

Mapping elements-at-risk using OSM and JOSM

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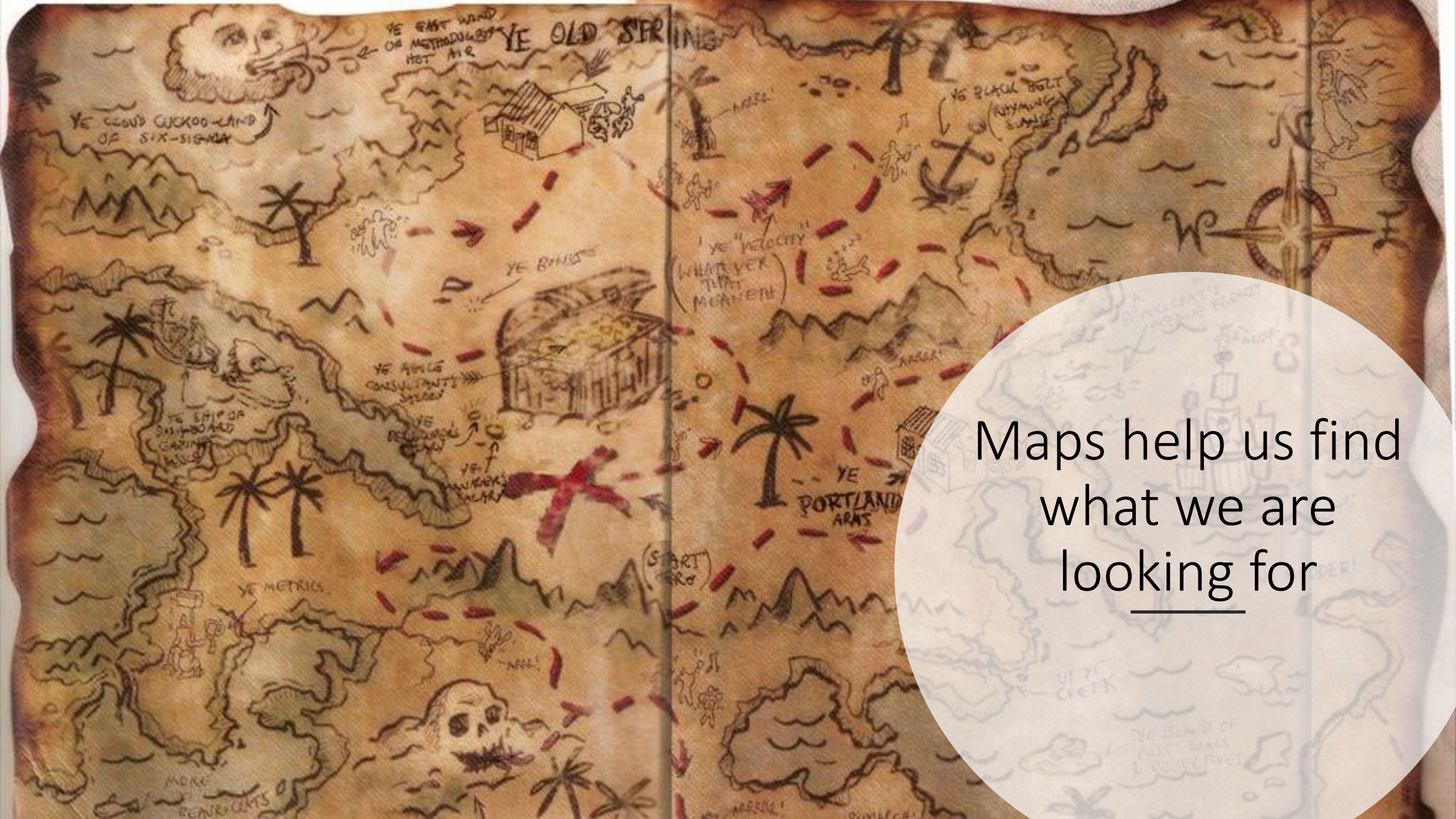
rajitha@ait.ac.th





Why we need to map?

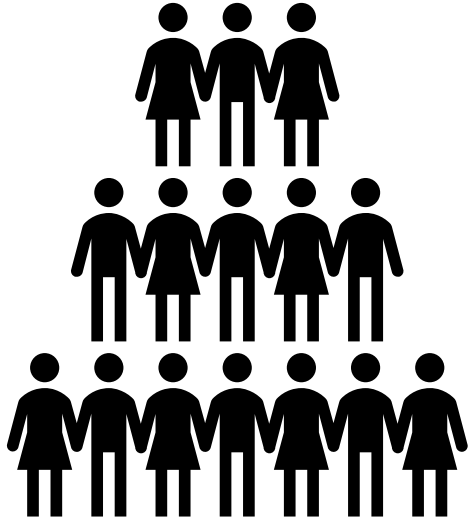




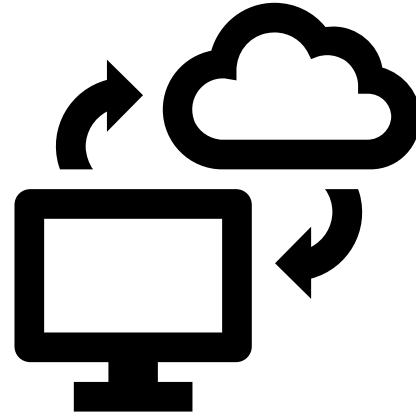
Maps help us find
what we are
looking for

Q: Imagine you need to map all the buildings in Tajikistan. What do you think should be required to achieve this goal in two weeks?

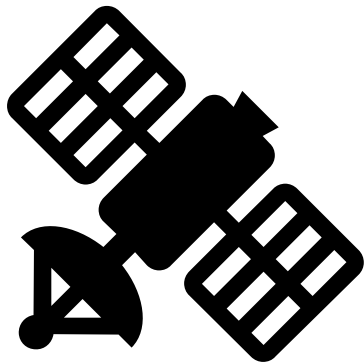




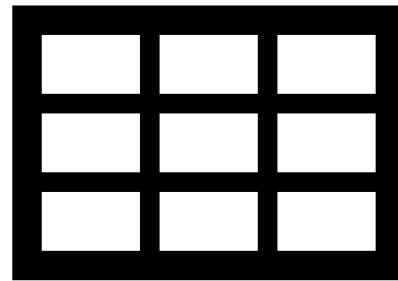
Team



Computers with internet



Satellite images



Systematic grid

My answer



Bing aerial imagery



OSM mapped data

Open Street Map (OSM)

OpenStreetMap is a free, editable map of the whole world that is being built by volunteers largely from scratch and released with an open-content license.

An overview of OSM

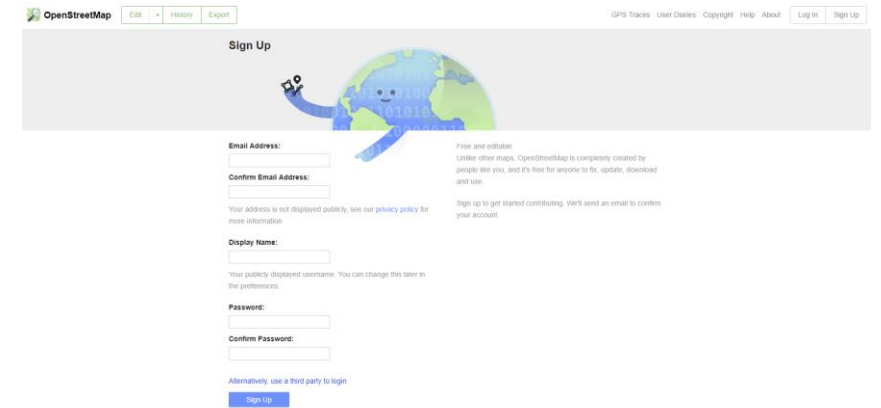
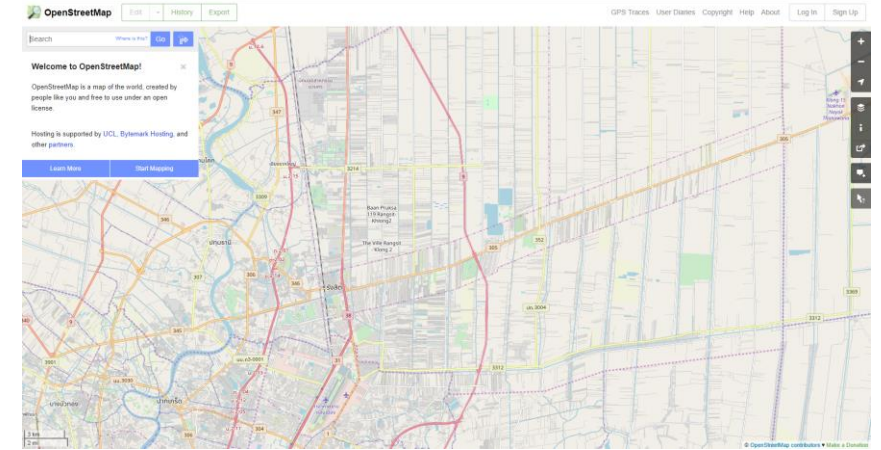
What is OpenStreetMap?




Setting up a new OSM account

- Go to the link below and signup for a new account

<https://www.openstreetmap.org>



Log in to the OSM using your own account

 OpenStreetMap

[GPS Traces](#) [User Diaries](#) [Copyright](#) [Help](#) [About](#)

Login

Don't have an account? [Register now](#)


Email Address or Username:

Password:

[Lost your password?](#)

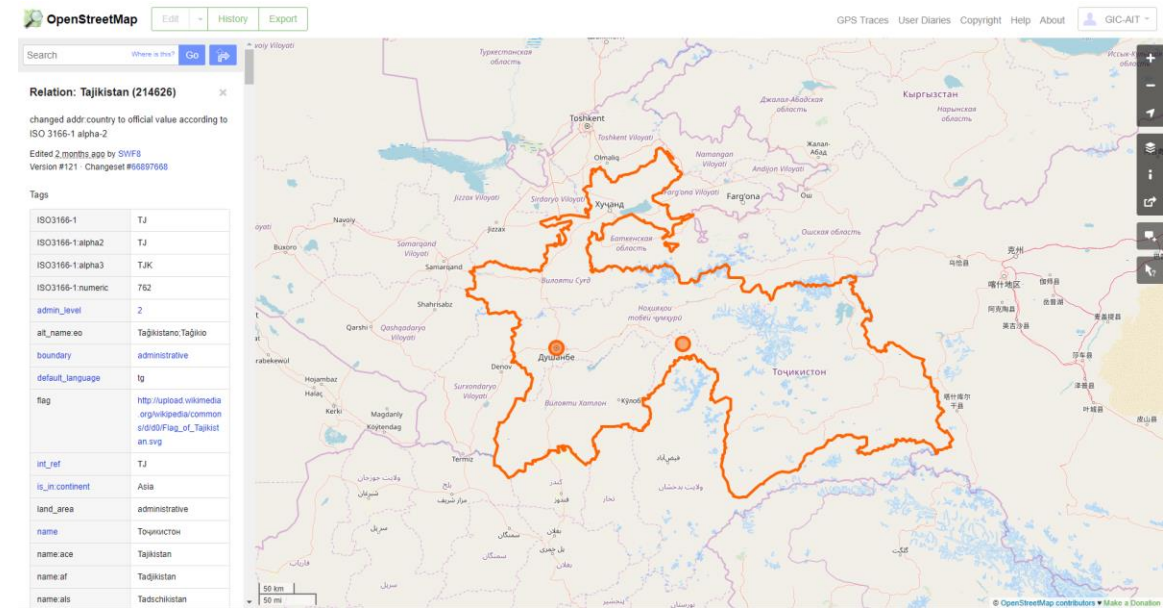
Remember me

Alternatively, use a third party to login:



Lets search for Tajikistan

1. Type Tajikistan and enter



Now lets try to find the place where we are now

The screenshot shows a search interface with the following elements:

