Mapping NOI Techpark in OpenStreetMap

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Wikimedia Italia

Wikimedia Italia - Associazione per la diffusione della conoscenza libera - APS-ETS is a social promotion association, active since 2005 in the field of free culture.

Since 2005, it has been a local chapter of the Wikimedia Foundation.
Since 2016, it has been a local chapter of the **OpenStreetMap Foundation**.

The association consists of more than 350 members, active in OpenStreetMap and Wikimedia projects. It supports the activities of contributors as stated in its bylaws.

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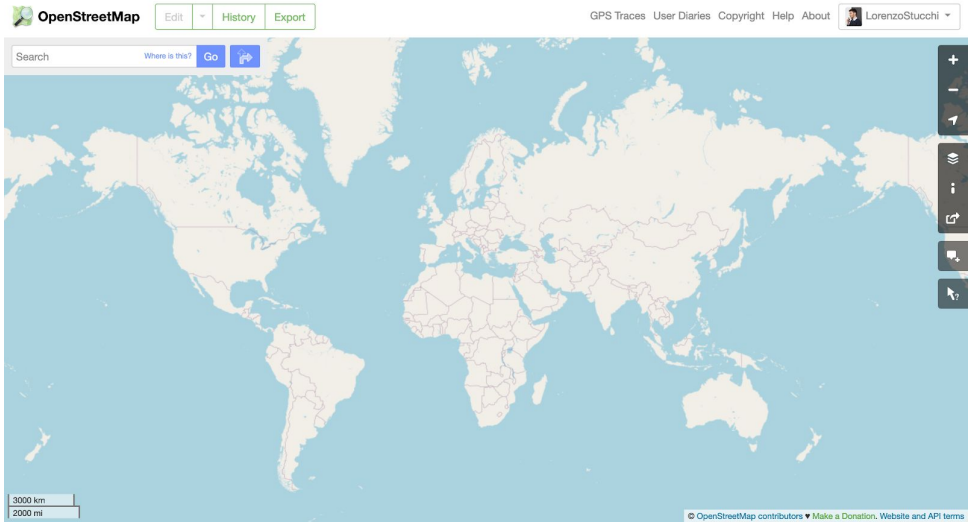
OpenStreetMap

OpenStreetMap (OSM) is a project founded in 2004 at University College London by Steve Coast.

It is not just a map but a **database of geographic data**.

An important aspect is the **licensing** of these data.



https://www.openstreetmap.org/

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partici.fi/22493936

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What comes to your mind when you hear the word “license”?

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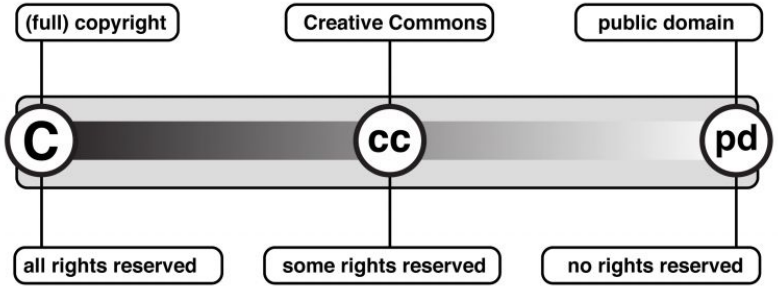
Data licence

An important aspect is **data licensing**. There are different types of licenses, ranging from copyright, where all rights are reserved, to the public domain, where no rights are applied.

In between, among others, are the Creative Commons licenses.



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Data licence

The Creative Commons licences are made of four different “rights”:

Icon	Right	Description
	Attribution (BY)	Licensees may copy, distribute, display and perform the work and make derivative works and remixes based on it only if they give the author or licensor the credits (attribution) in the manner specified by these. Since version 2.0, all Creative Commons licenses require attribution to the creator and include the BY element.
	Share-alike (SA)	Licensees may distribute derivative works only under a license identical ("not more restrictive") to the license that governs the original work. (See also copyleft.) Without share-alike, derivative works might be sublicensed with compatible but more restrictive license clauses, e.g. CC BY to CC BY-NC.)
	Non-commercial (NC)	Licensees may copy, distribute, display, and perform the work and make derivative works and remixes based on it only for non-commercial purposes.
	No Derivative Works (ND)	Licensees may copy, distribute, display and perform only verbatim copies of the work, not derivative works and remixes based on it. Since version 4.0, derivative works are allowed but must not be shared.

https://en.wikipedia.org/wiki/Creative_Commons_license

The power of OSM lies in its license

The OpenStreetMap **license** is ODbL (Open Database License)

You are free:

- *To share*: To copy, distribute and use the database.
- *To create*: To produce works from the database.
- *To adapt*: To modify, transform and build upon the database.

As long as you:

- *Attribute*: You must attribute any public use of the database, or works produced from the database, in the manner specified in the ODbL. For any use or redistribution of the database, or works produced from it, you must make clear to others the license of the database and keep intact any notices on the original database.
- *Share-Alike*: If you publicly use any adapted version of this database, or works produced from an adapted database, you must also offer that adapted database under the ODbL.
- *Keep open*: If you redistribute the database, or an adapted version of it, then you may use technological measures that restrict the work (such as DRM) as long as you also redistribute a version without such measures.

https://www.openstreetmap.org/copyright

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Challenges of Collaborative Mapping

- Data Quality and Accuracy
  - Variation in quality depending on contributors' expertise
  - Difficulty in keeping data up to date
- Coordination and Volunteer Management
  - Heterogeneity of contributors and coordination challenges
  - Conflicts among users on mapping practices and information inclusion
- Technology and Tools
  - Limited access to advanced mapping tools
  - Difficulty in accessing accurate reference data

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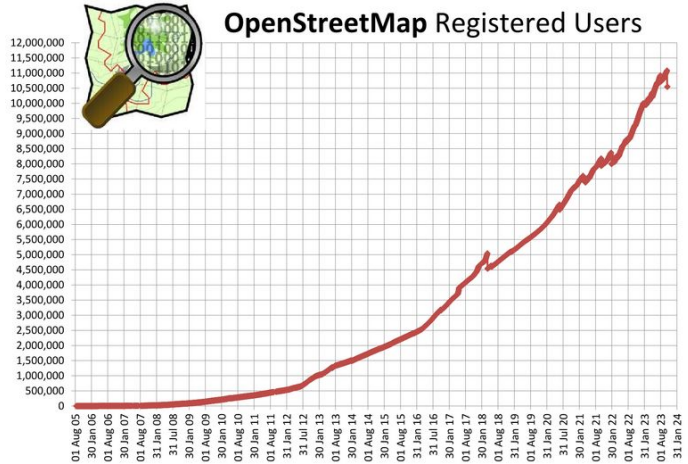
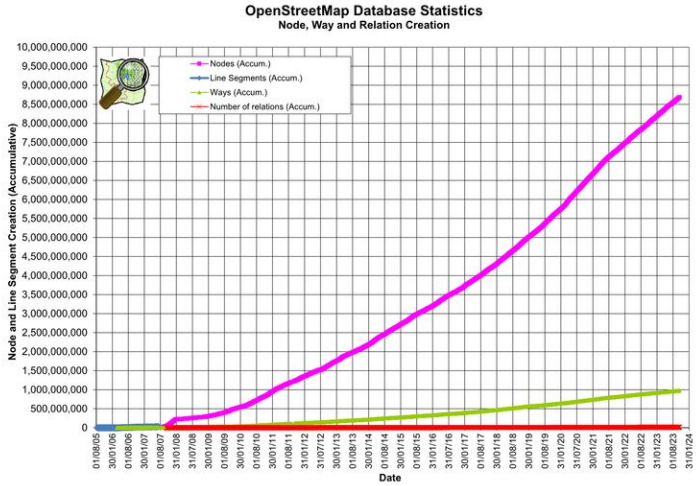
OSM: Numbers

