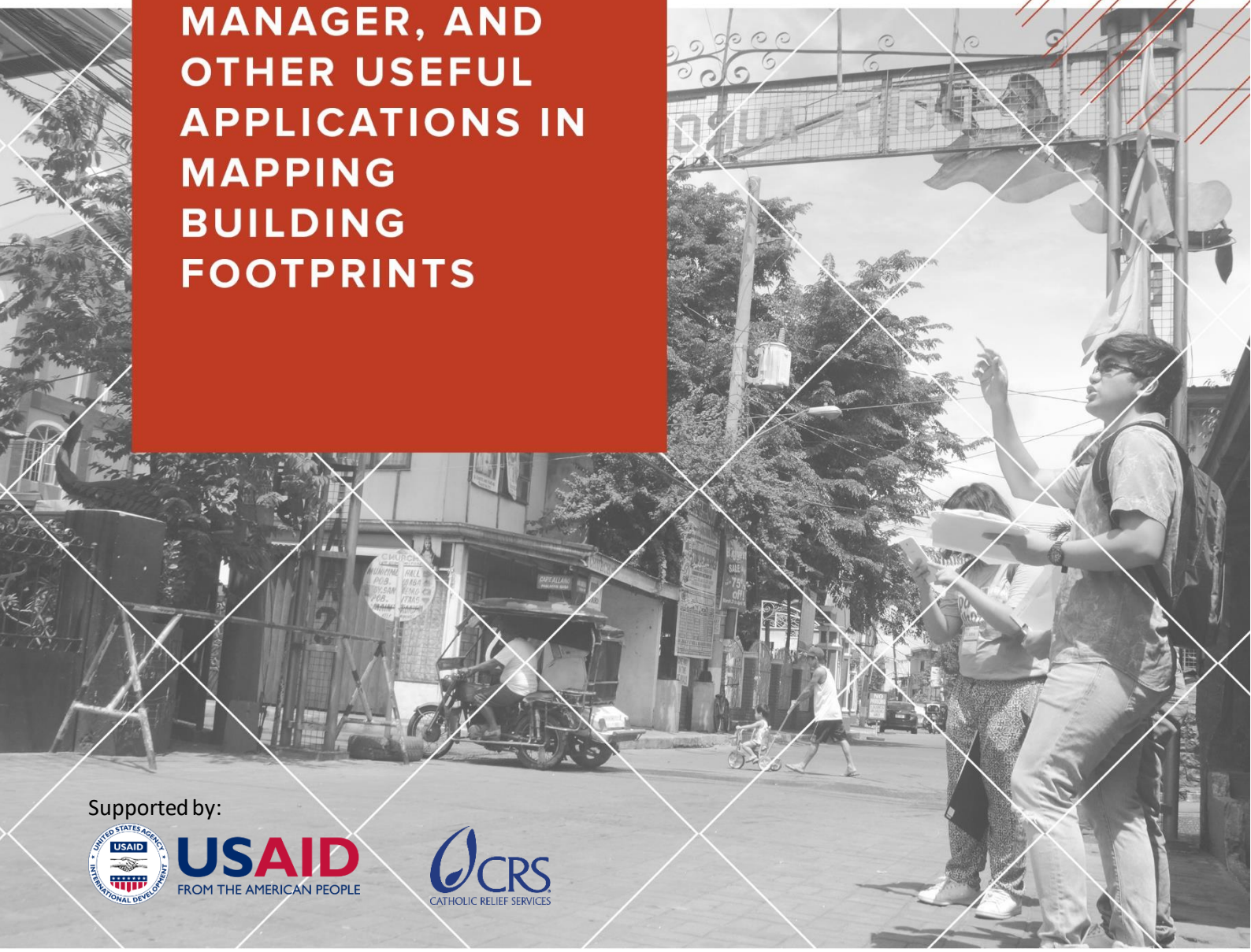
AWESOME OSM

A COMPREHENSIVE GUIDE ON MAPPING BUILDING FOOTPRINTS

USING

OPENSTREETMAP, HOT TASKING MANAGER, AND OTHER USEFUL APPLICATIONS IN MAPPING BUILDING FOOTPRINTS



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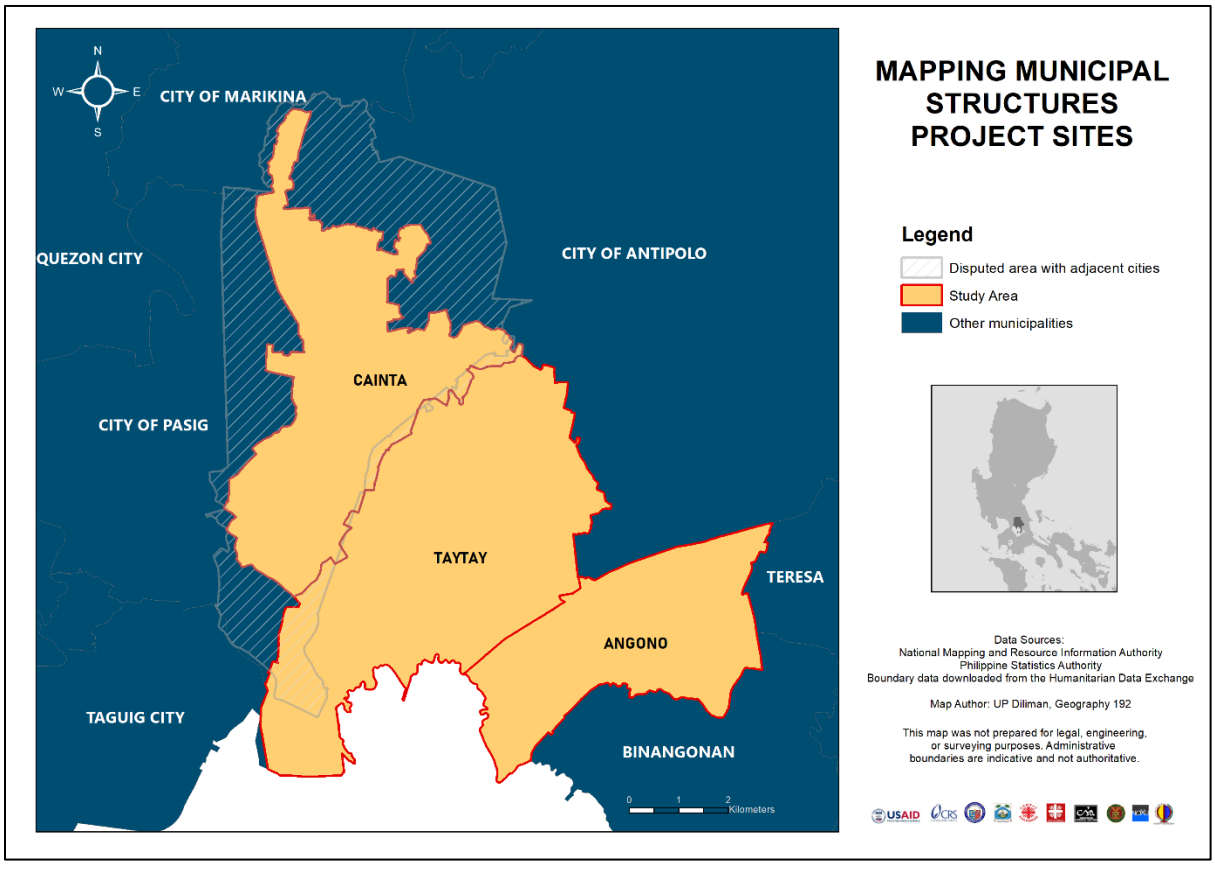
INTRODUCTION

The **Awesome OSM: A Comprehensive Guide on Mapping Building Footprints** was made by The University of the Philippines-Diliman Department of Geography Field Methods class of midyear 2018 with help from the Catholic Relief Services (CRS). This will serve as a guide for Local Government Units (LGUs), student-mappers, researchers, and other volunteers on the process of mapping and validating building footprints in OpenStreetMap (OSM) via desktop computers, mobile devices, and field papers.

The main objective of the field class is to teach OSM mapping, and to ensure that trained individuals can teach others as well. The objectives were achieved through workshops the field class and CRS staff facilitated. The attendees of the workshop included community volunteers, Local Government Unit (LGU) staff, and student volunteers from the project sites. The project commenced on the 5th of June 2018 and ended on the 20th of July 2018.

The following are the three participant municipalities to the project: Angono, Cainta, and Taytay, Rizal.



ACKNOWLEDGEMENTS

On behalf of our project partner, the United States Agency for International Development (USAID) and Catholic Relief Services (CRS), we express our deepest appreciation to all those who provided us the opportunity to complete our project and activities. A special gratitude to the Local Government Units of Angono, Cainta, and Taytay (Rizal) at the municipal and barangay levels, whose support helped us in executing our endeavors this midyear. We thank the locals of Bagumbayan, Kalayaan, Poblacion Itaas and Ibaba, and San Vicente in Angono; San Andres and San Juan in Cainta; and in Dolores, San Juan and Santa Ana in Taytay for welcoming us to their communities during our brief fieldwork. Furthermore, we acknowledge with much appreciation the crucial role of the staff of the Municipal Disaster Risk Reduction Management and Municipal Planning Development Offices of the LGUs, who provided us space for the OSM workshops we facilitated, transport service for our trips, and the necessary materials to complete our tasks.

Shoutout to all the volunteer mappers of OSM, who support this initiative by giving their time and effort to map the structures and buildings in the project sites. Lastly, we thank UP NOAH Center for helping enhance our technical skills in mapping by providing us reference materials and trainings on the tools that we can use (and teach others) to attain our objectives.

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FOREWORD

OpenStreetMap (OSM) is a collaborative project by Steve Coast designed to create a free and editable map of the world. It is an open, available, and global dataset of spatial and infrastructure data. Users draw maps on computers and mobile phones rather than paper, however, changing a map on a device is usually similar with drawing on paper. Lines are still used to represent roads, fields, while symbols are used to represent schools, hospitals, and other important buildings. It is important to remember that OSM maps are saved on the internet: anyone can access them at any time without spending a single peso.

Disaster preparedness begins with access to information about population and infrastructure, both of which are accessible in OpenStreetMap. Risk and hazard preparedness starts with accessibility and the ability of people to obtain and collect timely and relevant data for disaster risk assessments and preparedness activities. **Humanitarian OpenStreetMap (HOT)** is perhaps the most visible example of using OSM to provide timely data to disaster response efforts.

Through this manual, anyone will be able to map and see the results of what they mapped in OSM. They will learn how to map using desktops or laptops through HOT Tasking Manager. More portable options like learning to map using tablets and mobile phones would be taught through this manual as well. This will include the introduction of mobile apps like **Vespucci** for android and **Go Map!!** for IOS. More traditional forms of mapping that use methods like sketching buildings onto field papers and pacing are presented as well.

ABOUT THE TOOL

OPENSTREETMAP

OpenStreetMap (OSM) is an open source mapping site where people can easily contribute through adding features and attributes to a map. Different data such as roads, railways, buildings, and other elements can be added by contributors coming from different parts of the world thus encouraging local knowledge in mapping the areas beyond their communities. OpenStreetMap's basic use is for navigation: it is used to see routes, natural features, and location of different points of interests. Beyond its basic use, OpenStreetMap is helpful for disaster response due to its indispensable critical features on its *base maps* that are useful for calamity response scenarios. Overall, OSM helps in accessing information, in contrast to other spatial datasets needing to be purchased. Like other open source platforms, the data in OpenStreetMap can be easily updated.

Mapping in OpenStreetMap (OSM) does not require professional GIS knowledge. Contributors from different parts of the world could help in mapping to encourage and enlist help of non-local volunteers. Since it is an open source, anyone can extract data from OSM to make maps, facilitate academic research, and other practical uses.

HOT TASKING MANAGER

Humanitarian OpenStreetMap Team (HOT) Tasking Manager is one of the mapping tools used to edit features in OSM. HOT tasking manager split tasks in OSM to make the mapping easier and faster. The tasking manager is designed to cater remote mapping using different sources (e.g. satellite images). Mapping tasks can be accomplished by groups of individuals working in the different areas but with familiarity of the area featured in the Tasking Manager.

ABOUT THE TOOL

The HOT Tasking Manager interface assists in monitoring the progress of every project. It also enables users to review and validate the works of other contributors to maintain the consistency and the quality of traced features.

HOT Tasking Manager plays an important role in mapping different priority areas with the aim of helping communities. HOT projects focus on disaster-mapping response and economic development.

Since HOT Tasking Manager is an open data sharing site, anyone can contribute data which are useful for humanitarian response to projects, hazards, and other mapping activities. The data contributed by individuals can be used by response units which facilitate the provision of assistance to communities that are vulnerable to different calamities.

VESPUCCI OSM EDITOR

Vespucci OSM Editor or Vespucci, an application that can be installed in Android devices, enables users to edit in OSM. Vespucci is practical when mapping in the field: the user can map while going around the vicinity, which can make the tags and attributes more accurate. This application can also be used in field validation. Vespucci offers different functions which help in creating different features corresponding to real-world situations.

This application, like any other open source mapping software, encourages community mapping by local knowledge. Mappers and locals can use this application to add features in areas they are familiar with or areas near them.

ABOUT THE TOOL

GO MAP!!

Go Map!! is the iOS counterpart of Vespucci. It is a free application used to add and edit information in OpenStreetMap. Like Vespucci, it can also be used to edit features while in the field and it can also be used offline. It offers similar functions allowing individuals to edit points, roads, and areas which can be uploaded to OSM.

This application can be used by anyone with an iOS device. People with little knowledge about mapping can learn this application with ease because it is straightforward to use.

FIELD PAPERS

Field Papers is a website which enables users to layout and print maps that can be uploaded to OSM. The printed maps are brought to the field to write notes and figures about the areas being mapped. The use of field papers is practical when there are circumstances in the field hindering the use of gadgets. The notes can be scanned, and the location can also be tracked in OSM via the QR code. The uploaded field papers allow users to trace and make edits in OSM.

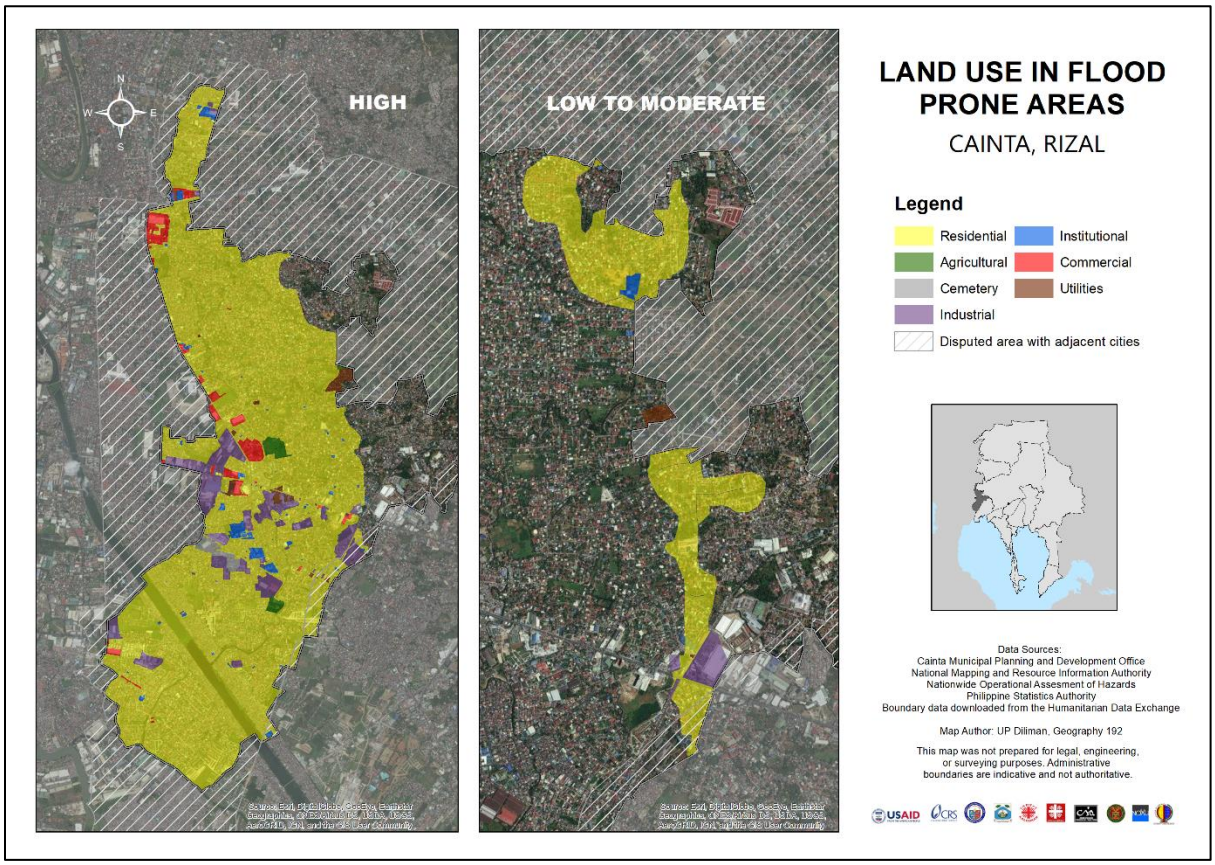
Field papers are used by researchers and GIS personnel as supplement to gadgets and mapping equipment for traditional note-taking. This tool helps in writing details and additional information about the area being mapped. Since gadgets have limitations such as limited battery power, field papers are very useful in distant field sites that may have difficulties in terms of power source.

GENERATED MAPS

Mapping of building footprints is important in identifying and locating establishments within an area. This could help in the assessment of buildings' roof material, wall material, level and use. The data could generate different kinds of maps especially in mapping hazards such as flooding, earthquakes and landslides. Here are sample maps that can be generated from the data:

Population Exposure to Hazard Map

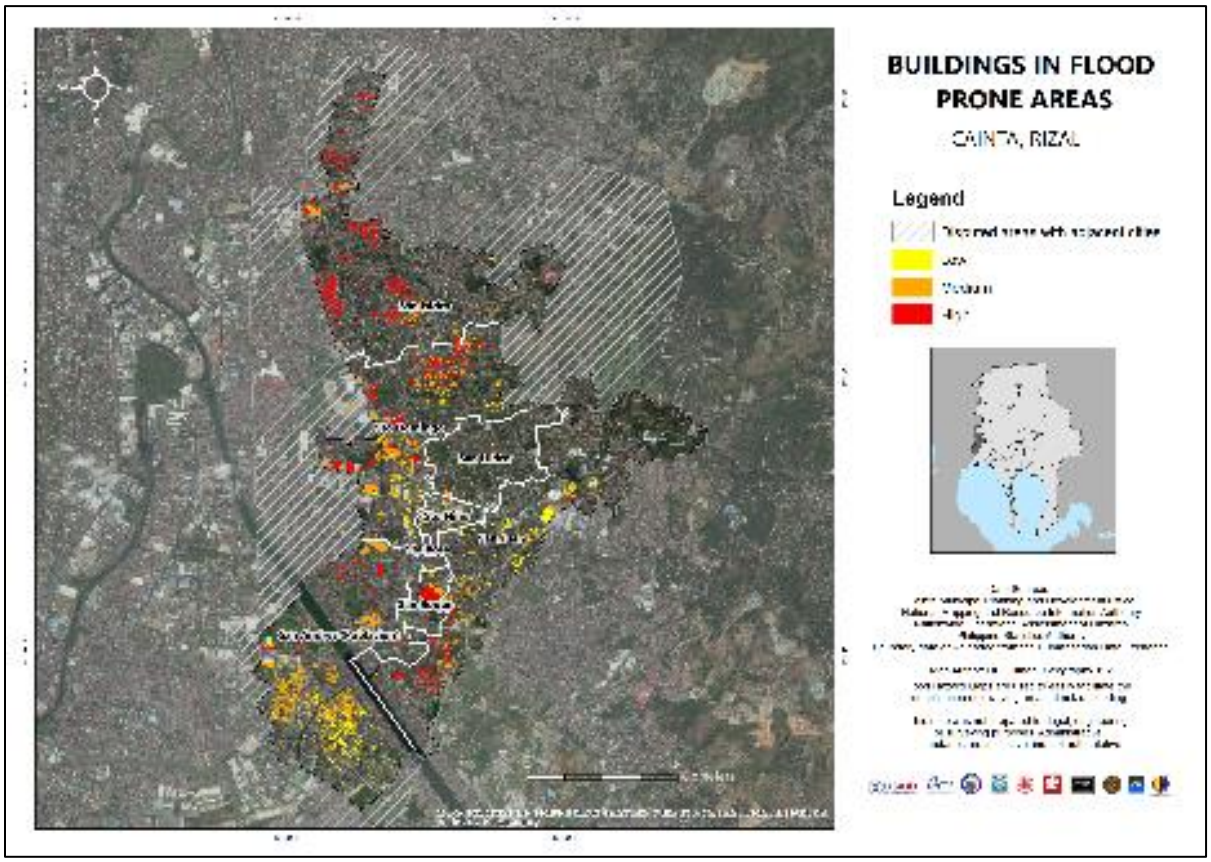
This map shows the exposed population to flood in Cainta, Rizal based on the identified residential area in the town's land use map.



GENERATED MAPS

Structural Exposure Map

In the absence of a land use map, building footprints are relevant indicators of the extent and location of residential, commercial, and institutional spaces in an area. Below is a map that shows the structures in Cainta that are exposed to flood hazard.



GENERATED MAPS

How can these maps help the community?

The Philippines has always experienced natural disasters such as typhoons, earthquakes, landslides, and volcanic eruptions which lead to widespread flood, destruction of buildings and infrastructure, and casualties across the nation. Therefore, we need to reduce these damages through disaster prevention and preparation. The generated maps such as population exposure can be used for disaster risk assessment in the municipality. This could be of help in emergency response by identifying which households need urgent evacuation during heavy floods and in locating nearby evacuation centers in an area. Aside from disaster management, these maps can also be used in land use planning and environmental management. Most importantly, these maps increase awareness of hazards and risks among the public and local authorities.

MODULE

01

MAPPING BUILDING FOOTPRINTS VIA DESKTOP

MODULE 01

OVERVIEW

This first module will help the user get started in mapping building footprints using OpenStreetMap (OSM) and HOT Tasking Manager. In this module, the user will learn how to create an OSM account and sync this account with the HOT Tasking Manager. The user will then be introduced to iD Editor which will enable him or her to make edits in OSM. A step-by-step guide will help familiarize the user with the HOT Tasking Manager and iD Editor functions that are important in the process of mapping building footprints.

