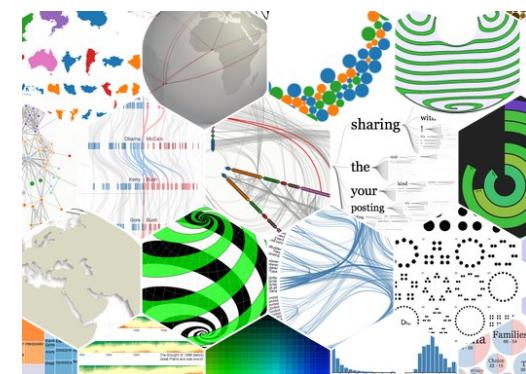


OpenLayers

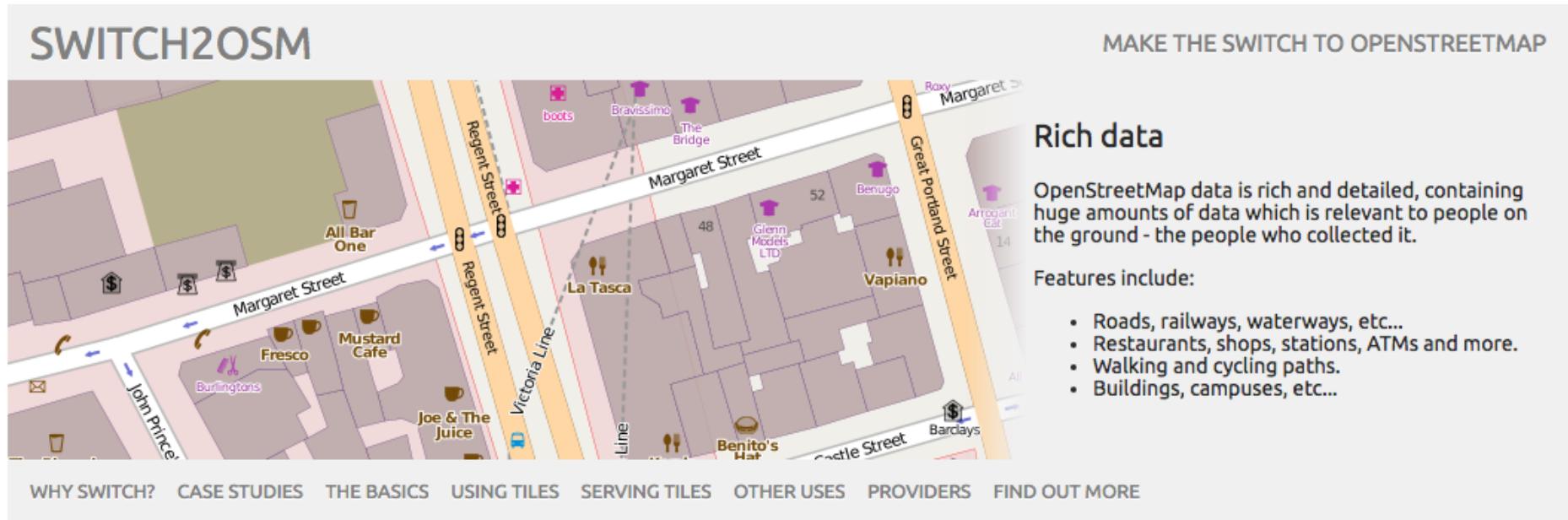
<http://openlayers.org>

D3.js

<https://d3js.org>



Eigener Geo-Stack



The screenshot shows a detailed map of a central London area, specifically around Oxford Circus and the West End. The map includes street names like Margaret Street, Regent Street, Great Portland Street, and Castle Street. Numerous buildings and businesses are marked with icons and labels, such as All Bar One, Mustard Cafe, Fresco, Joe & The Juice, Burlingtons, Bravissimo, The Bridge, boots, Glenn Medies LTD, Benugo, Vapiano, La Tasca, Benito's Hat, and Arrogant Eat. A Victoria Line station is also indicated. The map is overlaid with a grid of orange tiles, suggesting it's a tile-based map service.

SWITCH2OSM

MAKE THE SWITCH TO OPENSTREETMAP

Rich data

OpenStreetMap data is rich and detailed, containing huge amounts of data which is relevant to people on the ground - the people who collected it.