The OSM database is created by multiple volunteers all over the world and everybody could contribute. After more than 18 years OSM has more than 10 million users (2025-11) and more than 10 billions of elements.





https://planet.openstreetmap.org/statistics/data_stats.html

Glossary

The data is collected by volunteer **users**; their edits (**changes**) are grouped into **changesets**. The modified elements are:

- Node
- Way
- Relation
- Tag (the attributes of the elements)

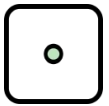
To communicate and provide information to new users, a wiki page is available.On the **wiki page**, descriptions of most tags can be found.

Users may collect data in different ways, through **outdoor** activities, **remote** mapping, or by **importing** existing data.

Data model

Each object is a combination of a geometry and one or more tags. There are three types of geometries:

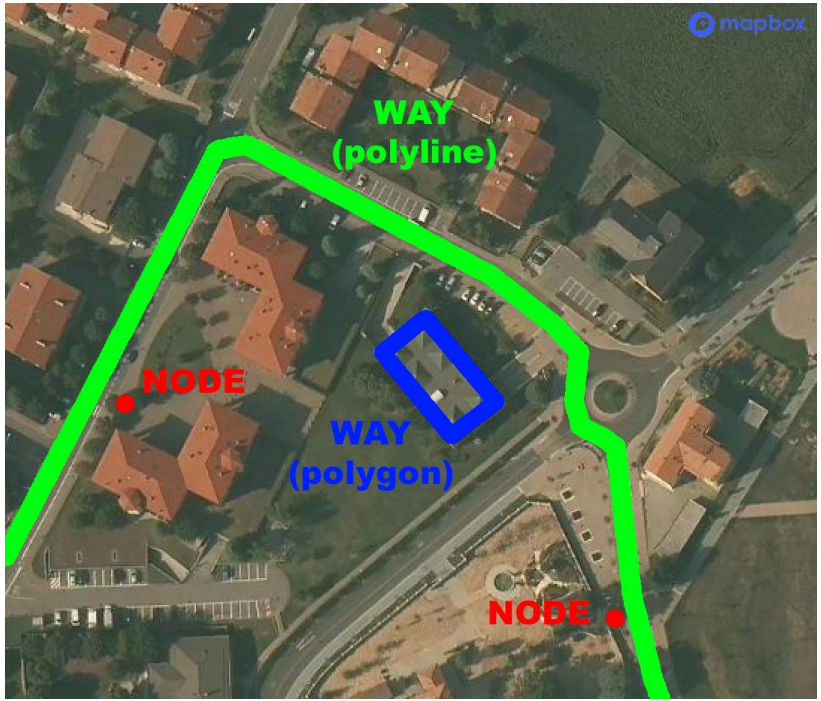
1. NODE: single point:
   a. Point objects: tree, bench, bin, gate, etc.

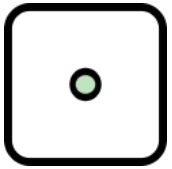


2. WAY: ordered list of nodes:
   a. Linear objects: road, river, hedge, wall, etc.
   b. Polygonal objects: building, lake, cultivated field, etc.

3. RELATION: ordered list of nodes, ways, and/or relations:
   a. Complex data structures: transport route, multipolygon, etc.

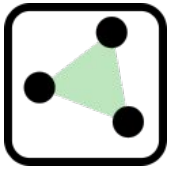
Data model





Node

OPEN WAY
(POLYLINE)



CLOSED WAY
(POLYGON)

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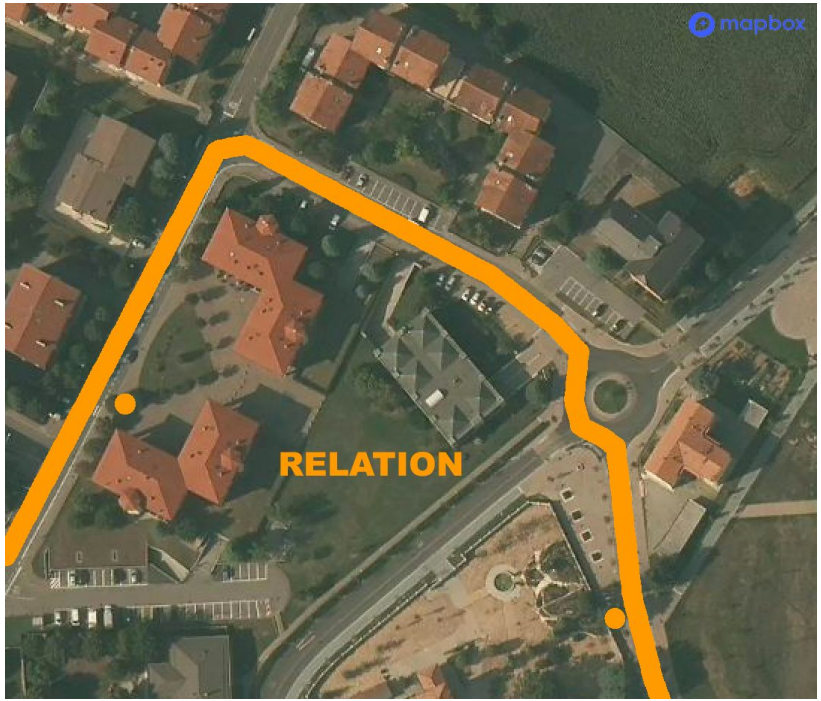
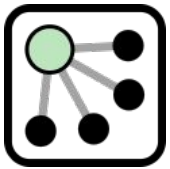
Data model





RELATION

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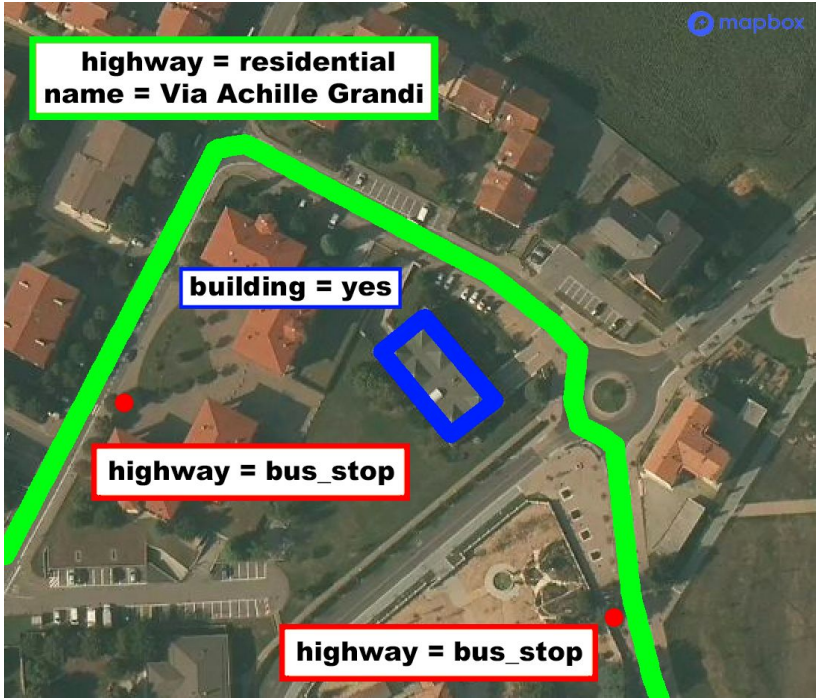
Data model

For a complete description of objects, a fourth primitive is needed: **tags**, which are pairs of **key** = **value**.