OBJECTIVES

At the end of this module, the user should be able to:

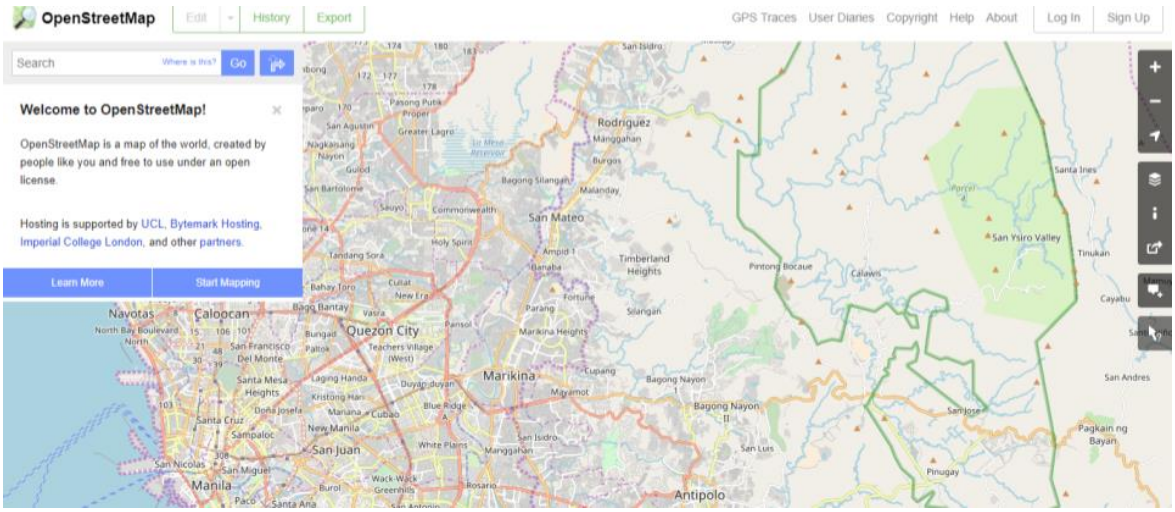
- Create an OSM account
- Open HOT Tasking Manager
- Trace building footprints in OSM using iD Editor in HOT Tasking Manager
- Mark tiles as mapped in OSM for validation

MATERIALS NEEDED

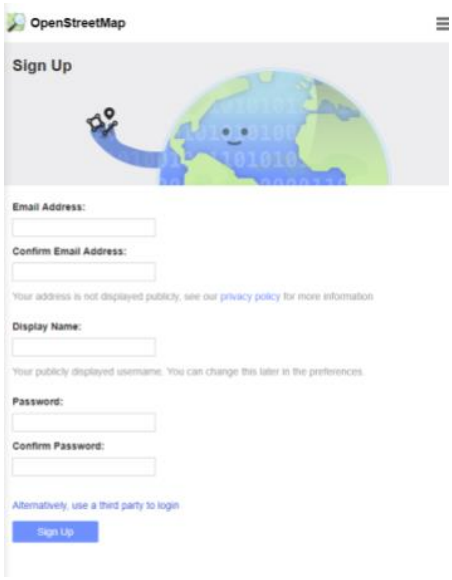
OpenStreetMap, HOT Tasking Manager, Personal Computer

Creating an OSM account

1. Open OpenStreetMap (openstreetmap.org) in your browser. It is advisable to open OpenStreetMap on a compatible browser: Internet Explorer 7+, Mozilla Firefox 3.5+, and Google Chrome 4+.



2. To start creating an account, click on the **Sign Up** button located at the upper right corner of the web page.

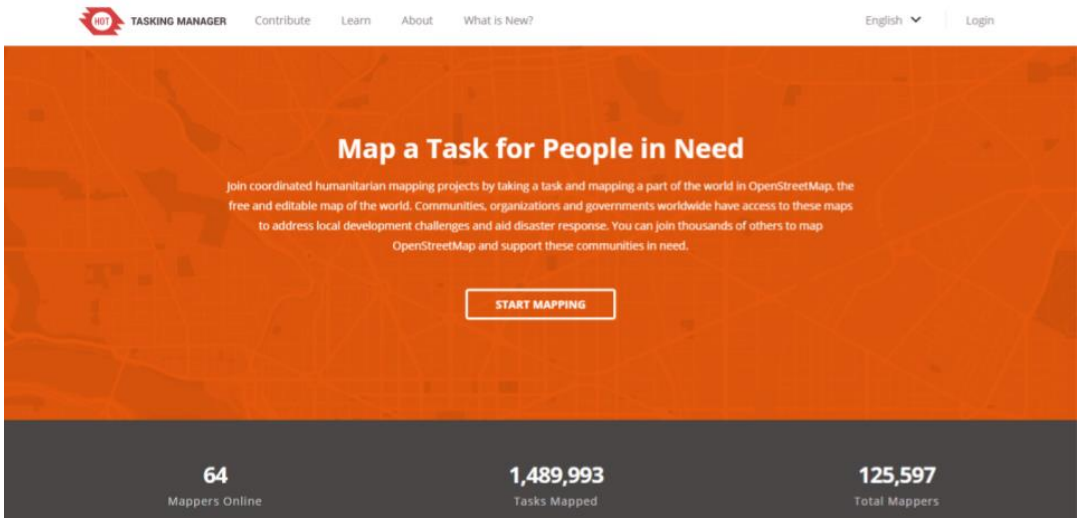


3. Fill out the needed information such as e-mail address, display name, and password. Then, click **Sign Up**.

4. Confirm your account by clicking the link attached on the confirmation e-mail sent to your e-mail address.

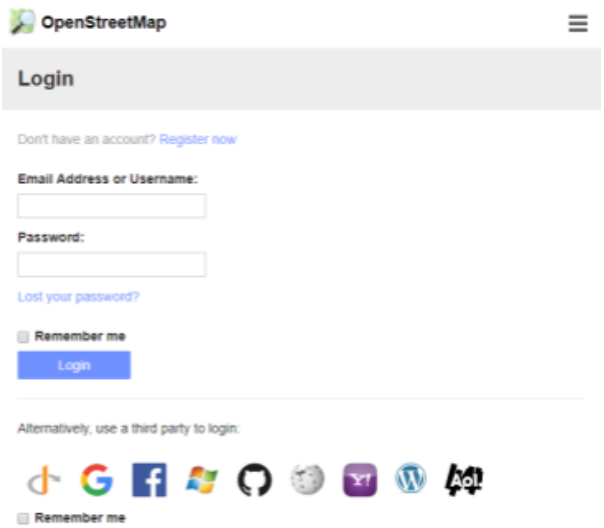
Opening Hot Tasking Manager

1. Open HOT Tasking Manager (tasks.hotosm.org) in your browser.



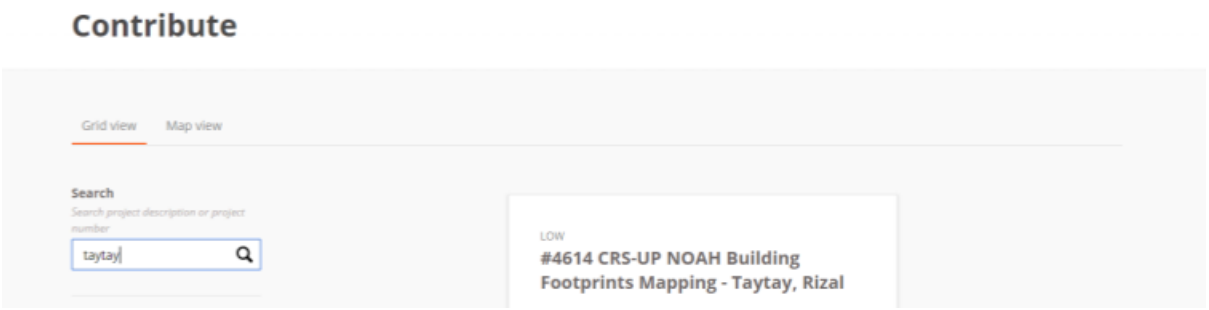
2. Click **Login** located at the upper right corner of the web page.

3. Log in at HOT Tasking Manager using the credentials of your OpenStreetMap account. Then, click **Login**.
4. Authorize access to your account by clicking **Grant Access**.

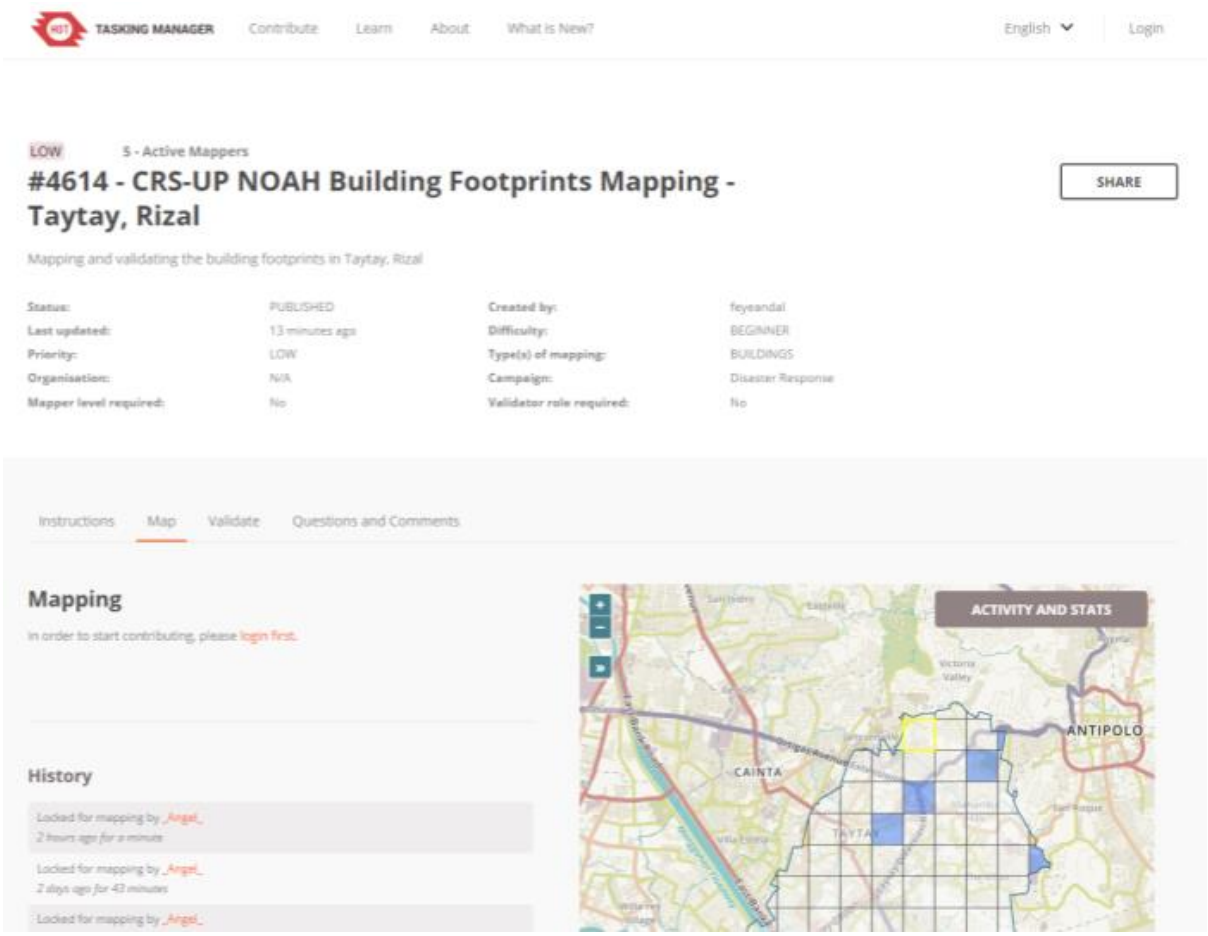


Contributing to Project

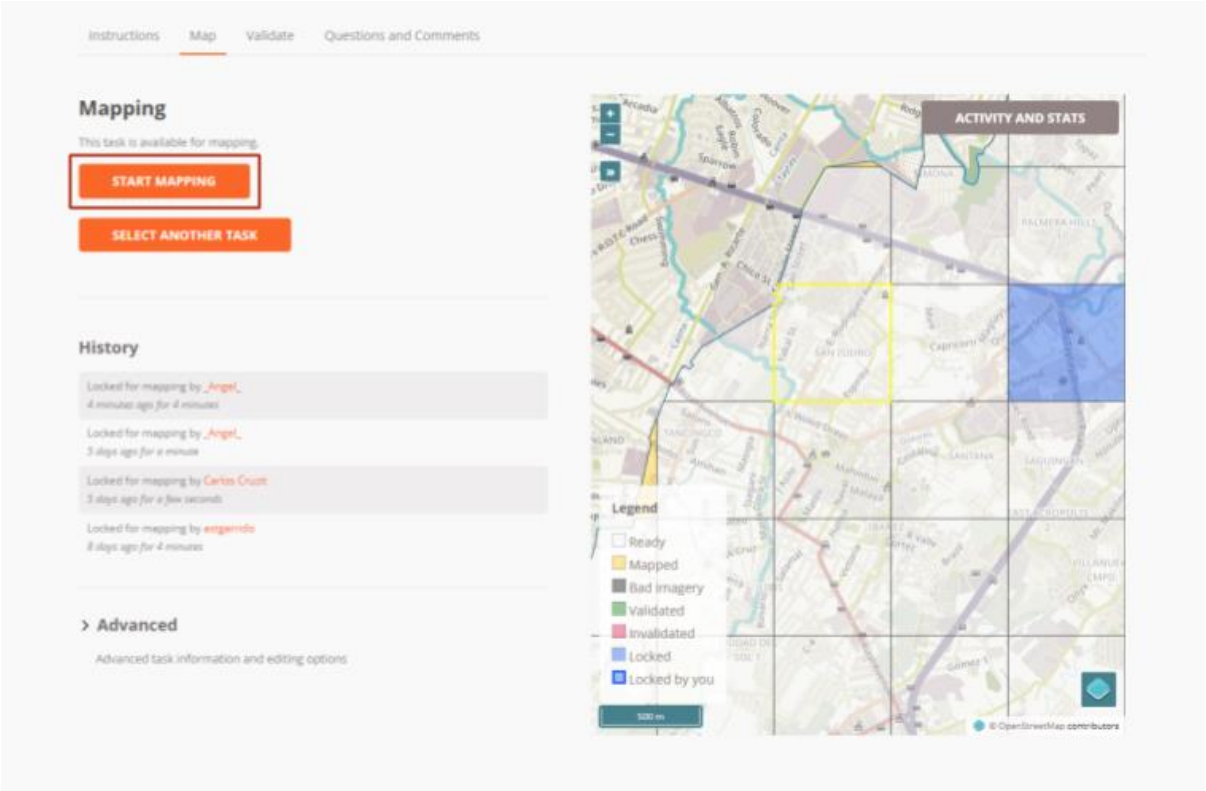
1. Go back to the main homepage of the HOT Tasking Manager. On the top menu, click **Contribute**.
2. On the search bar, type the project title that you are interested to work on.



3. Once your desired project pops up, click it and it will redirect you to the project manager.

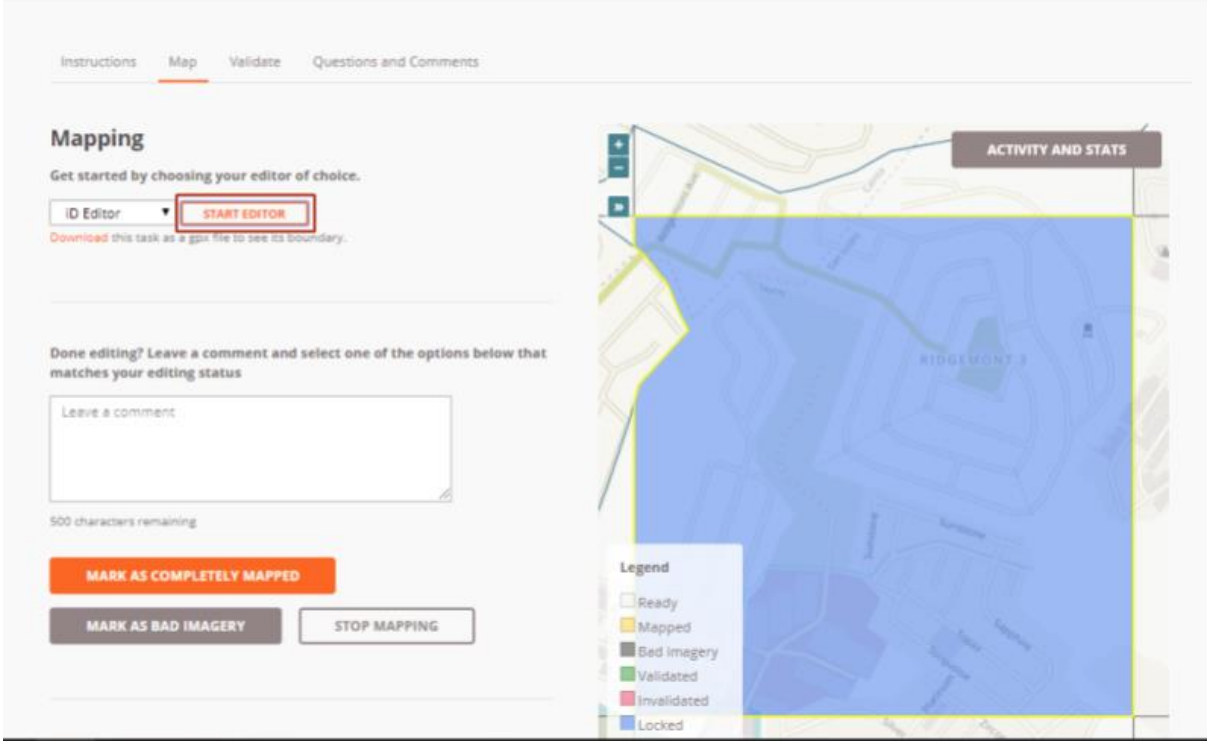


4. Read the instructions stated for the project.
5. After understanding the instructions, start mapping by clicking any desired tile to work on then click **Start Mapping**.



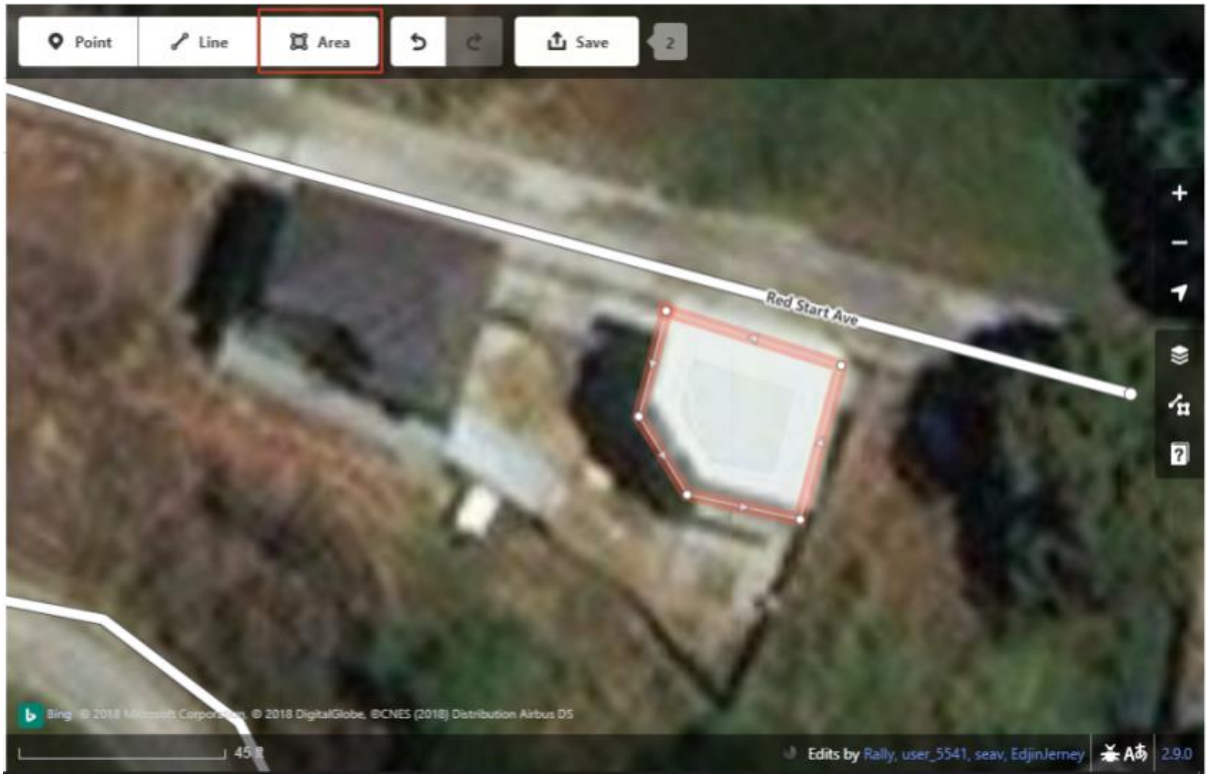
NOTE: *Only the "ready" tiles are the tiles that can be mapped. The tiles that are completely mapped (yellow), locked (blue), and validated (green) are not available for editing.*

6. Make sure to set **iD Editor** on the dropdown menu then click **Start Editor**.



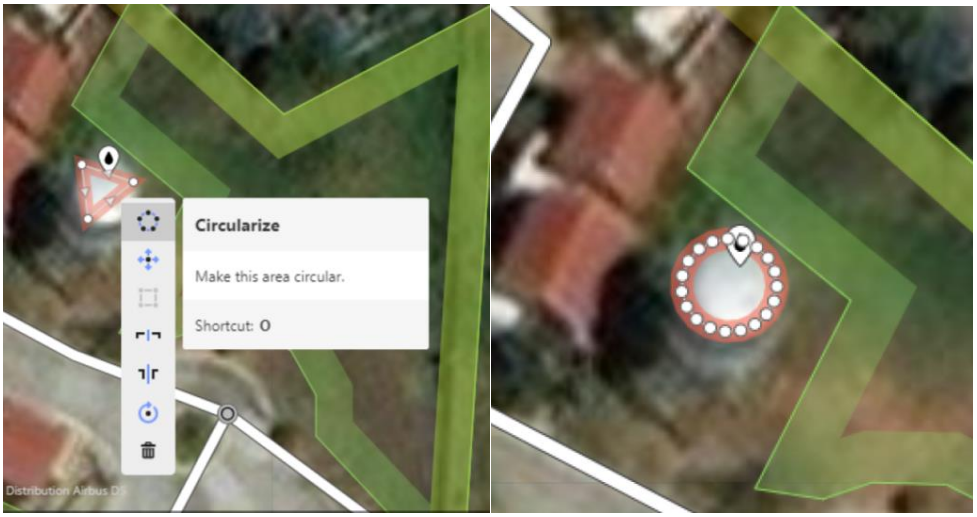
7. Before starting to map, locate your reference building (i.e. municipal hall). You can check for the alignment your reference building to see if the red box is aligned with the satellite image before making any edits.

