

# OpenStreetMap

## What is that and how can I contribute?

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## 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)

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

## Motivation

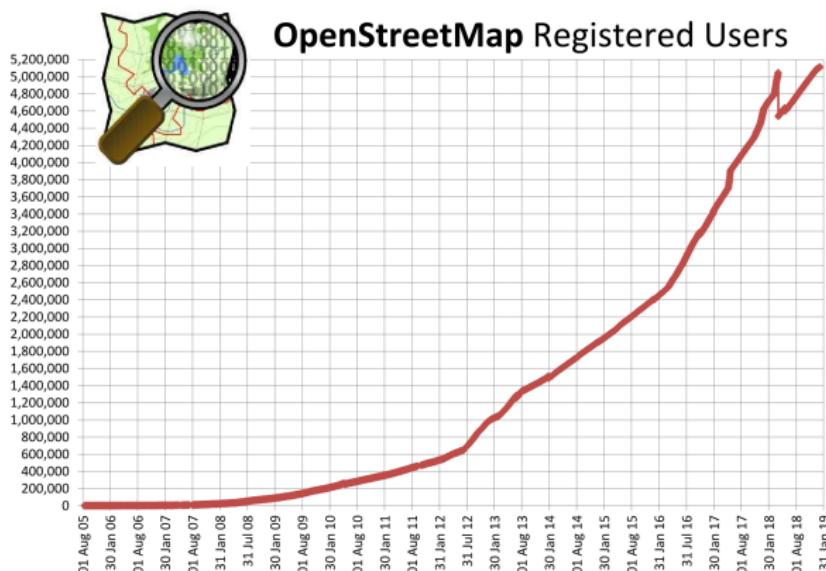
Why has OpenStreetMap been created?

- 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

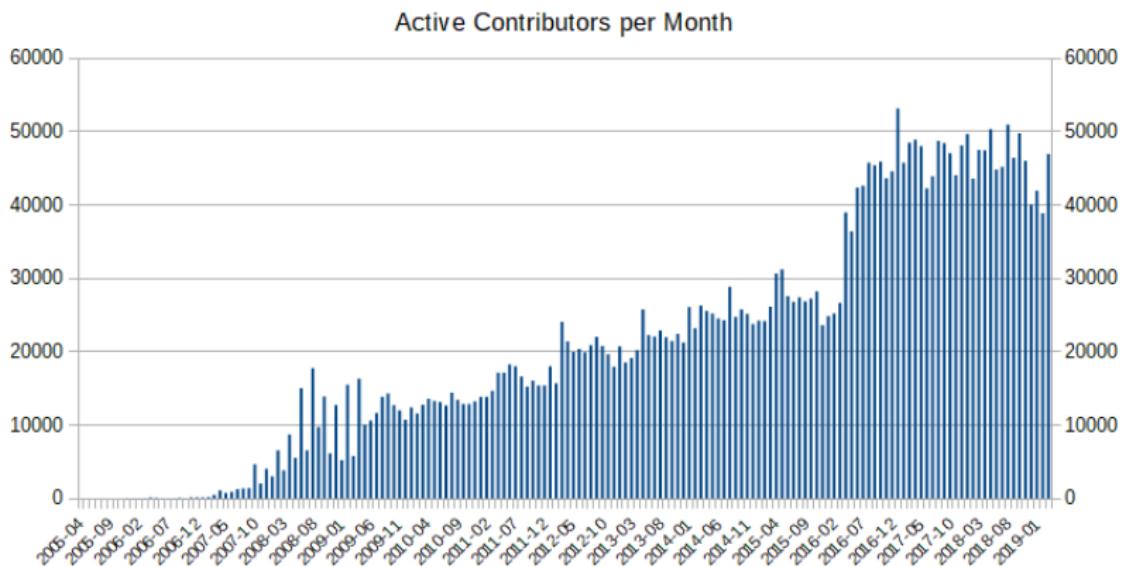
- 2004 – OSM founded
- 2006 – release JOSM-Editor
- 2006 – first map rendered with Mapnik
- 2007 – TIGER data import USA started
- 2008 – TIGER data import USA finished
- 2009 – API 0.6 (still latest version)
- 2009 – cooperation with Wikipedia
- 2010 – Bing Imagery allowed usage for OSM
- 2013 – 1 mio.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