Education					
amenity	college		Campus or buildings of an institute of Further Education (aka continuing education)		
amenity	dancing_school		A dancing school or dance studio		
amenity	driving_school		Driving School which offers motor vehicle driving lessons	●	
amenity	first_aid_school		A place where people can go for first aid courses.		
amenity	kindergarten		For children too young for a regular school (also known as preschool, playschool or nursery school), in some countries including afternoon supervision of primary school children.		

https://wiki.openstreetmap.org/wiki/Map_features#Education

Data model



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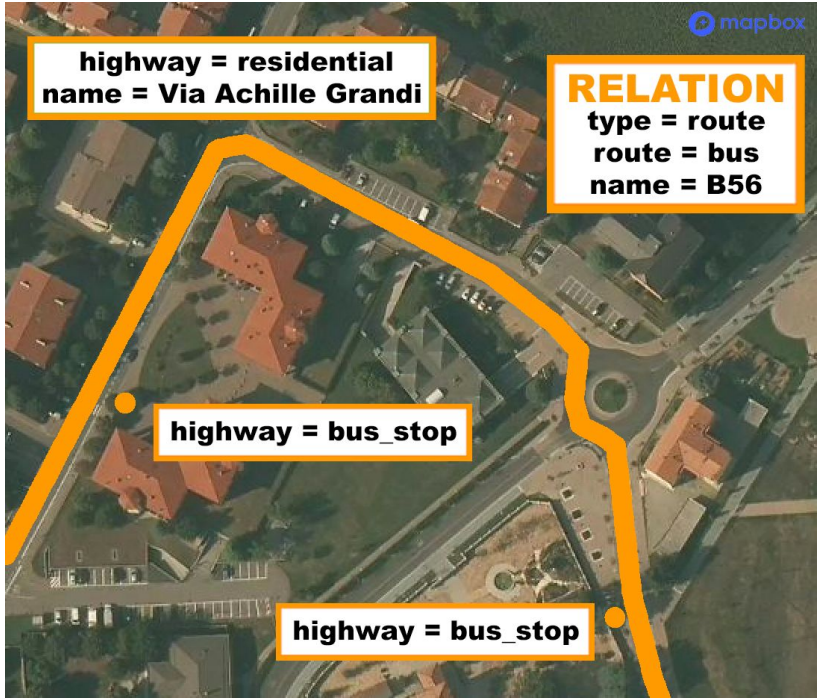
Data model



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Mapping methodologies

There are three ways to edit the map:

1. **In field**: find the elements of interest while moving around in an area I know.

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Mapping methodologies

There are three ways to edit the map:

1. In field: find the elements of interest while moving around in an area I know.
2. **Remote mapping**: mapping using satellite imagery, even in remote areas.

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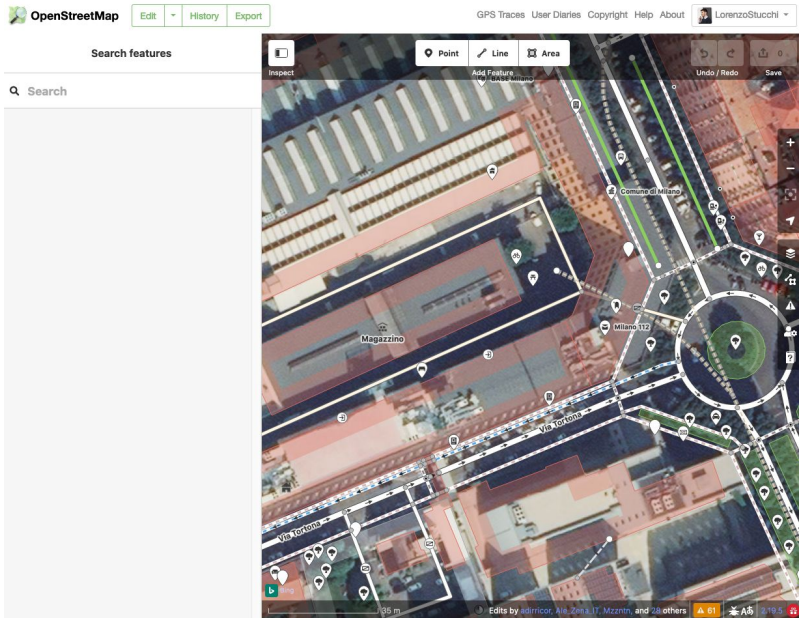
Remote mapping

For remote mapping, three main tools are used:

- iD Editor: integrated into the OSM website.
- RapiD: a fork of iD Editor by META with AI-assisted mapping features.
- JOSM: an advanced and customizable editor available for different operating systems.

Remote mapping: iDeditor

The iD Editor is integrated directly into the OpenStreetMap web page. It is a simple remote editor that provides various presets (combinations of tags) to make mapping easier for new users.



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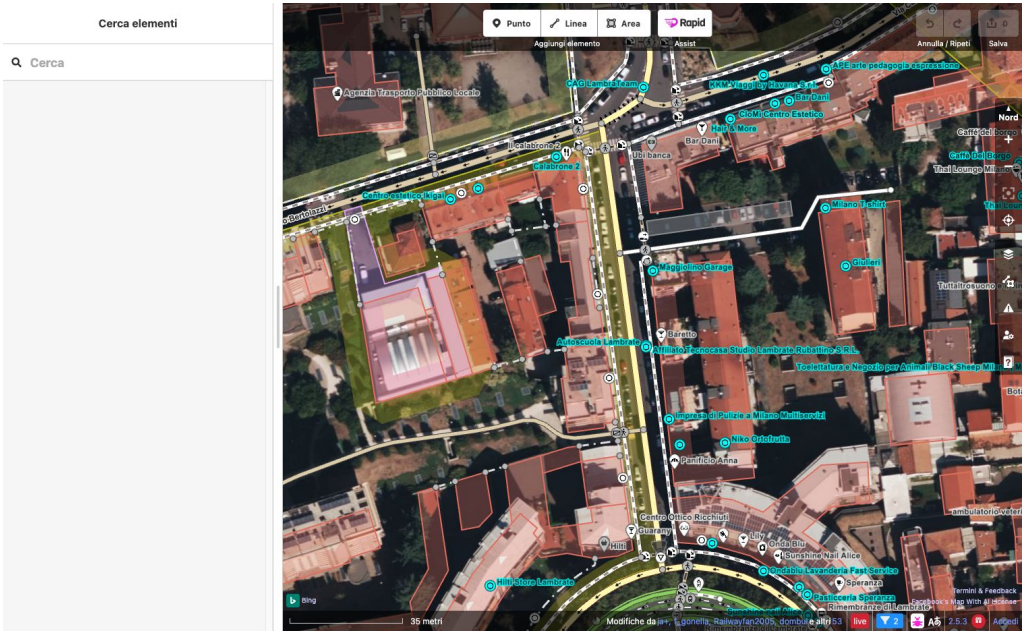
Remote mapping: RapID

The RapiD editor additionally integrates advanced AI-based mapping tools and open data from authoritative sources to facilitate edits.
It can be useful for integrating data from different sources.