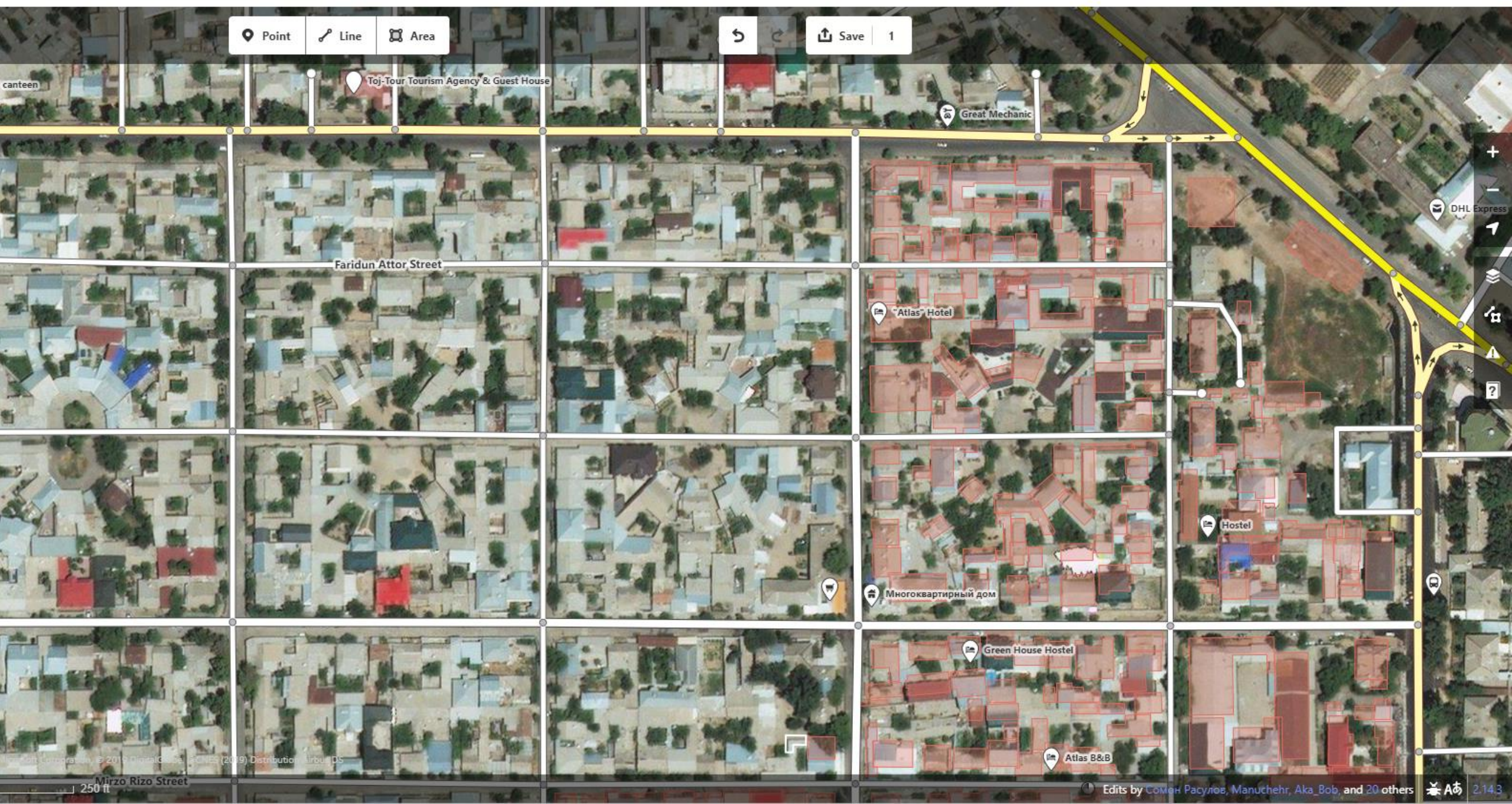
- Search features**: A header label above the search bar.
- Search bar**: Contains the text "Atlas hotel Dushanbe".
- Message**: A warning icon followed by the text "No results in visible map area".
- Button**: A grey button labeled "Search worldwide...".

Two callout boxes provide instructions:

- Box 1**: "1. Type Atlas hotel Dushanbe" with a line pointing to the search bar.
- Box 2**: "2. Select search worldwide" with a line pointing to the "Search worldwide..." button.

Point Line Area

Save 1



canteen

Toj-Tour Tourism Agency & Guest House

Great Mechanic

Faridun Attor Street

"Atlas" Hotel

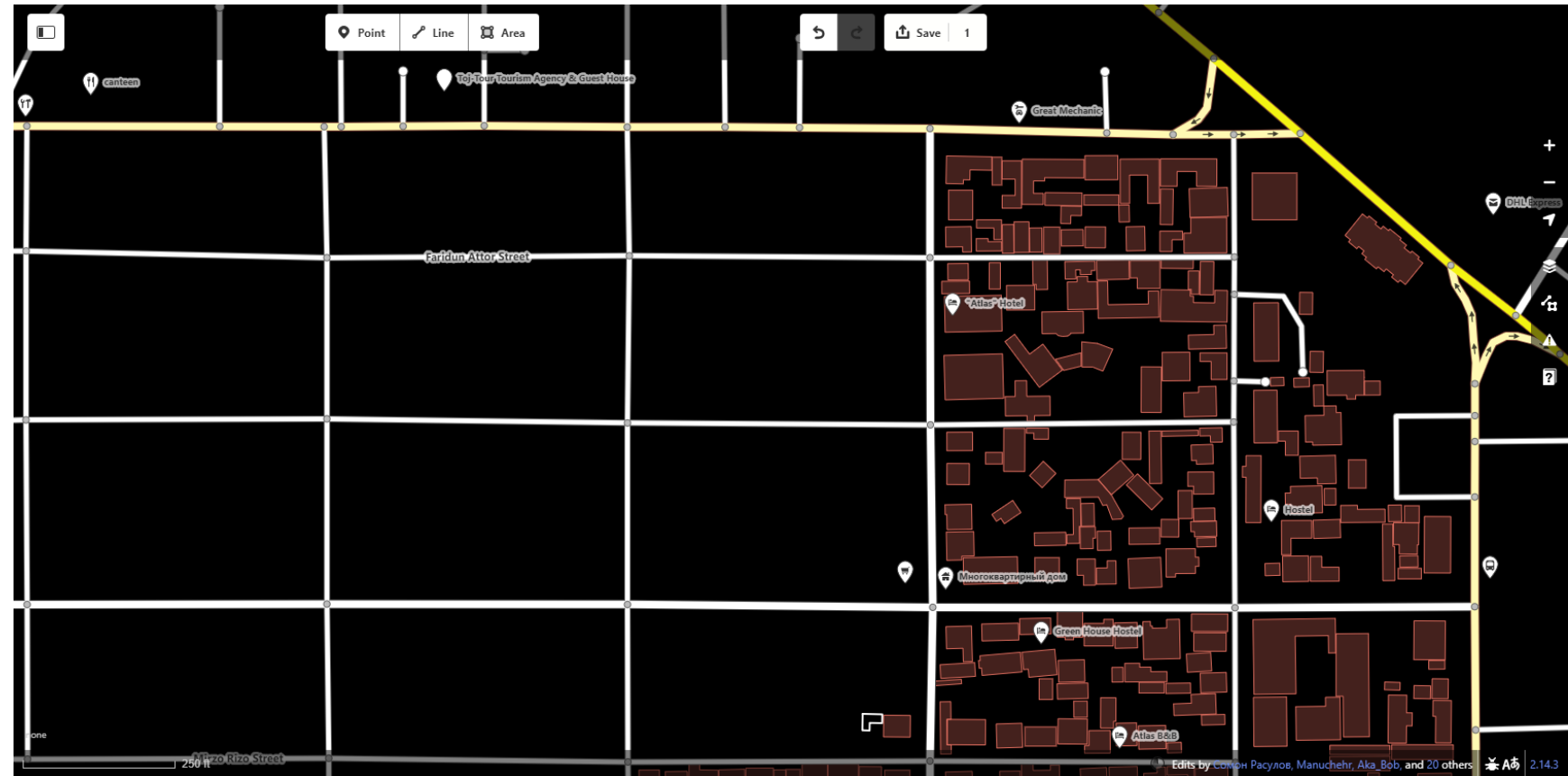
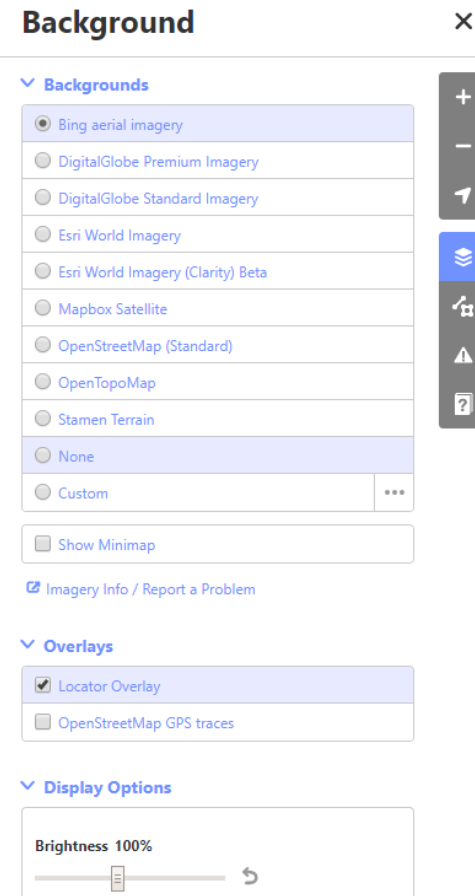
Hostel

Многоквартирный дом

Green House Hostel

Atlas B&B

Switching the background imagery



Java OpenStreetMap Editor (JOSM)



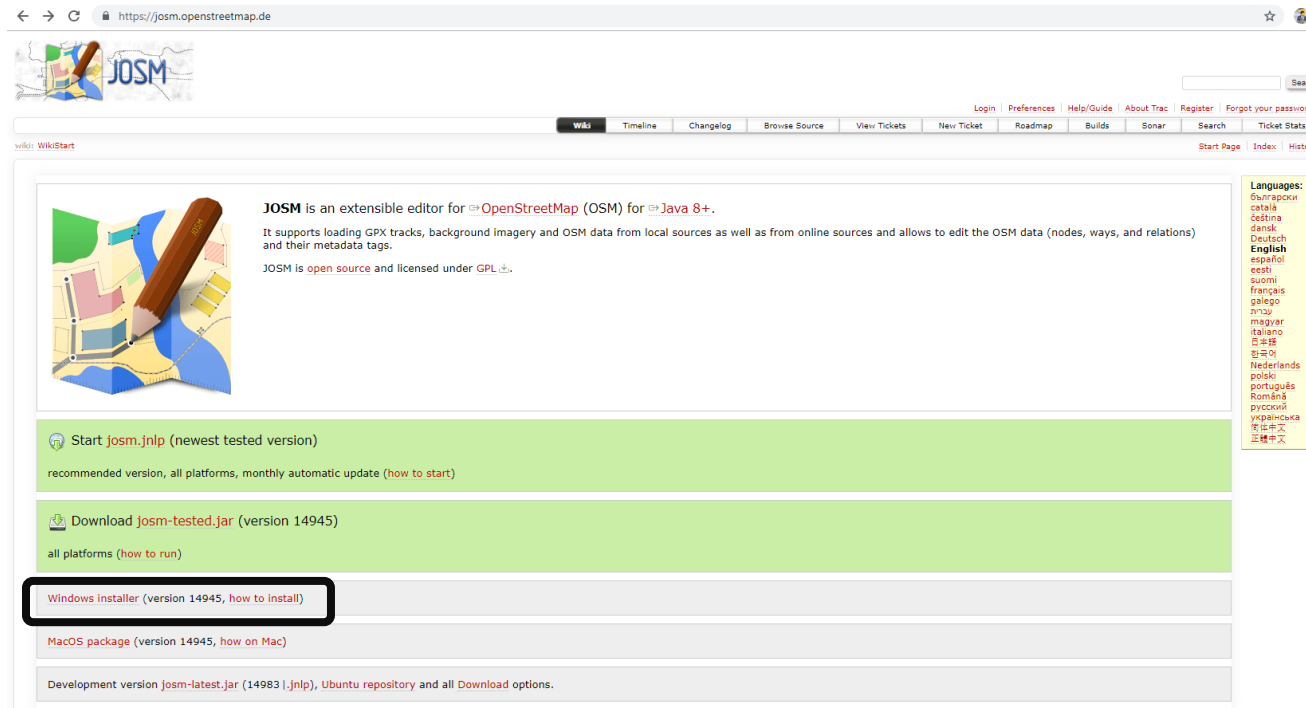
JOSM is a free software desktop editing tool for OpenStreetMap geodata created in Java. Its easy to use and convenient for beginners to map fast and accurately.