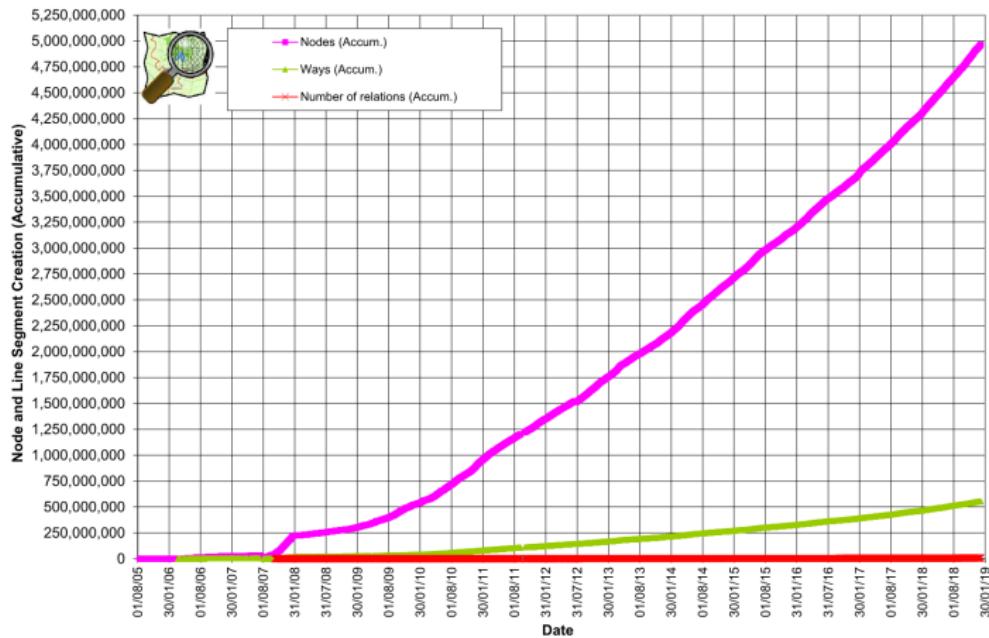


[https://wiki.openstreetmap.org/wiki/File:Active\\_contributors\\_month.png](https://wiki.openstreetmap.org/wiki/File:Active_contributors_month.png), 2019-05-25