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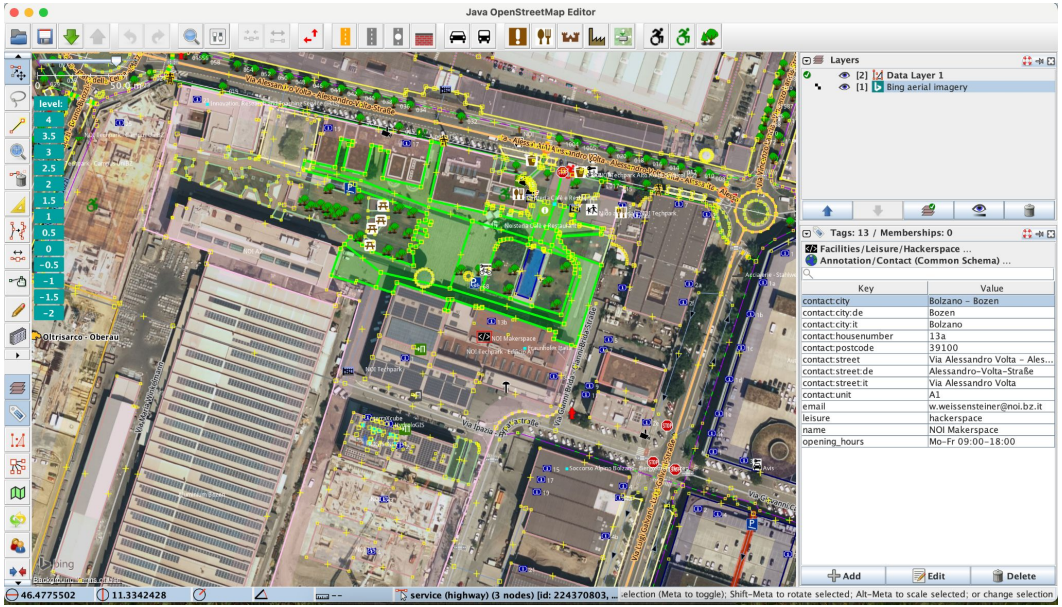
Remote mapping: JOSM

The JOSM (Java OpenStreetMap) editor is a powerful tool that can be downloaded and used on multiple operating systems (Windows, Mac, Linux). It is a full-featured editor that offers various presets and plug-ins. It is recommended for advanced users.



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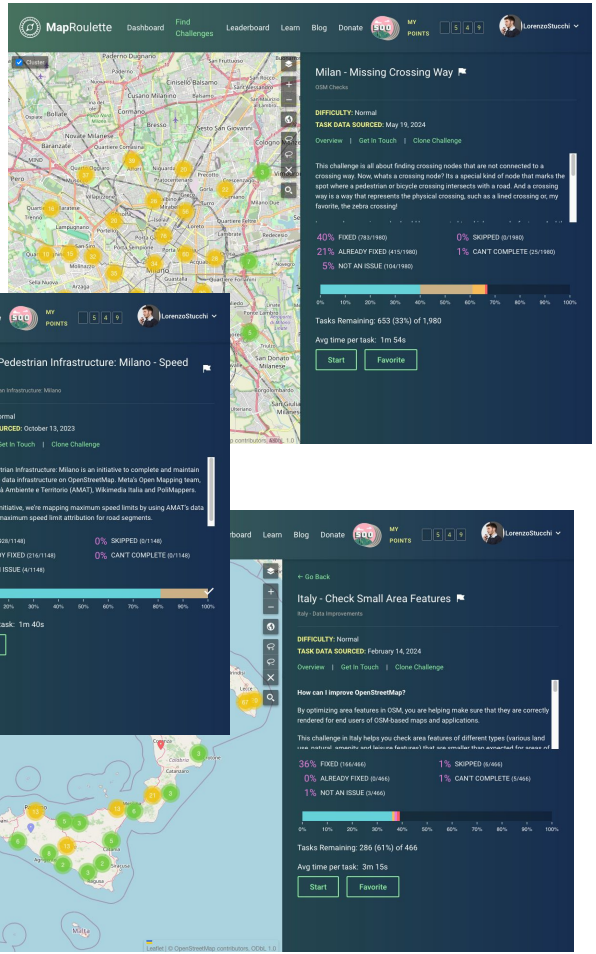
Tools: MapRoulette

MapRoulette is a great tool for **Quality Assurance** (QA) and guided new data import.

The edits are split into small, single changes, and this allows a correction to be done in a **few minutes**.



Mapping methodologies

There are three ways to edit the map:

1. In field: find the elements of interest while moving around in an area I know.
2. Remote mapping: mapping using satellite imagery, even in remote areas.
3. **Import**: complex process to add into OSM data created by other organizations that make them available under a compatible license.

Indirect mapping

Another indirect way to contribute to OSM is by collecting street-level images.

It is not possible to upload these images directly to the OpenStreetMap website, but there are different projects that provide options for integrating such data into OSM:

The main projects are:

- **Mapillary** provided by Meta;
- **KartaView** provided by Grab;
- **Panoramax** community based by OSM France

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https://api.panoramax.xyz/

Indirect mapping

On Mapillary, it is possible to upload photos taken either with a smartphone (via the app) or with an action camera (including 360° cameras).

https://www.mapillary.com/app/org/vialibera?lat=45.517088300001 01&lng=9.212280500000 02&z=18.8389 7474117988&pKey=756929014972 573&x=0.6163398130163765&y=0. 4175242151416869&zoom=0&focus=photo

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Uses of OSM for humanitarian and social purposes