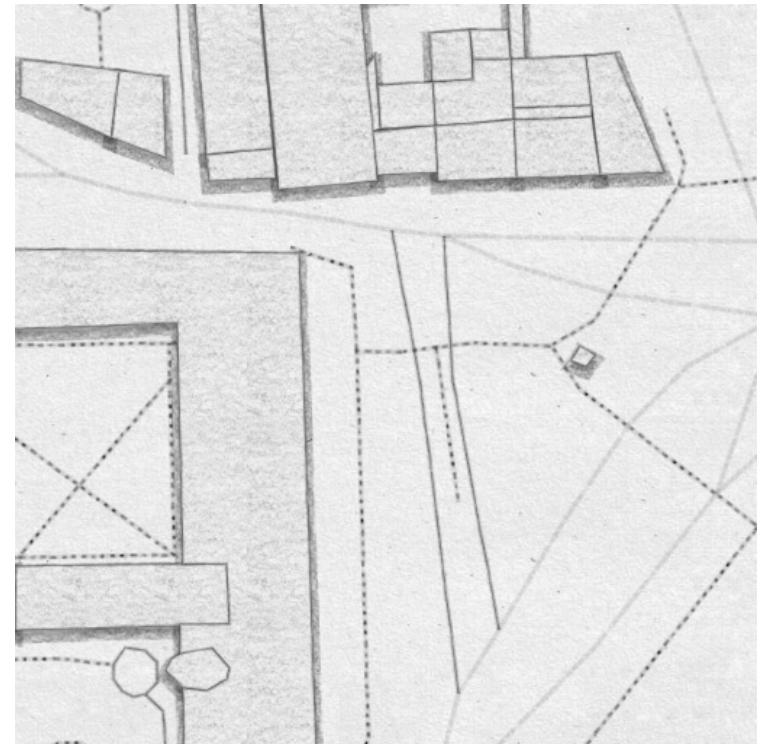
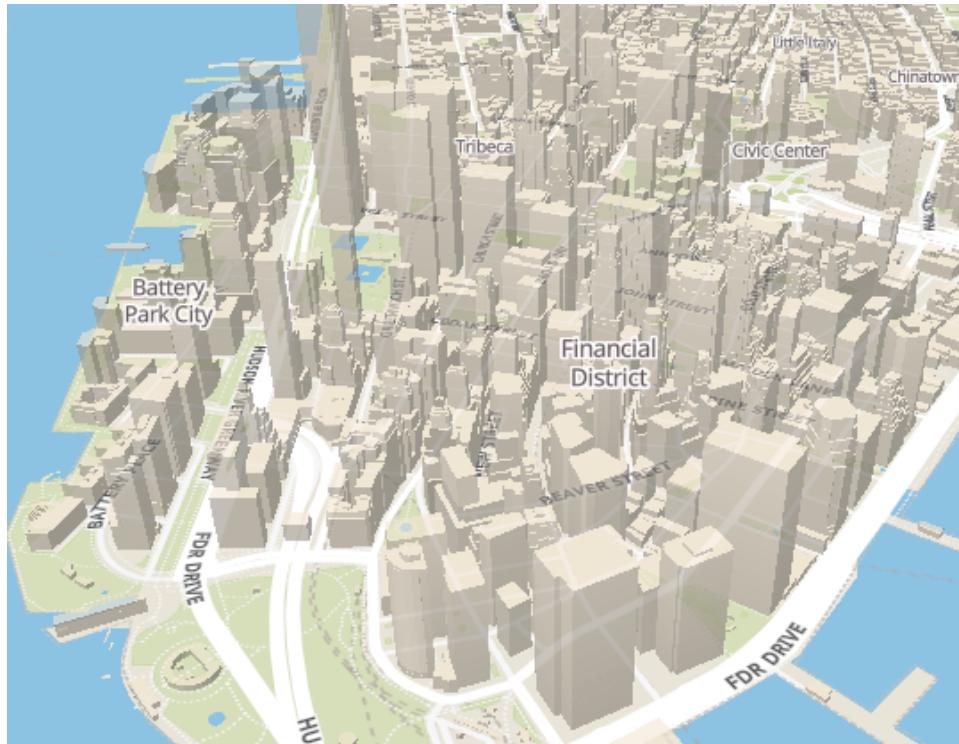
Features include:

- Roads, railways, waterways, etc...
- Restaurants, shops, stations, ATMs and more.
- Walking and cycling paths.
- Buildings, campuses, etc...

