

# OpenStreetMap

## What is that and how can I contribute?

Hauke Stieler  
4stieler@informatik.uni-hamburg.de

26. Mai 2019



## 1 What is this?

- Motivation
- History
- Statistics
- Community

## 2 The data

- Geometries
- Tags

## 3 Applications

## 4 Contributing to OSM

- Trace aerial imagery
- Go outside
- Report errors
- Socialize

- free<sup>1</sup> project collecting **free accessible** geodata
- open database for geodata
- ODC-ODbL
  - ▶ OpenDataCommons Open Database License
  - ▶ Ersetzt CC BY-SA 2.0 (share alike & attribution)

---

<sup>1</sup>free as in freedom

## Motivation

Why has OpenStreetMap been created?

- proprietary maps old and faulty
  - focus on cars and traffic
  - no access to raw data
    - ▶ error correction not possible
  - Google Maps *not directly evil* – but **not free**
  - license problems with (nearly) all map service providers

## History

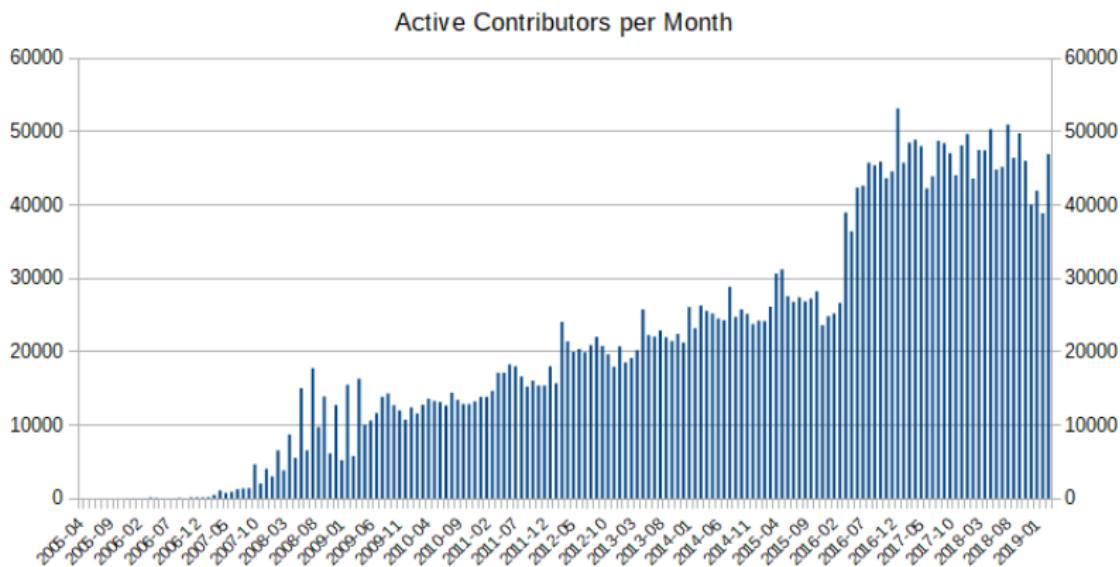
- 2004 – OSM founded
- 2006 – release JOSM-Editor
- 2006 – first map rendered with Mapnik
- 2007 – TIGER data import USA started
- 2008 – TIGER data import USA finished
- 2009 – API 0.6 (still latest version)
- 2009 – cooperation with Wikipedia
- 2010 – Bing Imagery allowed usage for OSM
- 2013 – 1 mio. registered users
- 2016 – Maps.me app enabled edits

# Statistics



[https://wiki.openstreetmap.org/wiki/File:Osmdbstats1\\_users.png](https://wiki.openstreetmap.org/wiki/File:Osmdbstats1_users.png), 2019-05-25