8. Locate the specific area you want to map. In the Tools Panel, click **Area** then trace the buildings to be mapped.



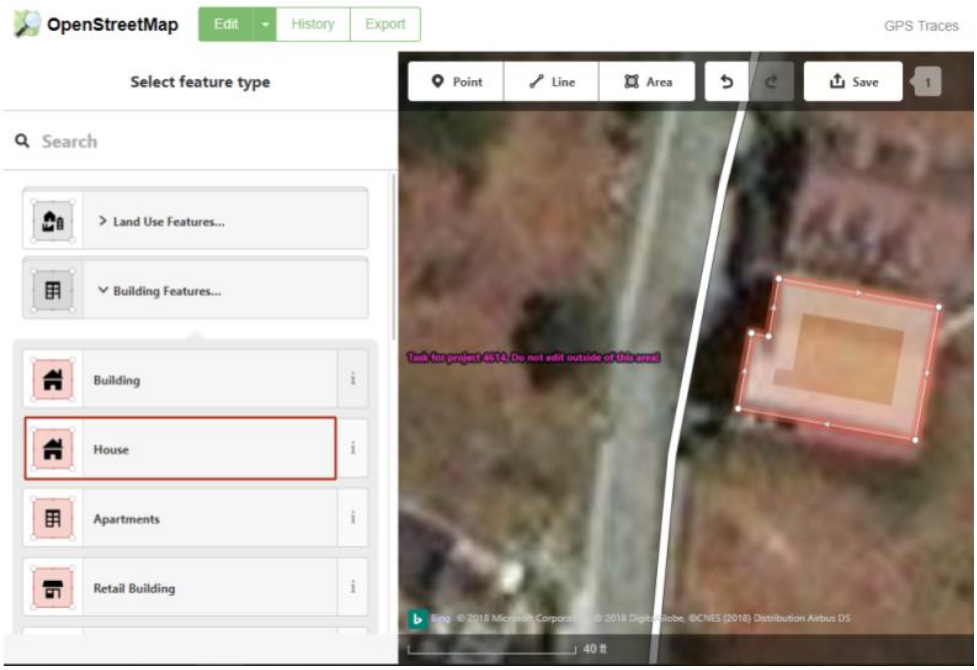
TIP: *To orthogonalize, right click on the area that you traced and choose* ***Square****.*

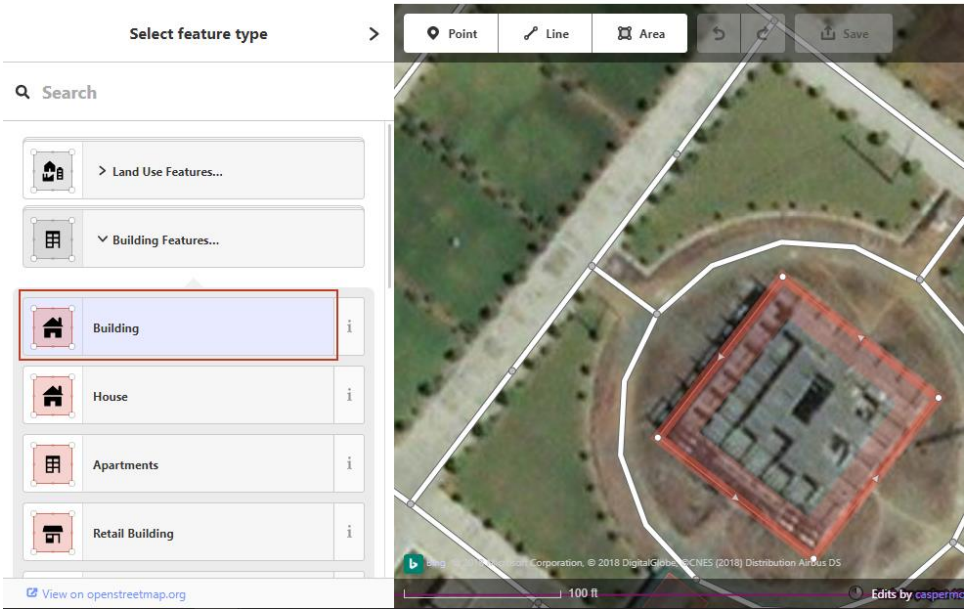
TIP: *To circularize, right click on the area that you traced and choose* ***Circularize****.*



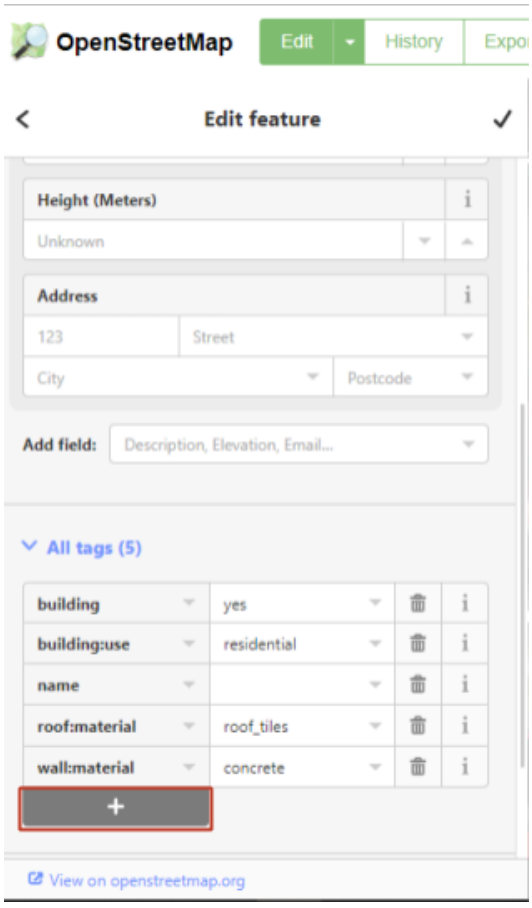
9. Click **House** or **Building** in the Edit Feature Panel under **Building Features**, or type "House" or "Building" in the Search bar.

   NOTE: *Please choose House if the structure is considered as a house, otherwise choose Building.*





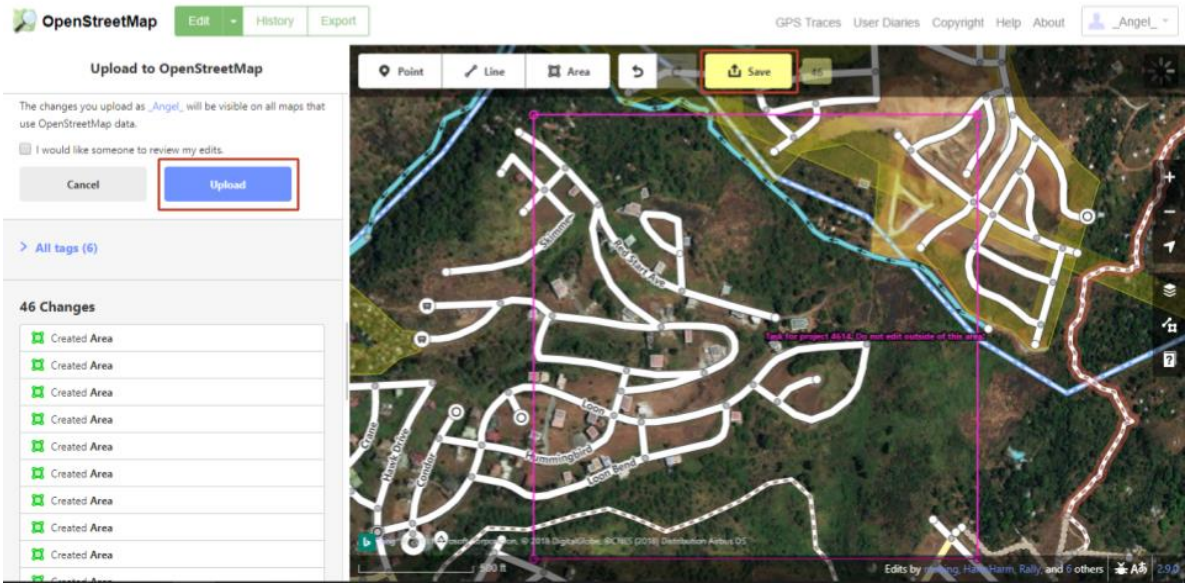
10. Set attributes on the traced buildings by adding tags on it. The following are the tags that are necessary to be added on its building together with its description



    a. **building:levels** - describes the number of above-ground levels the building has
    b. **building:use** - describes what kind of function the building serves (e.g. residential, commercial, industrial, etc.)
    c. **name** - describes the name of the building (if applicable)
    d. **roof:material** - describes the outer material used for the roof (e.g. metal, concrete, asphalt, wood)
    e. **wall:material** - describes the outer material for the building facade (e.g. concrete, brick, glass, stone)

11. Repeat steps 8-10 for unmapped buildings.

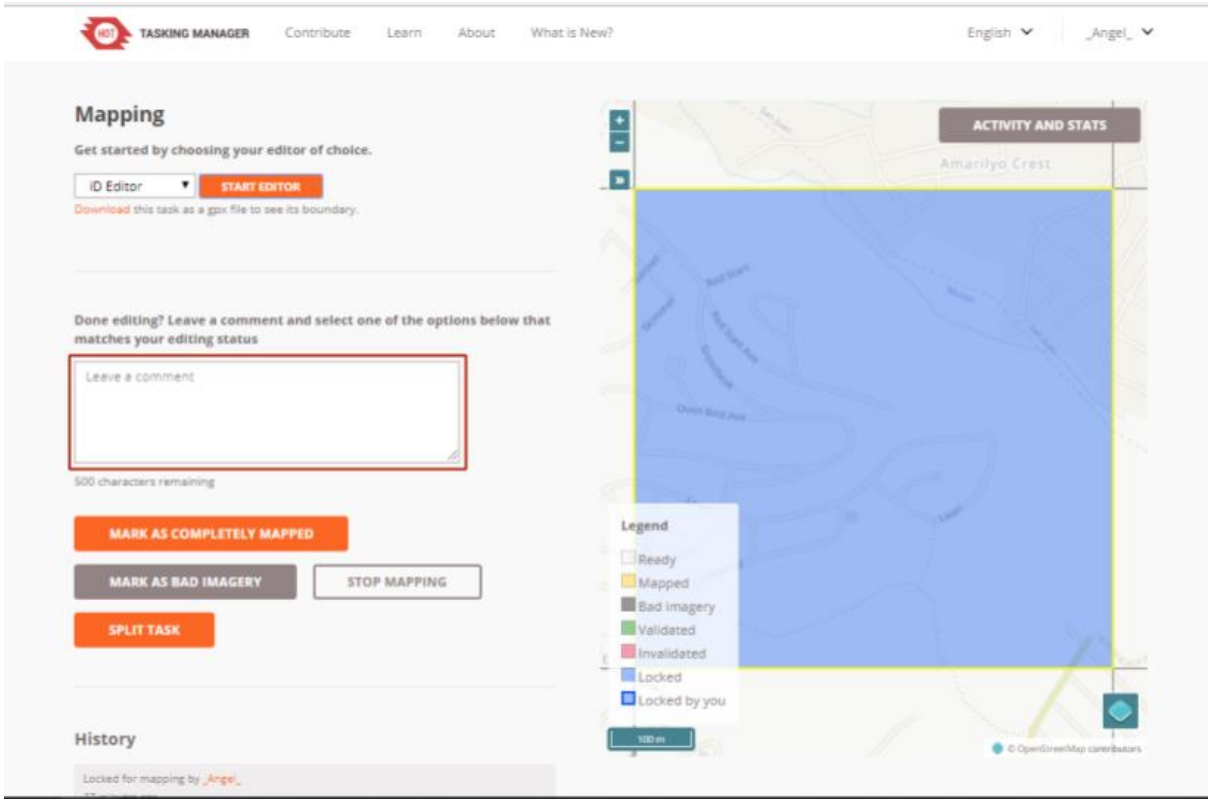
12. Once you are done mapping, save your edits by clicking **Save**. You must also upload your edits to OpenStreetMap for it to be available for public use. To do this, click **Upload** located on the left panel.



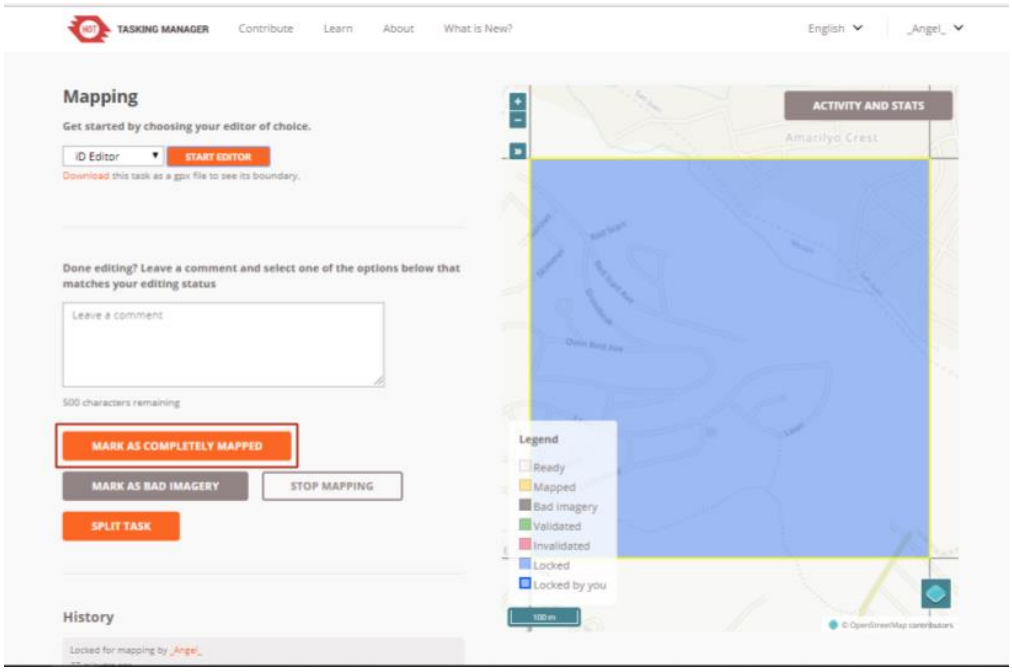
13. Close the OpenStreetMap tab once you have uploaded the changes you made.

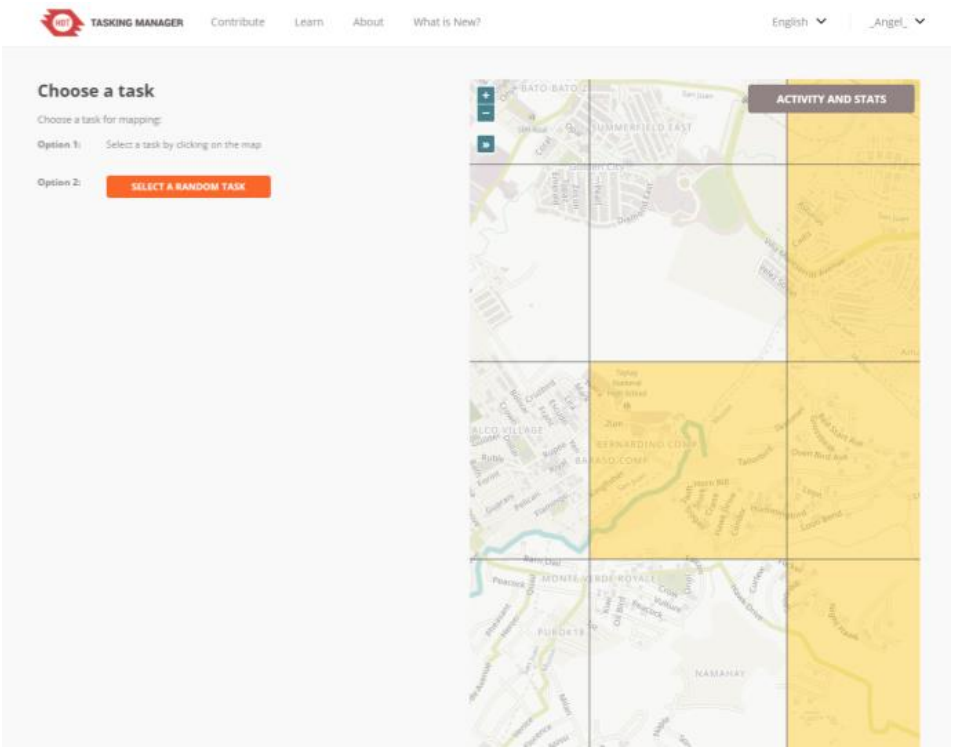
14. On the project tasking manager, input your changeset comments in the comment box available. Here are some example changeset comments that you can input on the comment box:

    a. "Added buildings in residential area"
    b. "Updated building tags based on Bing and local knowledge"
    c. "Edited offsets and incorrect geometry/shape of buildings"
    d. “Fixed overlapping structures”
    e. “Added necessary tags”

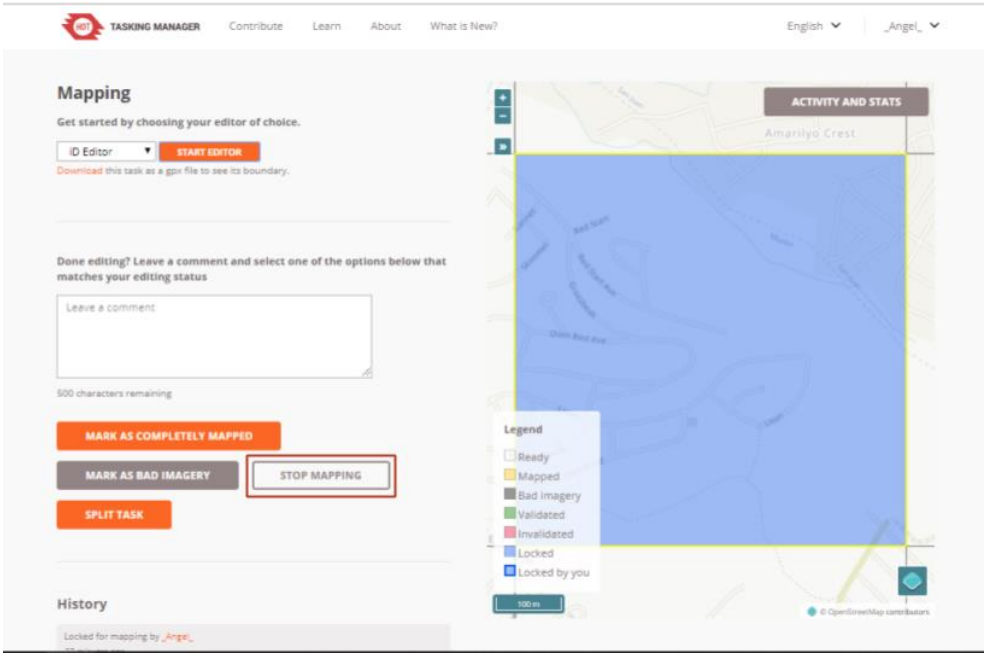


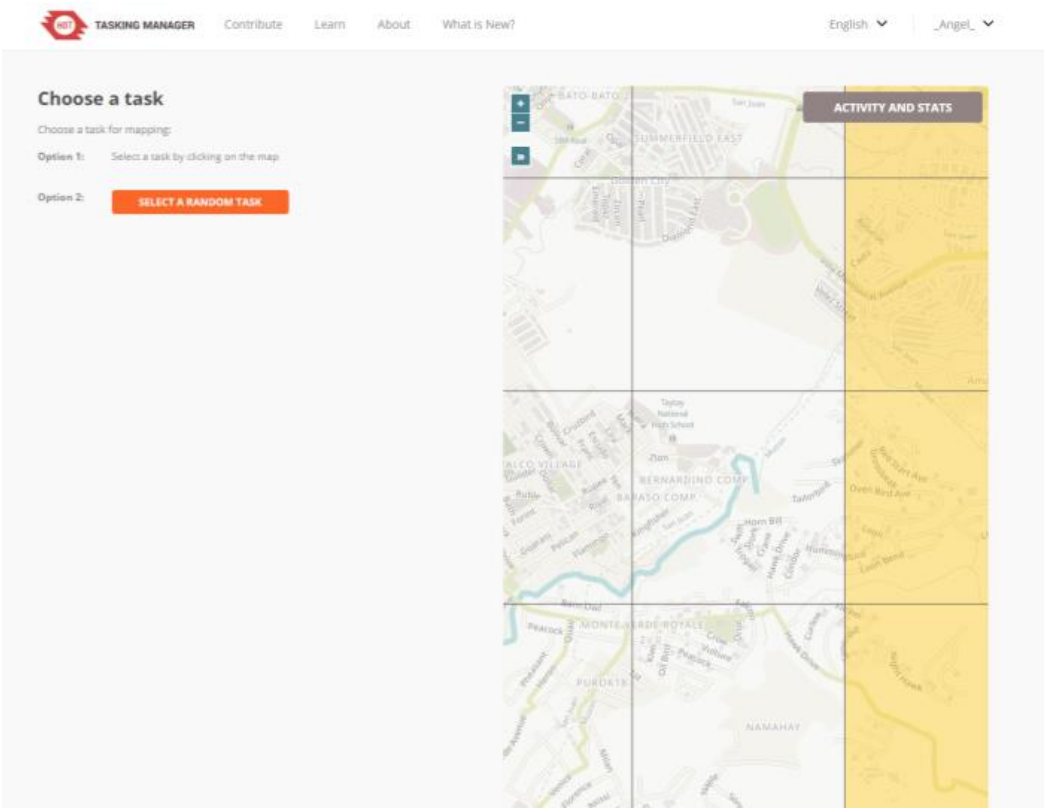
15. If all the building structures on the tile you are working on has been mapped, click **Mark as Completely Mapped**. Otherwise, click **Stop Mapping**.





***NOTE**: **Mark as Completely Mapped** will make your tile locked for validation while **Stop Mapping** will make your tile available again for editing.*




TASKING MANAGER
Contribute
Learn
About
What is New?
English
Angel
Choose a task
Choose a task for mapping:
Option 1:
Select a task by clicking on the map
Option 2:
SELECT A RANDOM TASK
ACTIVITY AND STATS

MODULE

02

MAPPING BUILDING FOOTPRINTS VIA MOBILE APPLICATIONS

MODULE 02

OVERVIEW

In this module, the user will be introduced to mobile applications for OSM mapping. Vespucci OSM Editor will be used for Android devices while Go Map!! will be used for iOS devices. A step-by-step guide for each of the applications will help the user become familiar with the interface, functions and process of mapping building footprints using mobile devices. Unlike desktop mapping with iD editor, offline editing is possible for these tools.