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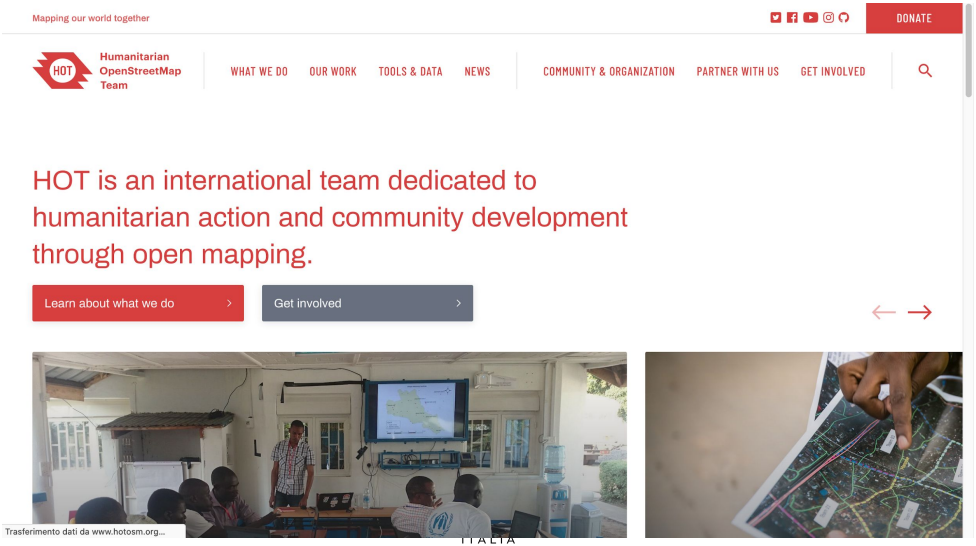
Humanitarian OSM Team (HOT)

The **Humanitarian OpenStreetMap Team** (HOT) was founded in 2010 with the goal of **coordinating collaborative mapping** through OSM in areas affected by natural disasters or humanitarian crises.



Missing Maps

The Missing Maps project works to “**anticipate**” crises by identifying and mapping the most vulnerable populated areas in the world.

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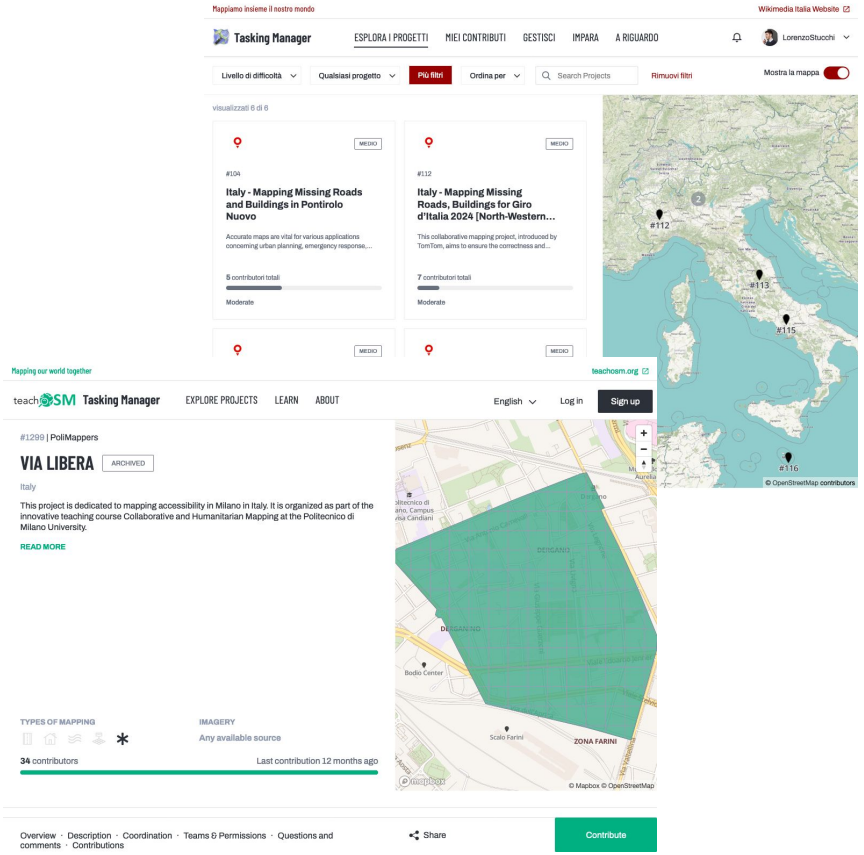
Tools: Tasking manager

Tasking Manager is a tool that allows **multiple users** to map the same areas simultaneously in an organized way.

It was created to respond to **emergencies** and provide maps and support to NGO interventions in the field.

It is Open Source, so there are multiple instances, and it could now be used for **multiple projects**.



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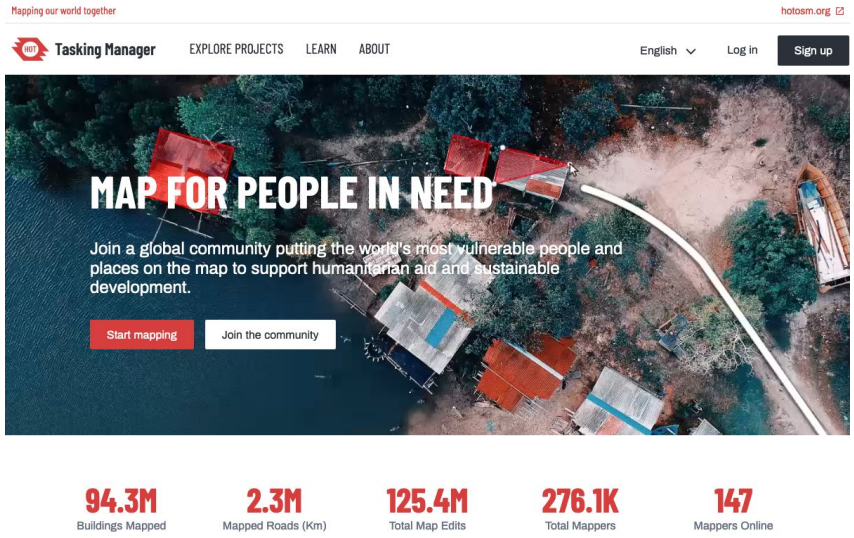
Tasking Manager



