

Introduction to OpenStreetMap

Spatial Data Analysis and Simulation modelling,
2020, Dr. Zhiyong Wang



Outline

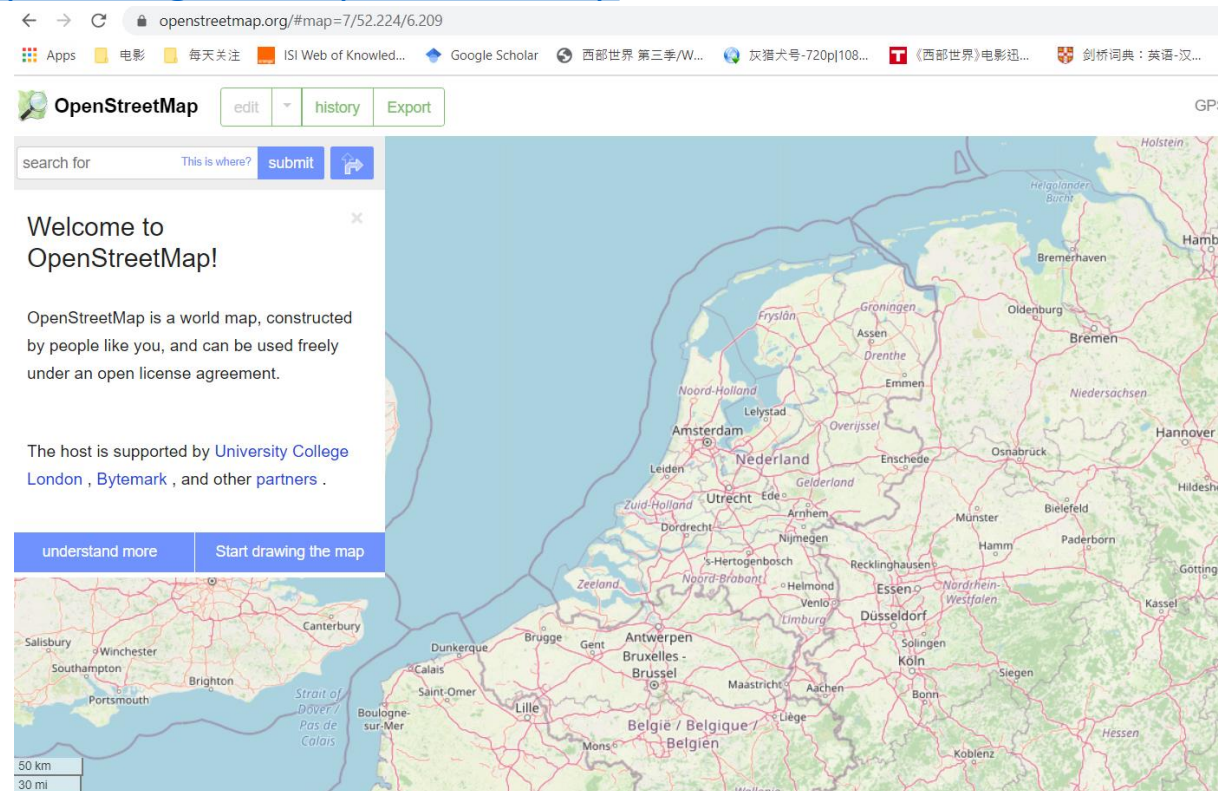
- Introduction
- OSM data model
- Applications of OSM



What is OpenStreetMap?

OpenStreetMap (OSM) is a collaborative project to create a free editable map of the world. The geodata underlying the map is considered the primary output of the project.