OBJECTIVES

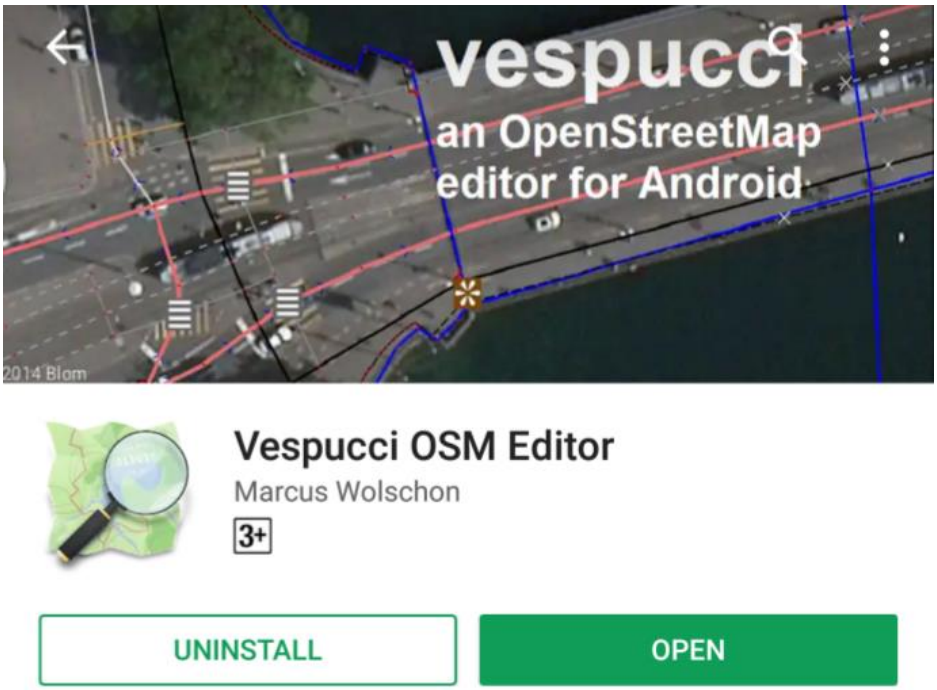
At the end of this module, the user should be able to:

- Download Vespucci to an android device or Go Map!! to iOS device
- Sign in to his or her OSM account via Vespucci or Go Map!!
- Trace building footprints online or offline using Vespucci or Go Map!!

MATERIALS NEEDED

Vespucci, Go Map!!, Android device, iOS device

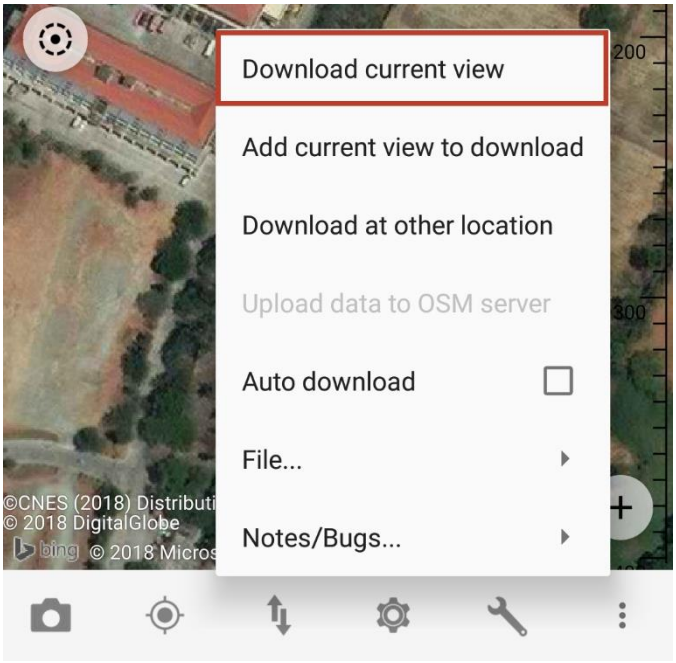
For mapping building footprints using an **Android** device, download the application **Vespucci OSM Editor**.



1. Open Vespucci OSM Editor on your Android device.

2. Examine the interface of the application.

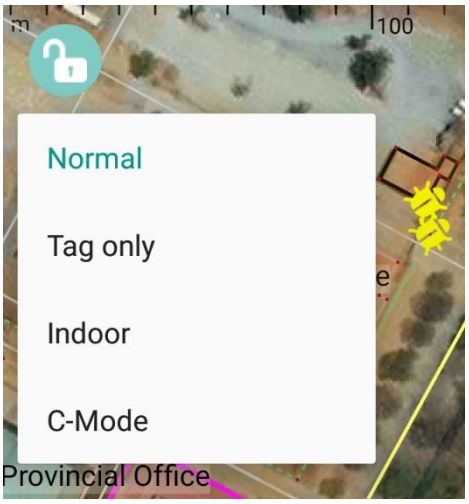
3. Sign into your OpenStreetMap account by selecting the Tools icon ( ) then select **Authorize OAuth**. Note that authorizing access to your OSM Account requires network connectivity.



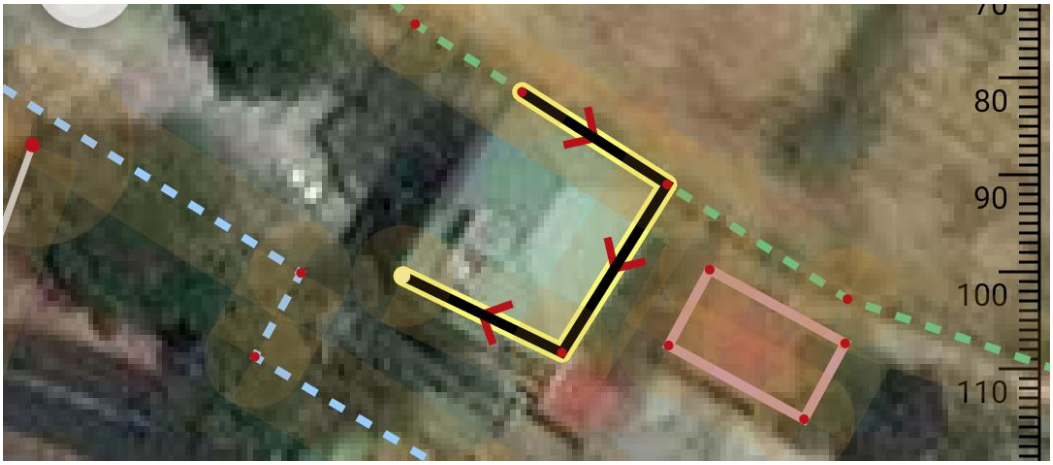
4. Locate your area of interest then download by tapping the **Transfer** icon ( ) then select **Download Current View**. This will allow you to map the area visible on your screen even when you are offline.

5. Start mapping your location of interest.

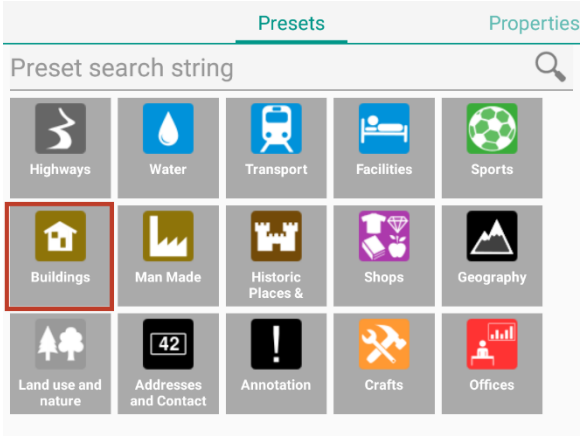
   a. Tap the **lock icon** ( ) to unlock it. The icon must change into the unlocked icon ( ). To edit, long press the icon then select **Normal**.

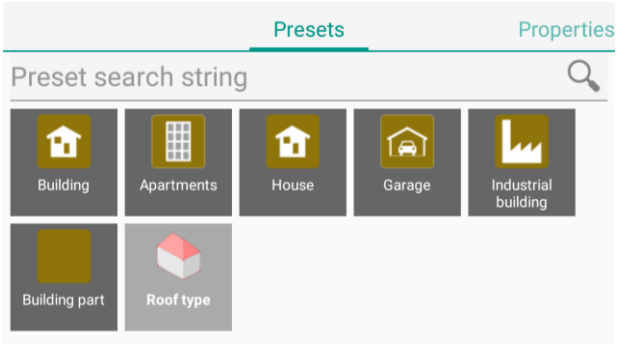


   b. Zoom in to your building of interest. Long press on one corner of the building then trace it by tapping all other corners.



c. Add tags by tapping the **Add Preset icon** ( ) located at the bottom of the screen, then tap **Buildings**.





d. On the available options in Buildings, choose **House** or **Buildings** (depending on the structure type).

e. Modify the necessary tags.

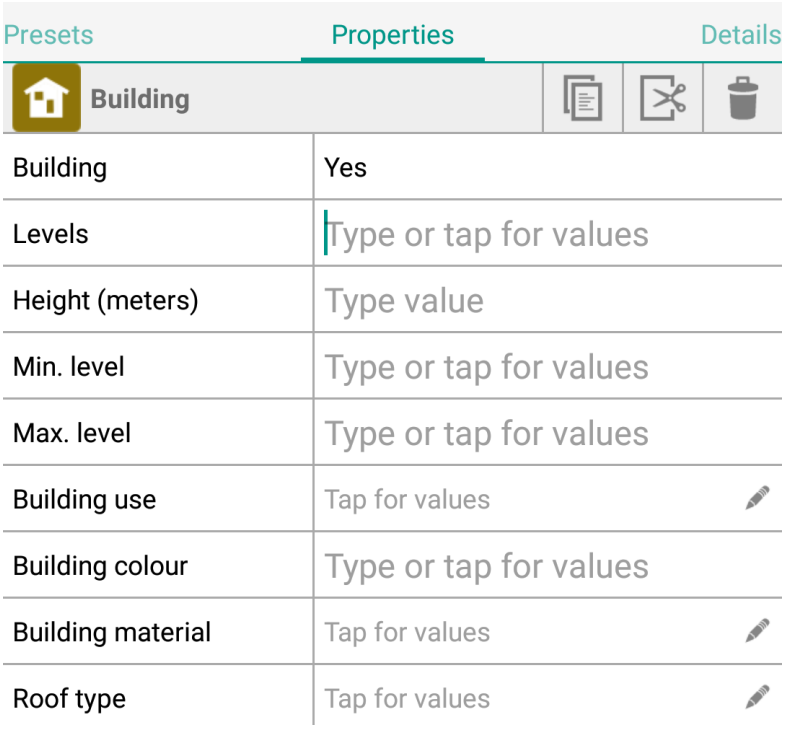
i. **building:levels** - describes the number of above-ground levels the building has

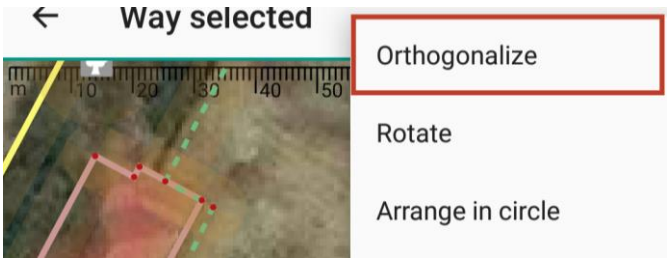
ii. **building:use** - describes what kind of function the building serves (e.g. residential, commercial, industrial, etc.)

iii. **name** - describes the name of the building (if applicable)

iv. **roof:material** - describes the construction material used for the building roof (e.g. metal, concrete, asphalt, wood)

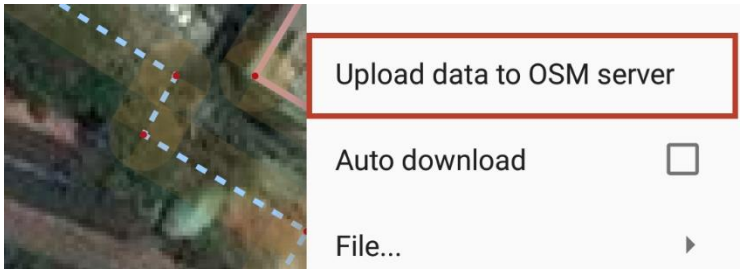
v. **wall:material -** describes the outer wall material of the building (e.g. concrete, brick, glass, stone)



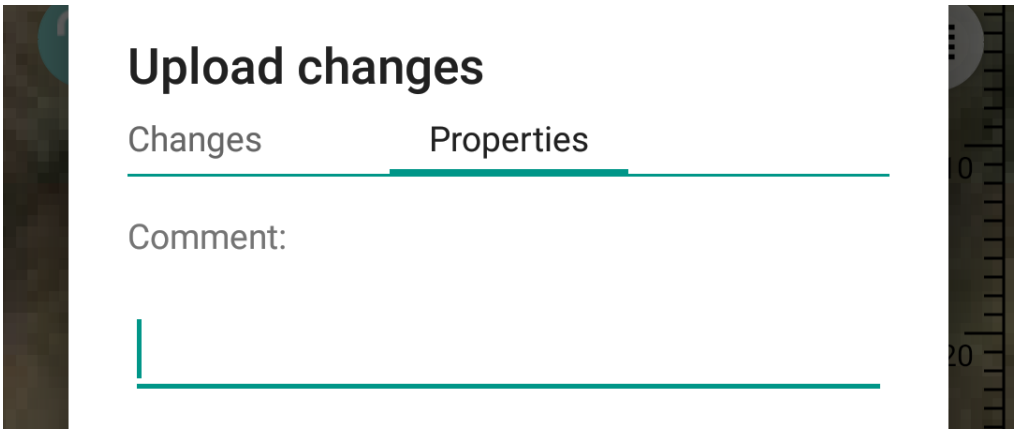


***TIP**: If you want to make your box a perfect square, tap the middle of the box, then select the More Options icon ( ), then select **Orthogonalize**.*

f. Repeat steps A to E. Once finished, tap the **Transfer** icon (⇅) then tap **Upload data to OSM server**.



g. Input your changeset comments in the corresponding field in the Properties section. Here are some example changeset comments that you can input:



i. "Added buildings in residential area"

ii. "Updated building tags based on Bing and local knowledge"

iii. "Edited offsets and incorrect geometry of buildings"

iv. “Fixed overlapping structures”

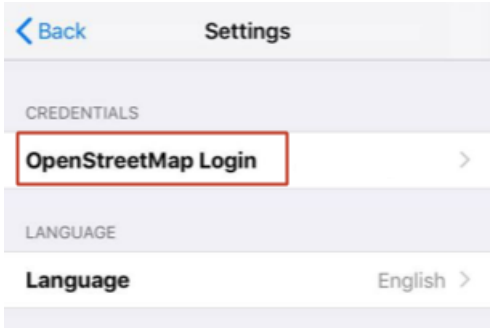
v. “Added necessary tags”

h. After inputting necessary comments, tap **Upload**. Your changes would now be uploaded to OpenStreetMap.

For mapping building footprints using an iOS device, download the application **Go Map!!** in the App Store.

1. Open Go Map!! on your iOS device.

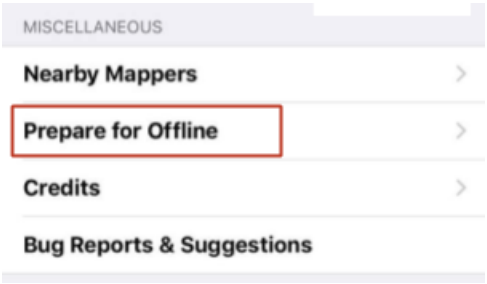
2. Sign in to your OpenStreetMap account by tapping the **Settings** icon ( ), then select **OpenStreetMap Login**.

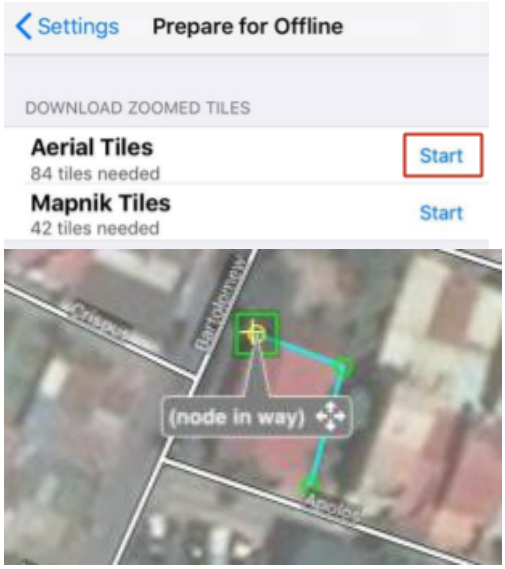


3. Enter the credentials of your OpenStreetMap account, then select **Verify**.

4. Locate your area of interest then tap the **Settings** icon ( ).

5. Select **Prepare for offline**

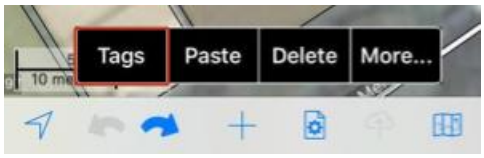


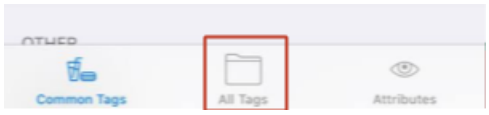


6. Select **Start** under **Aerial Tiles**.

7. Go back to main page, tap the **Add** icon ( ) then trace your building of interest.

8. Once the building is traced, select **Tags.**





9. Select **All Tags** and fill in the necessary information.

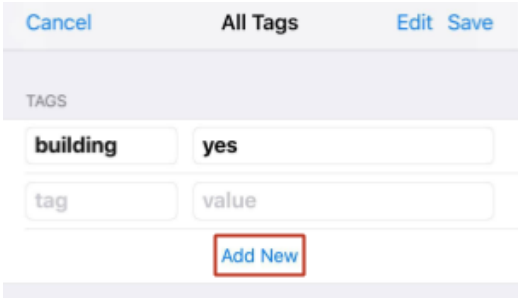
   a. **building:levels** - describes the number of above-ground levels the building has

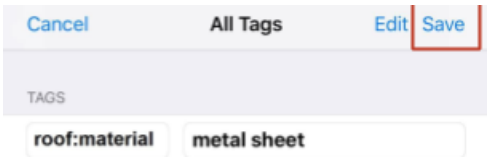
   b. **building:use** - describes what kind of function the building serves (e.g. residential, commercial, industrial, etc.)

   c. **name** - describes the name of the building (if applicable)

d. **roof:material** - describes the construction material used for the building roof (e.g. metal, concrete, asphalt, wood)

e. **wall:material** - describes the outer wall material of the building (e.g. concrete, brick, glass, stone)





10. Click **Save** after inputting the necessary tags.

11. Repeat steps 6-9. Once finished, tap the **Upload** icon ( ).

12. Input your changeset comments in the corresponding field in the Upload section. Here are some example changeset comments that you can input:

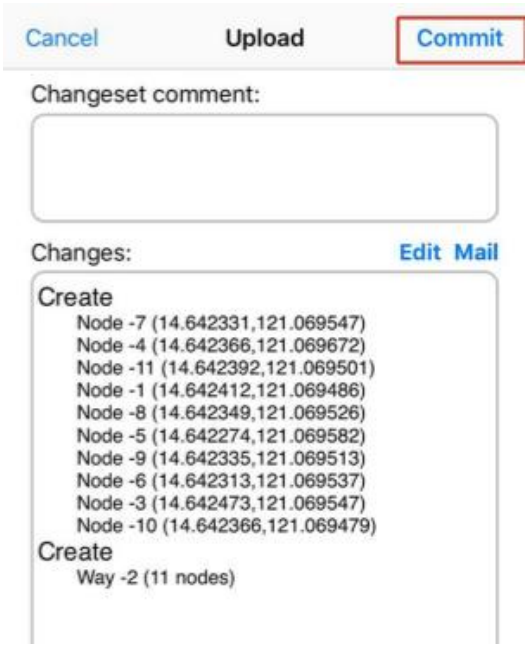
    a. "Added buildings in residential area"

    b. "Updated building tags based on Bing and local knowledge"

    c. "Edited offsets and incorrect geometry of buildings"

    d. "Fixed overlapping structures"

    e. "Added necessary tags"



13. Select **Commit** to upload your changes.

MODULE

03

VALIDATING BUILDING FOOTPRINTS VIA DESKTOP

MODULE 03

OVERVIEW

This module will focus on the process of validating mapped building features using iD Editor and HOT Tasking Manager. The user will be guided on checking for and correcting errors within a map tile. At the end of the module, the user should be able to determine how to mark tiles as valid or invalid.