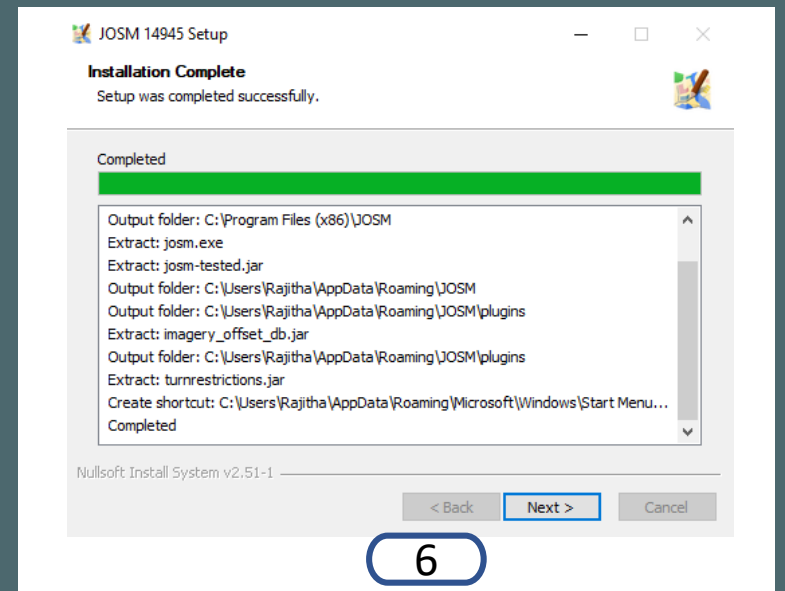
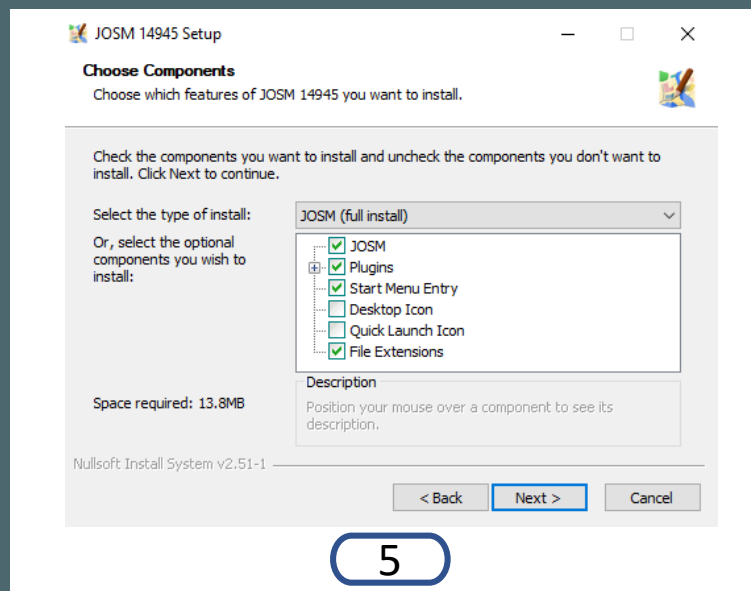
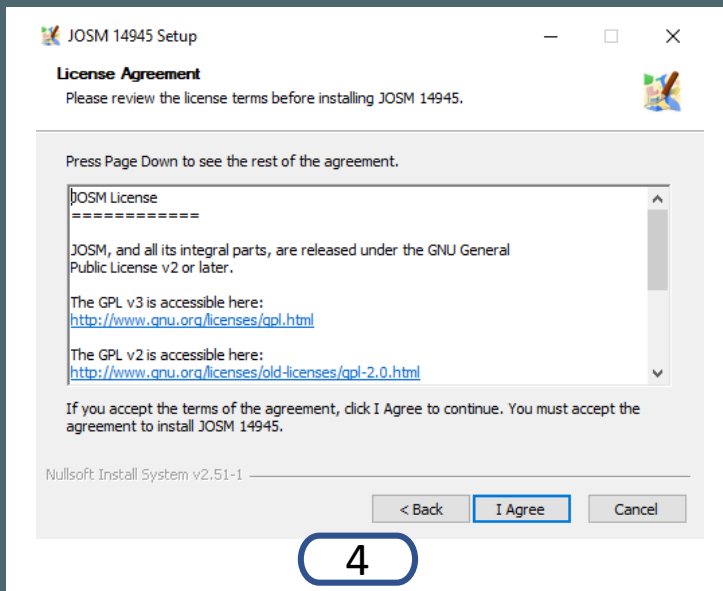
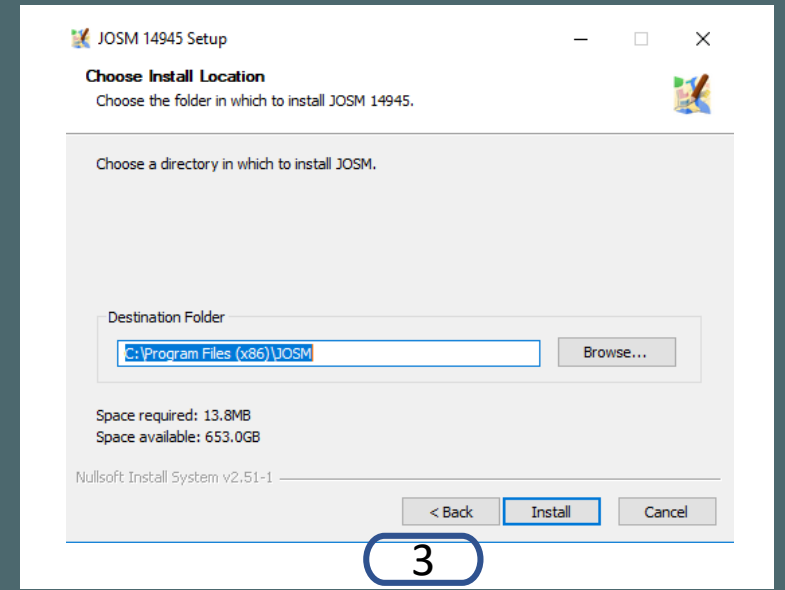
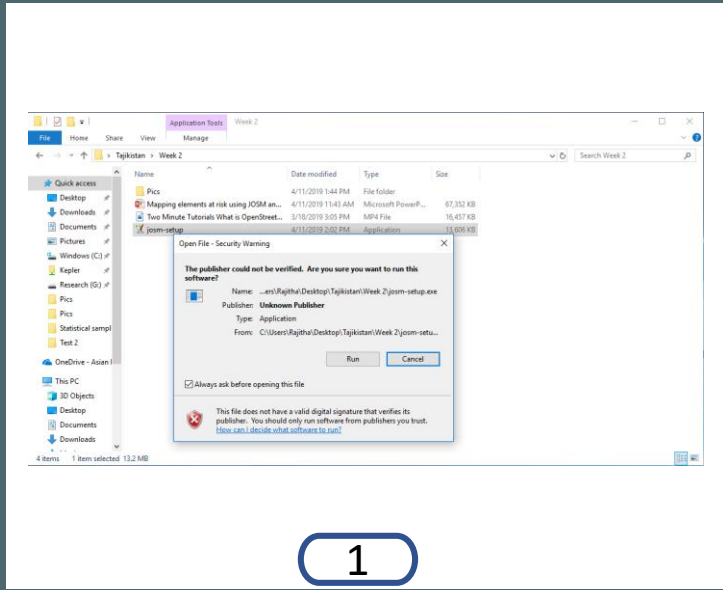
Downloading JOSM

1. Go to the JOSM website

2. Select the windows installer

<https://josm.openstreetmap.de/>

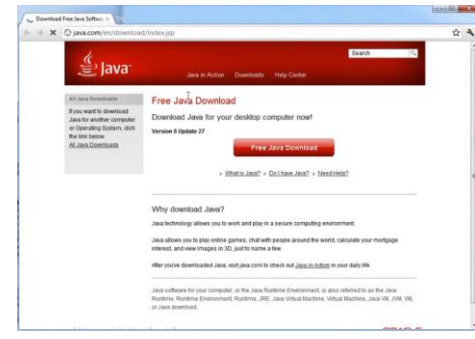




1



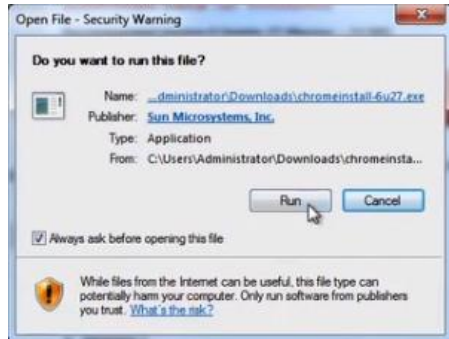
2



3



4



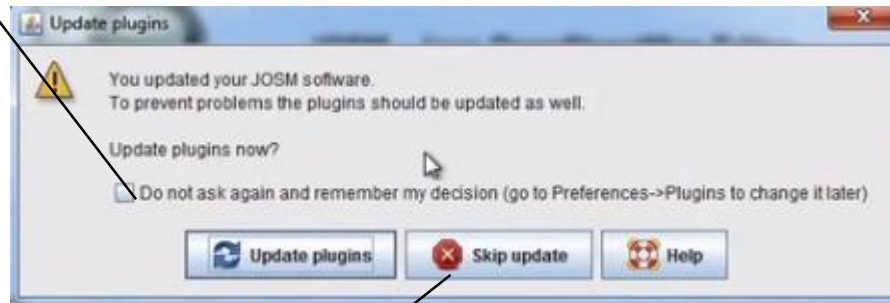
If a message comes to install newer version of Java, proceed and install