https://tasks.hotosm.org/

https://osmit-tm4.wmcloud.org/

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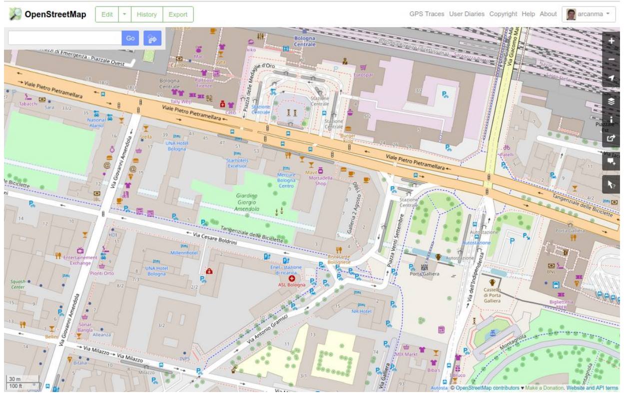
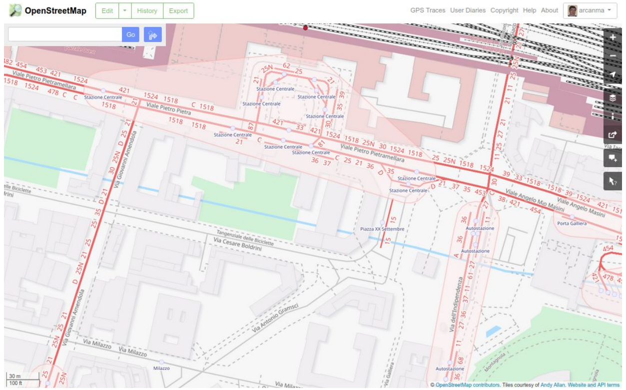
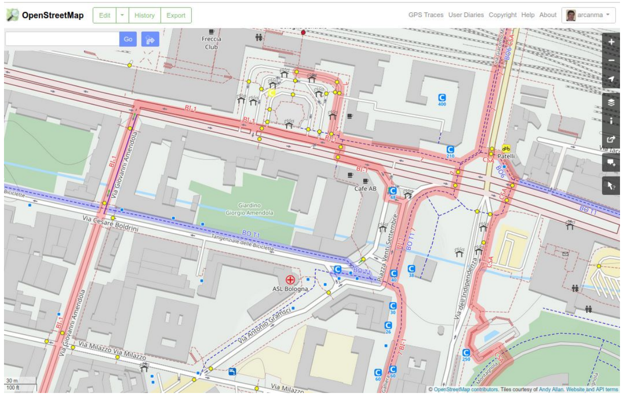
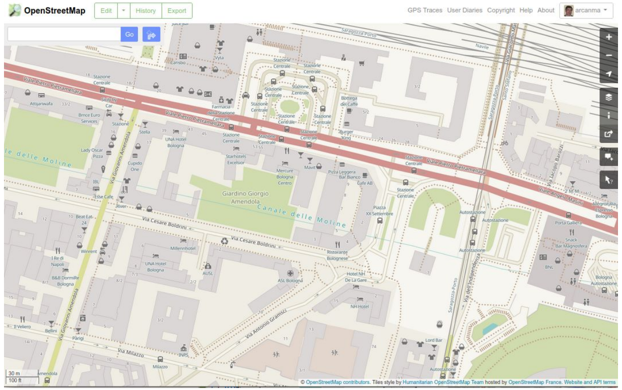
Data visualization









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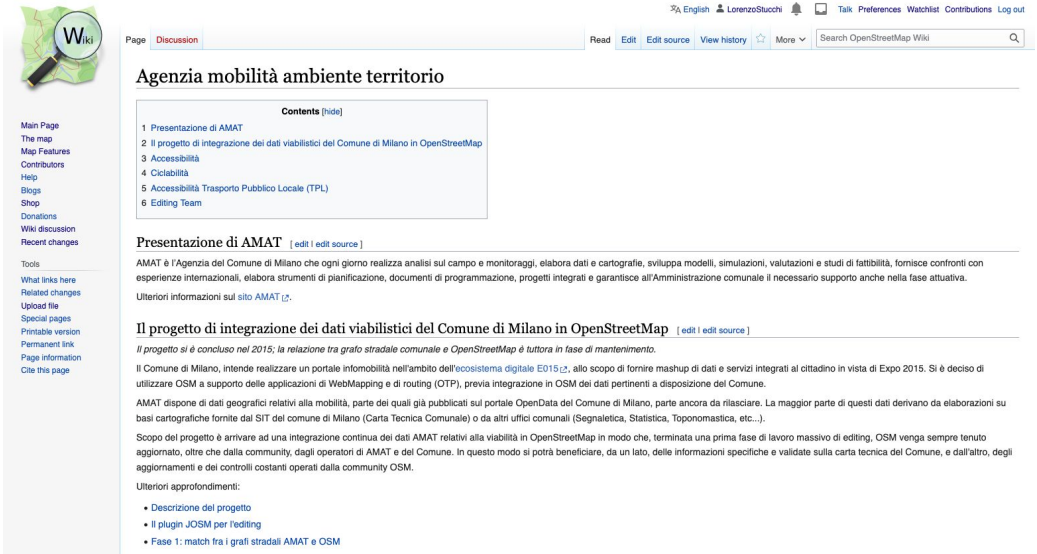
OSM wiki

All information about the various tags and discussions on projects takes place within the MediaWiki web pages.



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

Contributors

- **Volunteers mappers**: mapping local areas, adding detailed information
- Local **Communities**: Groups mapping specific regions or features, ensuring local accuracy
- **Organizations**: NGOs and companies contribute by adding their data and resources and validating the map
- **Government** bodies: Municipality and public agencies share their data, collect with public money, and start new processes to improve the map with high-quality data

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YouthMappers and PoliMappers

YouthMappers is a network of more than 5.000 university student mappers organized in 400 chapters across 77 countries. YouthMappers aims to empower students to address development and environmental **challenges** worldwide using public geospatial technologies.

PoliMappers, founded in 2016, is the first European chapter of YouthMappers. It organises and promotes mapping events in Milano on multiple topics.

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We don't just build maps. We build *mappers.*

Italian community

The Italian community interacts and discusses through three main channels:

- Forum: Discussion space for questions and advice about new projects.https://community.openstreetmap.org/c/communities/it/60
- Telegram channels: Used for quick discussions and small questions. https://t.me/OpenStreetMapItalia
- Mailing list: talk-it https://lists.openstreetmap.org/listinfo/talk-it

partici.fi/54256351

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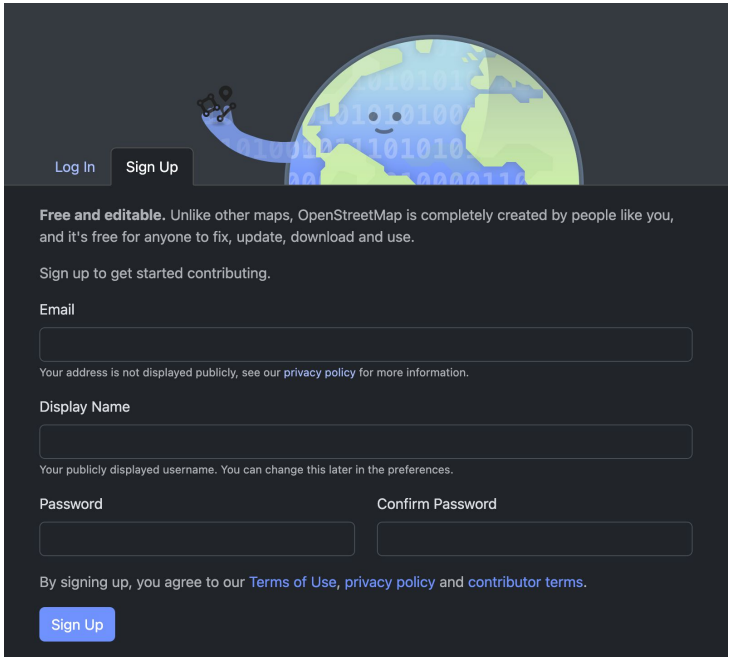
OSM account creation

If you haven’t done it already, go to https://www.openstreetmap.org/user/new and create an OSM account.