WHY SWITCH? CASE STUDIES THE BASICS USING TILES SERVING TILES OTHER USES PROVIDERS FIND OUT MORE

<https://switch2osm.org>

Vector tiles



https://wiki.openstreetmap.org/wiki/Vector_tiles

<https://openmaptiles.org/styles>

Data

Shapefiles

GEOFABRIK  *downloads*

OpenStreetMap Data Extracts

The OpenStreetMap data files provided on this server do **not** contain the user names, user IDs and changeset IDs of the OSM objects. These metadata fields contain personal information about the OpenStreetMap contributors and are subject to data protection regulations in the European Union. Please note that these regulations apply even to processing that happens outside the European Union because some OpenStreetMap contributors live in the European Union.
[Extracts with full metadata](#) are available to OpenStreetMap contributors only.

Welcome to Geofabrik's free download server. This server has data extracts from the [OpenStreetMap project](#) which are normally updated every day. Select your continent and then your country of interest from the list below. (If you have been directed to this page from elsewhere and are not familiar with OpenStreetMap, we highly recommend that you read up on OSM before you use the data.) This open data download service is offered free of charge by Geofabrik GmbH.

Willkommen auf dem Geofabrik-Downloadserver. Hier gibt es Daten-Auszüge aus dem [OpenStreetMap-Projekt](#), die normalerweise täglich aktualisiert werden. Wählen Sie aus dem Verzeichnis unten den Kontinent und ggf. das Land, für die Sie Daten benötigen. (Wenn Sie von anderswo auf dieser Seite gelandet sind und von OpenStreetMap nichts wissen, dann ist es empfehlenswert, sich mit dem Projekt vertraut zu machen, bevor Sie mit den Daten arbeiten.) Diese Downloads werden von der Geofabrik GmbH kostenlos angeboten.



 Not what you were looking for? Geofabrik is a consulting and software development firm based in Karlsruhe, Germany specializing in OpenStreetMap services. We're happy to help you with data preparation, processing, server setup and the like. [Check out our web site](#) and contact us if we can be of service.

<https://download.geofabrik.de>

Dumps



Planet OSM

The files found here are regularly-updated, complete copies of the OpenStreetMap.org database, and those published before the 12 September 2012 are distributed under a Creative Commons Attribution-ShareAlike 2.0 license, those published after are Open Data Commons Open Database License 1.0 licensed. For more information,

[see the project wiki](#).

Complete OSM Data

[Latest Weekly Planet XML File](#)

71 GB, created 2 days ago.

md5: 3e5c9ee41087fae56306515a55edc9d9.

[Latest Weekly Changesets](#)

2.4 GB, created 2 days ago.

md5: 0f3abe2c610a8d356794faee80ce220c.

[Latest Weekly Planet PBF File](#)

42 GB, created 2 days ago.

md5: 52e973f5ae2da160fddcfbbd926e1e66.

Each week, a new and complete copy of all data in OpenStreetMap is made available as both a compressed XML file and a custom PBF format file. Also available is the '[history](#)' file which contains not only up-to-date data but also older versions of data and deleted data items.

Using The Data

You are granted permission to use OpenStreetMap data by [the OpenStreetMap License](#), which also describes your obligations.

You can [process the file](#) or extracts with a variety of tools. [Osmosis](#) is a general-purpose command-line tool for converting the data among different formats and databases, and [Osm2pgsql](#) is a tool for importing the data into a Postgis database for rendering maps.

[Processed coastline data](#) derived from OSM data is also needed for rendering usable maps, and can be found in a [single shapefile](#) (360MB).

Extracts & Mirrors

The complete planet is very large, so you may prefer to use one of [several periodic extracts](#) (individual countries or states) from third parties. [GeoFabrik.de](#) and [BBBike.org](#) are two providers of extracts with up-to-date worldwide coverage.

<https://planet.osm.org>

Data model

Punkte (node)



Linien/Flächen (way)



Relationen (relation)