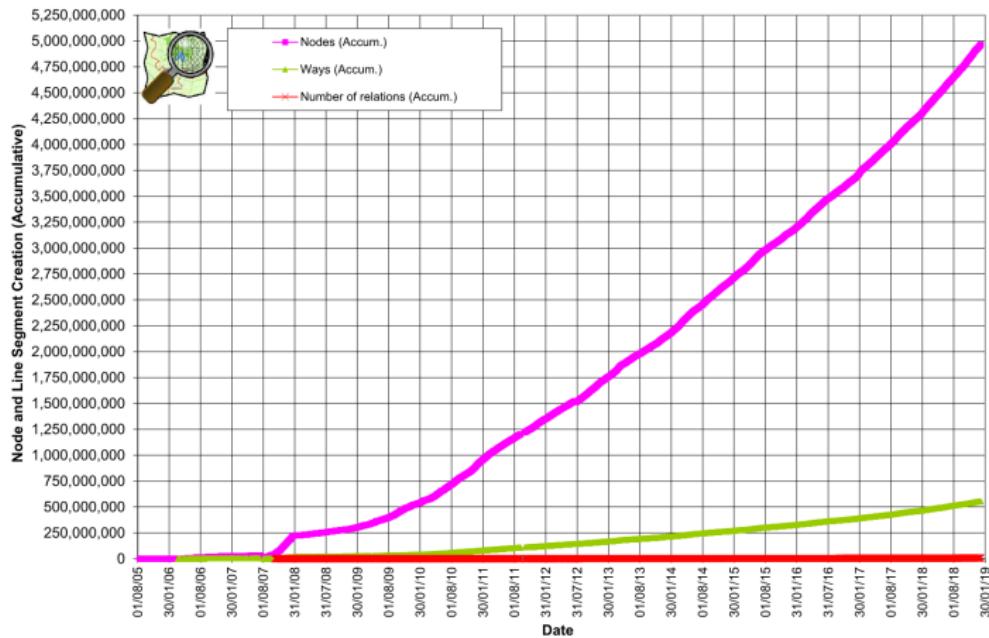
# Statistics



[https://wiki.openstreetmap.org/wiki/File:Active\\_contributors\\_month.png](https://wiki.openstreetmap.org/wiki/File:Active_contributors_month.png), 2019-05-25