from <https://en.wikipedia.org/wiki/OpenStreetMap>



The idea behind OSM

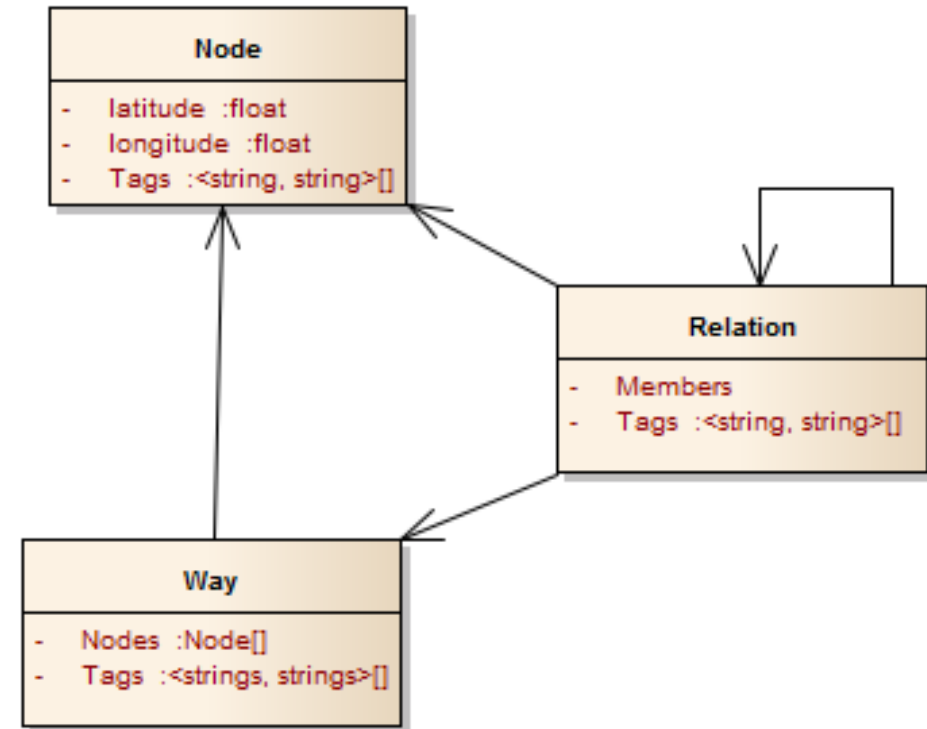


Idea (same as Wikipedia): A large number of individuals contributing together will tend to produce data with higher quality.