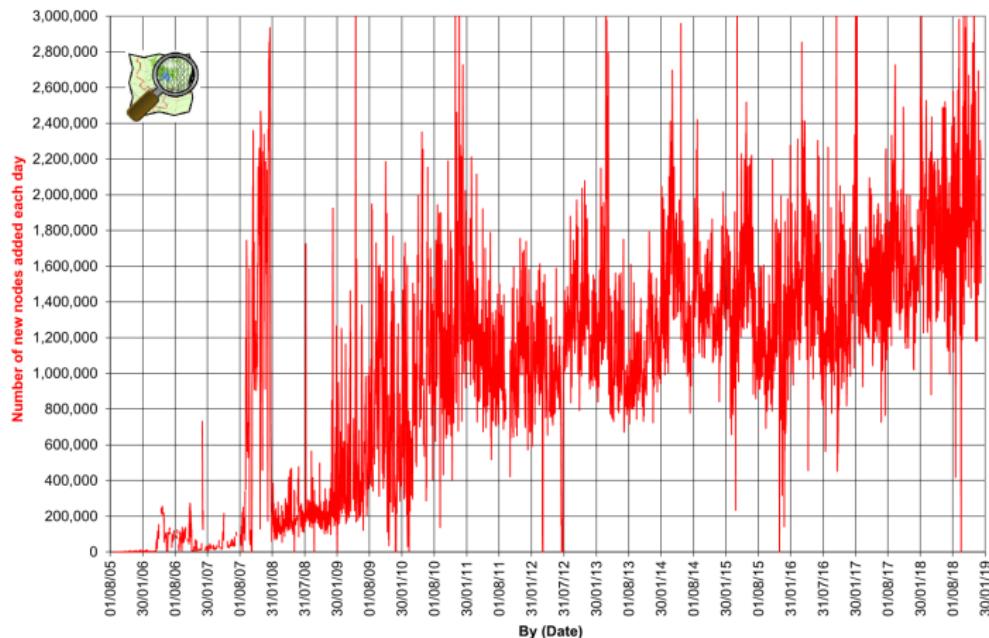
# Statistics

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



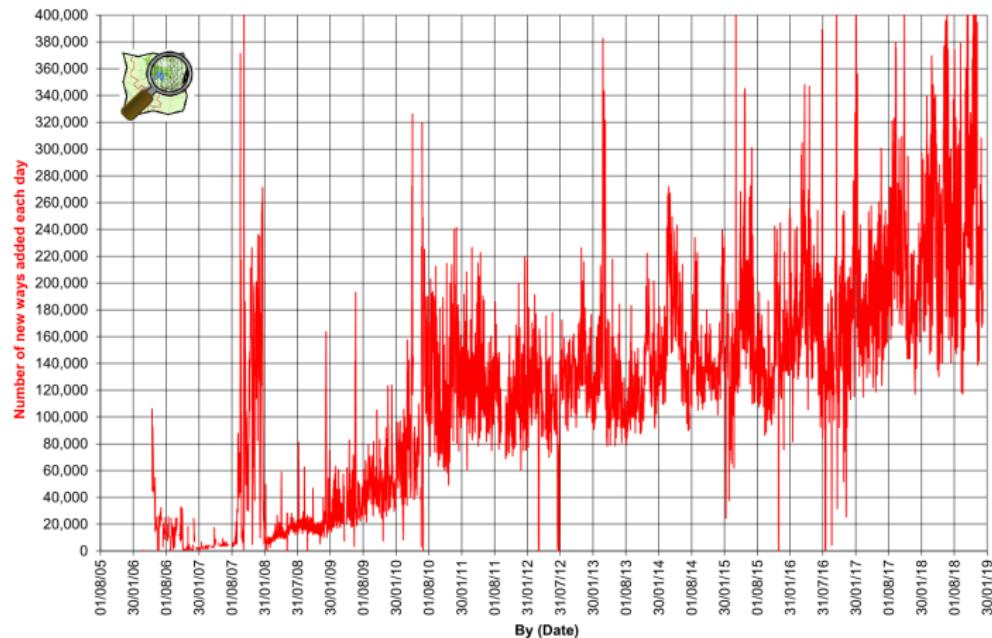
# Statistics

**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

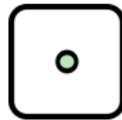
## 4 Contributing to OSM

- 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

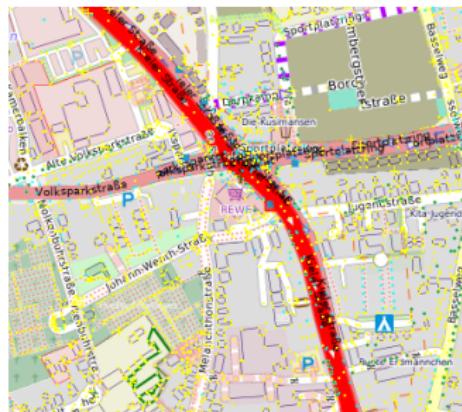


(1) <https://wiki.openstreetmap.org/wiki/File:Meyenburg-L134.jpg>, 2019-05-25

## 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

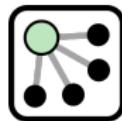


## Geometries

### 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

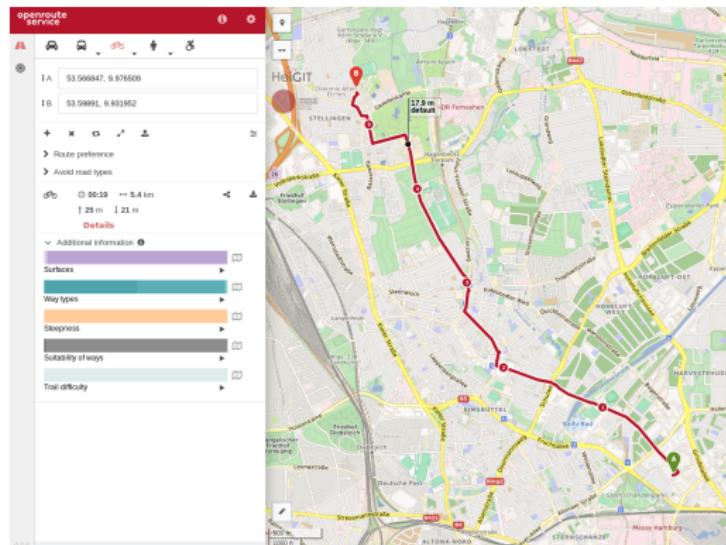
The screenshot shows the OpenStreetMap website interface. At the top, there is a search bar with the query "informatikum". Below the search bar, the results are displayed under "Suchergebnisse" (Search results). The first result is "Universität Informatikum, 30, Vogt-Kölln-Straße, Stellingen, Eimsbüttel, Hamburg, 22527, Germany" with a yellow