Gruppen von mehreren Nodes & Ways

→ Jedes Element kann Attribute (Tags) haben

<https://wiki.openstreetmap.org/wiki/Elements>

<https://wiki.openstreetmap.org/wiki/Tags>

Processing

OSMIUM

<https://wiki.openstreetmap.org/wiki/Osmium>

OSMOSIS

<https://wiki.openstreetmap.org/wiki/Osmosis>

Weitere Informationen

<https://wiki.openstreetmap.org/wiki/Develop>

API

Offizielle OSM API

<https://wiki.openstreetmap.org/wiki/API>

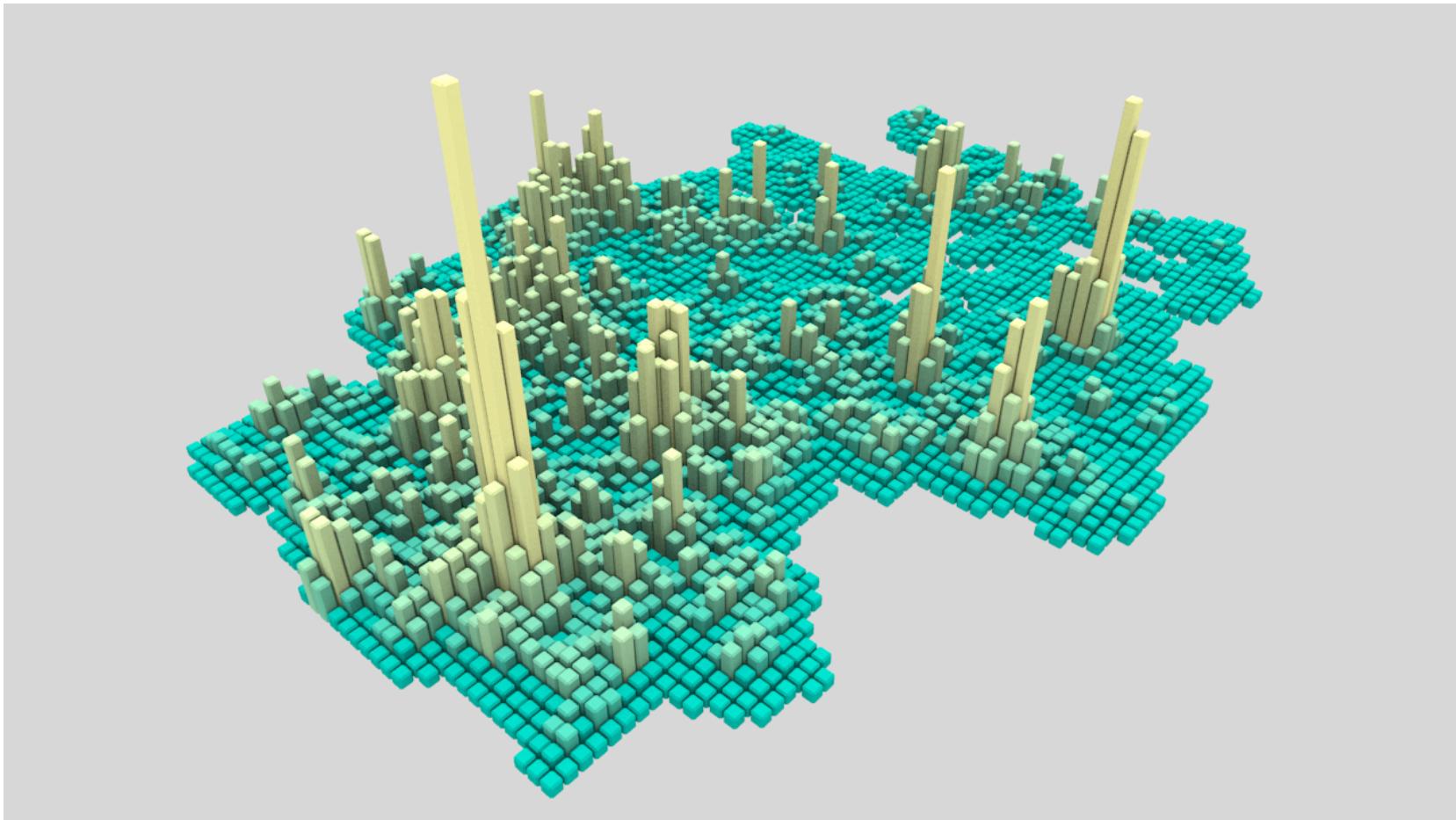
Overpass API

https://wiki.openstreetmap.org/wiki/Overpass_API

Beispiele

[https://wiki.openstreetmap.org/wiki/Overpass_API/
Overpass_API_by_Example](https://wiki.openstreetmap.org/wiki/Overpass_API/Overpass_API_by_Example)