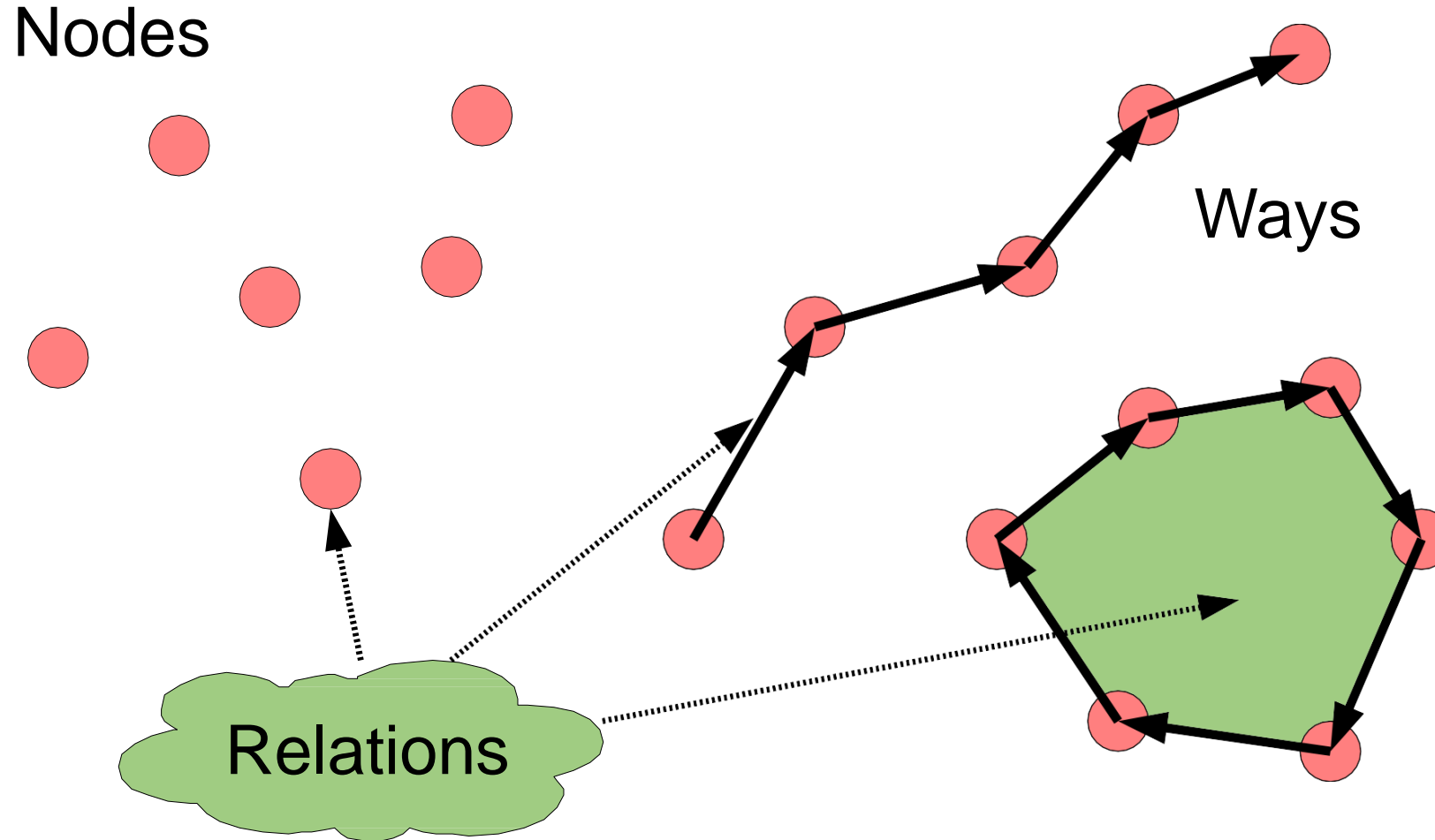


OSM Data model

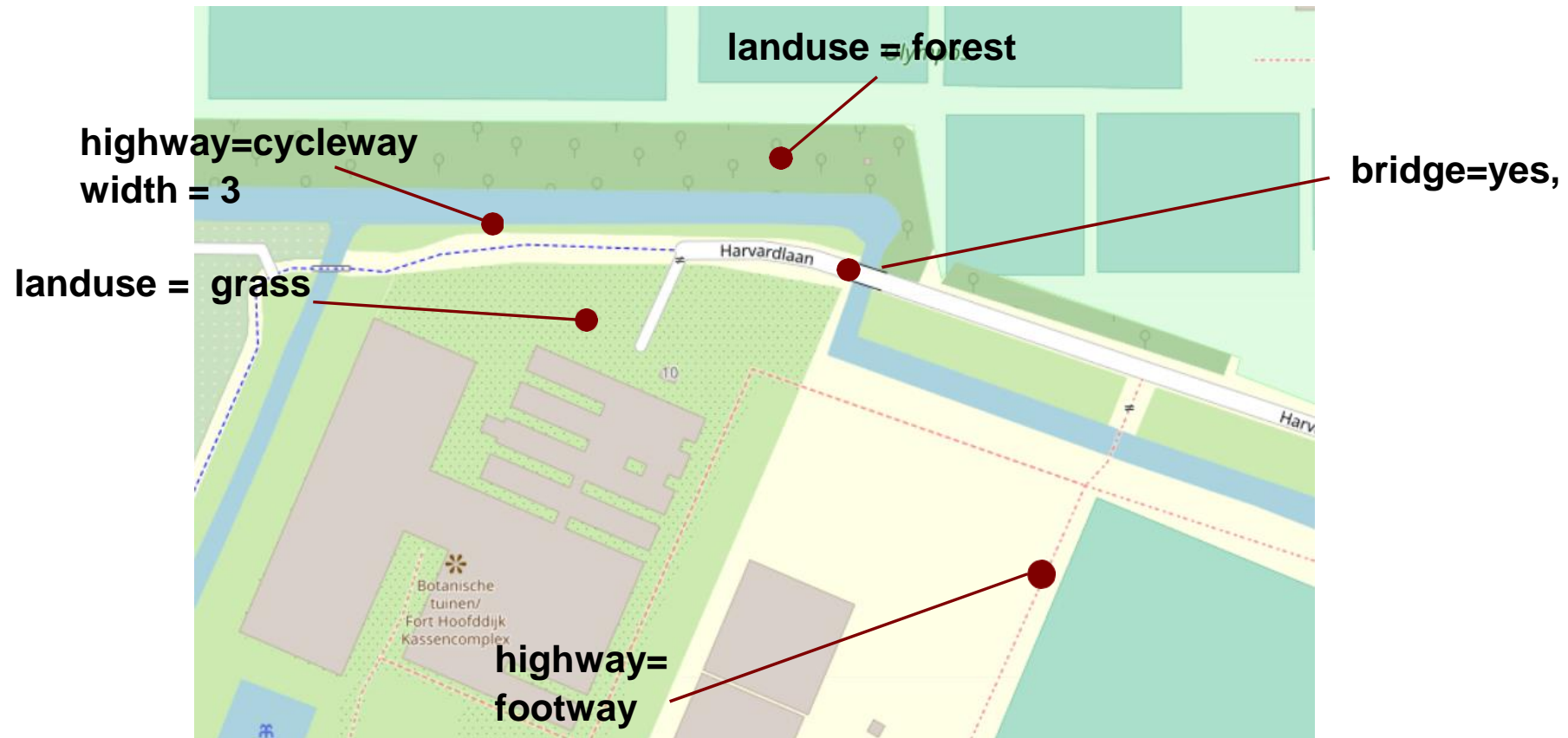
- Nodes
- Ways
- Relations
- Tags



OSM Data model - nodes, ways, and relations



OSM Data model - tags



Reference: https://wiki.openstreetmap.org/wiki/Map_Features



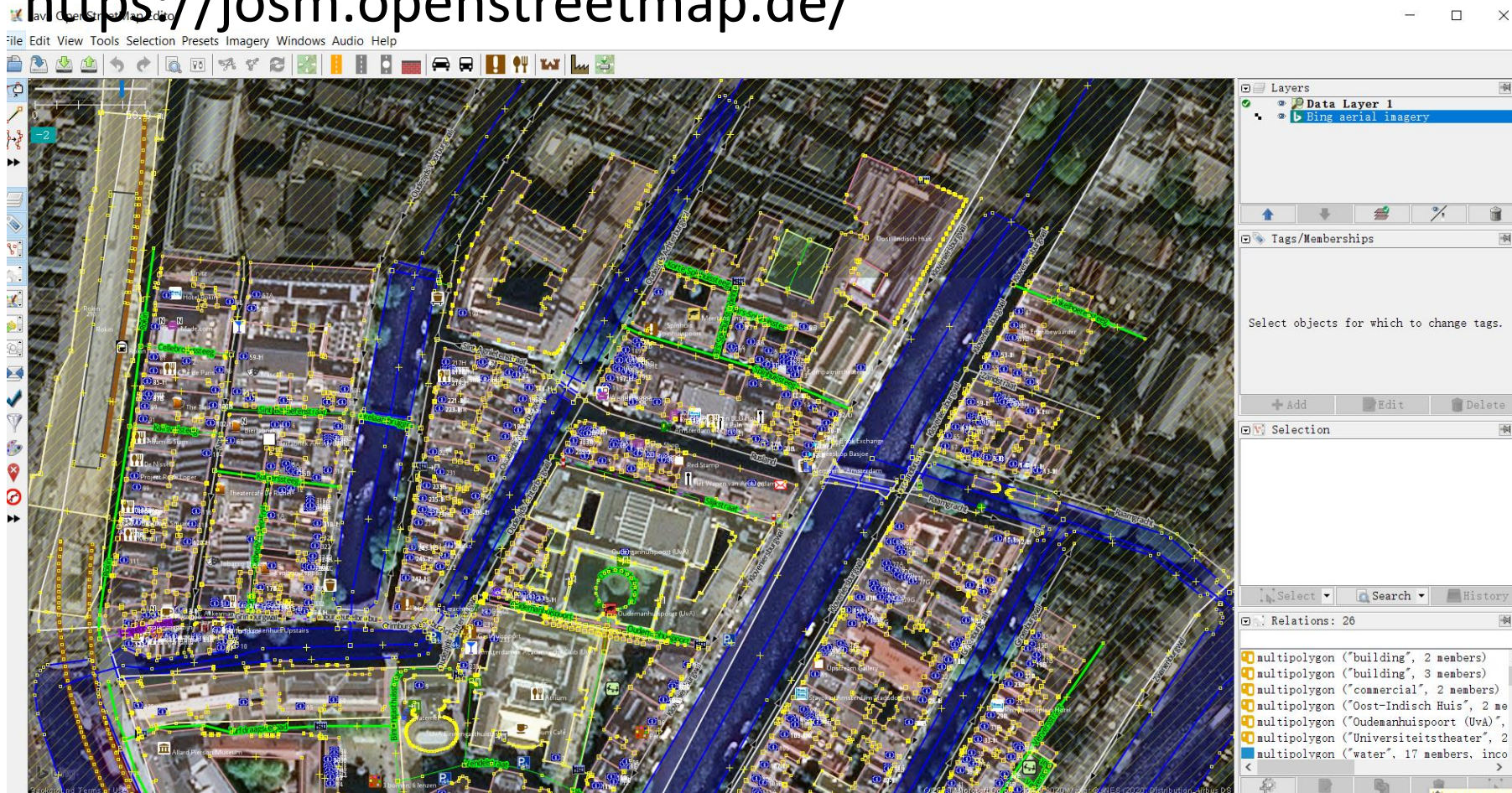
An example of OSM data

```
<?xml version="1.0" encoding="UTF-8"?>
<osm version="0.6" generator="CGImap 0.8.3 (1876111 spike-06.openstreetmap.org)" copyright="OpenStreetMap and contributors" attribution="h
  <bounds minlat="52.1073900" minlon="5.1589700" maxlat="52.1076900" maxlon="5.1597000"/>
  <node id="3043054595" visible="true" timestamp="2014-08-26T09:54:05Z" user="rivw_BAG" uid="1989843" lat="52.1074380" lon="5.1591631"/>
  <node id="3043054598" visible="true" timestamp="2014-08-26T09:54:05Z" user="rivw_BAG" uid="1989843" lat="52.1074482" lon="5.1591565"/>
  <node id="3043054601" visible="true" timestamp="2014-08-26T09:54:05Z" user="rivw_BAG" uid="1989843" lat="52.1074603" lon="5.1592555"/>
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  <node id="3043054614" visible="true" timestamp="2014-08-26T09:54:05Z" user="rivw_BAG" uid="1989843" lat="52.1075057" lon="5.1592264"/>
  <way id="300209929" visible="true" timestamp="2014-08-26T09:56:33Z" user="rivw_BAG" uid="1989843">
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    <nd ref="3043054606"/>
    <nd ref="3043054614"/>
    <nd ref="3043054601"/>
    <nd ref="3043054595"/>
    <nd ref="3043054598"/>
    <tag k="building" v="bunker"/>
    <tag k="historic:period" v="1939 - 1956"/>
    <tag k="material" v="concrete"/>
    <tag k="military:abandoned" v="shelter"/>
    <tag k="old_name" v="Groepsschuilplaats (NHW)"/>
    <tag k="operator" v="dutch"/>
    <tag k="ref:bag" v="344100000129143"/>
    <tag k="source" v="BAG"/>
    <tag k="source:date" v="2014-08-25"/>
    <tag k="start_date" v="1920"/>
    <tag k="type" v="P"/>
  </way>
</osm>
```