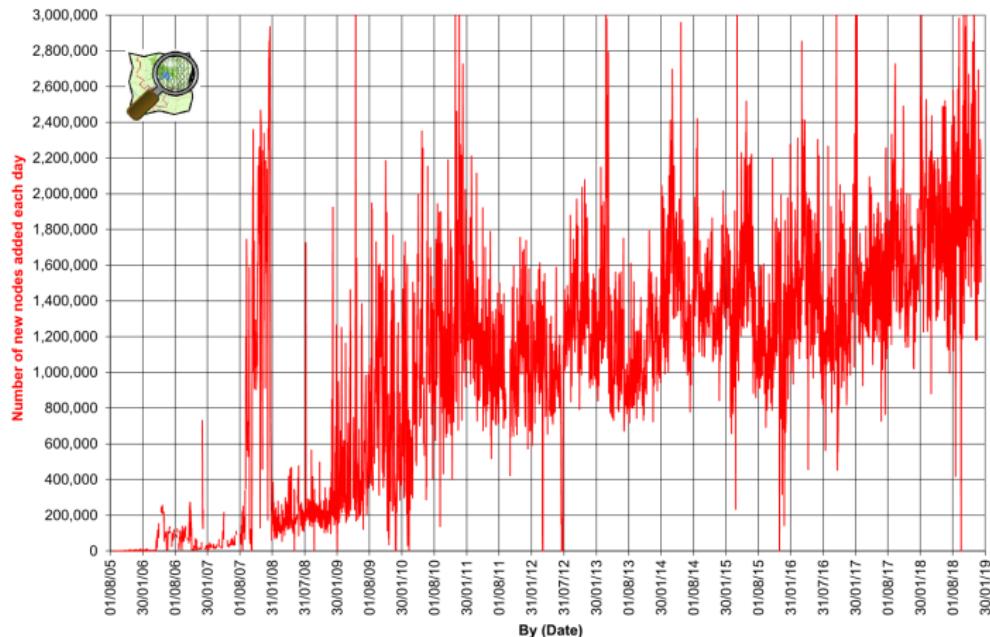
# Statistics

**OpenStreetMap Database Statistics**  
Node, Way and Relation Creation



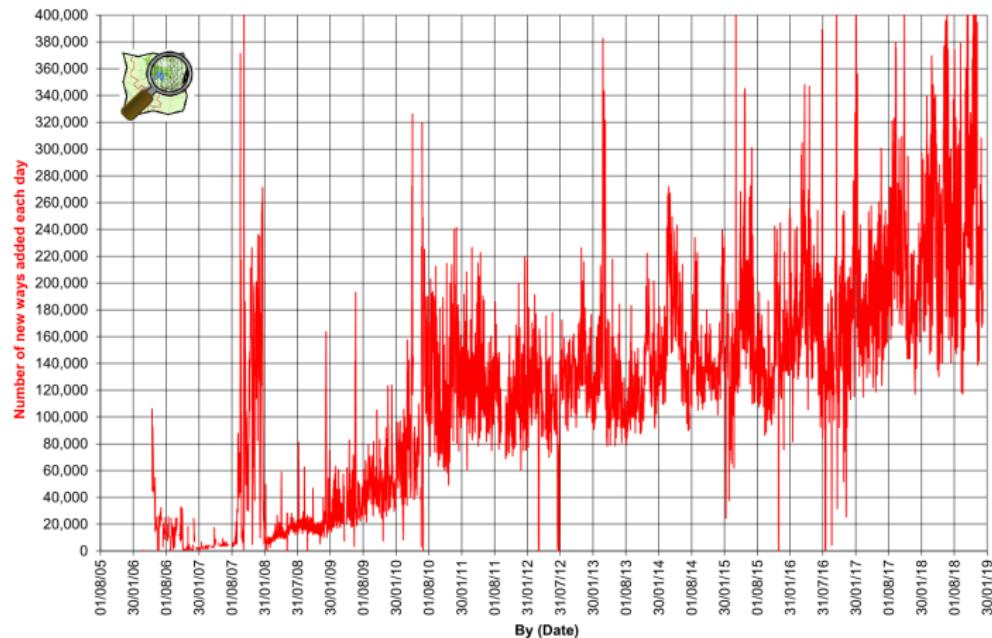
# Statistics

**OpenStreetMap Database Statistics**  
Number of nodes added each day



# Statistics

**OpenStreetMap Database Statistics**  
Number of ways added each day



## Community

### What is done?

- developing software and tools
- actual mapping
- creating and maintaining documentation
- doing public relations activities

## Community

### How is it done?

- going outside collecting information
- using imagery services
- meet other mappers
- participating in a mapathon

# Geometries

## 1 What is this?

- Motivation
- History
- Statistics
- Community

## 2 The data

- Geometries
- Tags

## 3 Applications

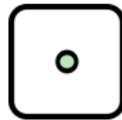
## 4 Contributing to OSM

- Trace aerial imagery
- Go outside
- Report errors
- Socialize

# Geometries

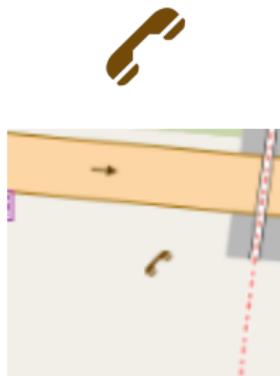
## Node

- single location on map



(1)

amenity=telephone  
covered=booth



(1) [https://wiki.openstreetmap.org/wiki/File:Red\\_telephone\\_box\\_-\\_geograph.org.uk\\_-\\_919348.jpg](https://wiki.openstreetmap.org/wiki/File:Red_telephone_box_-_geograph.org.uk_-_919348.jpg)

2019-05-25

## Geometries

### Way

- line on map
- 2-2000 points per way



highway=secondary

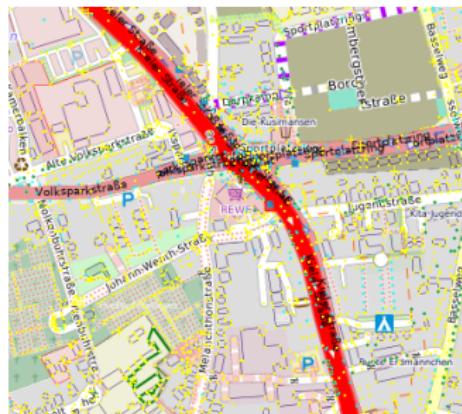


(1) <https://wiki.openstreetmap.org/wiki/File:Meyenburg-L134.jpg>, 2019-05-25

## Geometries

### Relation

- combination of ways (e.g. to a bus route)



`type=route  
route=bus  
name=MetroBus 4  
ref=4  
from=Wildacker  
to=Brandstwiete`

## Geometries

### Area

- basically a closed way with special tags

landuse=forest  
leaf\_type=broadleaved



(1)