OBJECTIVES

At the end of this module, the user should be able to:

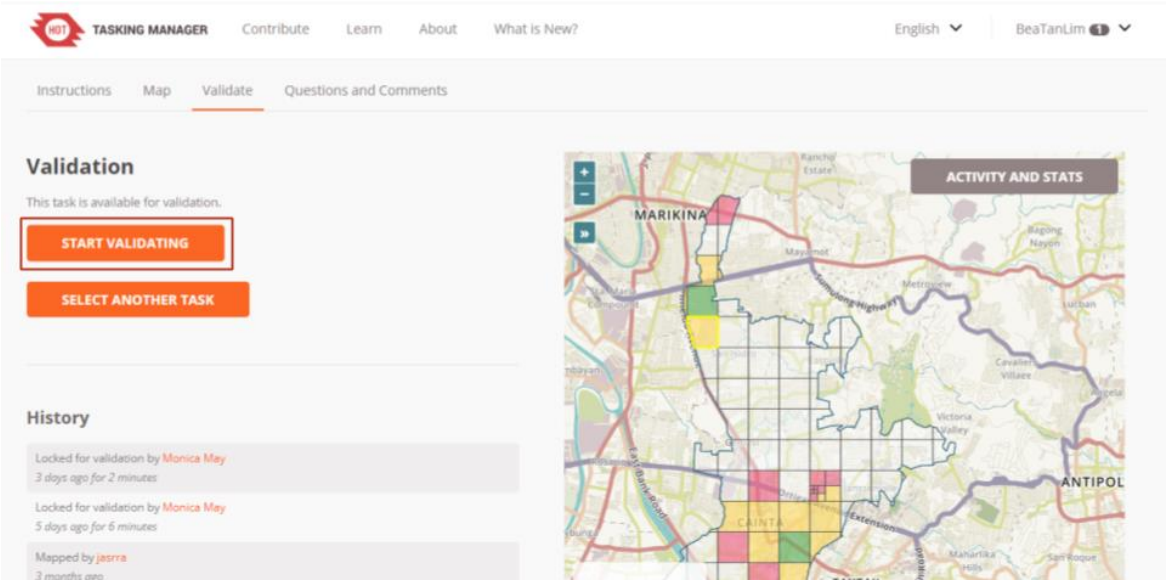
- Check traced building footprints for errors in tags, incorrect shapes, overlaps, and offsets
- Validate mapped tiles using iD Editor in HOT Tasking Manager
- Invalidate validated tiles that still need further mapping and/or fixing of errors

MATERIALS NEEDED

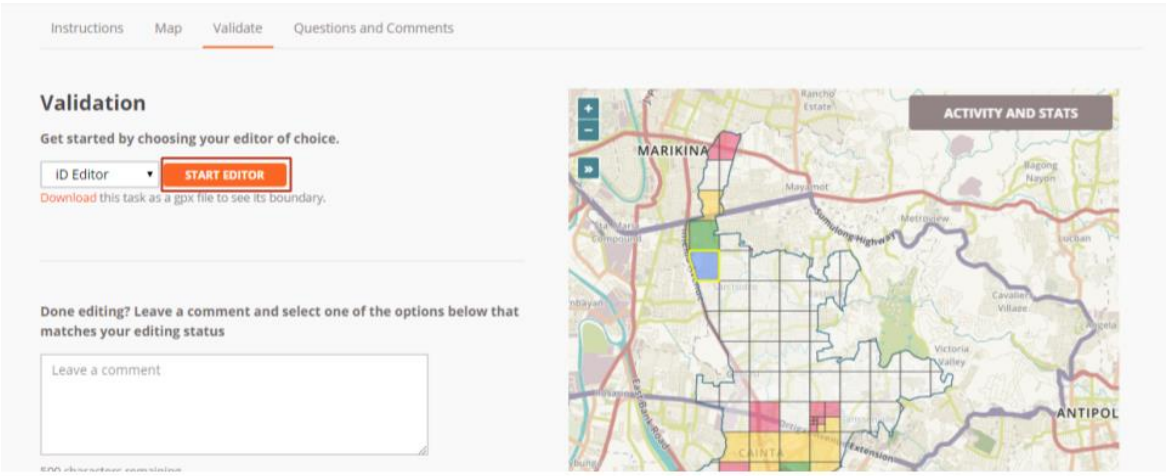
OpenStreetMap, HOT Tasking Manager, Personal Computer

Validating Building Footprints

1. In the HOT Tasking Manager, click on the **Validate** tab.
2. Start validating by clicking any tile to work on then click **Start Validating**. ***NOTE:*** *Only the completely mapped (yellow) tiles can be validated.*



3. Make sure to set **iD Editor** on the dropdown menu then click **Start Editor**.



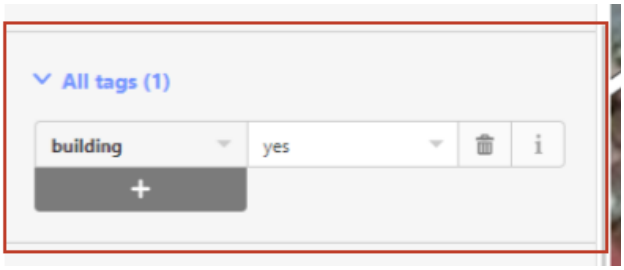
4. Scan the area you are working on and check for the following building attributes:
    a. building tags

b. building geometry

c. building alignment

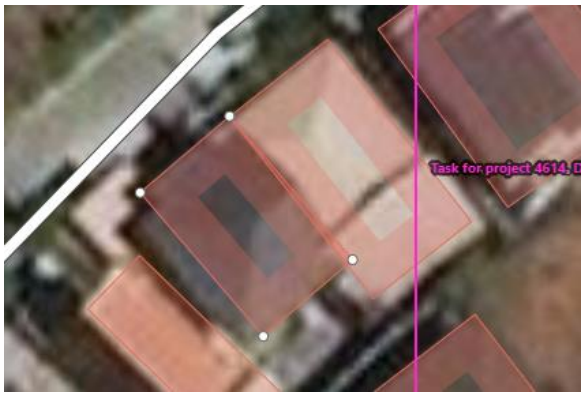
5. Look out for these common errors:

a. missing tags



b. incorrect building geometry

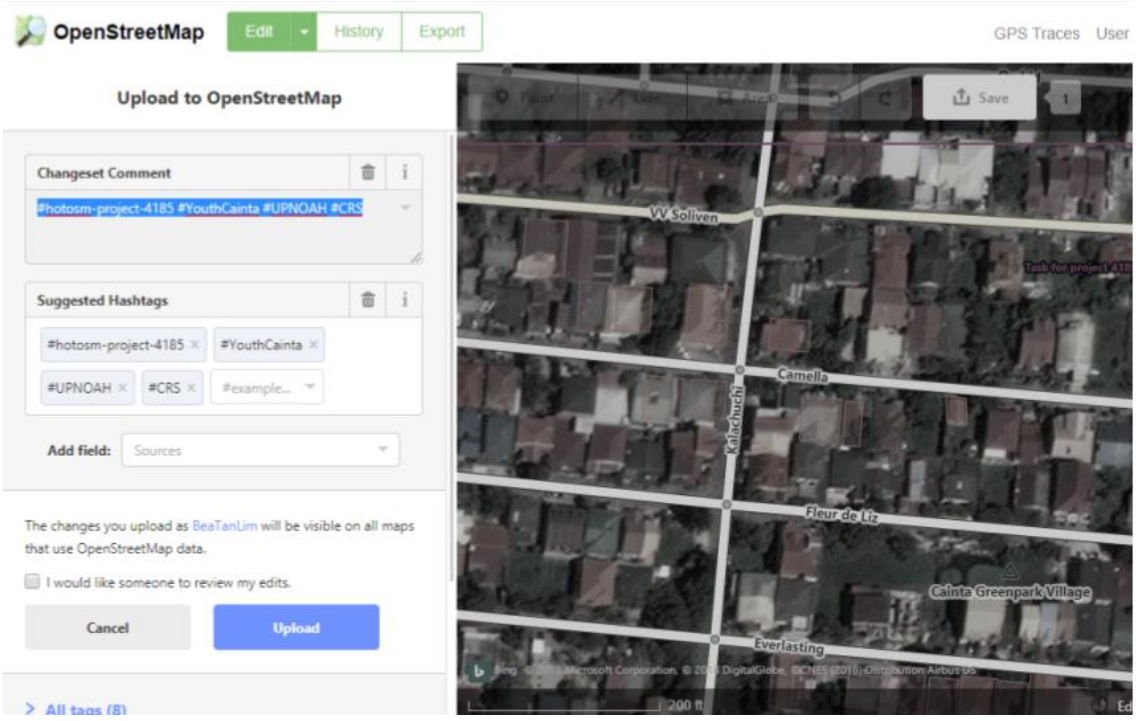
c. offsets



d. overlapping features

e. missing building footprints

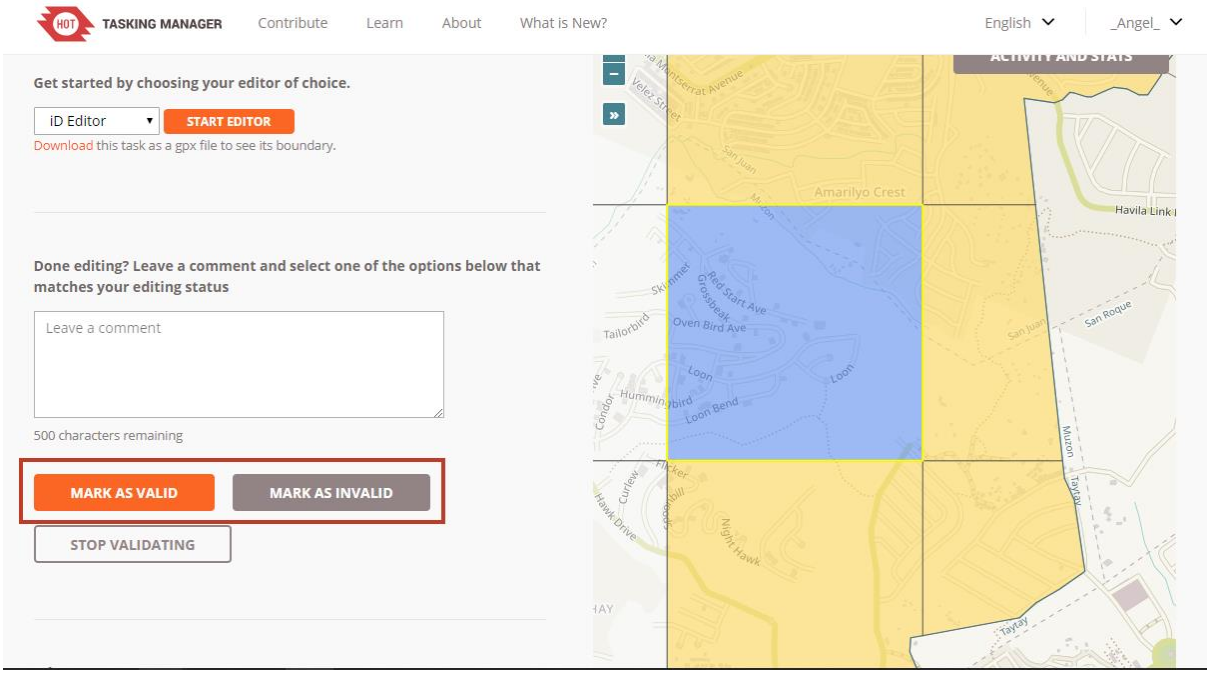
6. If changes were made, click **Save** then **Upload**. Then, go back to the HOT Task Manager.



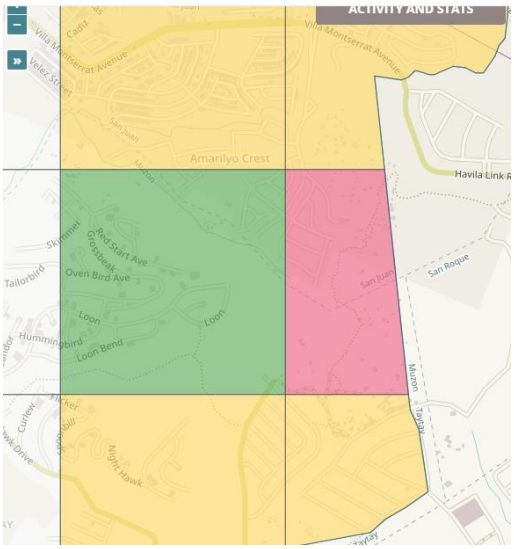
7. On the project tasking manager, input your changeset comments in the comment box.

   TIP: *You can include in the changeset comments the errors you found in the tile (if there are any). These comments may help other contributors improve the map.*

8. Once you have completely checked the tile you are working on and there were no errors, or you have corrected all errors, click **Mark as Valid**. If the tile still contains a lot of errors, click **Mark as Invalid**. Marking the tile as invalid makes the tile available for mapping again.



NOTE: *Tiles* ***Marked as Valid*** *will turn to green while tiles* ***Marked as Invalid*** *will turn to red.*



MODULE

04

VALIDATING BUILDING FOOTPRINTS VIA MOBILE APPLICATIONS

MODULE 04

OVERVIEW

This module will teach the user how to validate building footprints using the Android app Vespucci and using the iOS app Go Map!! The user will be guided on how to fix bugs and errors in Vespucci and how to change tags in Go Map!! It is important for the user to first be familiar with these apps by reading Module II to better understand this validation tutorial.

OBJECTIVES

At the end of this module, the user should be able to:

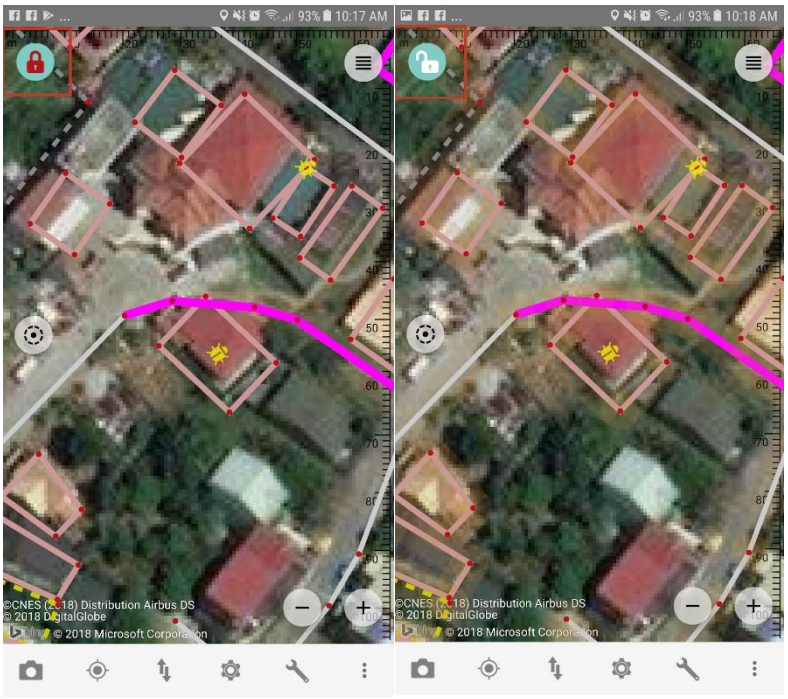
- Check the bugs and fix errors using Vespucci
- Check and fix errors using Go Map!!

MATERIALS NEEDED

Vespucci, Go Map!!, Android device, iOS device

VALIDATION (ANDROID): VESPUCCI OSM EDITOR

1. Unlock the map by tapping the lock icon ( ).



2. There would be yellow bugs ( ) visible on your screen. A bug indicates an error on the feature. The following are the type of bugs you might encounter on your screen and their corresponding descriptions:

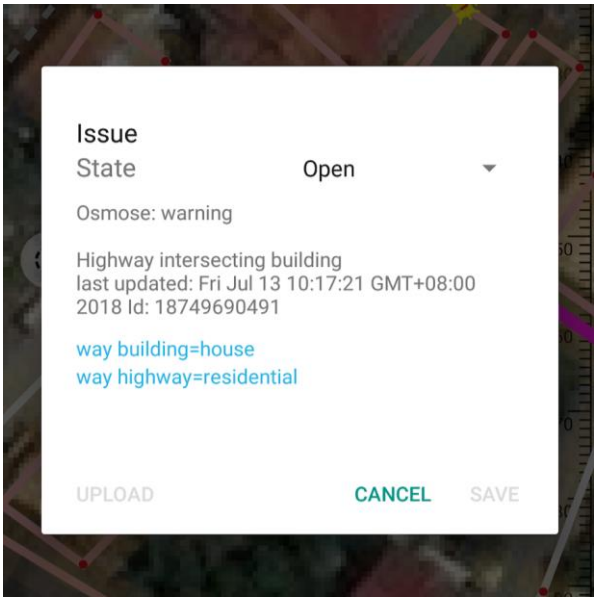
   a. **yellow bugs**: active bugs to be corrected

   b. **green bugs**: closed/resolved bugs

   c. **blue bugs**: bugs you have corrected

3. Click on a **yellow bug** to fix it. A dialog box would pop up and will show you the features that are present near the bug. Tap the **Osmose** option which refers to an error.

4. A new dialog box will pop up. This will show you the state of the issue and the options to resolve it:

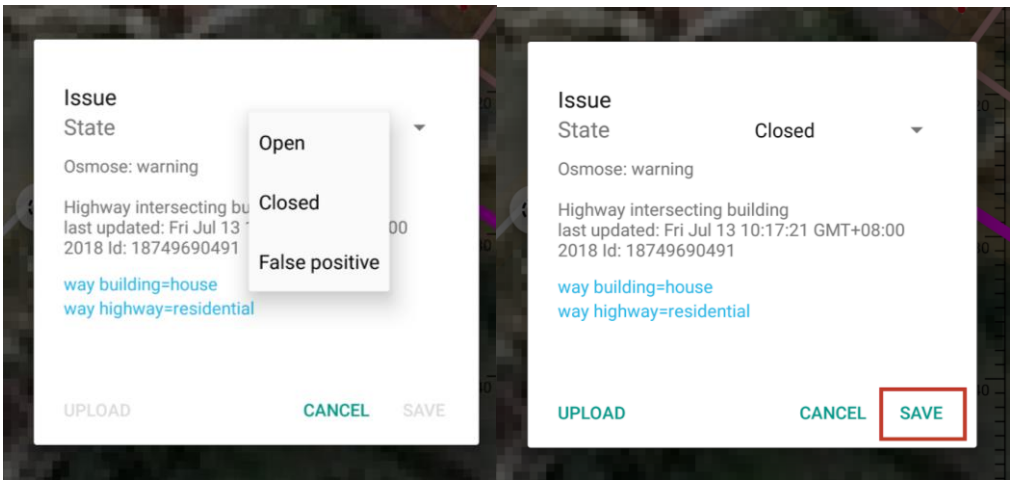


a. **open**: Select this to leave the issues open for other people to resolve.

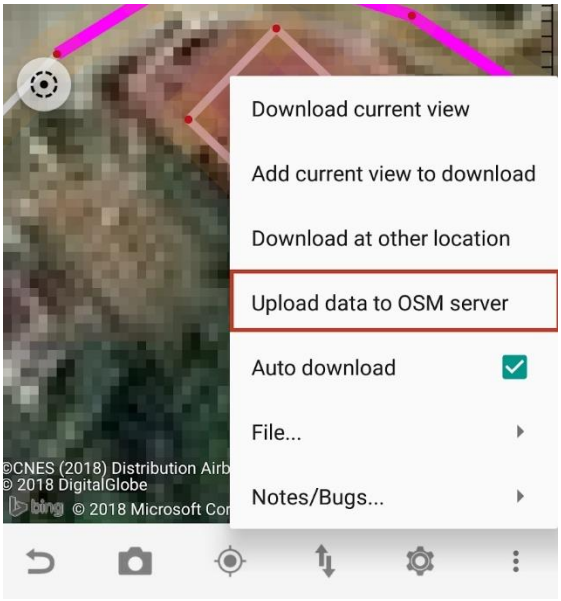
b. **closed**: Select this to resolve issues. Only choose this option if you have fixed the errors such as missing/incorrect tags, offsets, shape, etc. At this point, select **cancel** to go back to the map and correct the errors then return to this dialog box.

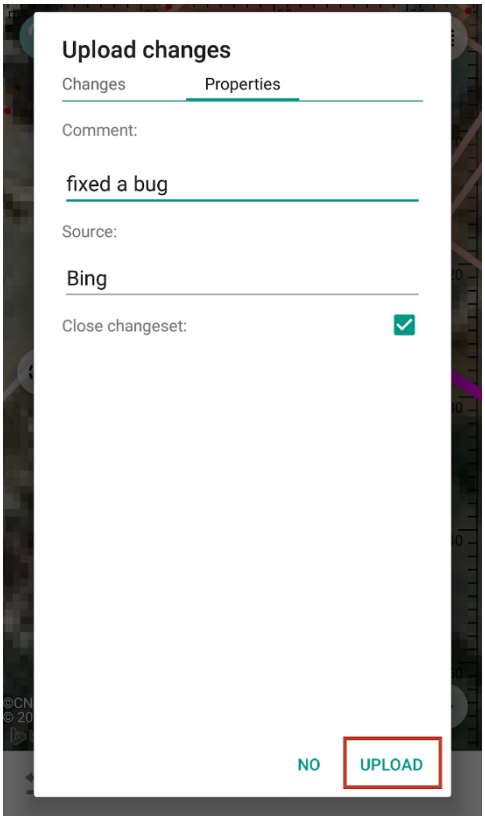
c. **false positive**: Select this if there is no issue (that is, the bug itself is erroneous).

5. Tap **Save** after making changes to the bug.



6. Once done, tap the **Transfer** icon ( ) then select **Upload data to OSM server**.





7. Input your changeset comments in the corresponding field in the Properties section. Here are some example changeset comments that you can input:

a. "Added buildings in residential area"

b. "Updated building tags based on Bing and local knowledge"

c. "Edited offsets and incorrect geometry of buildings"

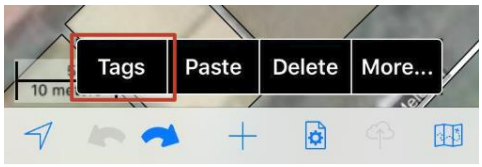
d. “Fixed overlapping structures”

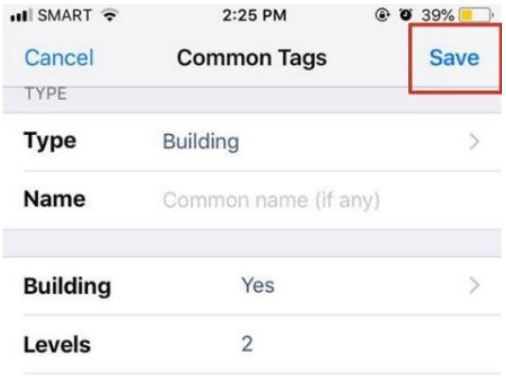
e. “Added necessary tags”

8. After inputting necessary comments, select **Upload**.

VALIDATION (IOS) : GO MAP!!

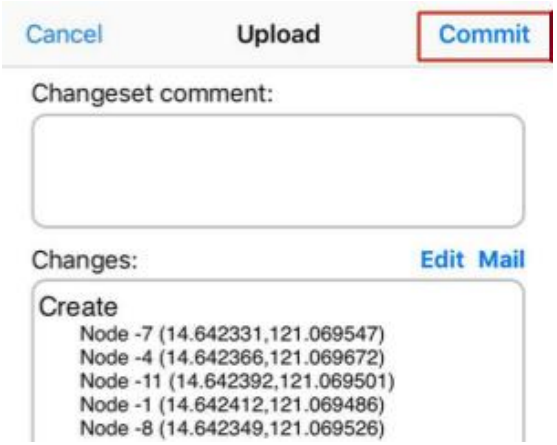
1. Tap your building of interest then select **Tags**.





2. Assess data by checking the tags and alignment of the building footprints then make edits if necessary.

3. When you are done, tap **Save**, ( ), then **Commit**.



MODULE

05

MAPPING AND VALIDATING VIA FIELD PAPERS

MODULE 05

OVERVIEW

There are times when the user needs to do field mapping without the use of gadgets. This is where field papers come in handy. With just a pen and a map sheet, the user will be able to map an area of interest. This module teaches the user how to ready the materials needed for field validation using Field Papers.