OSM editor

Java Based OpenStreetMap Editor, available from
<https://josm.openstreetmap.de/>



Applications

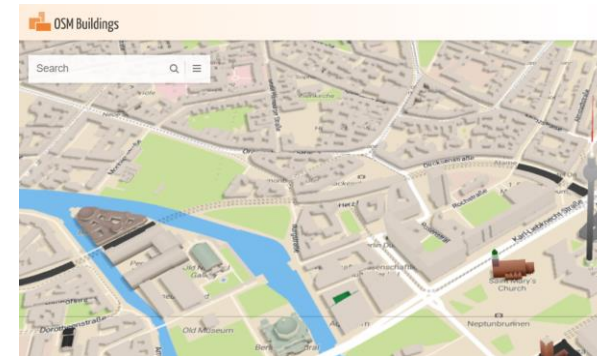
Disaster management



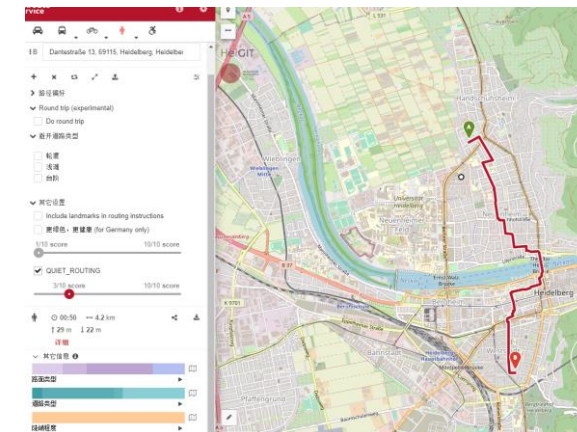
Map production



City modeling



Routing



Reference

- OSM wiki https://wiki.openstreetmap.org/wiki/Main_Page
- List of OSM-based services
https://wiki.openstreetmap.org/wiki/List_of_OSM-based_services
- Goodchild MF. Citizens as sensors: the world of volunteered geography. GeoJournal. 2007 Aug 1;69(4):211-21.
- Map features https://wiki.openstreetmap.org/wiki/Map_Features



Questions (Q&A session)

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