(1) [https://commons.wikimedia.org/wiki/File:Stellinger\\_Feldmark\\_ESE\\_01.JPG](https://commons.wikimedia.org/wiki/File:Stellinger_Feldmark_ESE_01.JPG) 2019-05-25

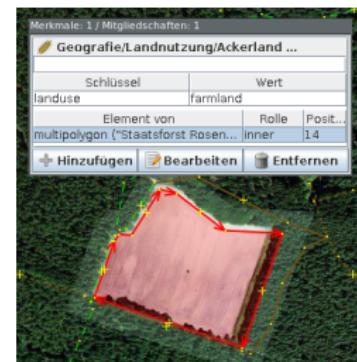


## Geometries

### Multipolygon

- basically a polygon with polygons inside
- role inner and outer

landuse=farmland



(1) Microsoft©BingTM Maps Platform; (2) Microsoft©BingTM Maps Platform inside JOSM editor



# Tags

- free tagging system
- unlimited amount of tags
- consider conventions (s. wiki)

format	notation	example
normal	key=value	highway=service
multiple values	key=v1;v2	amenity=library;cafe
namespace	key:namespace=value	addr:housenumber=42

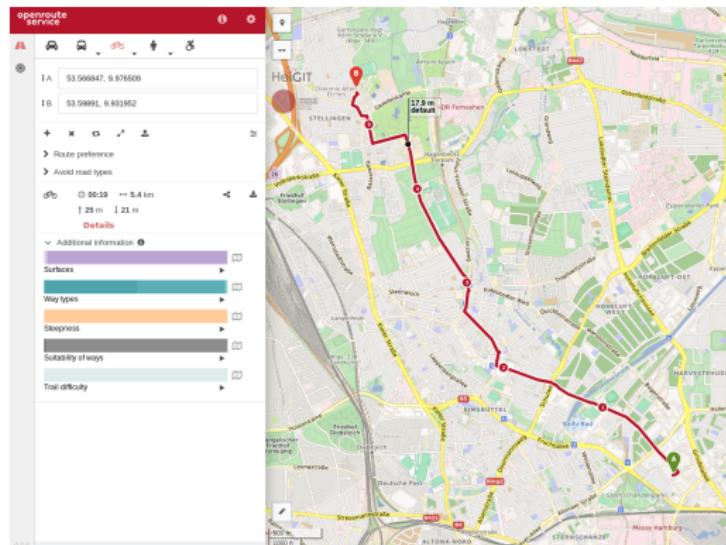
# OpenStreetMap website

The screenshot shows the OpenStreetMap website interface. At the top, there is a search bar with the query "informatikum". Below the search bar, the results section displays "Suchergebnisse" (Search results) from "OpenStreetMap Nominatim". The first result is highlighted in yellow and shows the address "Universität Informatikum, 30, Vogt-Kölln-Straße, Stellingen, Eimsbüttel, Hamburg, 22527, Germany". There is also a link to "Bushaltestelle Informatikum, Würdemanns Weg, Stellingen, Eimsbüttel, Hamburg, 22527, Germany". A "Mehr Treffer" (More results) button is visible. The main area features a detailed map of the Stellingen district in Hamburg, showing streets, buildings, and green spaces like the Tierpark Hagenbeck. On the right side, there is a sidebar titled "Kartenebenen" (Map layers) with options for "Standard", "Radfahrerkarke" (Bicycle map), "Verkehrskarte" (Traffic map), and "Humanitarian". Below the map, there are checkboxes for "Overlays zur Fehlersuche aktivieren" (Activate overlays for error search) with options for "Hinweise/Fehlermeldungen" (Tips/Error reports), "Kartendaten" (Map data), and "Öffentliche GPS-Tracks" (Public GPS tracks). At the bottom of the map, there is a copyright notice: "© OpenStreetMap. Mitwirkende Spender, Website und API lizenziert".