Overpass API & Python



<https://janakiev.com/blog/openstreetmap-with-python-and-overpass-api>

Streets of Paris colored by orientation



<https://www.pinterest.de/pin/112660428154320432/>

Location-based Services

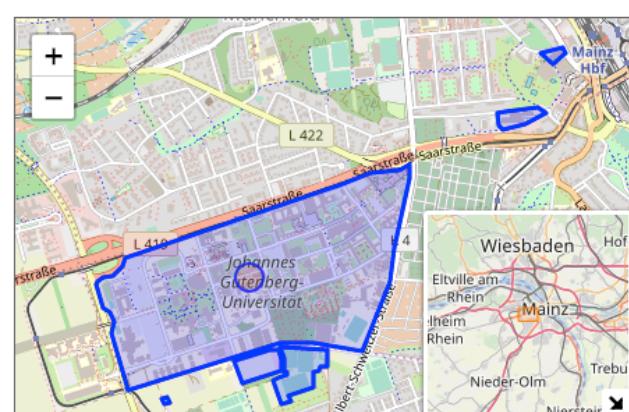
(Reverse) Geocoding

Nominatim

„Johannes Gutenberg-Universität“ \leftrightarrow „8.2370847 49.9920377“

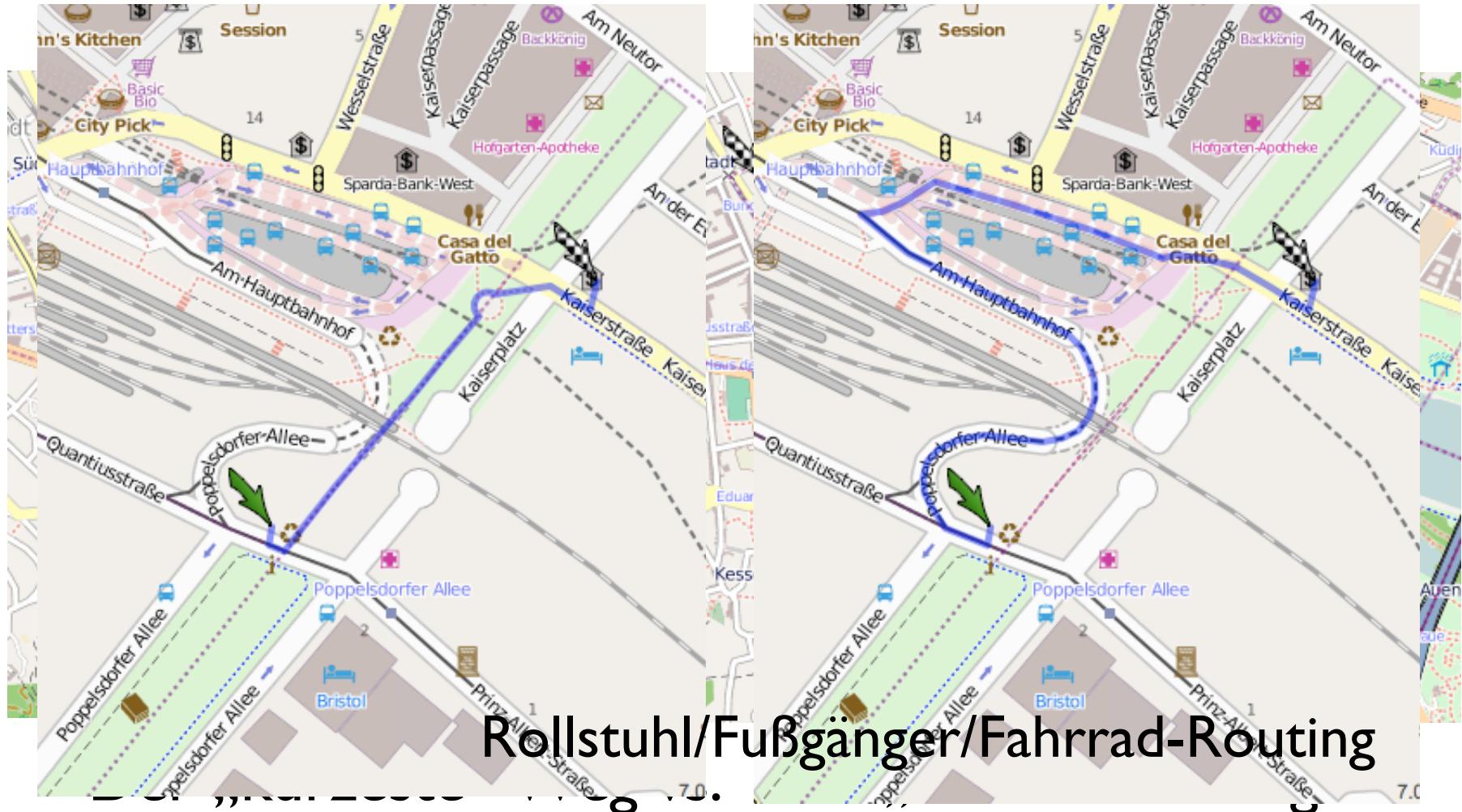
Johannes Gutenberg-Universität [link to this page](#) 