5

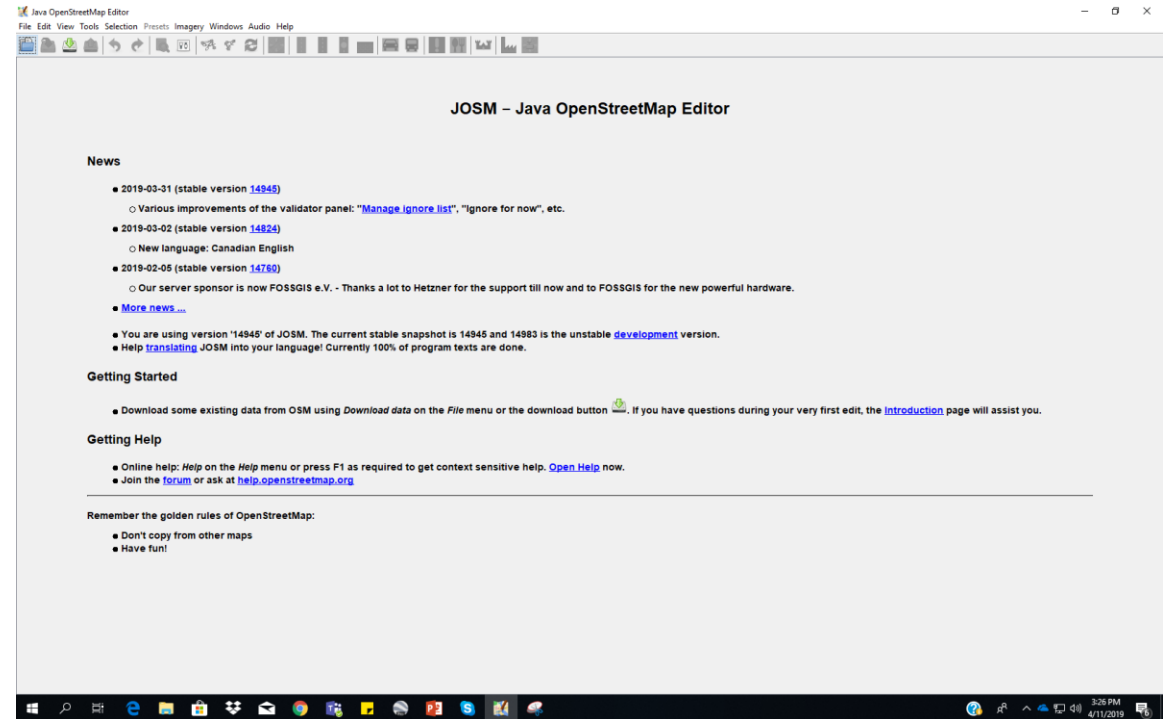


Now lets open JOSM

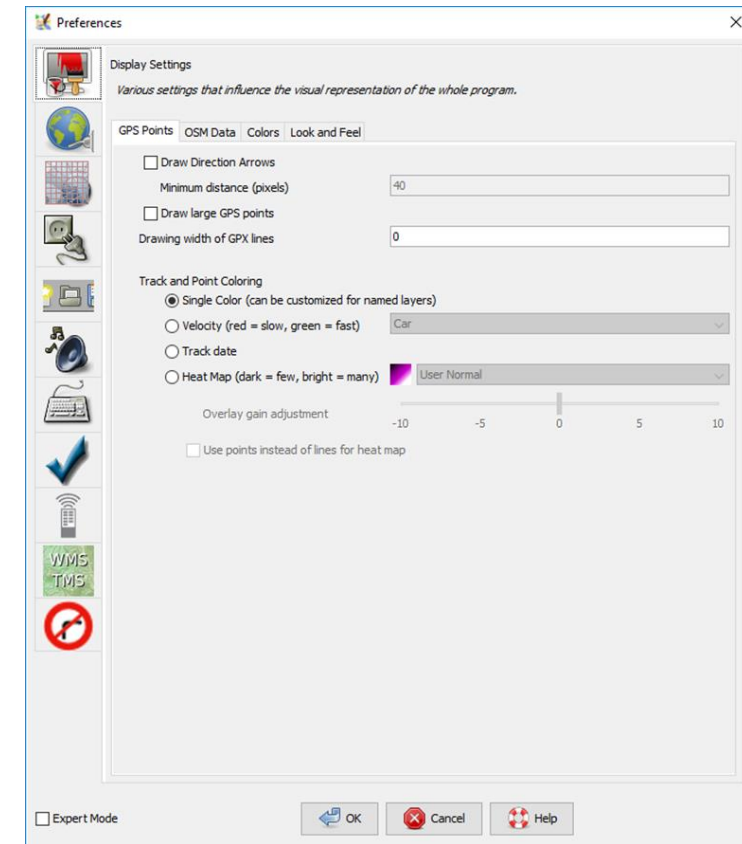
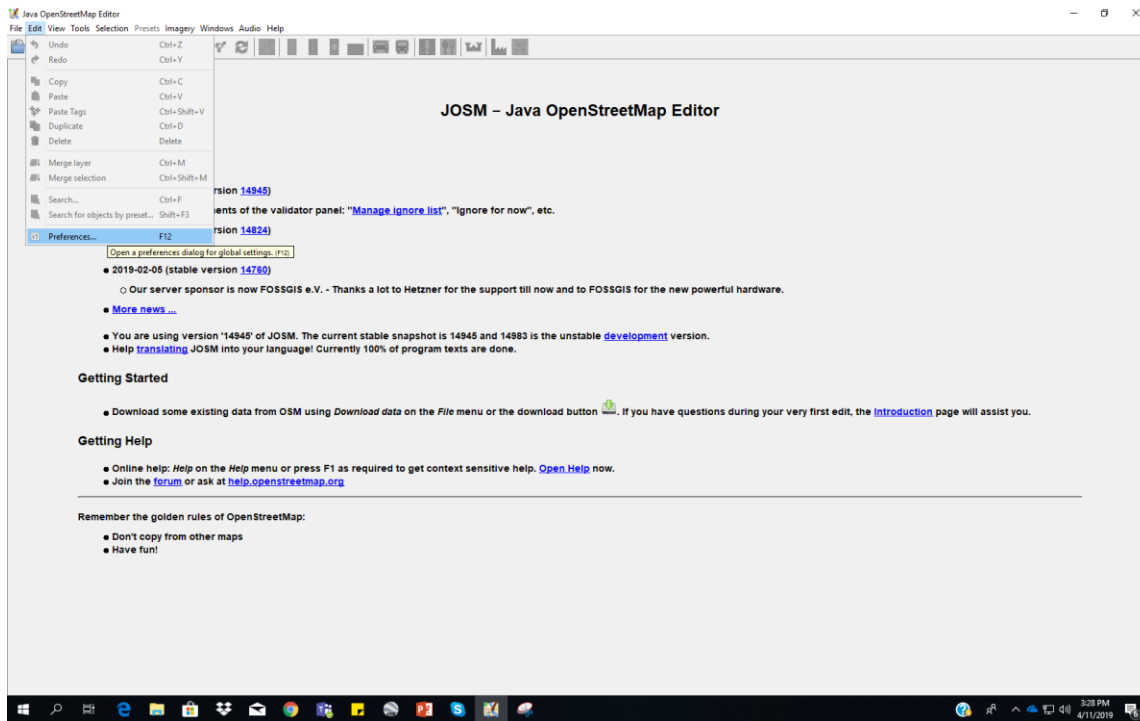
1. Tick this radio button



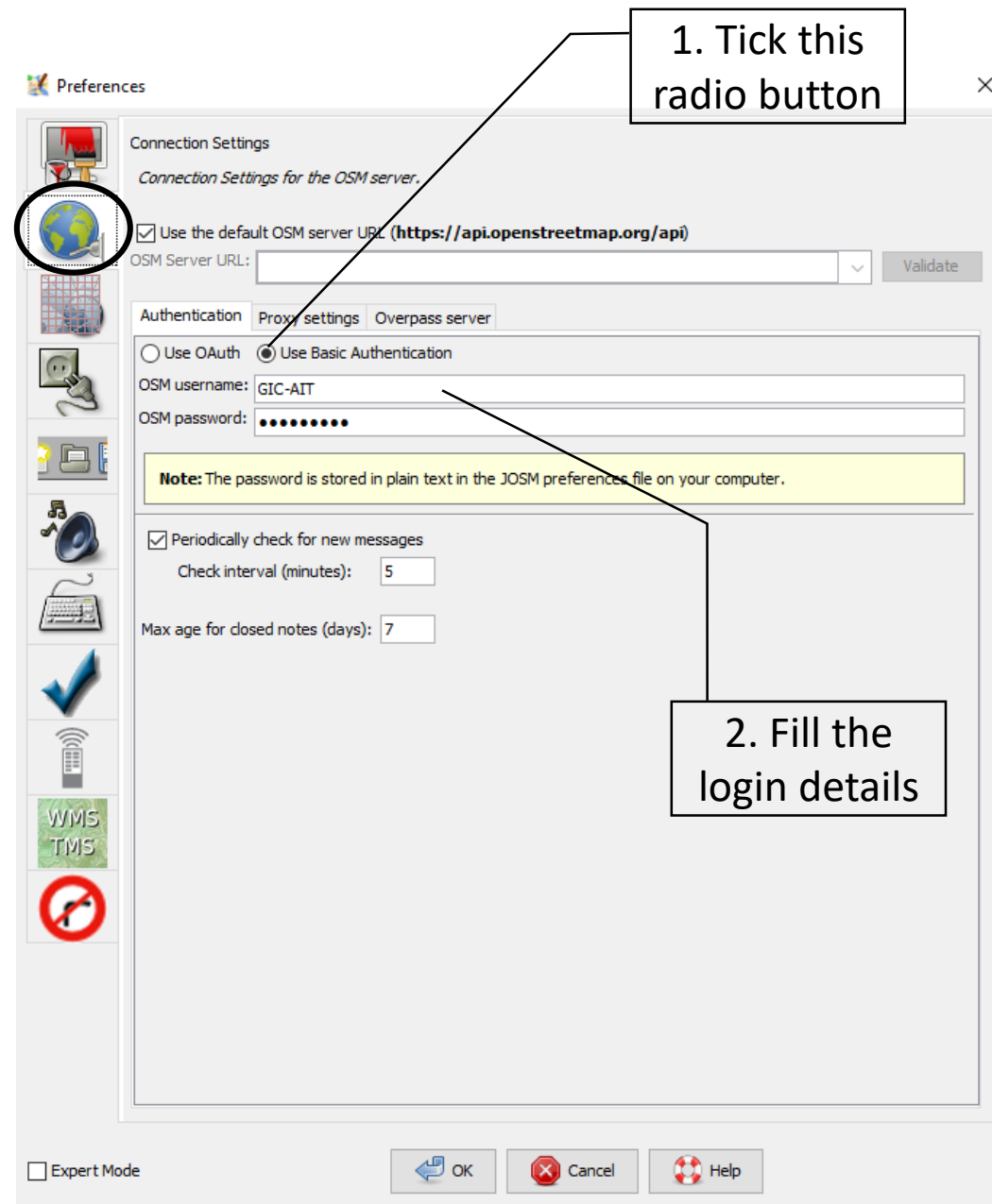
2. Select skip update



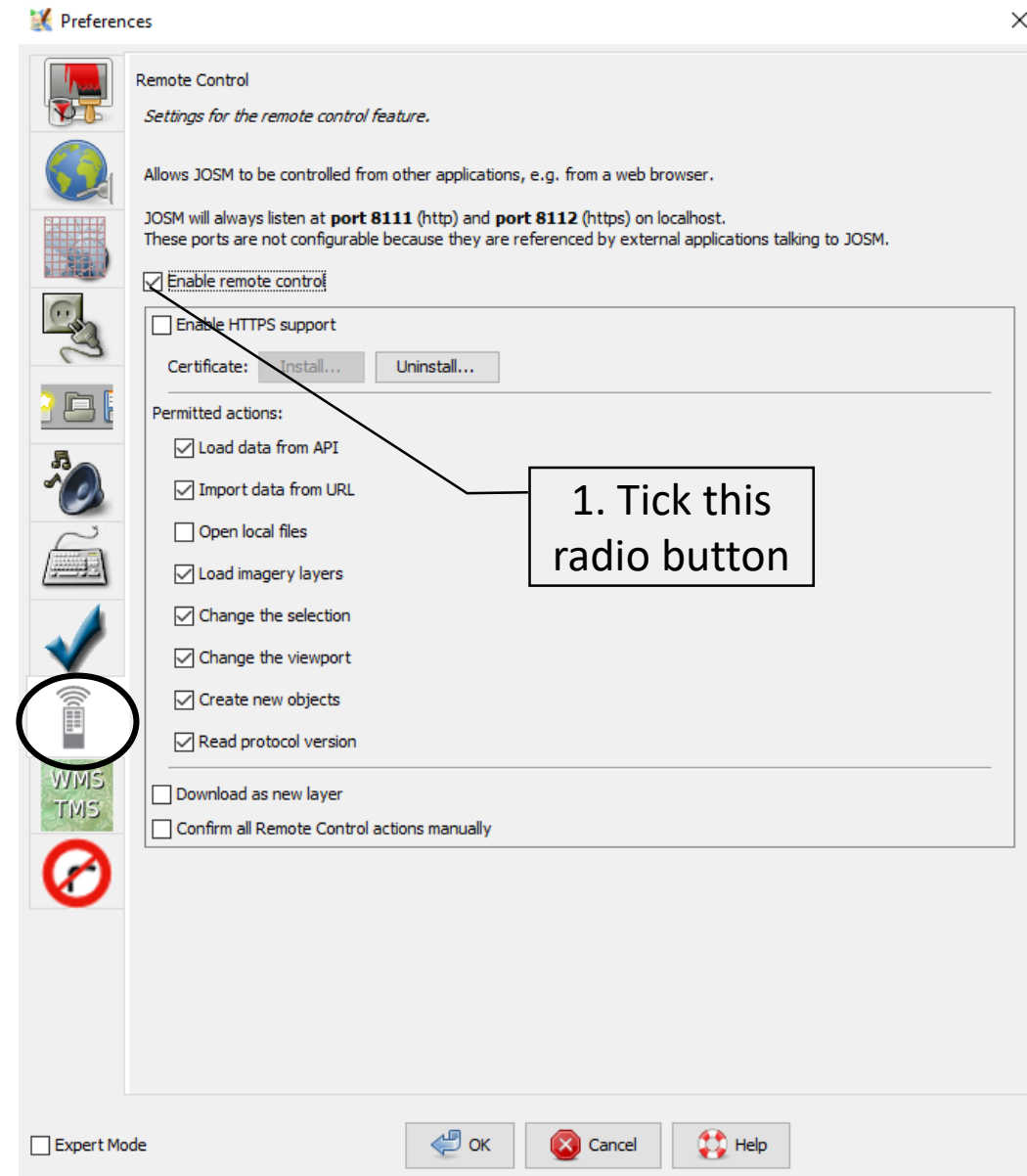
Lets now set up the preferences



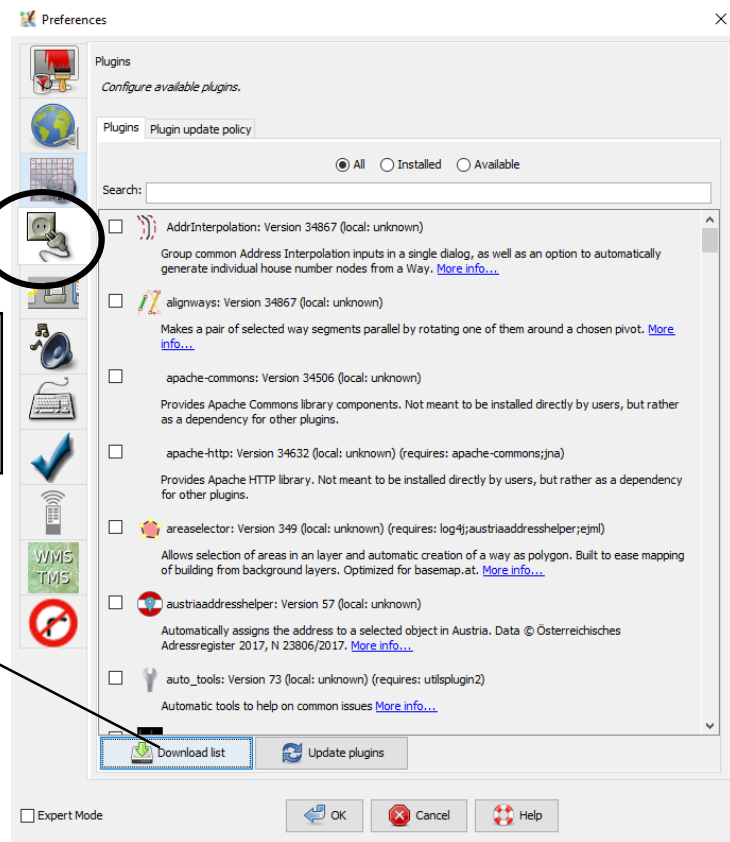
Go to connection settings and fill in your authentication details for OSM account