<https://osm.org>



# OpenRouteService



<https://maps.openrouteservice.org>



## OpenTopoMap website



<https://opentopomap.org>



# OpenStreetMap Wiki

<https://wiki.osm.org>

# Trace aerial imagery



(1) Microsoft©BingTM Maps Platform from JOSM editor

Go outside

## Surveying

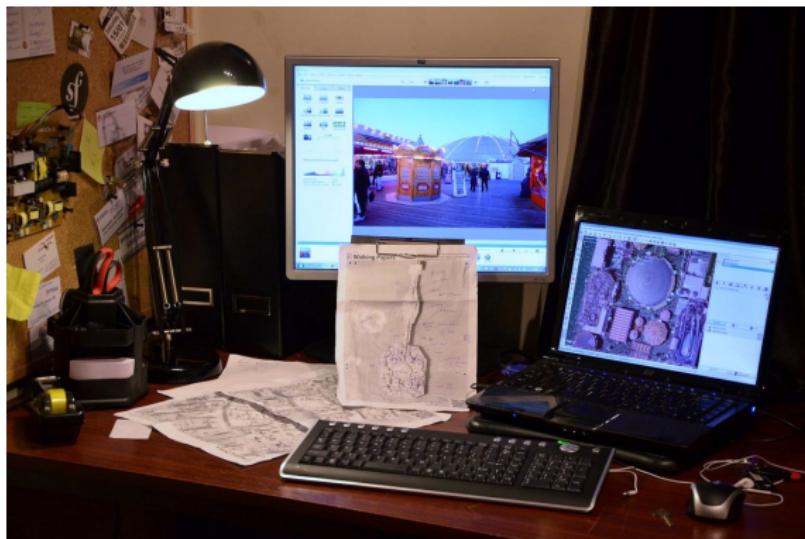


(1)

(1) [https://en.wikipedia.org/wiki/File:Motion\\_X\\_GPS\\_and\\_OSM.jpg](https://en.wikipedia.org/wiki/File:Motion_X_GPS_and_OSM.jpg), 2019-05-25

## Go outside

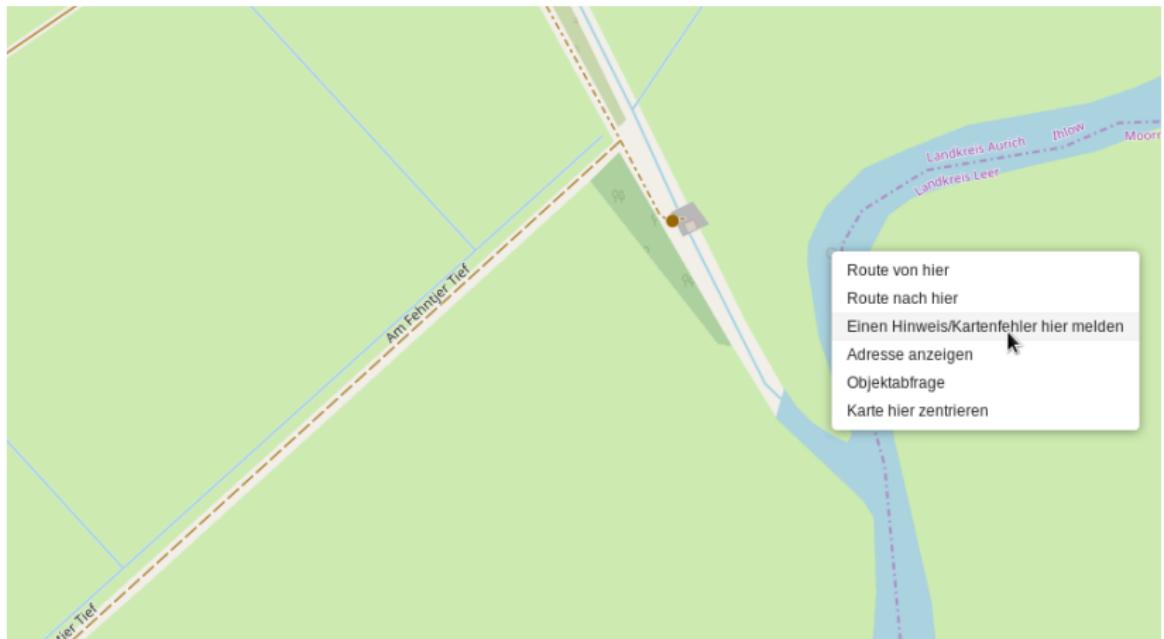
## Mapping



(1) [https://en.wikipedia.org/wiki/File:Adding\\_data\\_to\\_OSM\\_after\\_mapping\\_Brighton\\_Pier.jpg](https://en.wikipedia.org/wiki/File:Adding_data_to_OSM_after_mapping_Brighton_Pier.jpg).

2019-05-25

## Report errors



# Report errors

## Unerledigter Kartenfehler Nr. 1610297 ×

### Beschreibung

Pumpwerk im fahrrwasser?