Name	Johannes Gutenberg-Universität (name) Johannes Gutenberg-Universität (name:de) Uniwersytet Jana Gutenberga w Moguncji (name:pl) Uni Mainz (name:short) Університет Майнца імені Йоганна Гутенберга (name:uk)
Type	amenity:university
Last Updated	Sat, 29 Sep 18 17:25:15 +0000
Admin Level	15
Rank	Other: 30
Importance	0.489270887360303
Coverage	Polygon
Centre Point	49.9920377,8.23708473893845
OSM	relation 8061090
Wikipedia	de:Johannes_Gutenberg-Universität_Mainz
Calculated	
Computed	55128
Postcode	
Address Tags	
Extra Tags	<div style="border: 2px dashed green; padding: 2px;">http://www.uni-mainz.de (website) Q161982 (wikidata) de:Johannes Gutenberg-Universität Mainz (wikipedia)</div>



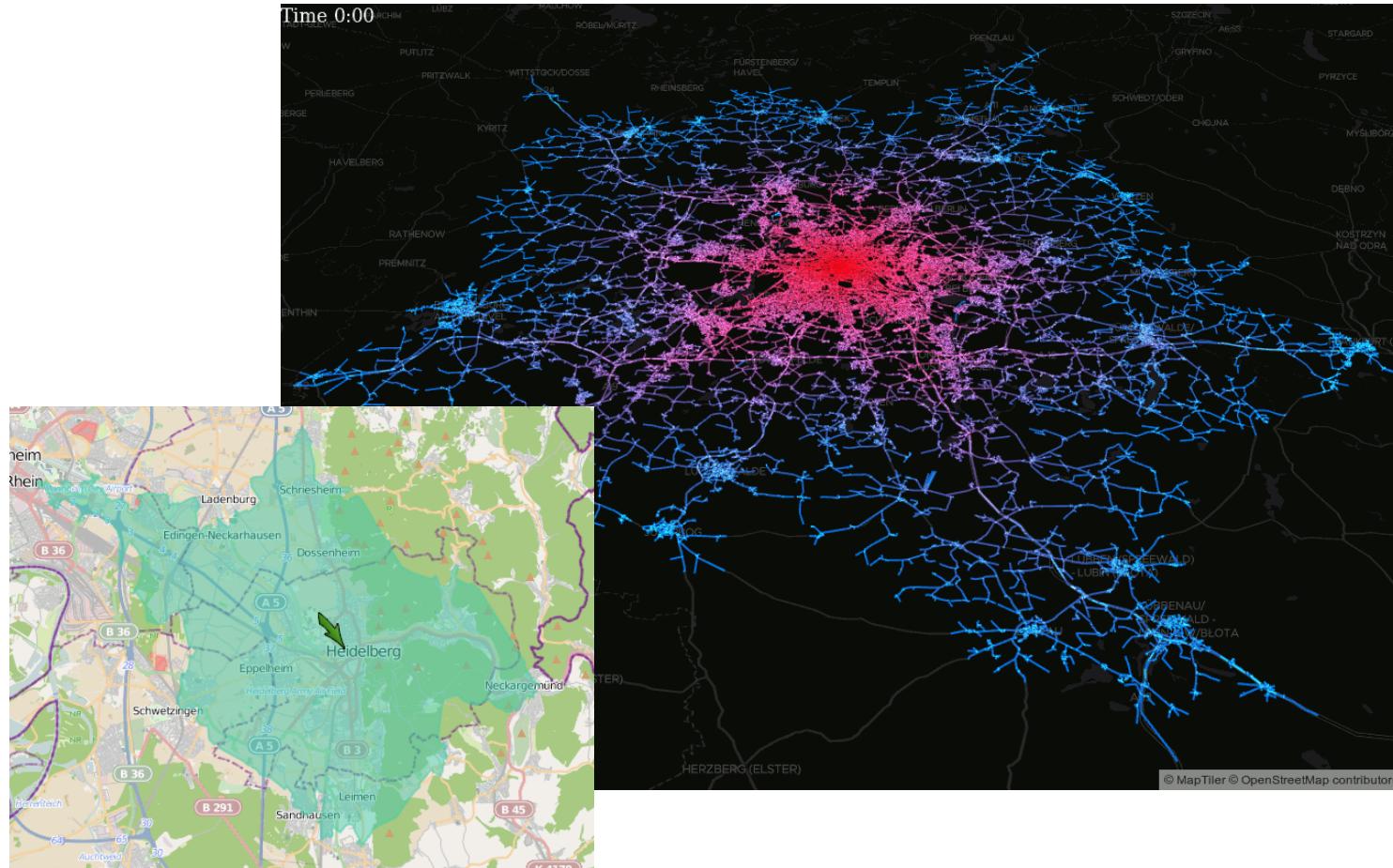
<https://wiki.openstreetmap.org/wiki/Nominatim>