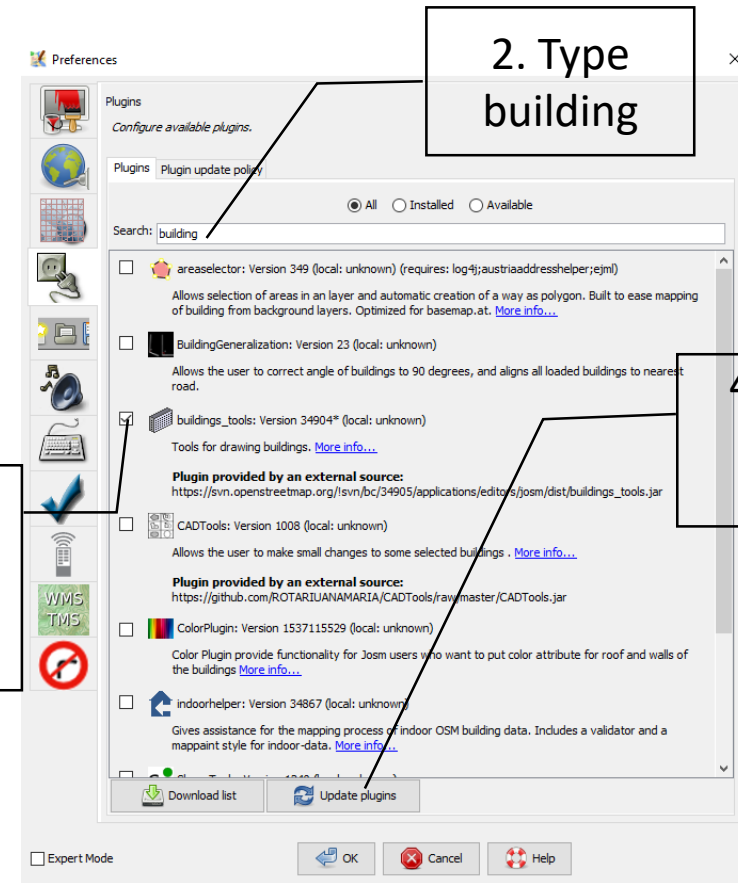
Enable remote control



Installing the buildings plug-in and make sure to restart the software



1. Select Download list



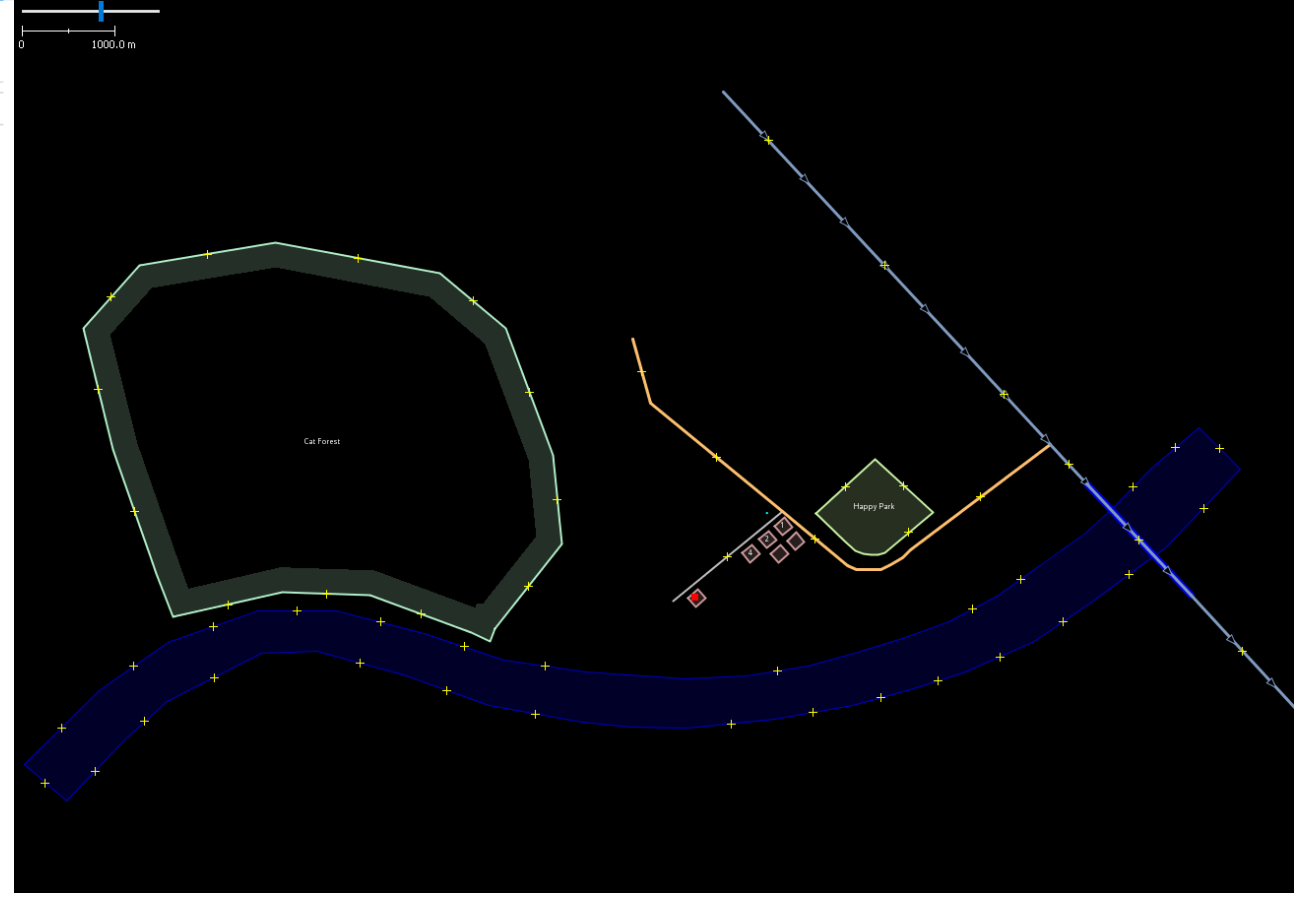
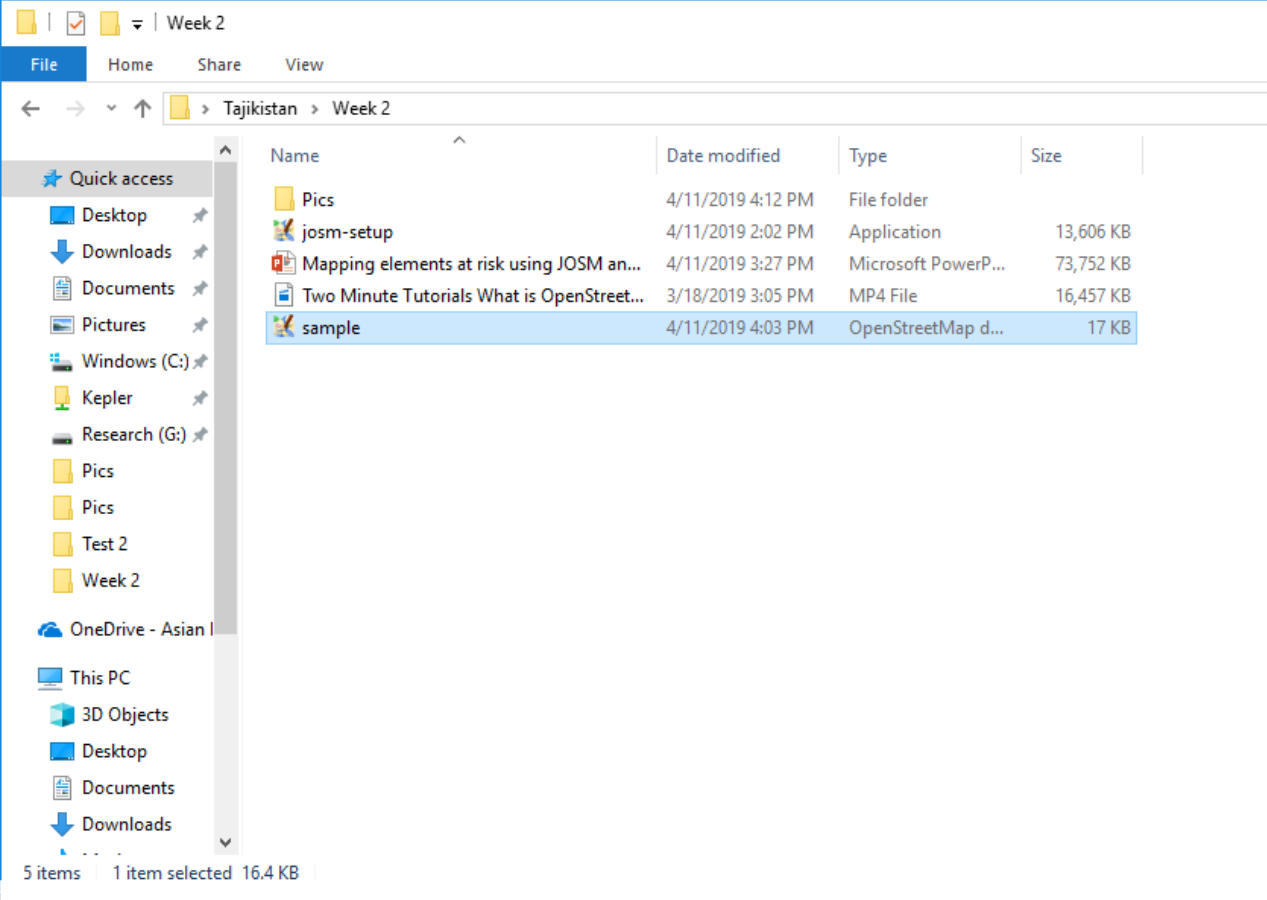
2. Type building

3. Select the building plugin

4. Select update plugins

For further
reading about
JOSM for OSM
refer this
website

- <https://learnosm.org/en/josm/start-josm/>



Lets now try to map using JOSM

Open the sample OSM file already provided

Basic navigation operations

A. To move the in any direction:
Hold your **right mouse button**
down, and move your mouse.



C. To select an object: Click on it
with your **left mouse button**.

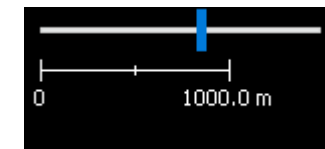


B. To zoom the in and out:

1. Use the **scroll wheel** in the
mouse.

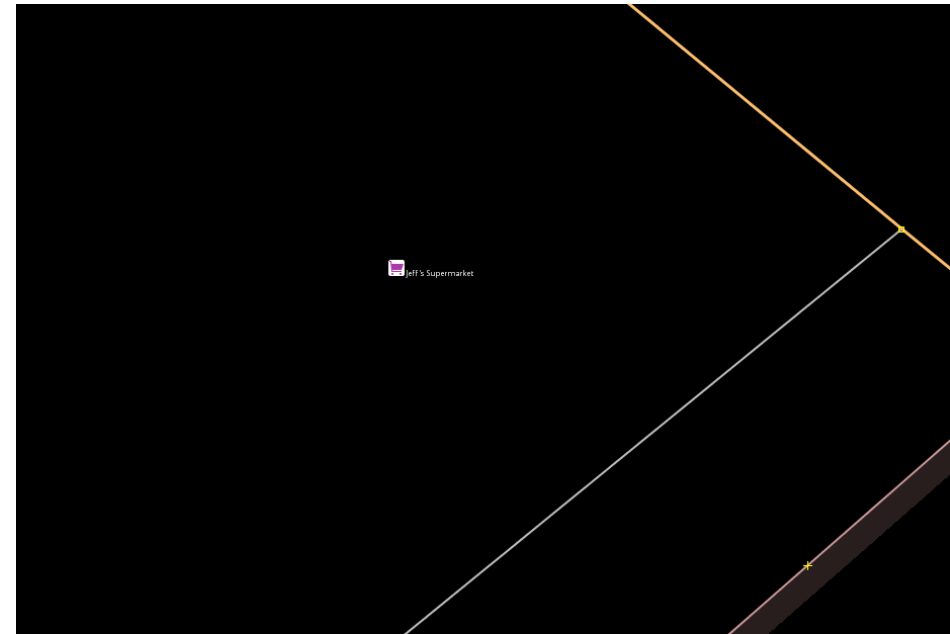
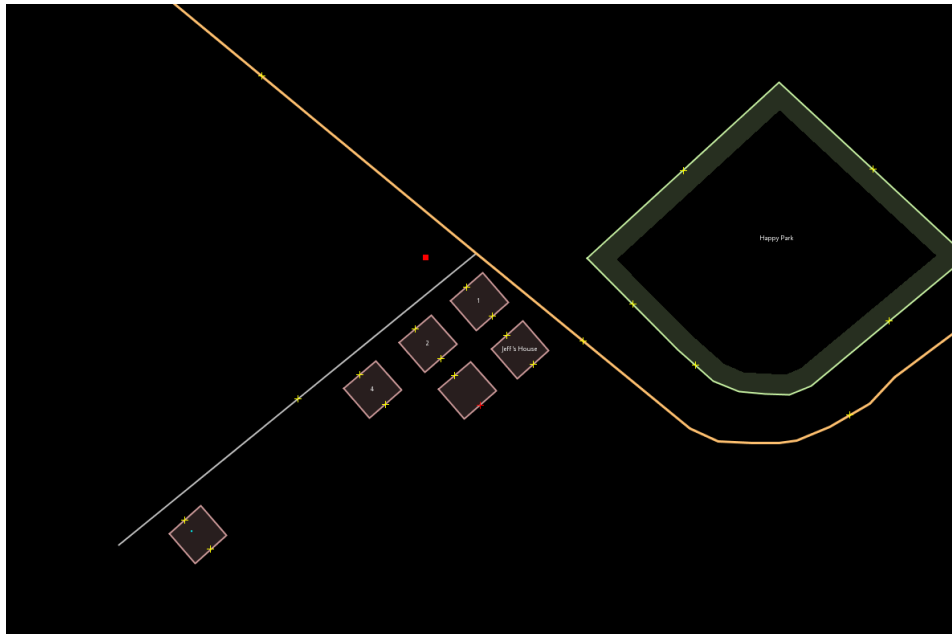