OBJECTIVES

At the end of this module, the user should be able to:

- Create his or her own account in Field Papers
- Make a new atlas using Field Papers through the HOT Tasking Manager
- Print his or her own rendered atlas from Field Papers
- Edit the uploaded atlas using iD Editor

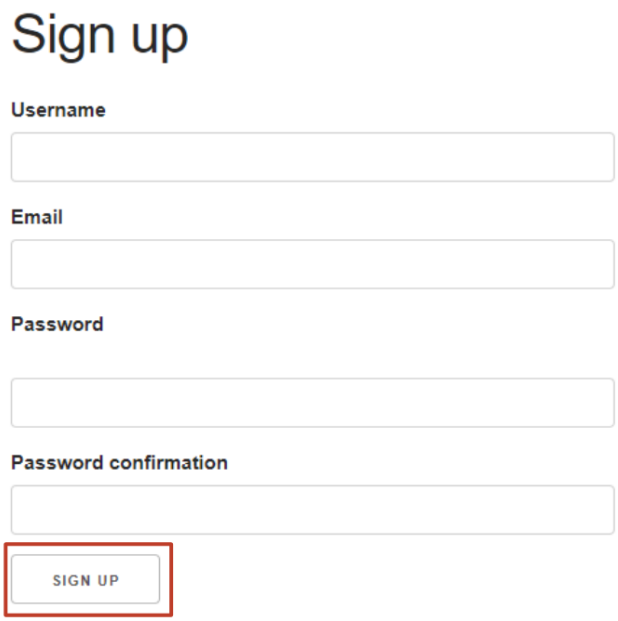
MATERIALS NEEDED

Personal Computer, Papers, Printer, Writing Materials

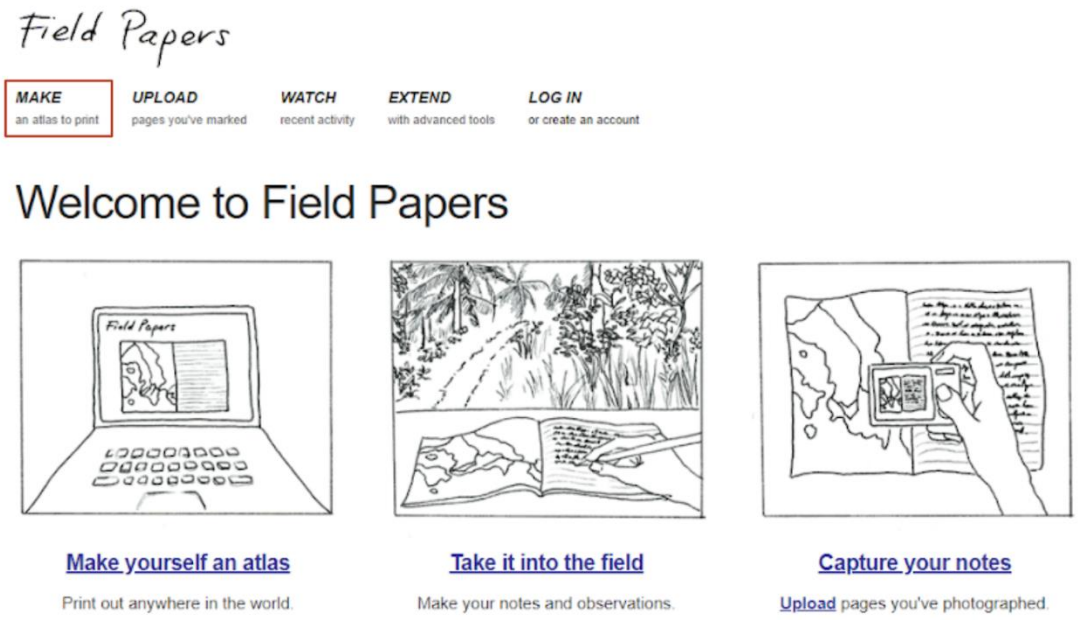
There are times when you need to do field mapping without your gadgets. Here's how to get started with Field Papers:

1. Go to fieldpapers.org and click **Create an Account**.

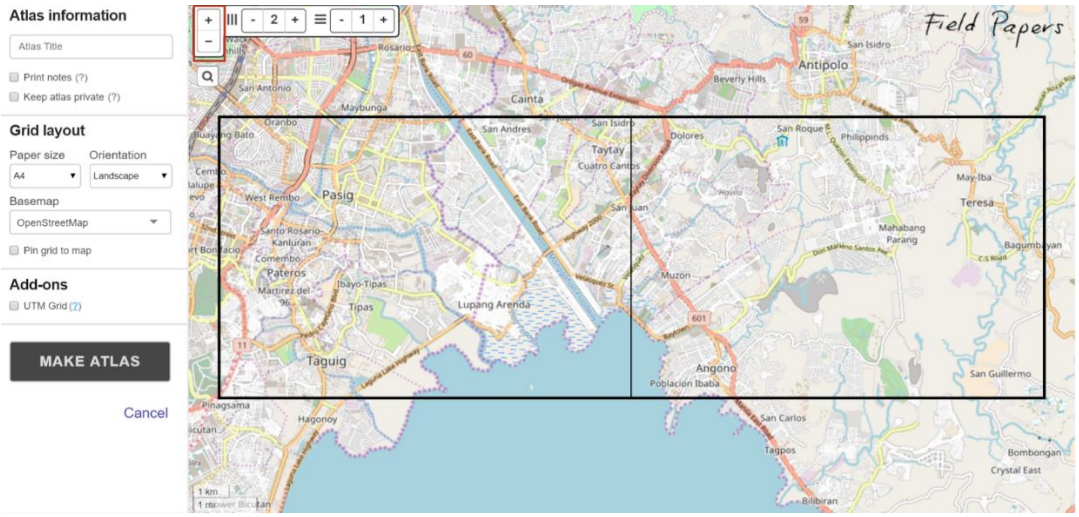
2. Fill in your username, e-mail address, and password. After doing so, click **Sign Up**.



3. Click **Make** to create a new map.

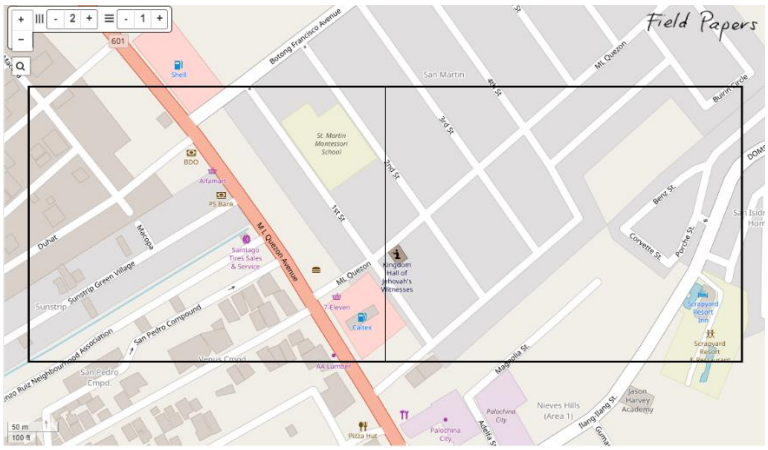


4. Zoom in to the area of interest.

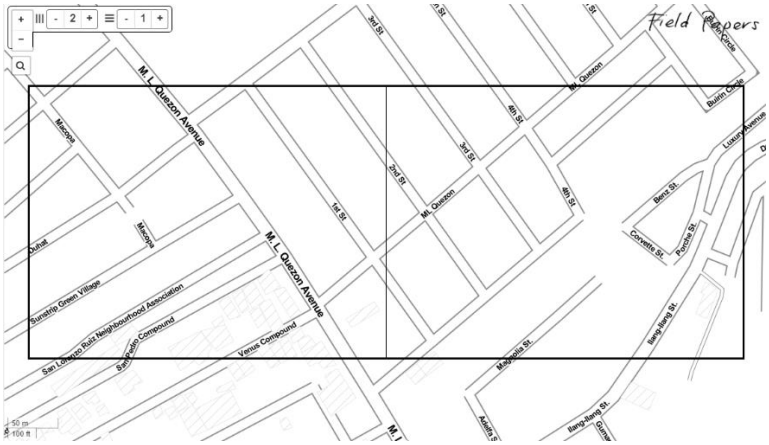


5. Choose which **base map** you prefer to use. Types of base maps include:

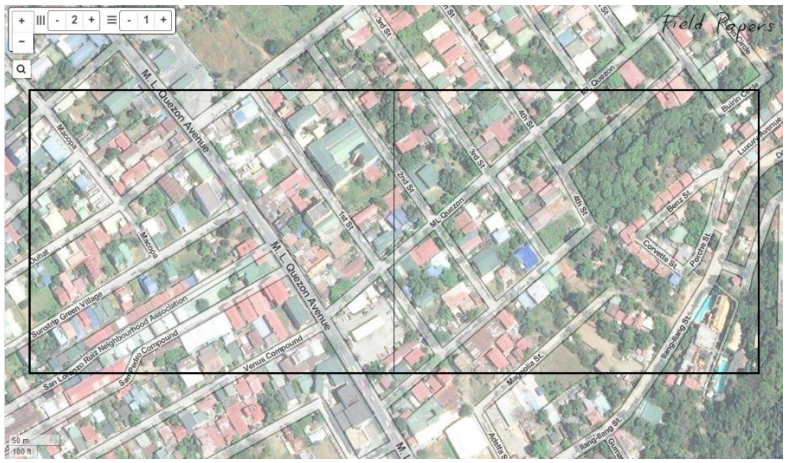
   a. OpenStreetMap



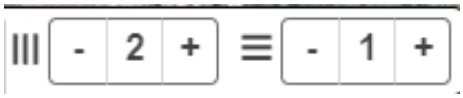
   b. Black & White



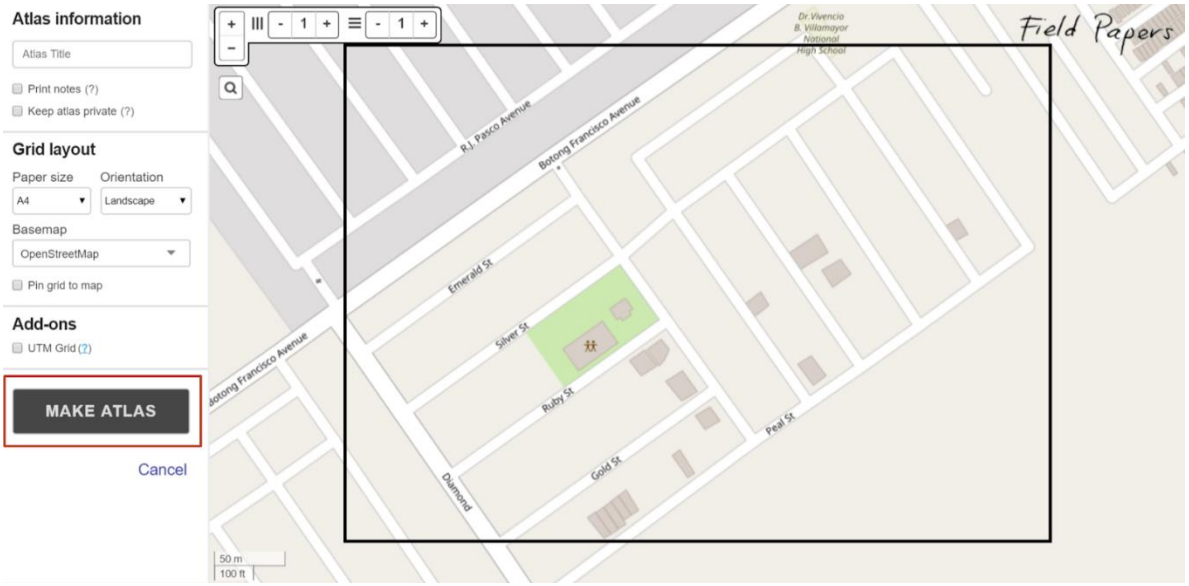
   c. Satellite + Labels



6. Choose the **paper size** you want to use for your field papers. You can set this on the left panel under Grid Layout.
7. Choose the **number of pages**.



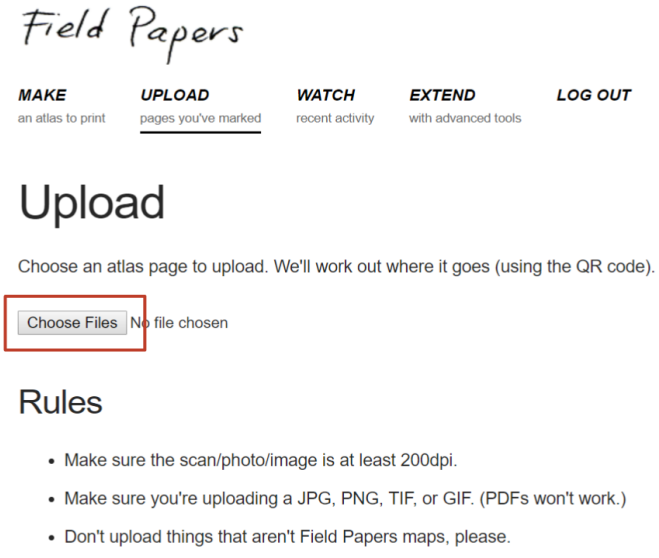
8. Once you have zoomed in to the area you want to map, click **Make Atlas**. Wait for the atlas to load.



9. **Download** the PDF file of the atlas then **print** it.

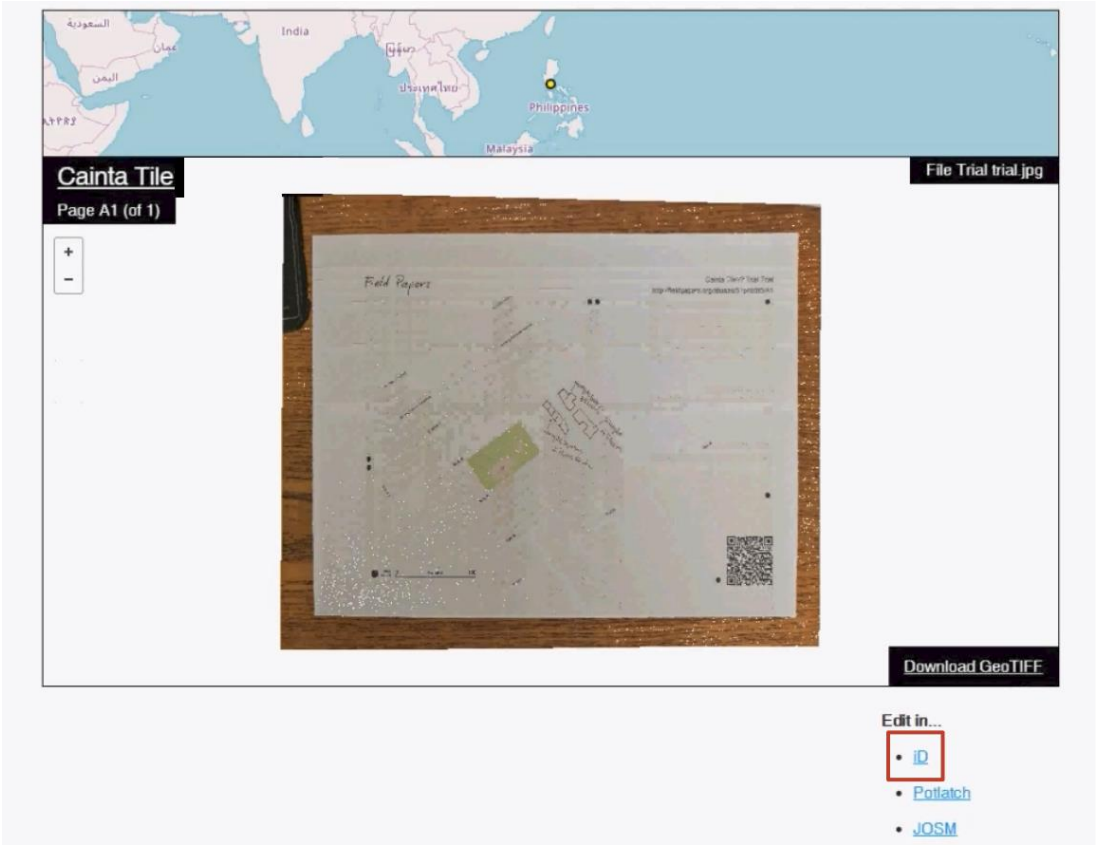
10. Take the printed papers to the field and write notes on it; you can draw the shapes of the buildings you see and write their attributes (e.g., level, roof material, etc).

11. After that, **scan** the page together with your notes. You may also opt to take a photo of the page. Make sure that the black dots on the field paper are clear.

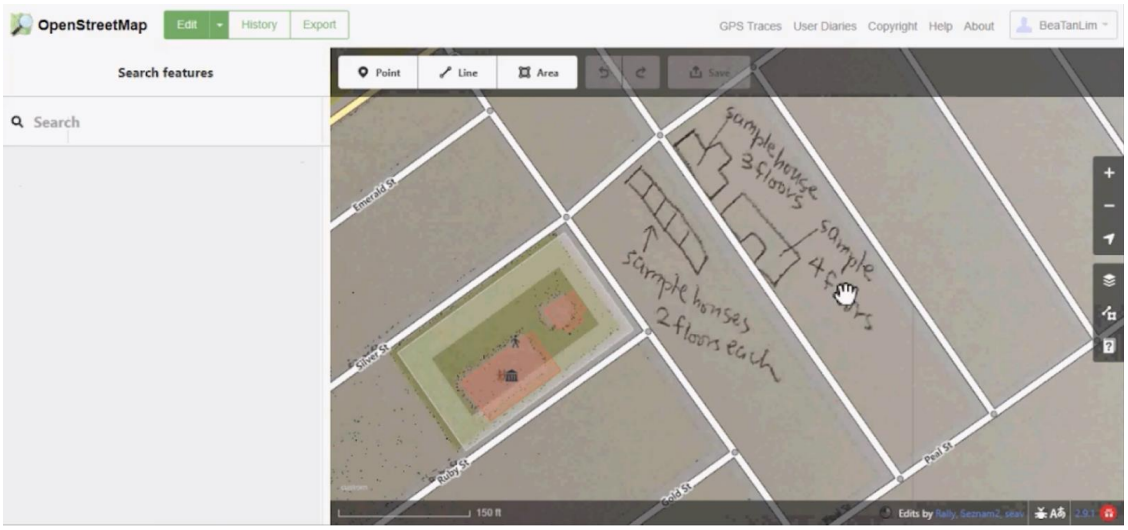


12. Upload the photo in Field Papers. Wait for a few minutes while your snapshot is being processed.

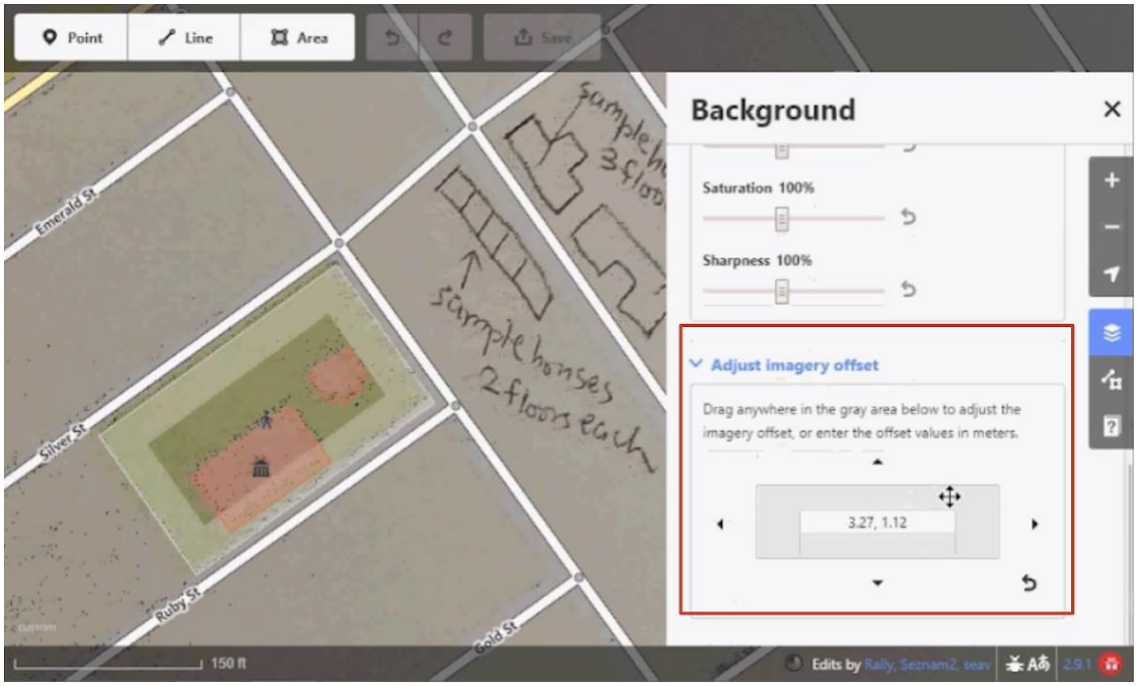
13. Once the image has been loaded, you may open your Field Paper in OSM by clicking **iD**.



This will redirect you to a new tab.



14. If the imagery doesn't align with your uploaded field paper, you may align them in the Background Settings, under Adjust imagery offset. Click and drag anywhere on the gray area to adjust the image.