Erstellt von Anonym vor 6 Monate

Dieser Hinweis enthält Kommentare von anonymen Benutzern, die unabhängig geprüft werden sollten.

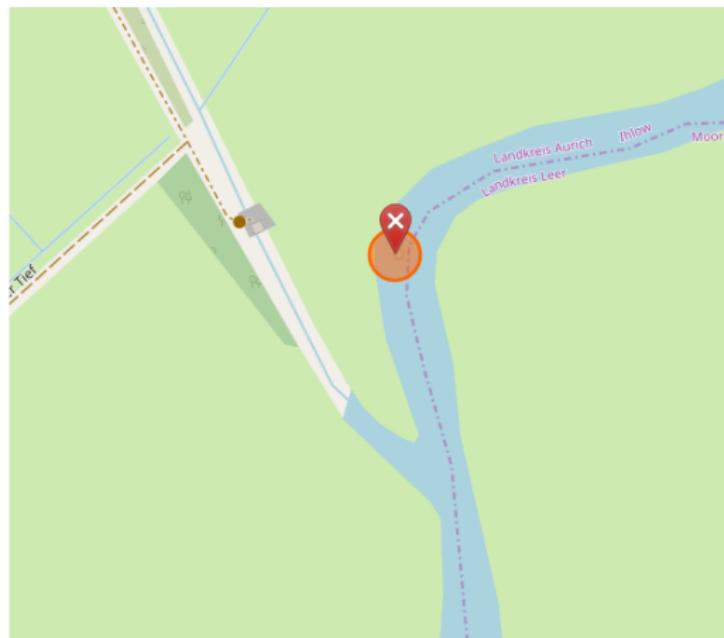
Diesen Hinweis melden

Kommentar von hauke-stieler vor 11 Tage

Kommt mir auch seltsam vor. Für mich sieht das nach Fehler aus und kann meinewegen gelöscht werden. Vielleicht war das eigentliche Pumpwerk daneben gemeint?

Erledigt

Kommentar



# Report errors



# Report errors

## Unerledigter Kartenfehler Nr. 1770846 ×

### Beschreibung

Diese Schule hat den Standort gewechselt, dieses Gebäude gehört zum Friedrich-Ebert Gymnasium

Erstellt von Anonym vor 17 Tage

Dieser Hinweis enthält Kommentare von anonymen Benutzern, die unabhängig geprüft werden sollten.

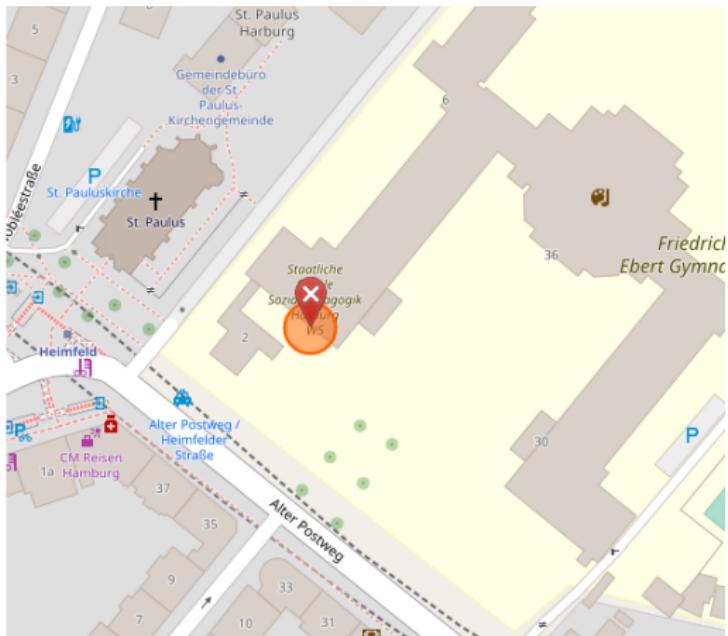
[Diesen Hinweis melden](#)

Kommentar von [ma-rt-in](#) vor 4 Tage

Weißt du auch wohin die sind?

[Erledigt](#)

[Kommentar](#)



# Socialize



(1)

(1) [https://wiki.openstreetmap.org/wiki/File:20110407\\_osm\\_stammtisch\\_hl.jpg](https://wiki.openstreetmap.org/wiki/File:20110407_osm_stammtisch_hl.jpg), 2019-05-25