2. Use the **scale bar** in the upper
left corner of the map view

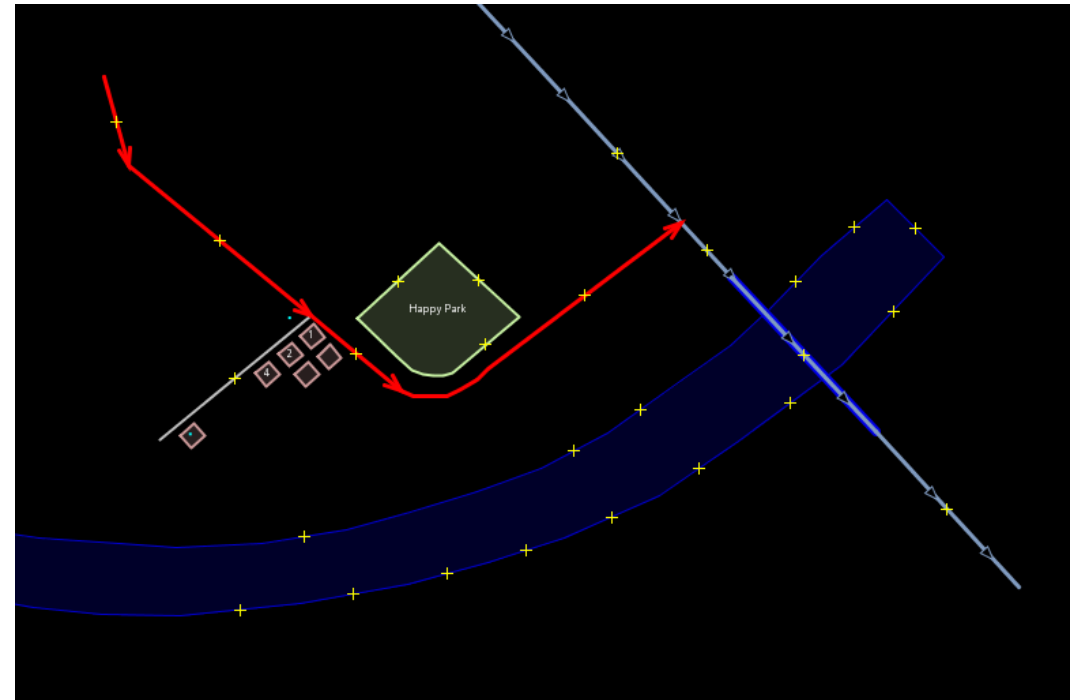


Points, lines and polygons

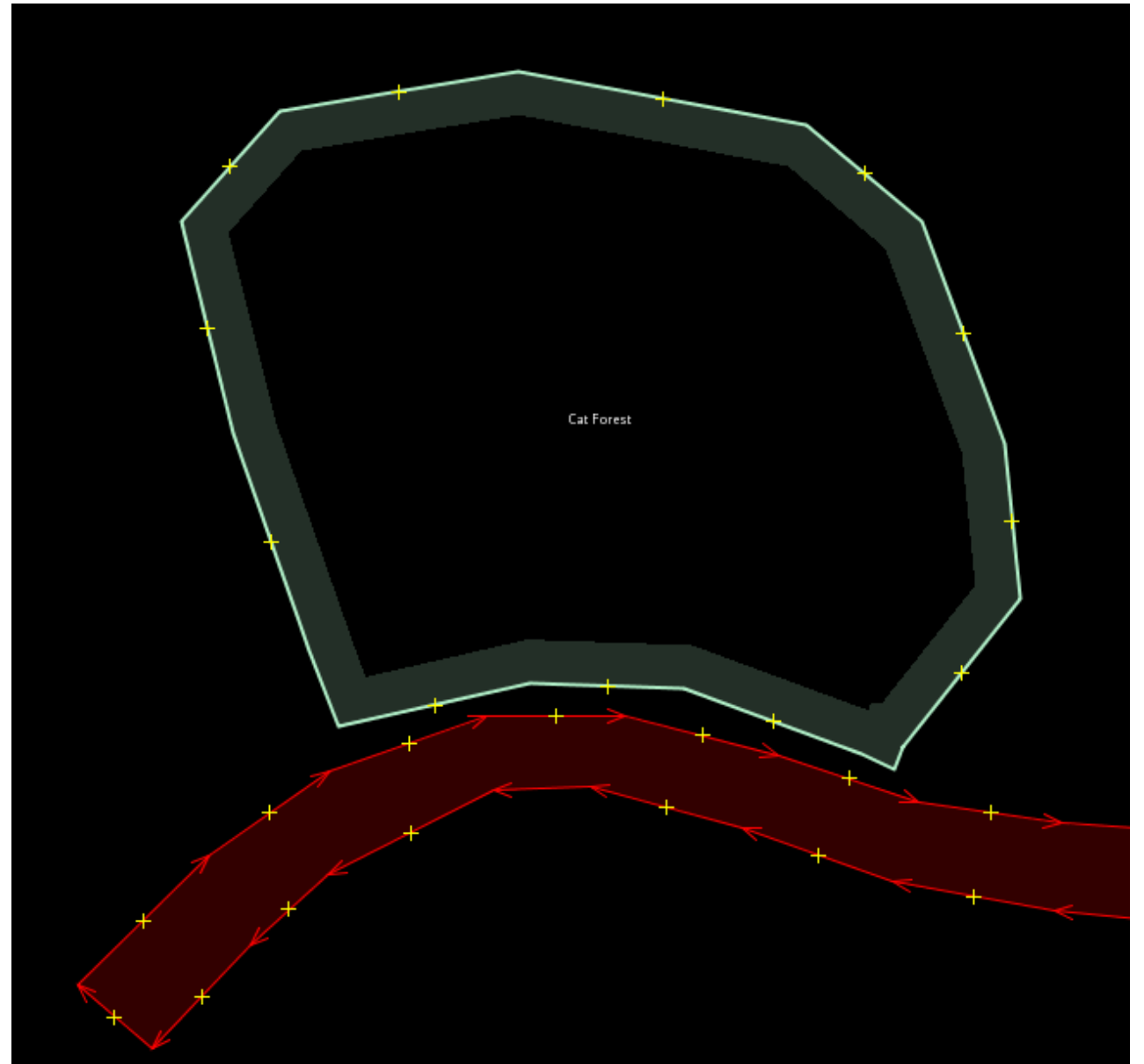
Points are a single location, represented by symbols. On this sample map, there are two points, a shoe shop and a supermarket. The shoe shop is represented by a shoe symbol, and the market is represented by a shopping cart.



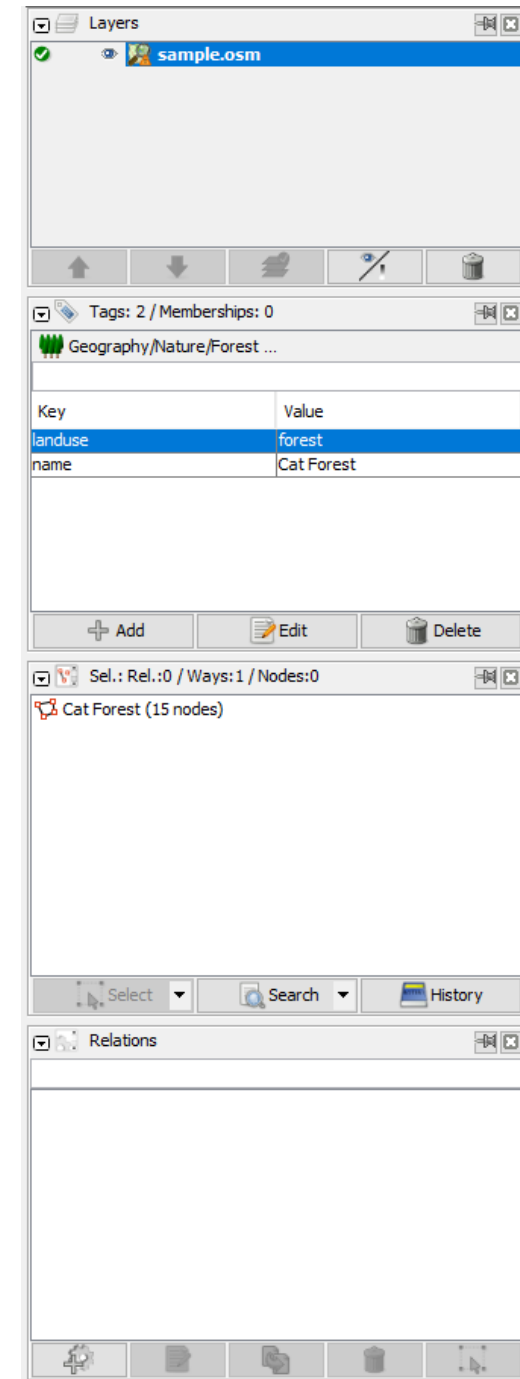
There are several lines on the map as well, which represent roads. If you look closely you will see that within the lines, there are points as well. These points don't have any symbols or other information associated with them, but they help to define where the line is located.



There are numerous shapes on the sample map, representing different places - a forest, a river, a park, and buildings. A shape is used to represent an area, like a field or a building. A shape is exactly like a line - the only difference is that the line begins at the same point where it ends.

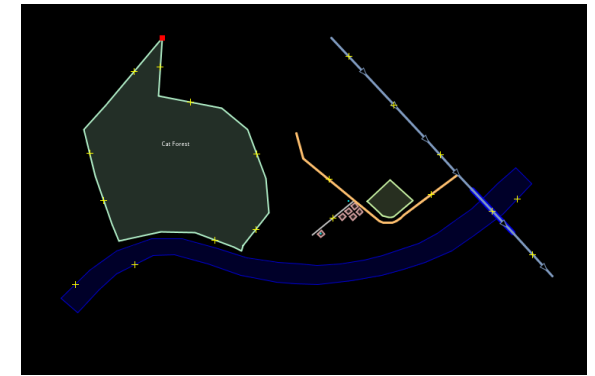
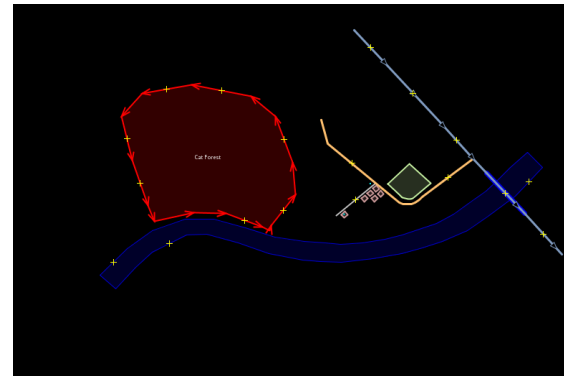
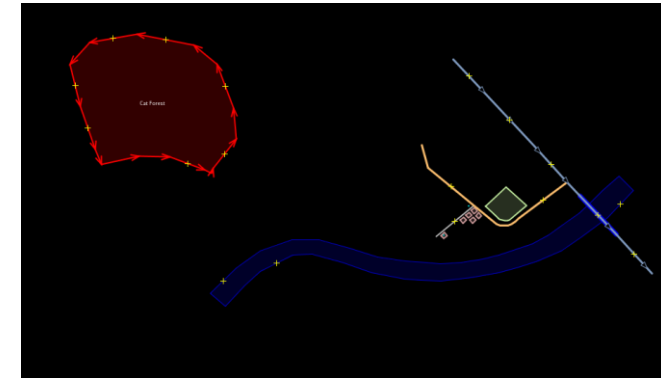
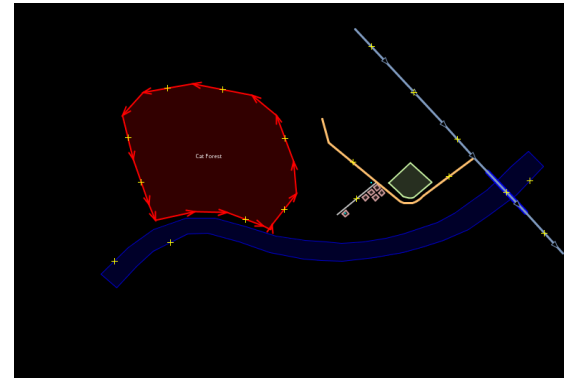


You may notice that when you select an object, a list appears to the right of the map in a window called “Properties”. These are known as tags. Tags are information that is tied to a point, line or shape that describes what it is. We’ll learn more about tags in a later chapter. For now all you need to know is that this information helps describe whether our object is a forest, a river, a building, or something else.