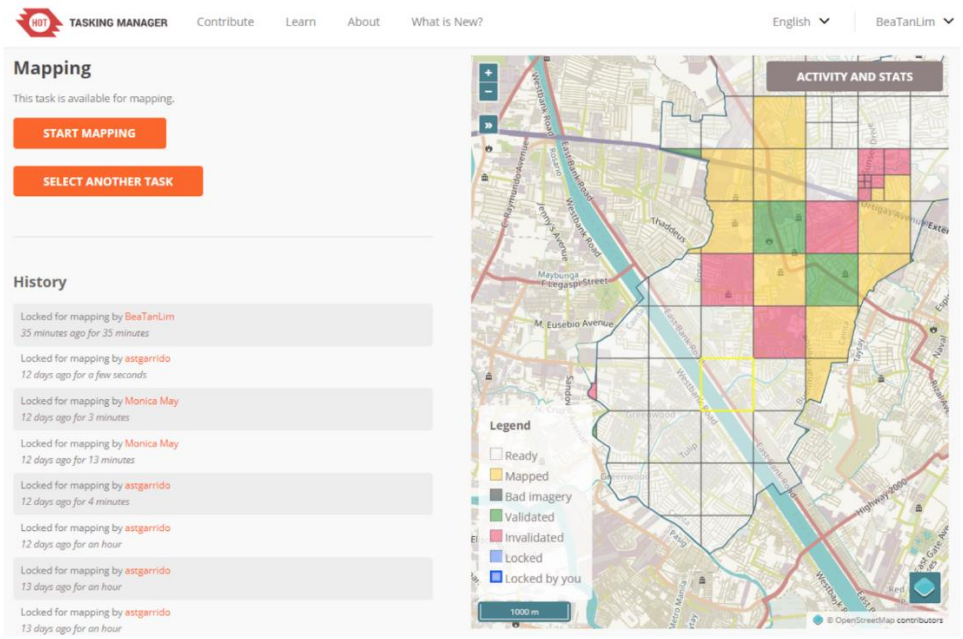


15. Start tracing the shape of the buildings and add the necessary tags.

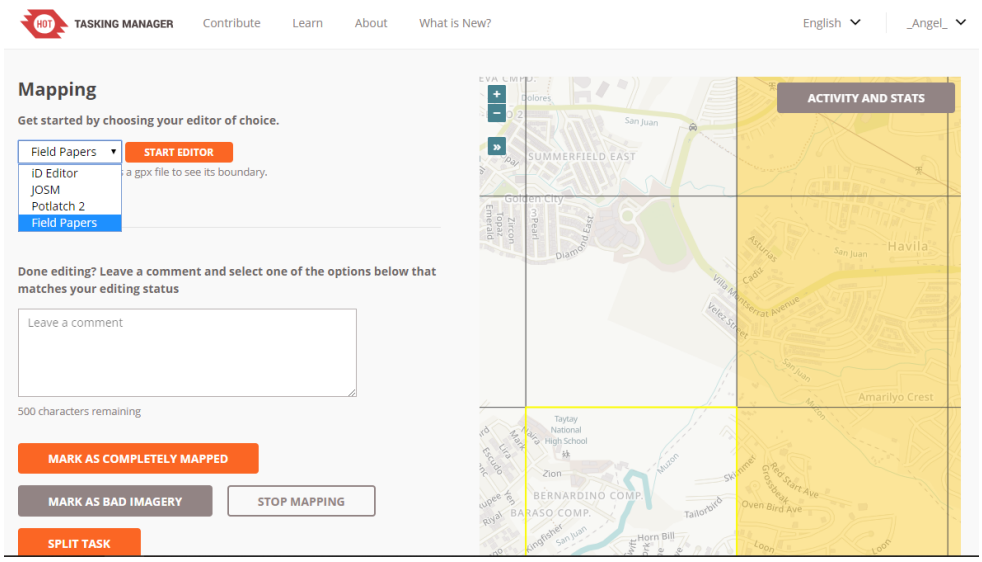
16. Once done, click **Save**, input your changeset comments, then click **Upload**.

TIP: *If you are having trouble finding your tile area in Field Papers, you can open Field Papers via HOT Tasking Manager. Make sure that you already have an account in Field Papers before doing this.*

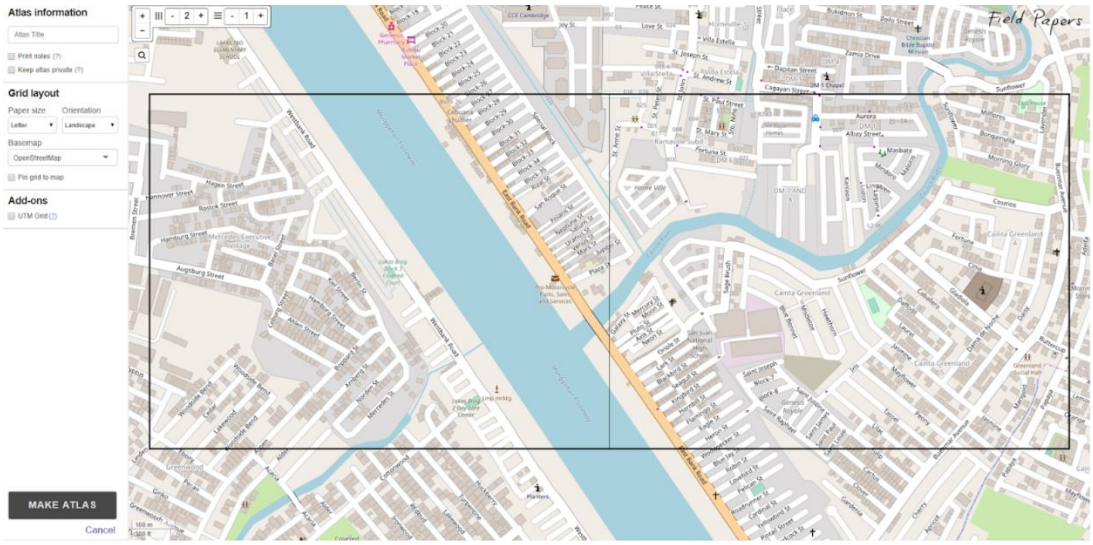
a. *In the HOT Tasking Manager, select the tile you want to open in Field Papers then click* ***Start Mapping****.*



b. *In the drop down menu beside Start Editor, select* ***Field Papers*** *then click* ***Start Editor****.*



c. *You will automatically be redirected to the Field Papers website and zoomed in to your tile. You can now modify your map layout for printing via Field Papers.*



MODULE

06

ON-SITE FIELD METHODS

MODULE 06

OVERVIEW

This module provides the user methods for on-site field validation such as photo documentation, feature coding and pacing, windshield survey, and audio recording + GPS. It aims to equip the user with the flexibility needed when gathering data, especially in instances when mapping needs to be done in a swift manner (e.g., unfavorable weather condition, areas with narrow spaces or alleys).

OBJECTIVES

At the end of this module, the user should be able to:

- Perform on-site field validation: photo documentation, feature coding and pacing, windshield survey, and audio recording + GPS

MATERIALS NEEDED

Field Papers, Writing Materials, Paper, Video Recorder, Camera, Audio Recorder, GPS

On-site Field Methods

A. Sketching

In case of emergencies such as wrongly-printed or inadequate field papers, a researcher can sketch or draw a map on a blank paper just like a field paper. In case of missing features such as pathways and roads, the researcher can draw them where they think it is located on a field paper. It is not necessary to be good at drawing to sketch a map if the researcher understands what is being illustrated. The mapper will have to estimate how long the roads are, where and how the building structures are positioned, where the important features are located, etc. The researcher will still have to trace structures, label the roads and streets and mark reference points.

B. Photo Documentation

A mapper takes photographs of various features that are deemed crucial to the research during the field activity which can be used as data source. It is used to chronicle events or environments both significant and relevant to the activity as well as everyday life. It is typically covered in professional photojournalism, or real-life reportage, but it may also be an amateur, artistic, or academic pursuit. It is an integral component of field validation.

One can use various types of camera such as DSLR, digicams, point and shoot, or a phone camera. The ones with built-in GPS capability are recommended for creating geotagged photos. Likewise, enabling the Location Tags in the camera settings of a common smartphone will suffice.

C. Feature Coding and Pacing

No need to sketch by using codes and pace factor. All you need are printed street maps, papers and a pen!

1. Using printed maps, locate your area of interest.
2. Mark your starting point by drawing a symbol (e.g. star) on the map then arrows for directions.

3. On a sheet of paper, write the street or road name of your starting point. Please take note that you must indicate which side of the street (left or right) you are mapping. Then number your paper from 1 to n.
4. For every building that you will pass by, you must determine its wall material, roof material, level, use and estimate its size by pacing. A pace is the length of a step in walking. For instance, if it takes one person 60 steps to cover 50 meters, then his or her pace factor is 0.833 meter. Five steps can therefore cover about 4 meters.
5. You can create your own code by using the first letter of the word (e.g. C for Concrete, M for Metal Sheet, 2 for two-storey, R for Residential, and 8 for pace factor) then you can come up with a sample code like CM2R8. Make sure that you are writing it in order.
6. You can add a "remarks" column for every row if you want to take some notes. *(Optional)*
7. Using iD Editor, reconstruct your notes and trace the buildings.

D. Windshield Survey

While riding a vehicle, you can do a systematic observation. You can also use your video camera to record the buildings in the area. This can be a good reference for validation.

E. Audio Recording

There are times when you cannot bring out your cameras or papers in the field site. You can utilize your phone's audio recording function to record by describing where you are and what you see in the field. This method would also make it look like you're just having a phone call. Marking your location using a GPS and recording your observations through the audio recorder makes it easier to collect data, rather than having to refer to a printed map or writing on paper.

TERMINOLOGIES

Terminology	Definition
Area	***(In iD Editor)*** A function used in OpenStreetMap to draw polygons.
Building footprint	A trace of the total area covered by a building.
Circularize	***(In iD Editor)*** A function which transforms a closed polygon with at least 3 nodes into a perfect circle.
CRS	Catholic Relief Services; a humanitarian aid organization which helps the poor and vulnerable overseas by responding to major emergencies, fighting disease, etc. In this project, CRS helps in facilitating the mapping of building footprints in the municipalities of Cainta, Taytay and Angono together with the University of the Philippines Geography 192 students.
Edit Feature Panel	***(In iD Editor)*** Shown on the left side of the interface once a feature is selected; shows the corresponding tags of the selected feature
Field class	The class of Geog 192 students that facilitated the mapping of building footprints in the municipalities of Cainta, Taytay and Angono, in partnership with CRS.
Field notes	Notes taken by observation during on-site field activities.
Field Papers	A website that can be accessed through the HOT Tasking Manager; it enables the user to print maps of a certain study area. The printed maps can be used to take notes during field validation. These can then be uploaded to the iD editor for correction of building footprints.

Field validation	On-site checking of building footprints and tags. This is important for checking buildings that may not be displayed clearly through satellite images (i.e. blocked by trees, bad imagery, etc).
Geometry	Refers to the properties and relations of points, lines and surfaces.
GIS	Geographic Information System; a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data
Go Map!!	An iOS application synced with OSM which enables users to map on iOS devices.
HOT Tasking Manager	The purpose of the HOT tasking manager is to divide up a mapping project into tiles. It shows which areas need to be mapped and which areas need the mapping validated in the project.
iD editor	iD is an OpenStreetMap editor programmed to be accessible through a web browser without plugins. It enables the user to modify OpenStreetMap data.
Information Panel	***(In iD Editor)*** Located at the bottom of the interface; shows the scale bar, contributors and number of buildings of the displayed area (not only within the tile).
LGU	Local Government Unit; institutional units whose fiscal, legislative and executive authority extends over the smallest geographical areas distinguished for administrative and political purposes.
Make Rectangular	***(In Go Map!!)*** A function which transforms a polygon into regular polygons.
Map	A representation usually on a flat surface of the whole or a part of an area.

Map Panel	***(In iD Editor)*** Located on the right side of the interface; shows various configuration functions
MDRRMO	Municipal Disaster Risk and Reduction Management Office
Move	***(In iD Editor)*** A function in the iD editor which enables the user to move a selected feature on the map.
MPDO	Municipal Planning and Development Office
Offset	A mapping error in which the building footprint does not match the satellite image.
On-site	Refers to being in the field area
Orthogonalize	A function in Vespucci which enables the user to transform polygons into regular polygons.
OSM	OpenStreetMap is an open-source collaborative project to create a free editable map of the world.
Polygon	Refers to the building trace.
Rotate	***(In iD Editor)*** A function which rotates a selected polygon on its central axis.
Square	***(In iD Editor)*** A function which transforms a polygon into a regular polygon.
Tags	Attributes of a feature (includes address, roof material, wall material, building use, building levels, etc)
Tile	A division of a mapping project from HOT Tasking Manager. It can be whole (square) or partial (smaller, irregular shapes) tiles.
Tool Panel	***(In iD Editor)*** Panel that contains drawing tools that can be found on the upper portion of the interface. This enables users to draw points, lines and areas on the map layer.

Validation	The process of checking for and correcting errors of a building footprint and other map features (i.e. roads, labels, etc).
Vespucci	An Android application synced with OSM which enables users to map on Android devices.
Wrong shape	A mapping error in which the building footprint was incorrectly traced.

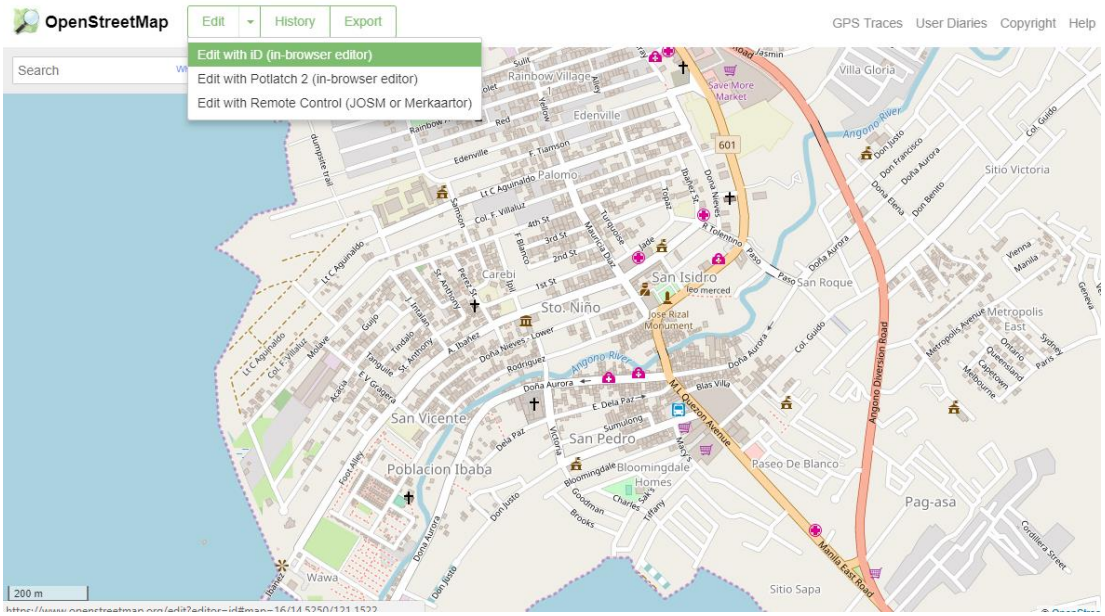
APPENDIX

A

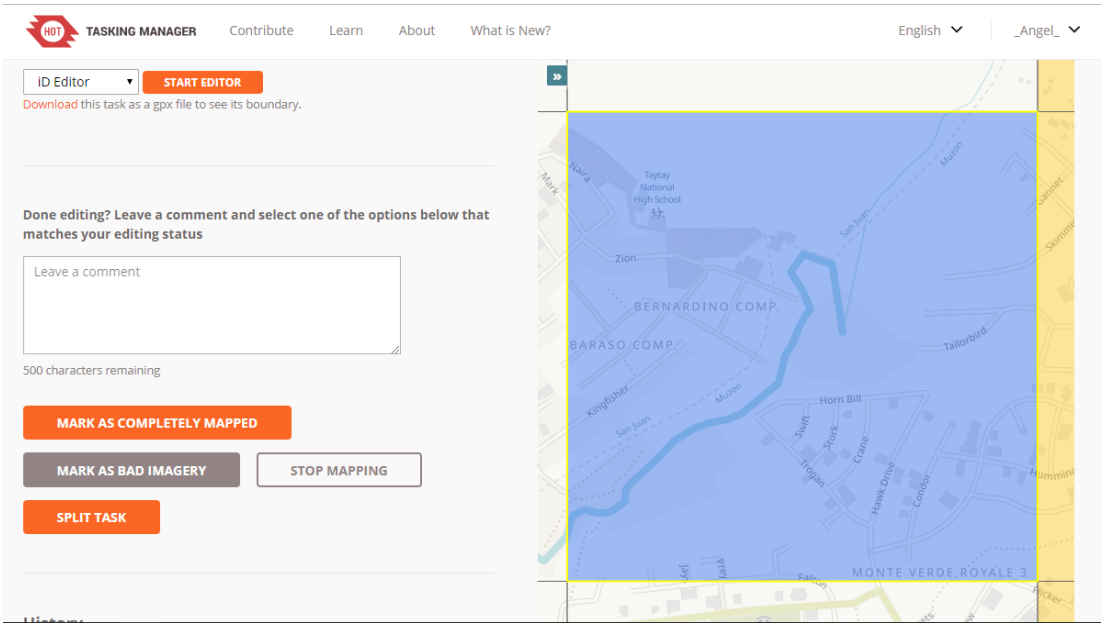
MAPPING AND MODIFYING ROADS IN OSM VIA ID EDITOR

Mapping Roads

1. Load the area of interest (if you opt to directly access the area from the OpenStreetMap website) or map tile (if you are using HOT Tasking Manager) in iD Editor.

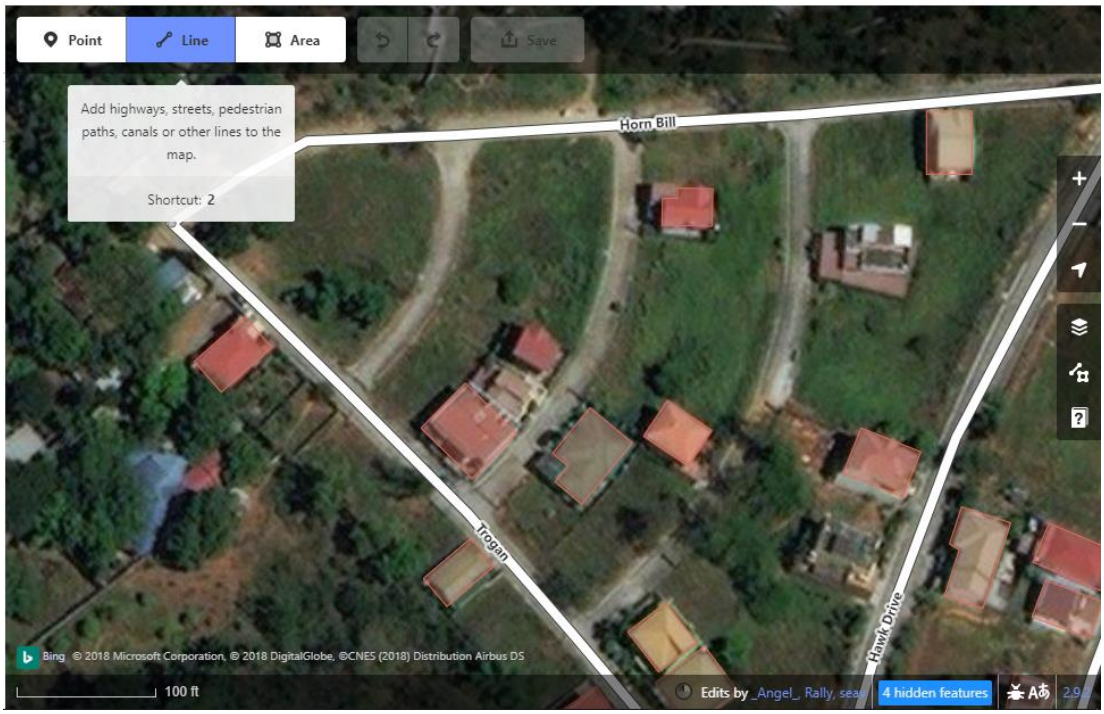


Opening iD Editor in OpenStreetMap

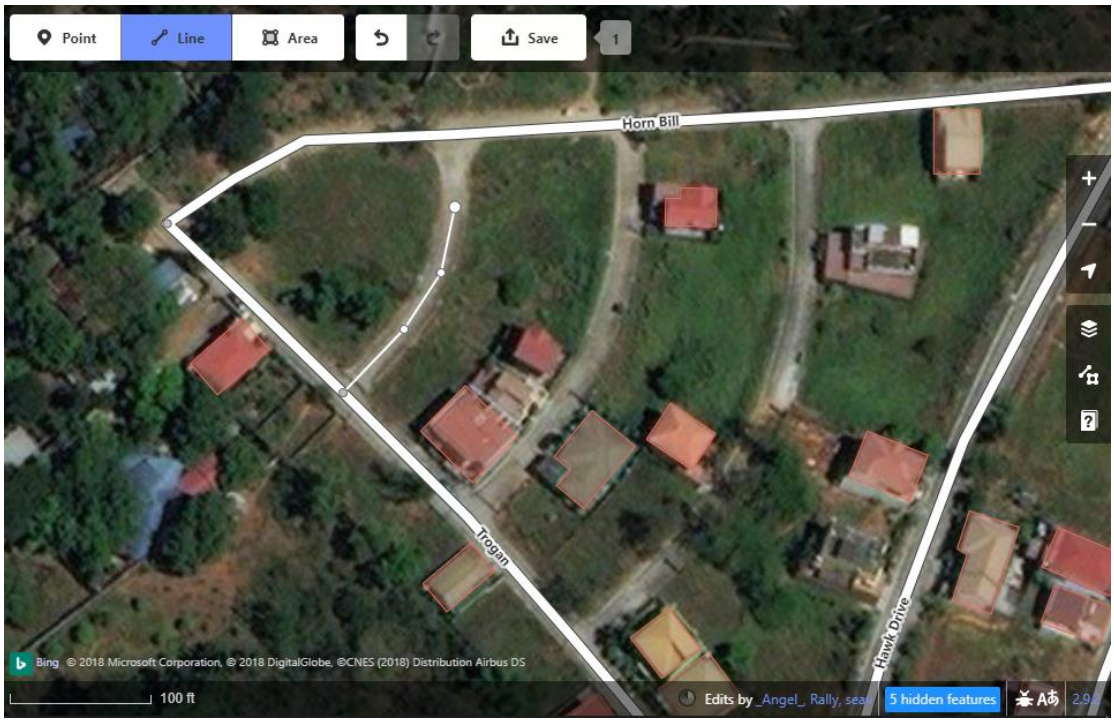


Opening iD Editor in HOT Tasking Manager

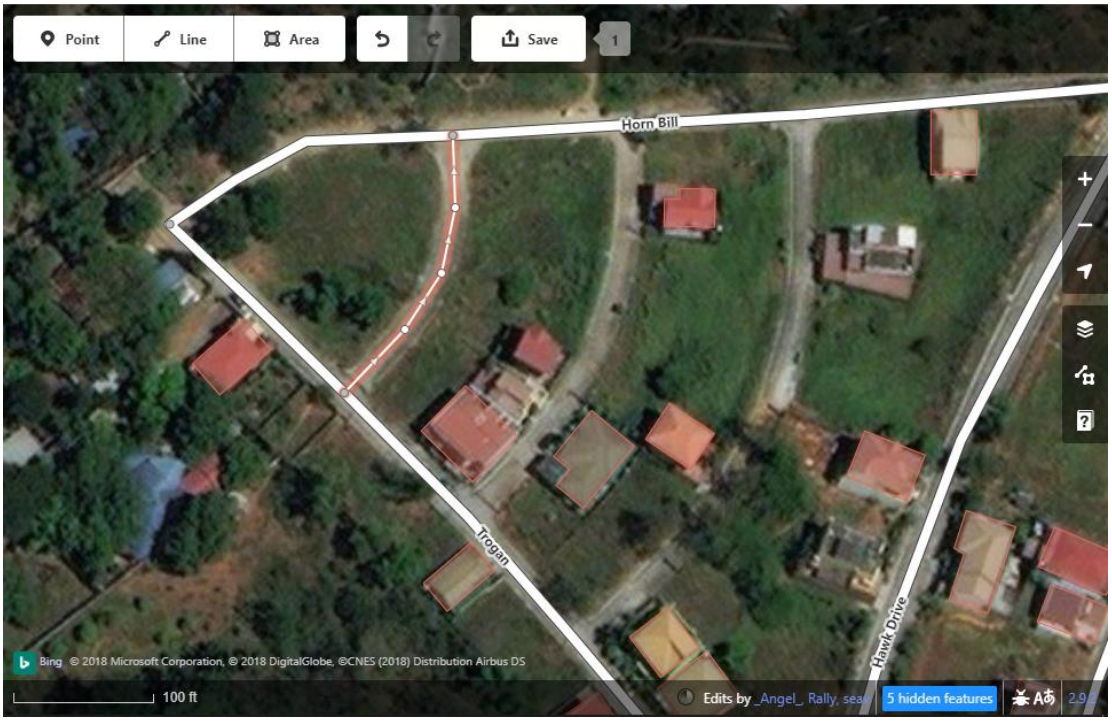
2. Click on the **Line** button in the Tools Panel.