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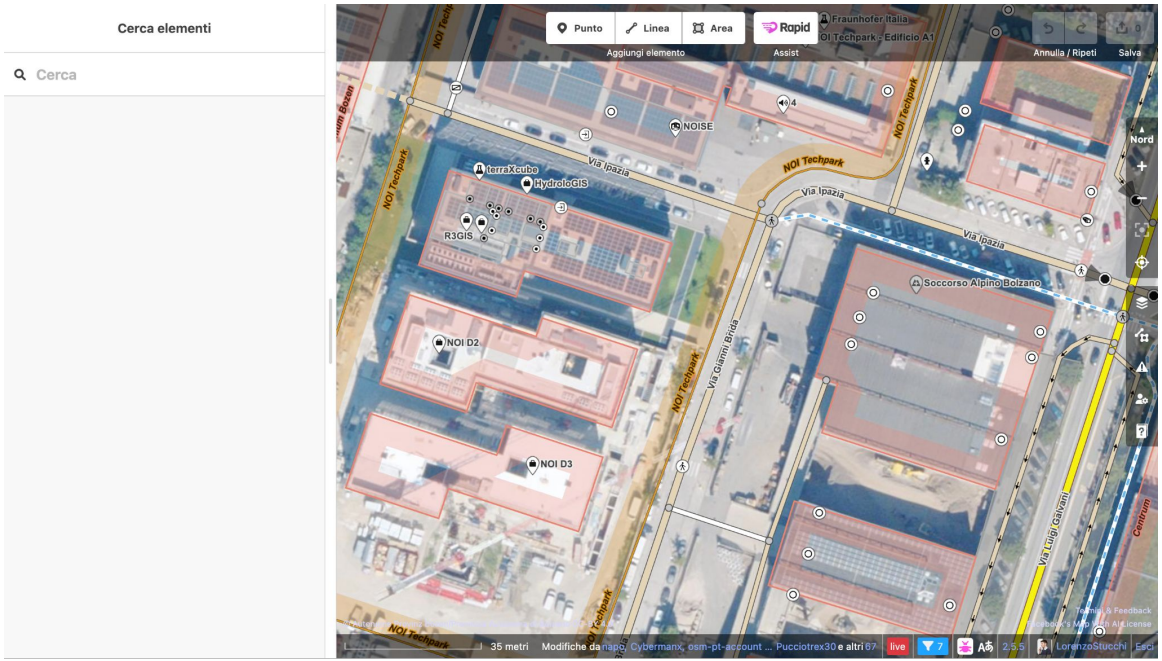
Remote mapping demo



https://rapideditor.org/edit#map=19.00/46.47772/11.33237&background=South-Tyrol-Orthofoto-2023

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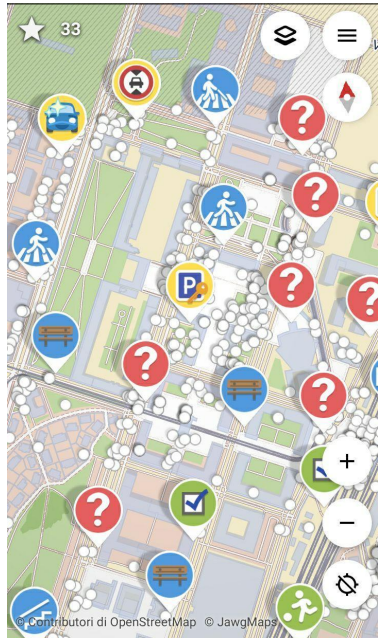
Mapping with apps

The field mapping activity using the app could be carried out with different applications. We are going to explore:

- StreetComplete: app available only for Android.
- MapComplete: web app with many features https://mapcomplete.org/



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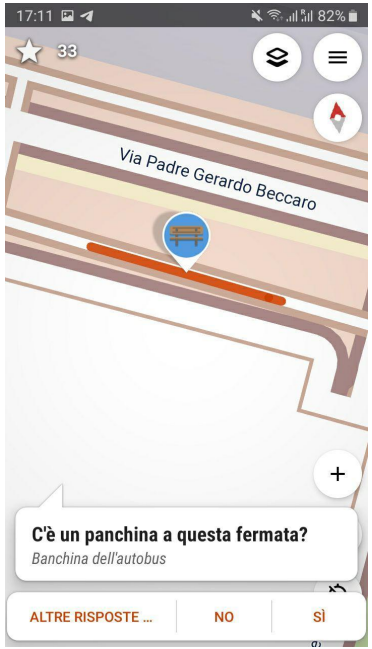
StreetComplete

StreetComplete is very useful for field mapping and allows users to add tags to existing geometries through simple questions and images.



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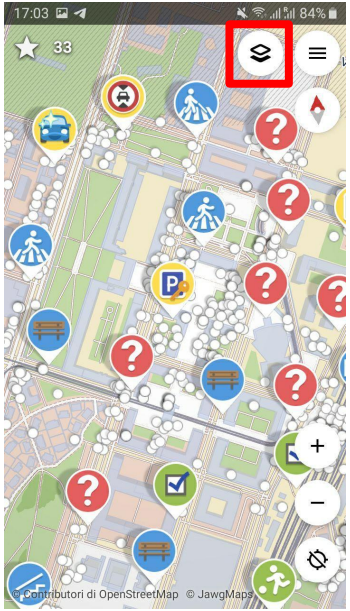
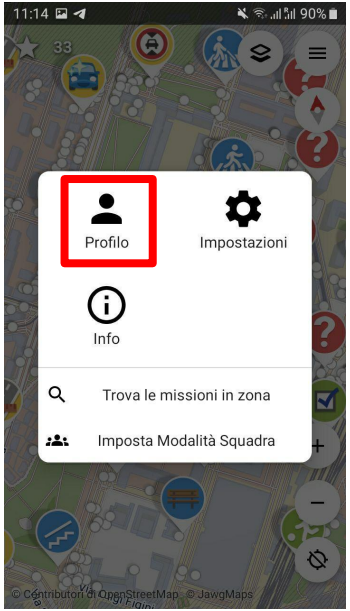
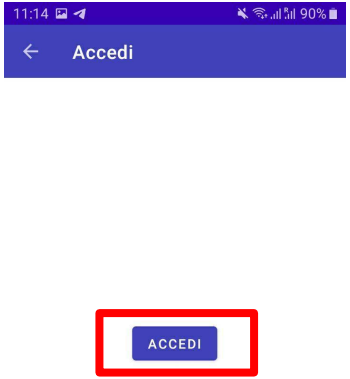
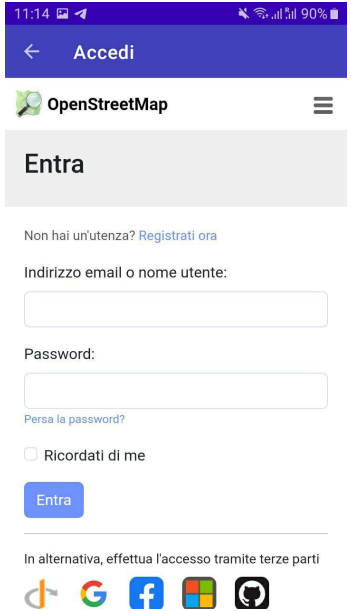
StreetComplete

First step: log in to StreetComplete with your OSM account.