Changing existing objects

- **Select the forest** on the left side of the map. Be sure to click on the line around the forest, not one of the points on the line. Now **hold your left mouse button down and drag your mouse**. You should be able to move the forest to a new location on the map.
- **Click on one of the points on the line** around the forest. **Hold your left mouse button down and drag your mouse**. You should be able to move the point. This is how you can change the shape of an object, or move a point.



Drawing

1. Select tool icon

2. Draw tool icon



Lets try to use the draw tool to map a road around the park

A. Start from this end

B. End from this end



This will create a separate line but connected to the existing road

Some useful shortcuts

- Activate the Select Tool : S
- Activate the Draw Tool : A
- Activate the Zoom Tool : Z
- Delete the selected object/s : Delete
- Zoom In : +
- Zoom Out : -

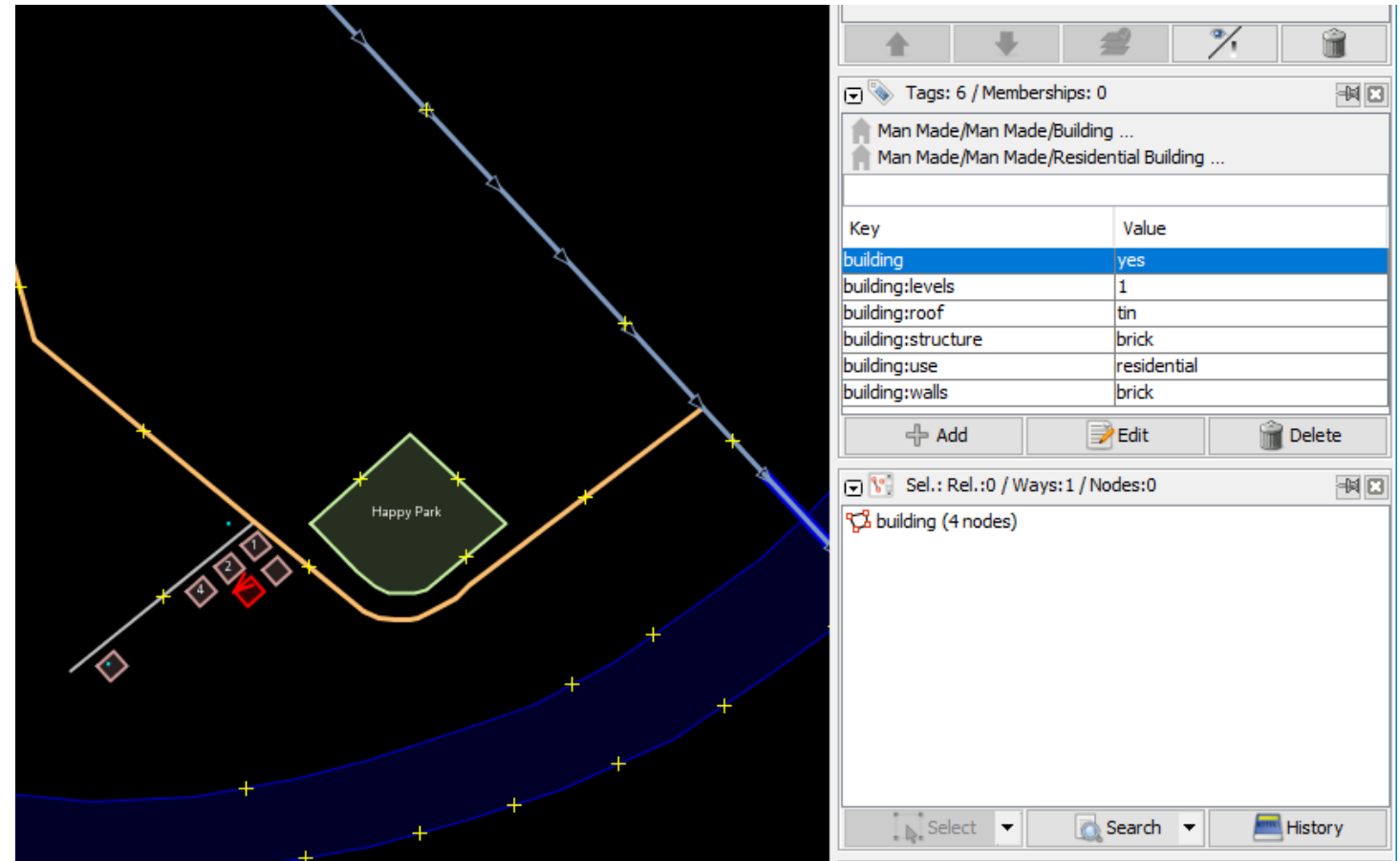
To rotate an object, first select it.

Hold SHIFT+CTRL and drag the mouse to rotate



Adding tags for objects

- When you draw a point, line, or shape, it has a location, but no information about what it is. In other words, we know **where** it is, but not **what** it is.
- The way OpenStreetMap knows **what** an object is by using **tags**.
- A tag is like a label that you can put on something
- You can add, edit, and delete tags from the Properties panel.

