

# Towards a ubiquitous place accessibility information: OpenStreetMap Accessibility Coverage



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The built environment of cities and villages was not designed for people with disabilities. Although accessible places exist and their number increases, information about the coverage of them within a settlement is still scarce. This project wants to shed light into the availability of such data.

Three heat maps were created that show the coverage of available information on accessibility, based on OpenStreetMap (OSM) data.

## WHY MAP ACCESSIBILITY

Information regarding a location's accessibility is important for people with impairments, as it is complicated to participate in social activities without available information about the location<sup>[1]</sup>. In a meeting with the foundation Pfennigparade two assumptions about data distribution were made:

1. Accessibility data spread unevenly
2. Difficult to contribute and map data where it is needed

This project seeks to show the distribution of available data and give an incentive to contribute accessibility data to OSM.

## APPROACH

We worked with OSM data and visualised it as a heat map, because it has following advantages:

OSM

- Open geo database with worldwide coverage
- People can contribute data

Heat Map<sup>[2]</sup>

- Visualise large amount of data
- Give an overview about a situation in a short amount of time
- Impacts viewers perception immediately

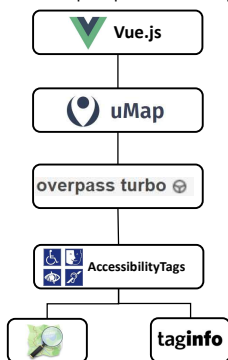


Fig. 2: Workflow diagram of the project



Fig 1: The Home page of our websites shows the quantity of available information on accessibility and inaccessibility by buildings. This example shows the city Brest, France.

## WORKFLOW

Firstly, the OSM tags related to accessibility were identified via the OSM Wiki and the TagInfo website. Based on this data the tags were grouped by Points of interests, e.g., buildings, crossing etc. and by impairment, e.g., visual, mobility etc.

Secondly the necessary queries were created, and the data was extracted via the Overpass turbo API. Each query describes one category/layer of data, e.g., inaccessible places for mobility impairment.

Thirdly, the extracted links were integrated as layer into uMap. Three independent maps were generated. One for Home, one for Accessible Places and one for Inaccessible Places. These links always download the specified data when opening the map and are therefore always up to date.

The maps were then integrated into the webpage, which we built with the Vue.js framework.

## THE DATA BEHIND THE MAP

The tags of our data collection are based on the following criteria:

- The tag is named in the OSM Wiki.
- The tag is used in a related project.
- The tag can be identified as either accessible or inaccessible

As data is highly scattered within OSM, we can not claim to have found all necessary tags, nor can we ensure the quality of the data. A complete list of the tags we used can be downloaded from the website.

## THE MAP

The map is by default a standard web map, provided by uMap, that we integrated into the webpage. The base map is a jwag map.

The Heat map shows the quantity of available information, depending on the layer. A place with little available data is displayed as blue (cold) while changing to green, yellow and eventually red (hot) with increasing number of data points, that overlay themselves. The color is not connected to quality of the data, meaning that red only means there is a lot of data and not that a place is more/less accessible or inaccessible. Places with no information stay white/dark.

## CONCLUSION

The created maps prove the assumption of the foundation Pfennigparade, that data is unequally distributed. The usual pattern, although we could not check everywhere of course, is a high density of data in the center of a city and decreasing density towards its edges, with small amounts of data in rural areas.

Now everybody can find this information for their city through our website.

We hope this can give incentive to mappers and affected people to create more data on accessibility.

## IMPRINT

Mapping Project  
Winter Semester 2022/2023  
Technical University of Munich

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## KEYWORDS

Accessibility, OpenStreetMap, Heatmap

## LINK

<https://sammyhawkrad.github.io/osm-accessibility-coverage/#/>



## REFERENCES

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This project was created within the Cartography M.Sc. programme – proudly co-funded by the Erasmus+ Programme of the European Union.