background, followed by "Bushaltestelle Informatikum, Würdemanns Weg, Stellingen, Eimsbüttel, Hamburg, 22527, Germany". There is a "Mehr Treffer" (More results) button. Below the search results, there is a section for "Suchergebnisse von Geonames" (Search results from Geonames) which says "Keine Ergebnisse gefunden" (No results found).

The main part of the page is a map of the area around the University of Informatics (Informatikum) in Hamburg-Stellingen. The map includes streets, buildings, parks, and landmarks like the Tierpark Hagenbeck. A red pin marks the location of the University of Informatics. The map has a legend on the right side with various icons for different types of data. At the bottom of the map, there is a copyright notice: "© OpenStreetMap. Mitwirkende Spenders, 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



What is this?  
○○○○○○○○○○

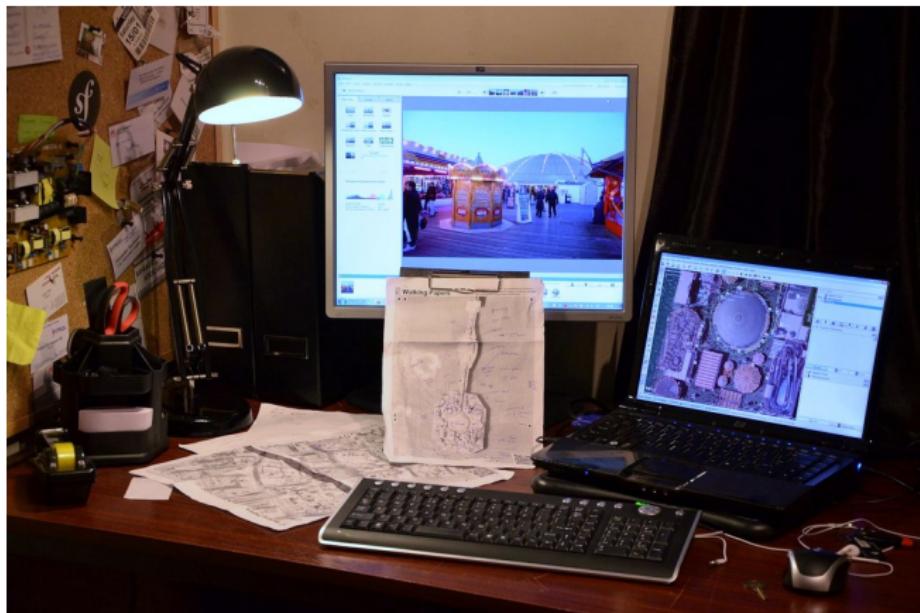
The data  
○○○○○

Applications  
○○○○

Contributing to OSM  
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## Go outside