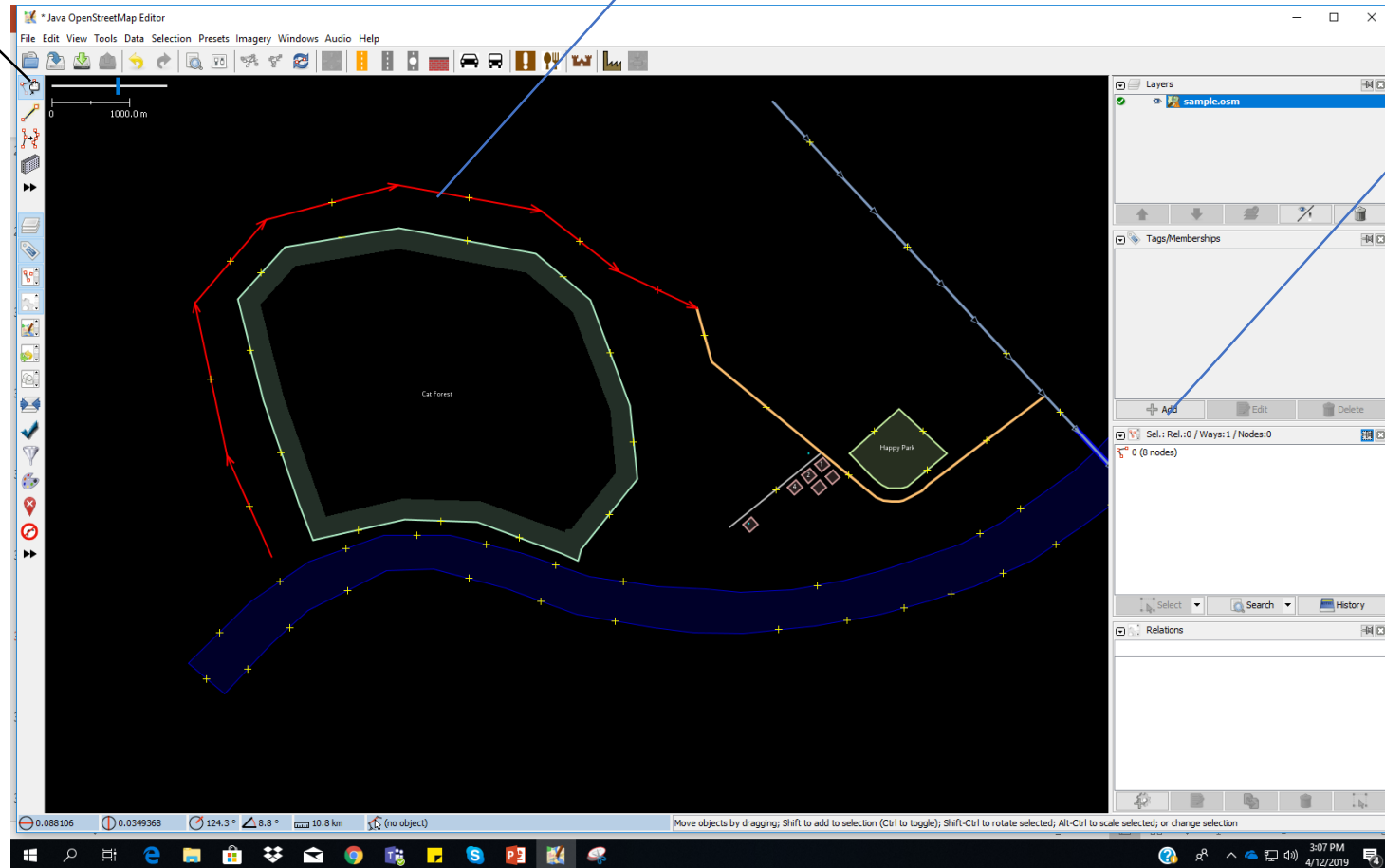


Editing tags

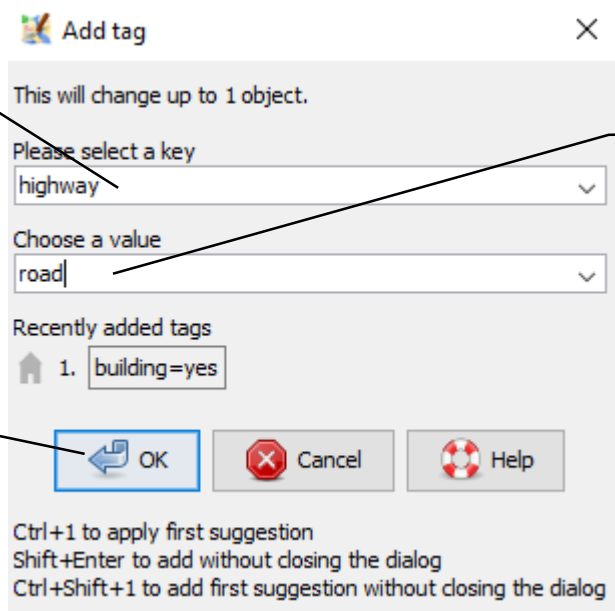
1. Click on the selection icon

2. Select the road object

3. Click Add



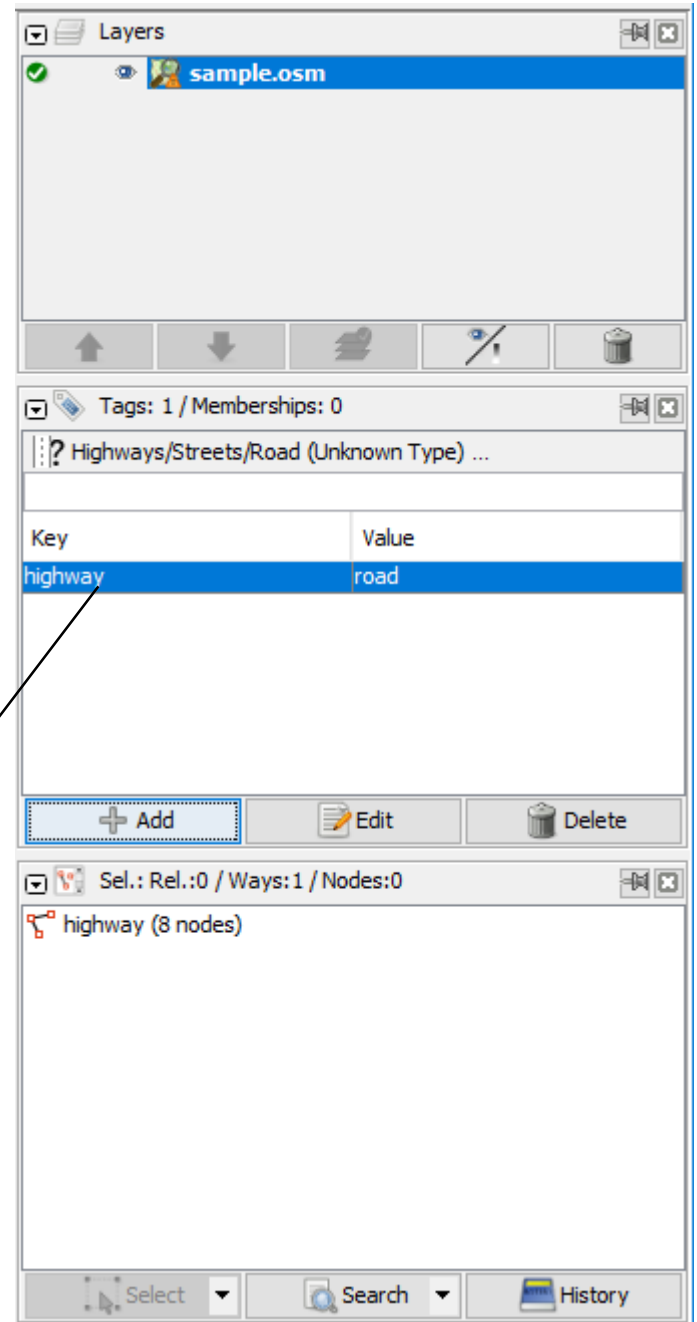
1. Choose the key as highway



3. Click OK

2. Choose road as the value

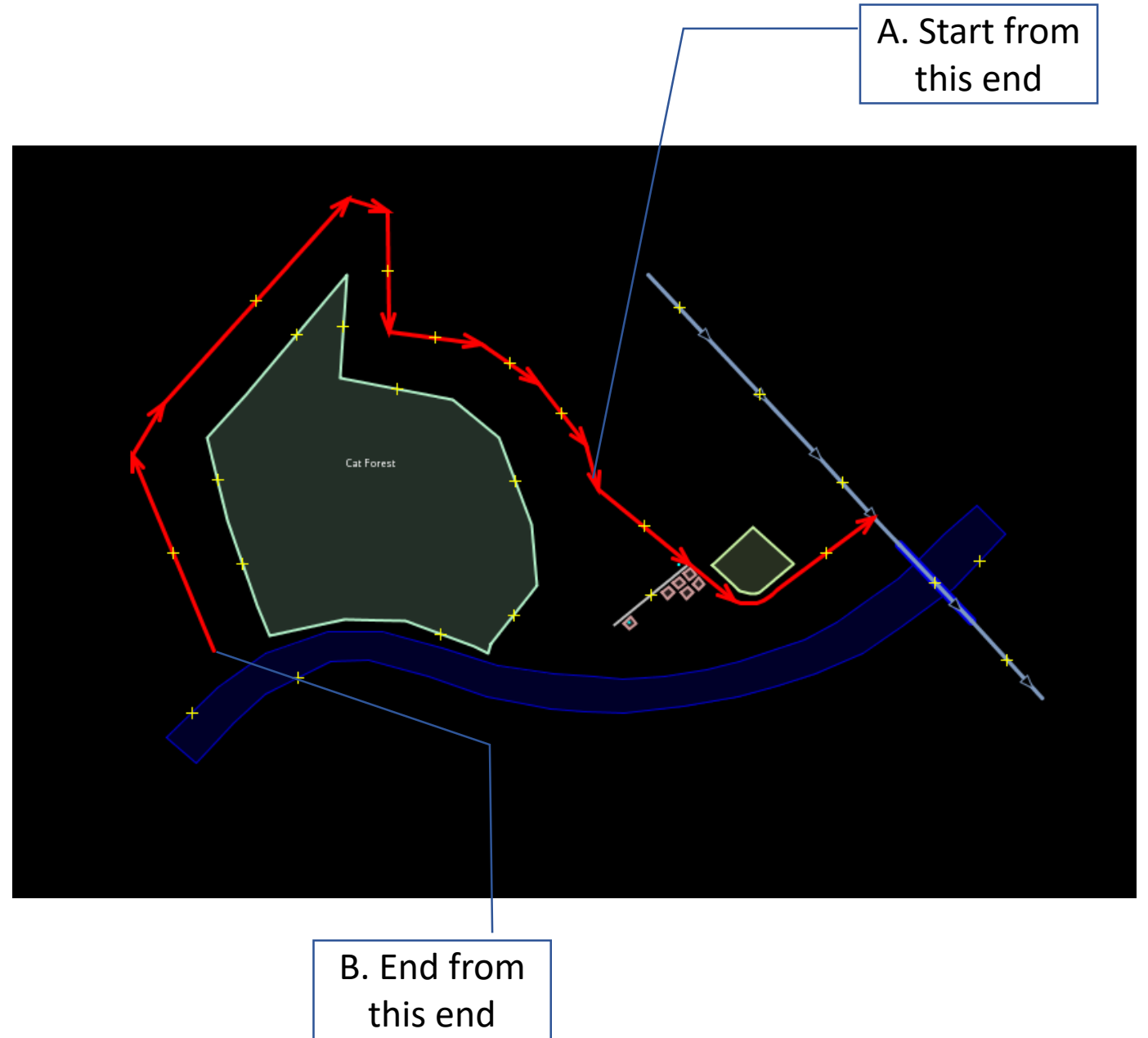
4. The newly added tag will appear



Basic map features in OSM

- aerialway: different forms of transportation for people or goods by using aerial wires
- aeroway: related to aerodromes, airfields other ground facilities that support the operation of airplanes and helicopters.
- amenity: facilities used by visitors and residents. For example: toilets, telephones, banks, pharmacies, cafes, parking and schools.
- barrier: barriers and obstacles that are usually involved in traveling. For example: city_wall, fence, ditch, wall etc
- boundary: describe administrative and other boundaries.
- building: identify individual buildings or groups of connected buildings.
- emergency: describe the location of emergency facilities and equipment.
- highway: describe roads and footpaths.
- historic: describe various historic places.
- landuse: describe the purpose for which an area of land is being used.

To extend the existing roadway, start from one end of the existing roadway line



Let's try to add a building

1. Click on the building icon

2. Left Click on the first vertex

3. Left click on the next vertex

4. Left click on the next vertex to finish the polygon

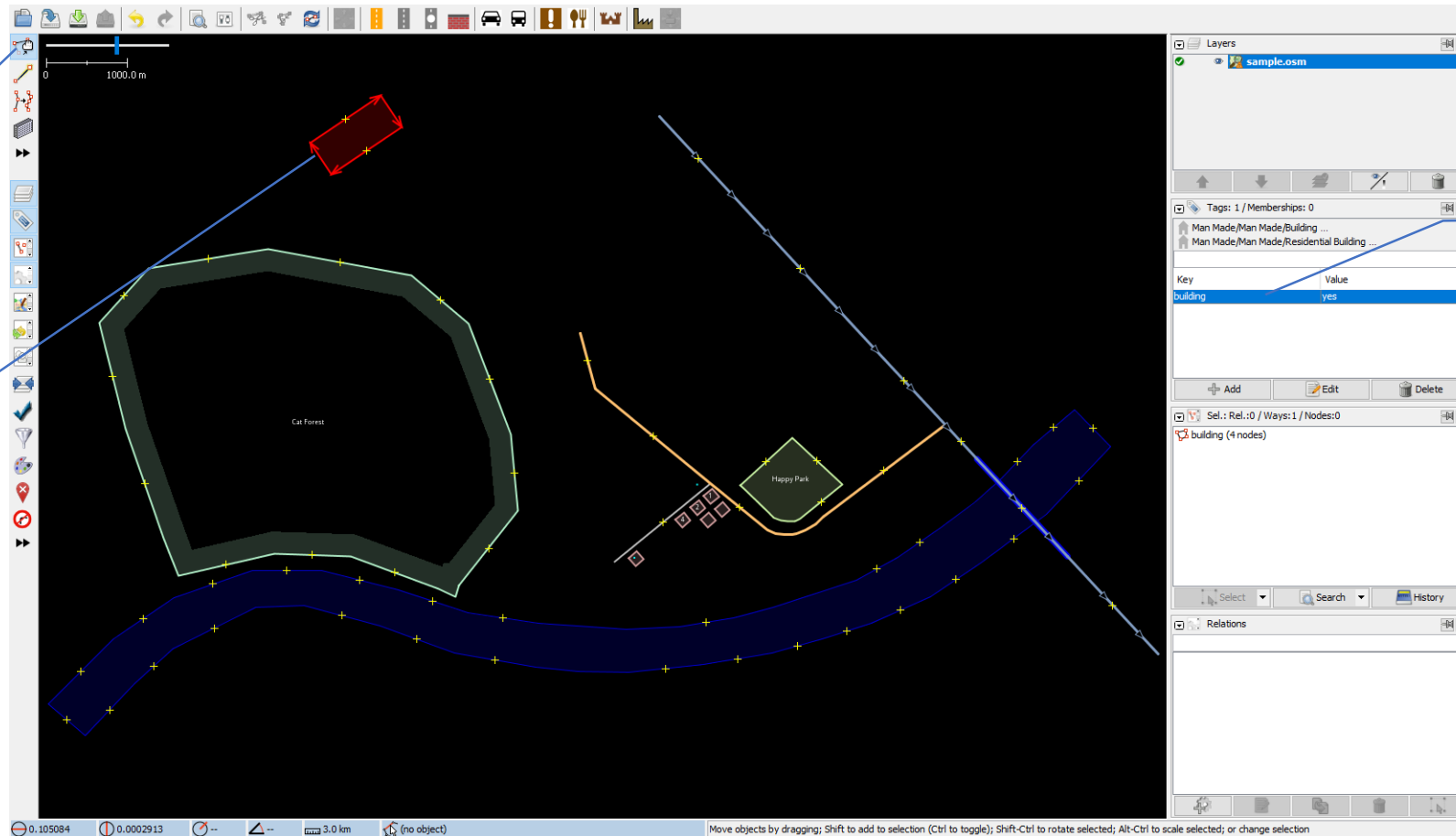
0.1454751 0.1422294 2.4 km (no object) Point on the corner of the building to start drawing

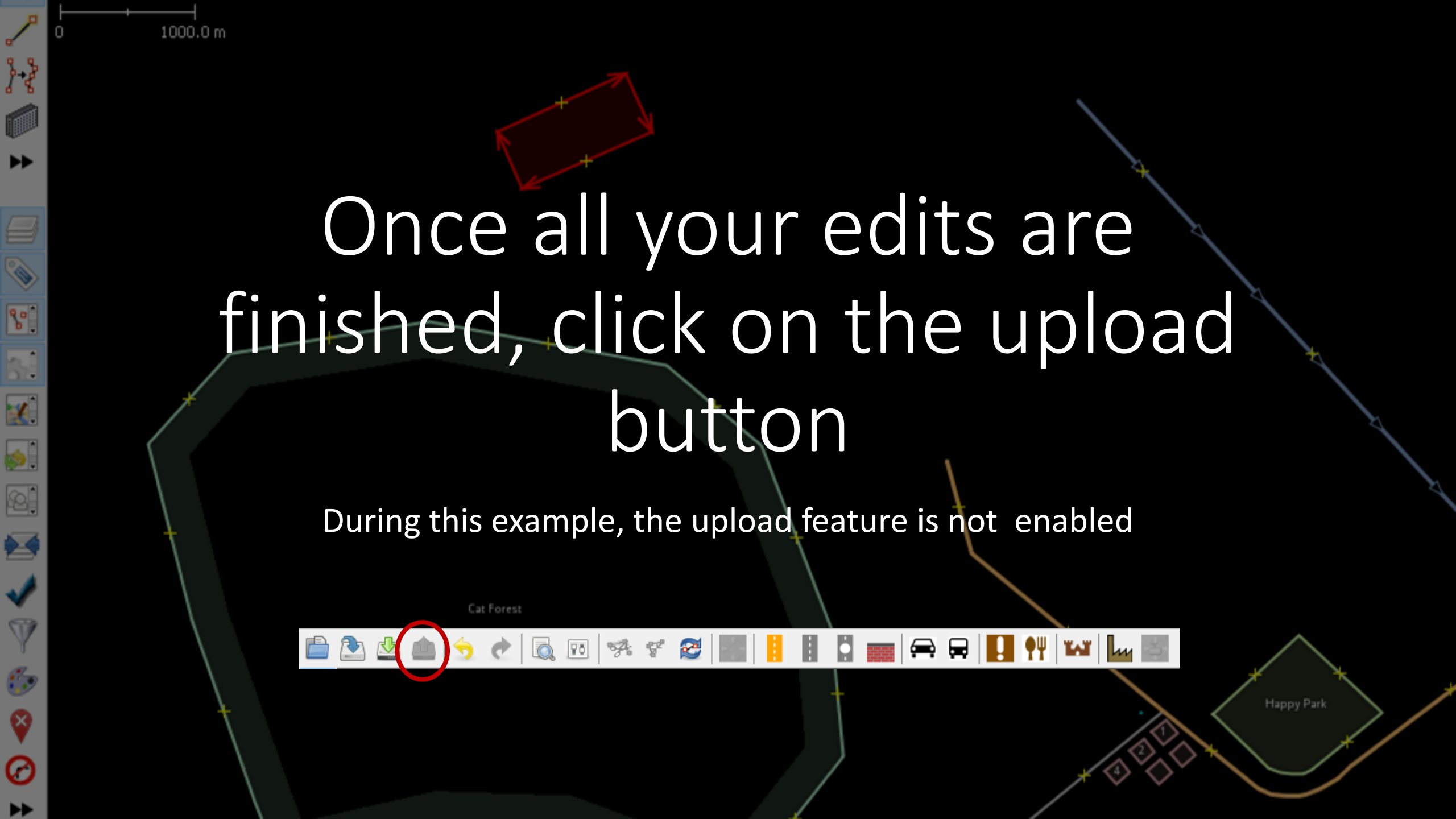
When using this tool to map buildings, the tags are placed automatically

1. Click on the select icon

2. Select the newly added building

3. The tag building will appear





Once all your edits are finished, click on the upload button

During this example, the upload feature is not enabled