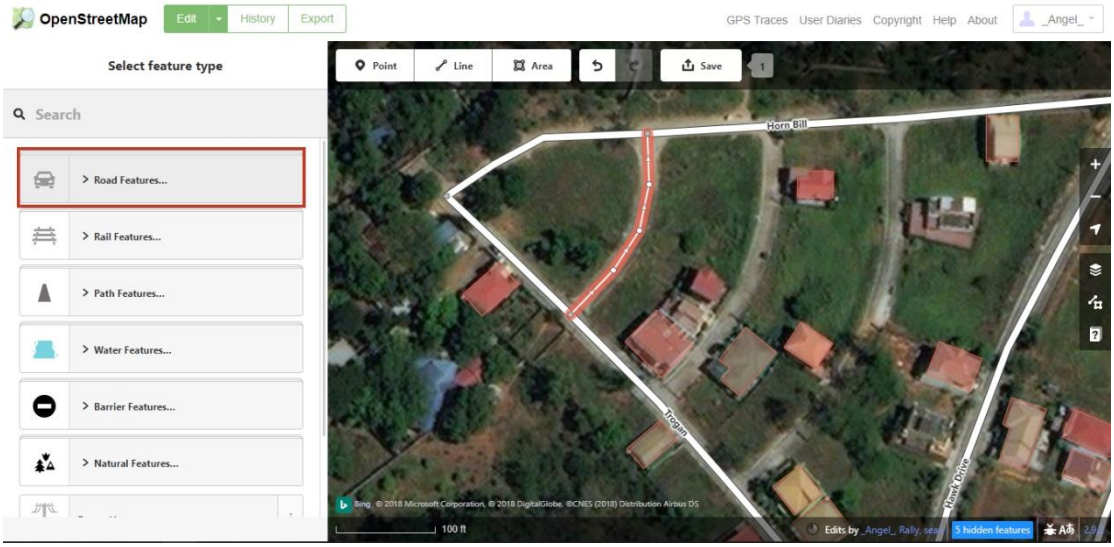
3. Start tracing the road by clicking on the map. To create a road, you must have at least two nodes. Note that your nodes must be positioned on the middle of the road.



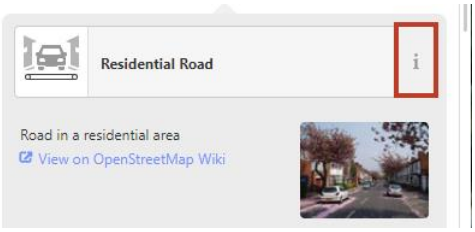
4. To stop tracing, double-click on your last node. Your newly mapped road should now be highlighted.



5. In the Edit Features Panel, click on **Road Features...** then select the appropriate road classification (e.g. residential road, primary road, etc). You can also add other attributes in this panel.



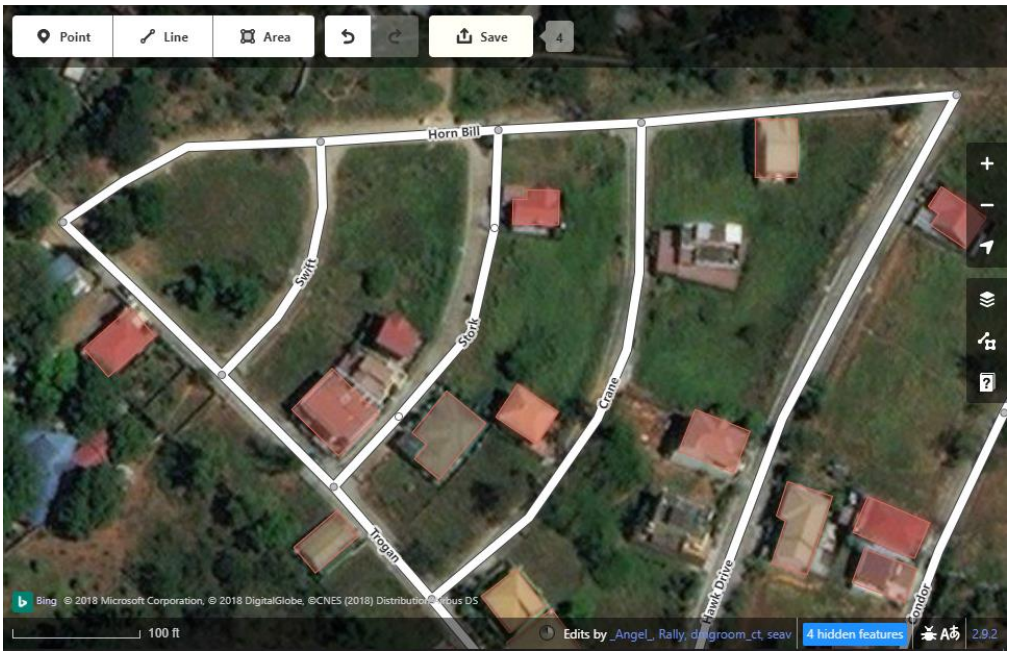
TIP: *If you are not sure on which classification to choose, you can click on the Information button for more information.*

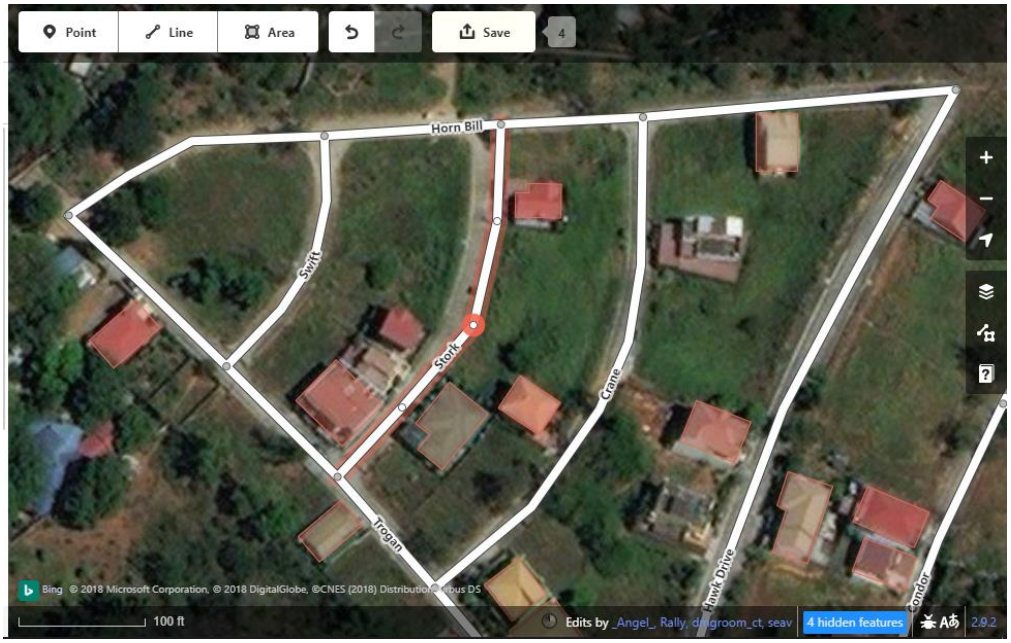


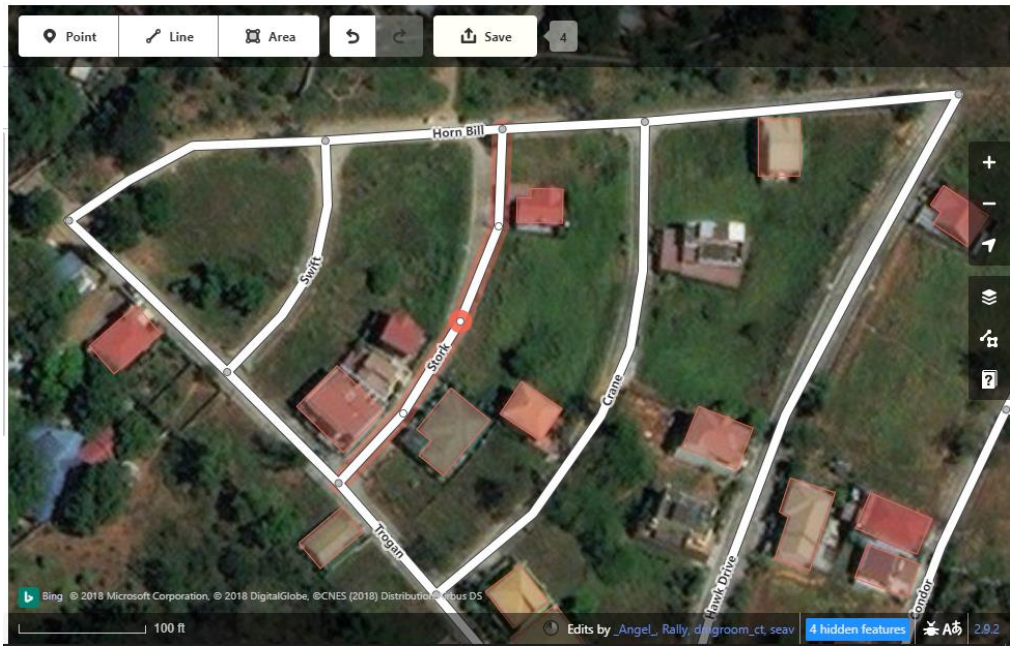
6. When you are done making changes, click **Save** then click **Upload** to apply these changes in OSM.

Modifying Roads

1. You can start modifying a road by clicking on it. This action will highlight the road that you have selected.
    a. If you want to change the form of the line, you can click on a node and drag it to the desired position. Do this to other nodes on the line until you achieve your desired line form.




Point
Line
Area
Save
4
Horn Bill
Swift
Stork
Crane
Trogan
Hawk Drive
Condor
Bing © 2018 Microsoft Corporation, © 2018 DigitalGlobe, ©CNES (2018) Distribution
100 ft
Edits by _Angel_, Rally, d
groom_ct, seav
4 hidden features
2.9.2


Point
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Bing © 2018 Microsoft Corporation, © 2018 DigitalGlobe, ©CNES (2018) Distribution
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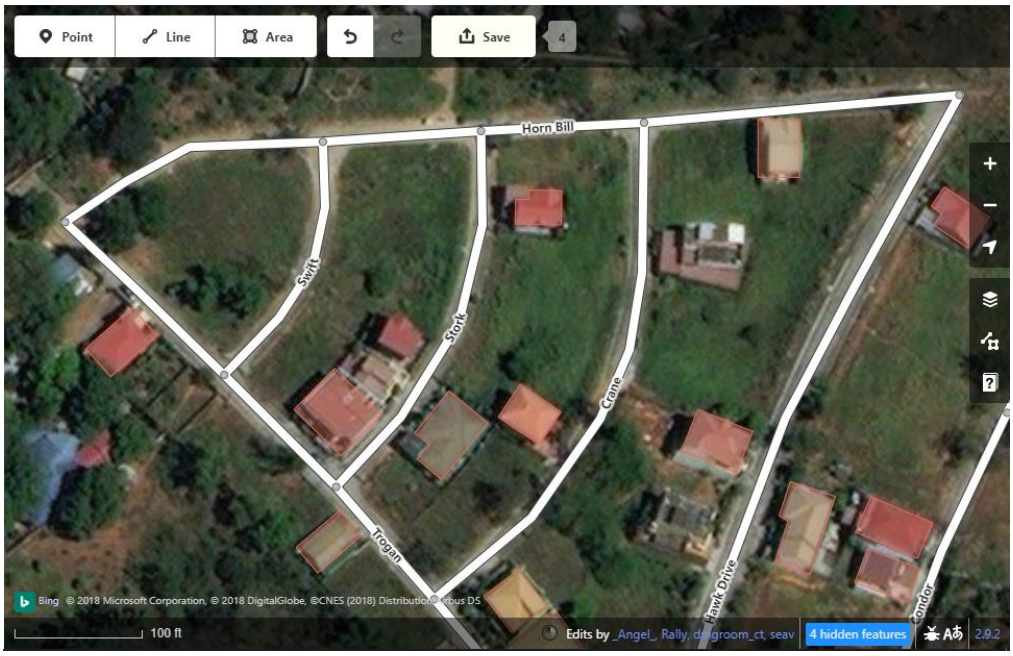
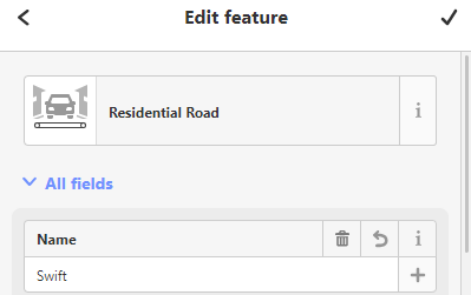
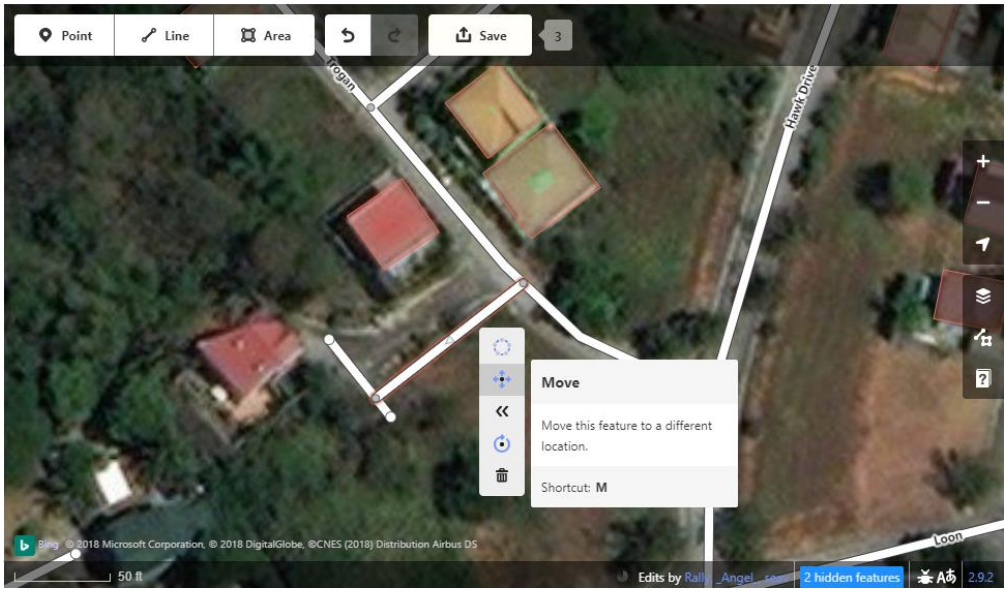
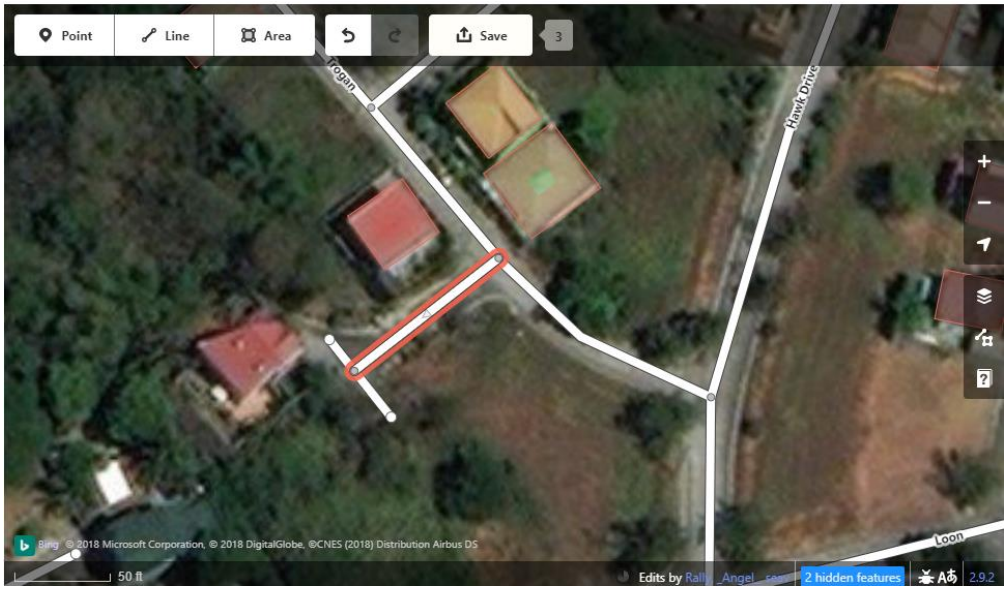




b. If you want to change the attributes of the road, you can do this via the **Edit Features Panel**.

c. If you want to move a segment, right-click and select **Move** ( ). This action will allow you to move the segment to the desired position.





d. If you want to delete a line segment, right-click on it and select ( ) to **delete**. Alternatively, you can press the delete key on your keyboard.

2. When you are done making changes, click on **Save** and then **Upload** to apply these changes in OSM.

USEFUL LINKS

MODULE 1: Mapping Building Footprints via Desktop

- OpenStreetMap Wiki
  (Accessible through https://wiki.openstreetmap.org/wiki/Main_Page)
- Beginner's Guide for OpenStreetMap.org
  (Accessible through https://learnosm.org/en/beginner/start-osm/)
- Beginner's Guide for iD Editor
  (Accessible through https://learnosm.org/en/beginner/id-editor/)
- iD Editor Shortcut Commands List
  (Accessible through https://wiki.openstreetmap.org/wiki/ID/Shortcuts)
- Tips for new mappers in iD Editor
  (Accessible through https://learnosm.org/en/hot-tips/)

MODULE 2: Mapping Building Footprints via Mobile Applications

- Vespucci Introduction for First time users
  (Accessible through http://vespucci.io/help/en/Introduction/)
- Vespucci Interface
  (Accessible through http://vespucci.io/help/en/Main%20map%20display/)
- Vespucci FAQ Page
  (Accessible through http://vespucci.io/tutorials/faq/)
- OSM Guide for Go Map!!
  (Accessible through https://learnosm.org/en/mobile-mapping/Go%20Map!!/)
- Go Map!! Wiki
  (Accessible through https://wiki.openstreetmap.org/wiki/Go_Map!!)

MODULE 3: Validating Building Footprints via Desktop

- Validating Data using Tasking Manager
  (Accessible through https://wiki.openstreetmap.org/wiki/OSM_Tasking_Manager/Validating_data)

USEFUL LINKS

MODULE 4: Validating Building Footprints via Mobile Applications

- Vespucci Guide for Notes and Bugs
  (Accessible through http://vespucci.io/help/en/Introduction/#notes-and-bugs)

MODULE 5: Mapping and Validating via Field Papers

- OSM Guide for Mapping using Field Papers
  (Accessible through https://learnosm.org/en/mobile-mapping/field-papers/)
- Field Papers Wiki
  (Accessible through https://wiki.openstreetmap.org/wiki/Field_Papers)
- Short Tutorial Video on How to Create an Atlas and Upload a Snapshot in Field Papers
  (Accessible through https://www.youtube.com/watch?v=A_HGkBXZ69g&feature=youtu.be)

OTHER Common Tools

- Maps.me (Accessible through https://maps.me/)
- OpenMapKit (Accessible through http://openmapkit.org/)
- OpenDataKit (Accessible through https://opendatakit.org/)
- Kobo (Accessible through https://www.kobotoolbox.org/)
- Check other HOTOSM recommended tools and data sites (Accessible through https://www.hotosm.org/tools-and-data)

REFERENCES

FAQ - Vespucci. (n.d.). Retrieved from http://vespucci.io/tutorials/faq/

Field Papers. (2018, May 13). Retrieved from https://wiki.openstreetmap.org/wiki/Field_Papers

Getting started on OpenStreetMap.org. (n.d.). Retrieved from https://learnosm.org/en/beginner/start-osm/

Go Map!! (2016). Retrieved from https://learnosm.org/en/mobile-mapping/gomap/

HOT Tips - Getting started for new mappers using iD and a Tasking Manager. (n.d.). Retrieved from https://learnosm.org/en/hot-tips/

ID/Shortcuts. (2018, February 25). Retrieved from https://wiki.openstreetmap.org/wiki/ID/Shortcuts

Introduction - Vespucci. (n.d.). Retrieved from http://vespucci.io/help/en/Introduction/

Main map display - Vespucci. (n.d.). Retrieved from http://vespucci.io/help/en/Main%20map%20display/

Notes and Bugs - Vespucci. (n.d.). Retrieved from http://vespucci.io/help/en/Introduction/#notes-and-bugs

OpenStreetMap Wiki Main Page. (2014, June 10). Retrieved from https://wiki.openstreetmap.org/wiki/Main_Page

OSM Tasking Manager/Validating data. (2018, March 12). Retrieved from https://wiki.openstreetmap.org/wiki/OSM_Tasking_Manager/Validating_data

Surveying with Field Papers. (n.d.). Retrieved from https://learnosm.org/en/mobile-mapping/field-papers/

The iD Editor. (n.d.). Retrieved from https://learnosm.org/en/beginner/id-editor/

REFERENCES

USAID Learning Lab. (2013, September 26). How to Create an Atlas and Upload a Snapshot with Field Papers. Retrieved from https://www.youtube.com/watch?v=A_HGkBXZ69g&feature=youtu.be

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DEPARTMENT OF GEOGRAPHY

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