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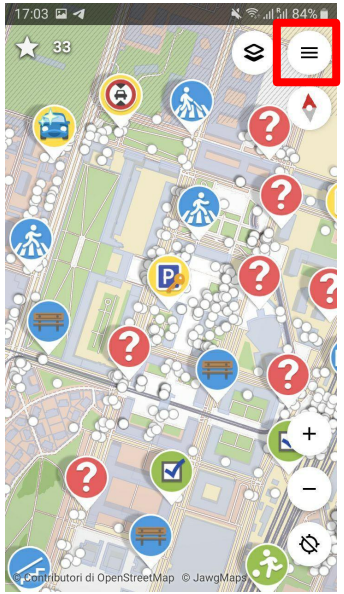
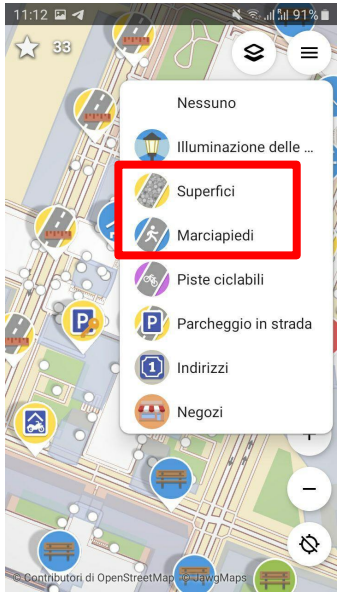
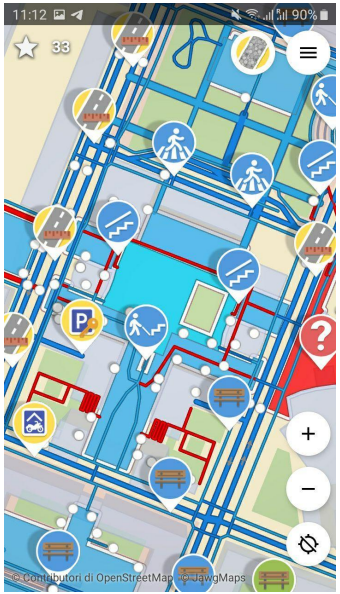
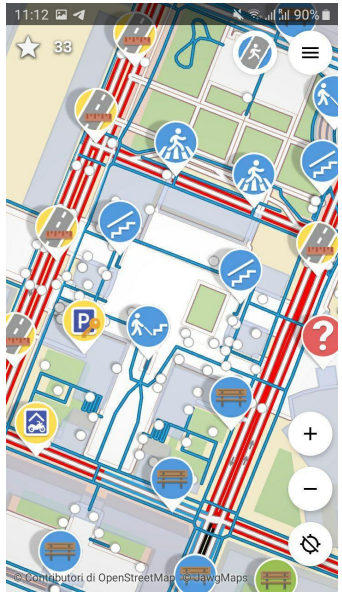
How to map

You can use two filters to highlight the challenges that are of greatest interest.









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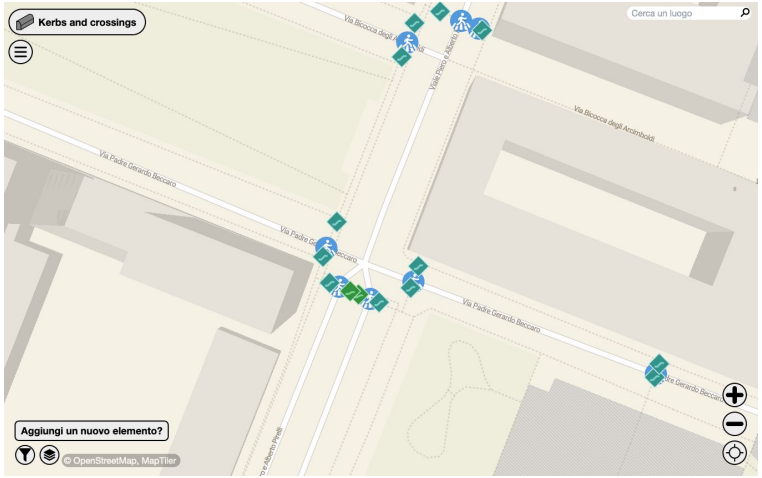
MapComplete

A web app that allows users, through a browser, either on a phone or a computer, to answer questions in order to complete the mapping of existing elements.



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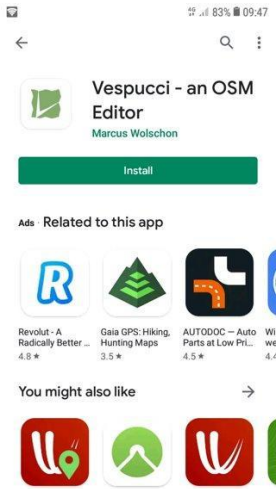
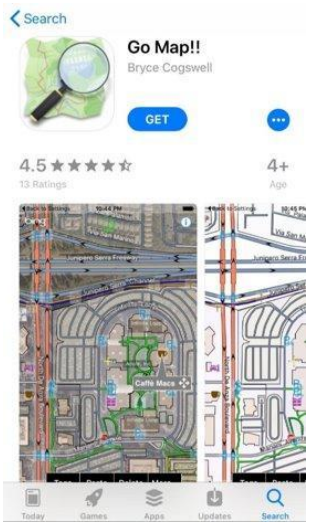
GoMap! and Vespucci

Two other apps are available, they are **smartphone editors** that are more **complex** to use but allow users to fully and freely edit the map.





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Let’s go mapping!
Try to be back here at
15:45

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Results of the mapping activities

OSMCha

v1.2.7

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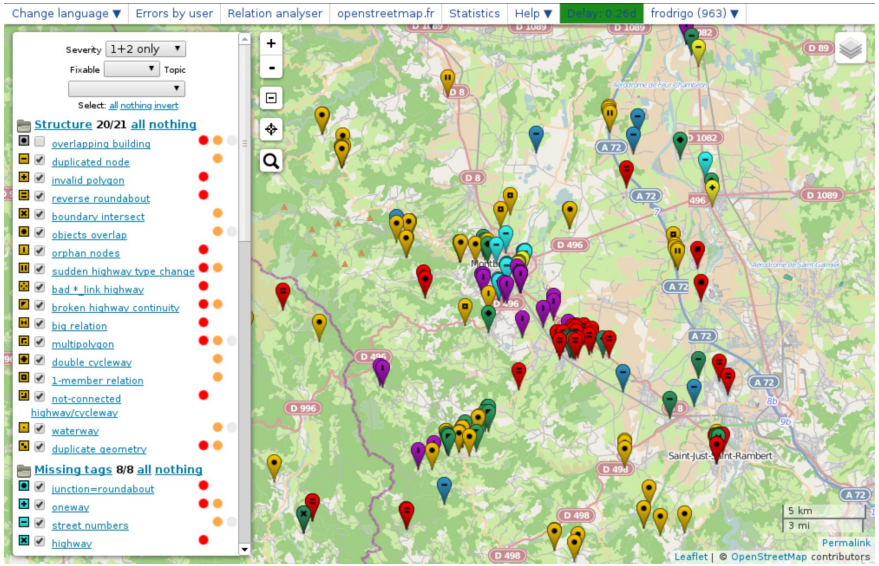
Supported by

OpenStreetMap US

OSMCha Bolzano



https://osmose.openstreetmap.fr/it/map/#zoom=18&lat=45.631008&lon=9.419354&item=xxxx&level=1&loc=16/46.477539/11.3317

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Thanks for listening!

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