Routing



<https://wiki.openstreetmap.org/wiki/Routing>

Isochrone



<https://wiki.openstreetmap.org/wiki/Isochrone>
<https://graphhopper.com/api/1/docs/isochrone/>

POI

OSMIUM oder OSMOSIS Extract

<https://osmcode.org/osmium-tool/manual.html>

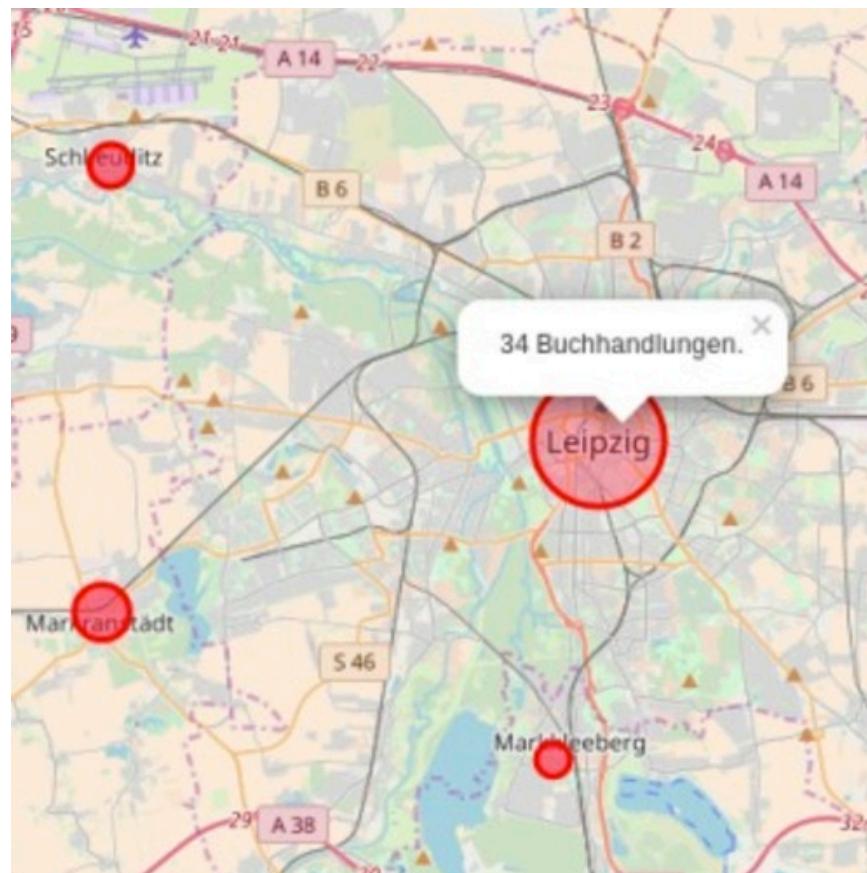
https://wiki.openstreetmap.org/wiki/Osmosis/Detailed_Usage_0.47