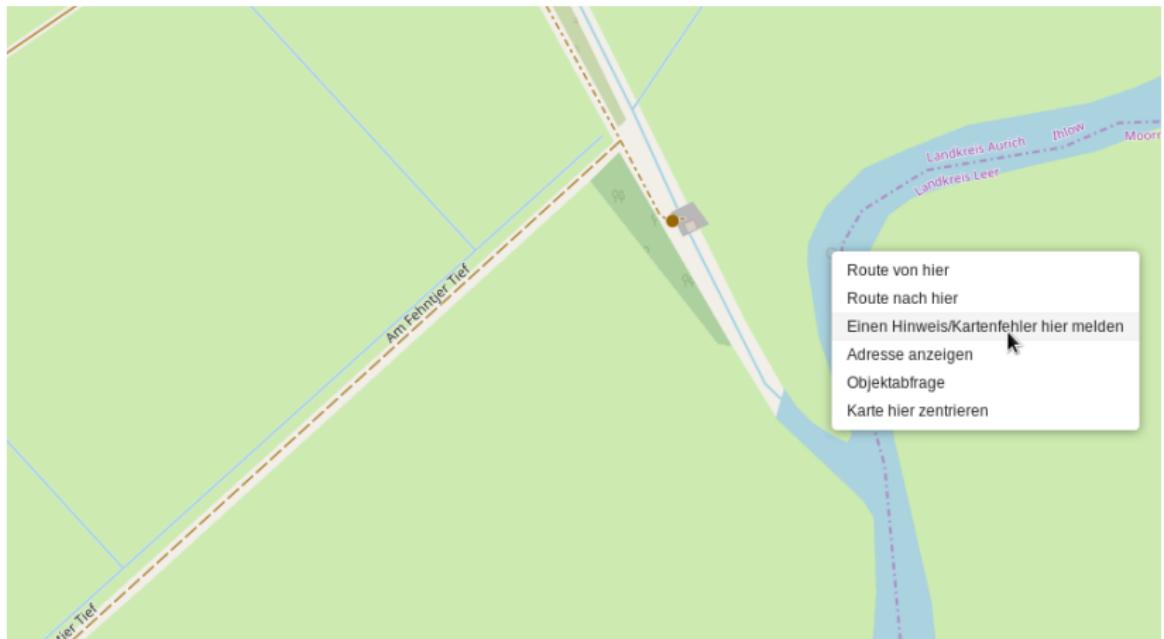
## Mapping



(1)

(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),  
Hauke Stieler4stieler@informatik.uni-hamburg.de

## 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.

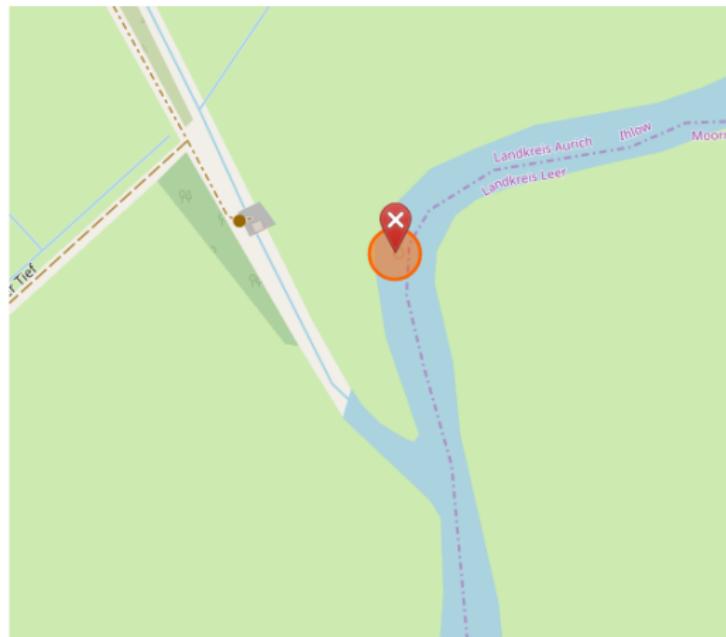
Diesen Hinweis melden

Kommentar von hauke-stieler vor 11 Tage

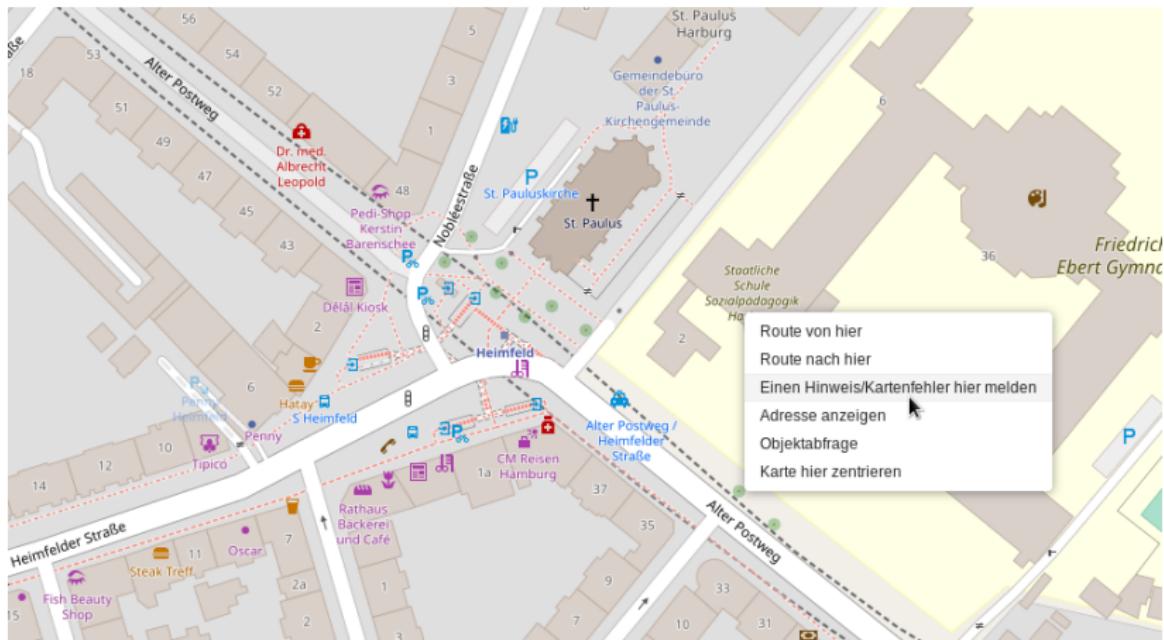
Kommt mir auch seltsam vor. Für mich sieht das nach Fehler aus und kann meinewegen gelöscht werden. Vielleicht war das eigentliche Pumpwerk daneben gemeint?

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.

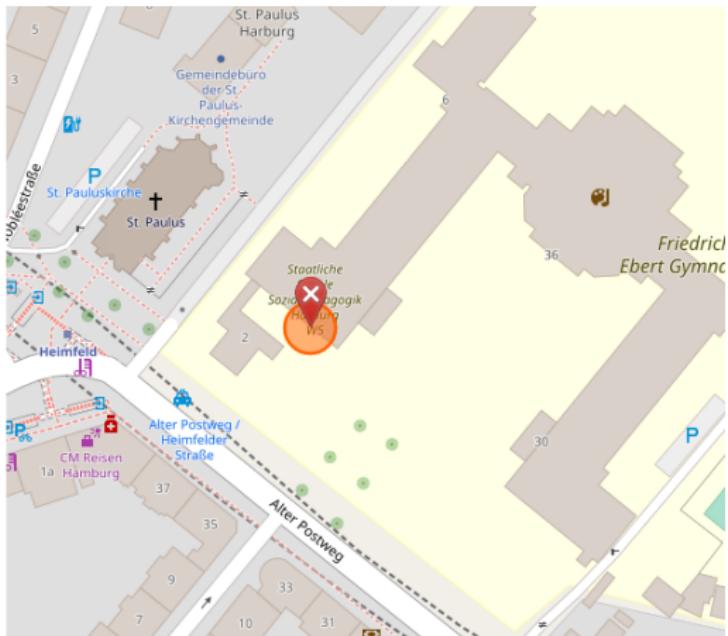
[Diesen Hinweis melden](#)

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