Leaflet Overpass Layer

<https://github.com/GuillaumeAmat/leaflet-overpass-layer>

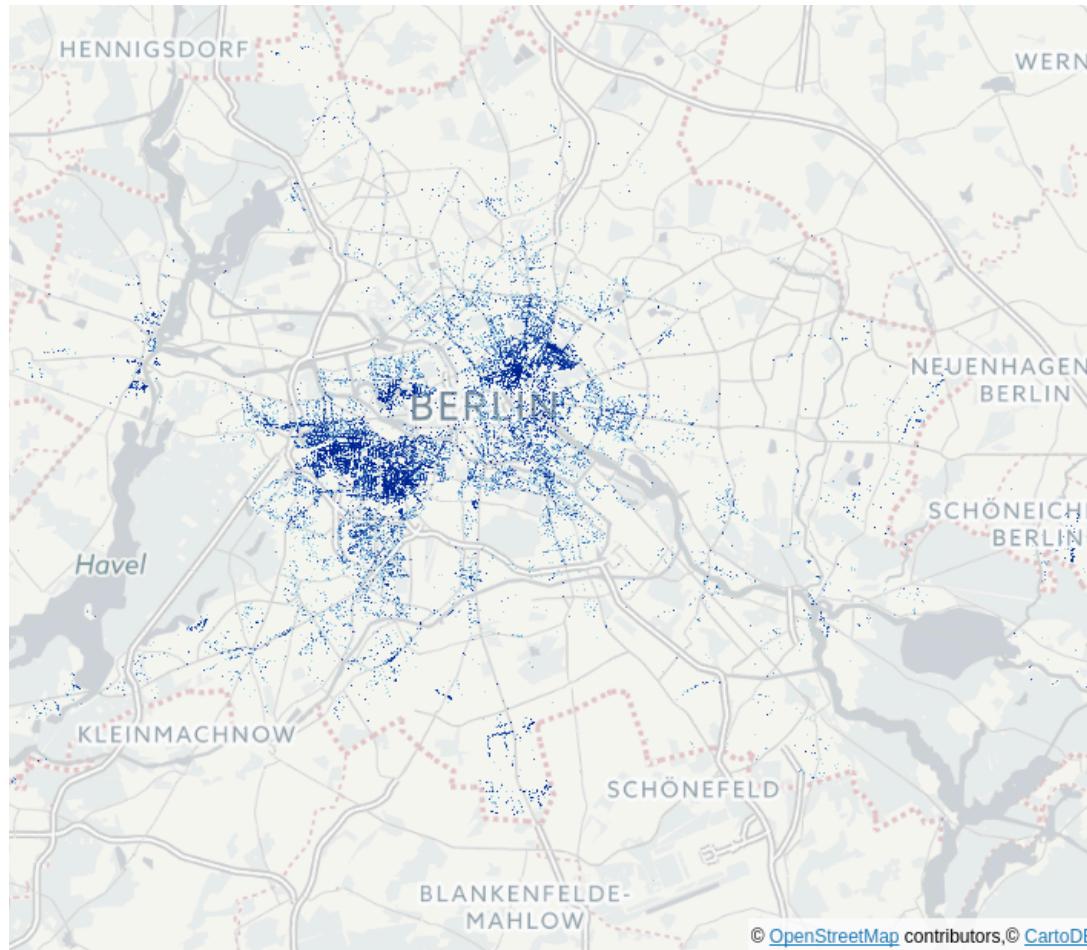
Beispiele @ #CodingDaVinci

Börsendaten - 2018



<https://codingdavinci.de/projects/2018/boersendaten.html>

Visualisierung jüdischen Lebens - 2017



<https://codingdavinci.de/projects/2017/visjuedleb.html>

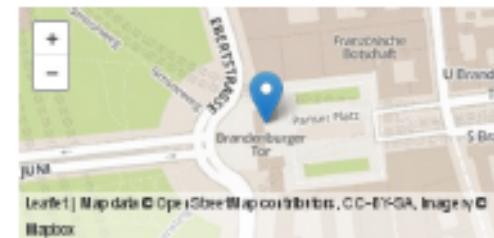
Zwei Welten – Berlin damals und heute - 2014

Zwei Welten Übersicht Impressum

Das Brandenburger Tor



Titel:
Das Brandenburger Tor
Künstler:
Chodowiecki, Daniel (1726-1801)
Erstellt:
Berlin, 1784
Rechte:
© Stiftung Stadtmuseum Berlin



Zusätzliche Informationen

- Stadtbefestigung
- Preußen
- Akzise
- Stadttor

Ein Stadttor war bis zur frühen Neuzeit der meist besondere verstärkte Durchlass durch die Ringmauer einer Stadt. Tüme und Tore dienten neben der Stadtmauer dazu, den Stadtkern gegenüber Feinden zu schützen.

Quelle: Wikipedia, Die freie Enzyklopädie
Bild: Berthold Werner, Public domain

- Pferdekutsche
- Brandenburger Tor

<https://www.benjamin-rosemann.de/blog/xml-technologien-und-coding-da-vinci-teil-3.html>

Stolpersteine – 20??

<http://www.stolpersteine.eu>



OSM + Wikipedia = ??

<https://wiki.openstreetmap.org/wiki/DE:Stolpersteine>

Vielen Dank!

Fragen?

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Map data © OpenStreetMap contributors