

OpenStreetMap Data Model

Objectives:

- Understanding Concept of *tag*, *key*, dan *value* in *OpenStreetMap*
- Knowing *OpenStreetMap* wiki page as a guideline for *key* and *value*
- Understanding Objects which can be mapped into *OpenStreetMap*
- Knowing and Understanding data model as a part of mapping preparation plan
- Checking specific *key* and *value* in *TagInfo* website

In this module, you will learn about *key* and *value* concept in *OpenStreetMap* (OSM) as well as data model in OSM objects. Knowing about data model will help you to prepare your mapping activity plan efficiently start from planning, field survey and input the field survey data. You also learn some websites which can help you to find specific information *key* and *value* that you need based on OpenStreetMap standard.

I. *Tag*, *Key*, dan *Value* Concept

In *OpenStreetMap* there are 3 types of object. They are: *Nodes*, *Ways*, and *Polygon/Closedways*. Each type of data has information that can represent the object. That information called *Tag* which structured by *key* and *value*.

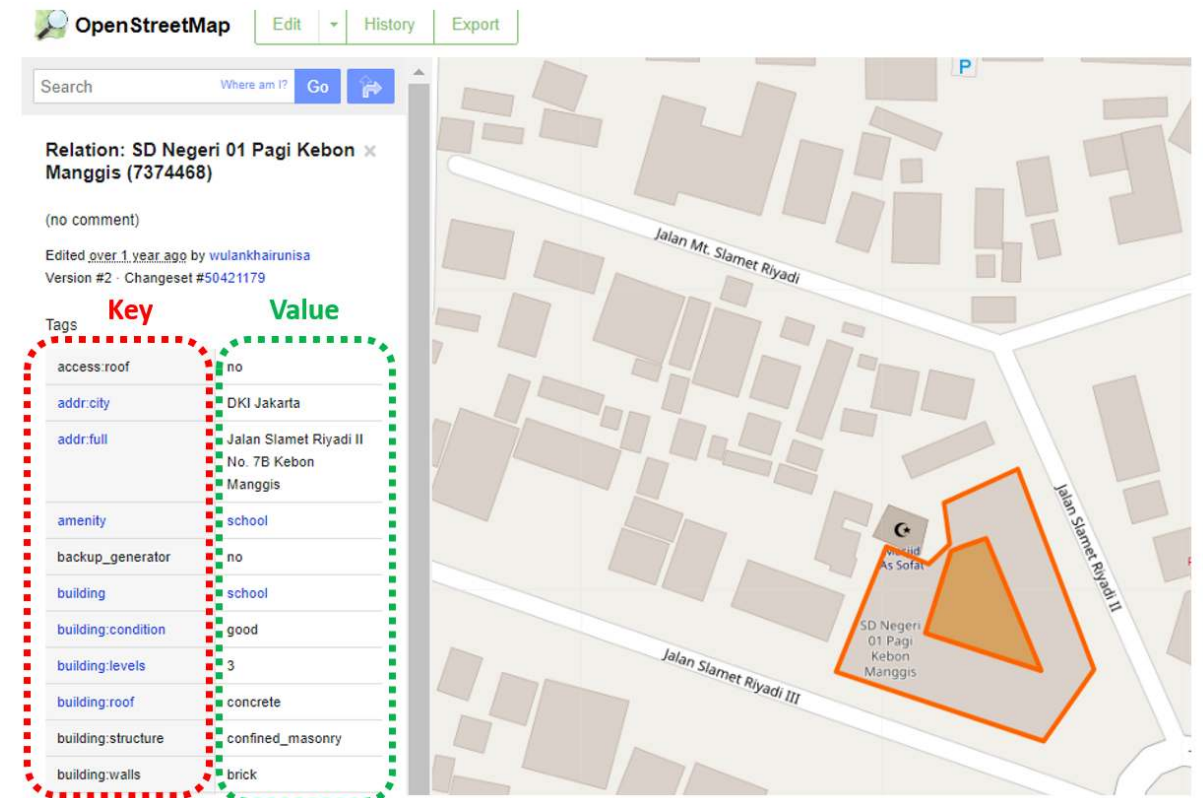
For instance, there is a school in your area. Therefore, the school should be **Tagged** as a school in OpenStreetMap. The school's tag has some details information that make the school being different from other schools. Those information such as name, address, building level, school type, etc. In OpenStreetMap, they are **Key** while each information of them called **Value**.

Example of School *Tag*:

name=SDN Kebon Manggis 11 Pagi

address= Jalan Slamet Riyadi II.

In the example above, "name and address" are **Key** while "SDN Kebon Manggis 11 Pagi and Jalan Slamet Riyadi II" are **Value**. See the image below to see the explanation in OpenStreetMap website:



Key and value of an object on OpenStreetMap

As you can see on the picture above, key and value always written in english according to the OpenStreetMap standard. You do not need to remember all key and value in OpenStreetMap because you can find them in wikipedia *OpenStreetMap* website which will be explained in this module.

II. Wikipedia *OpenStreetMap* to see Key and Value

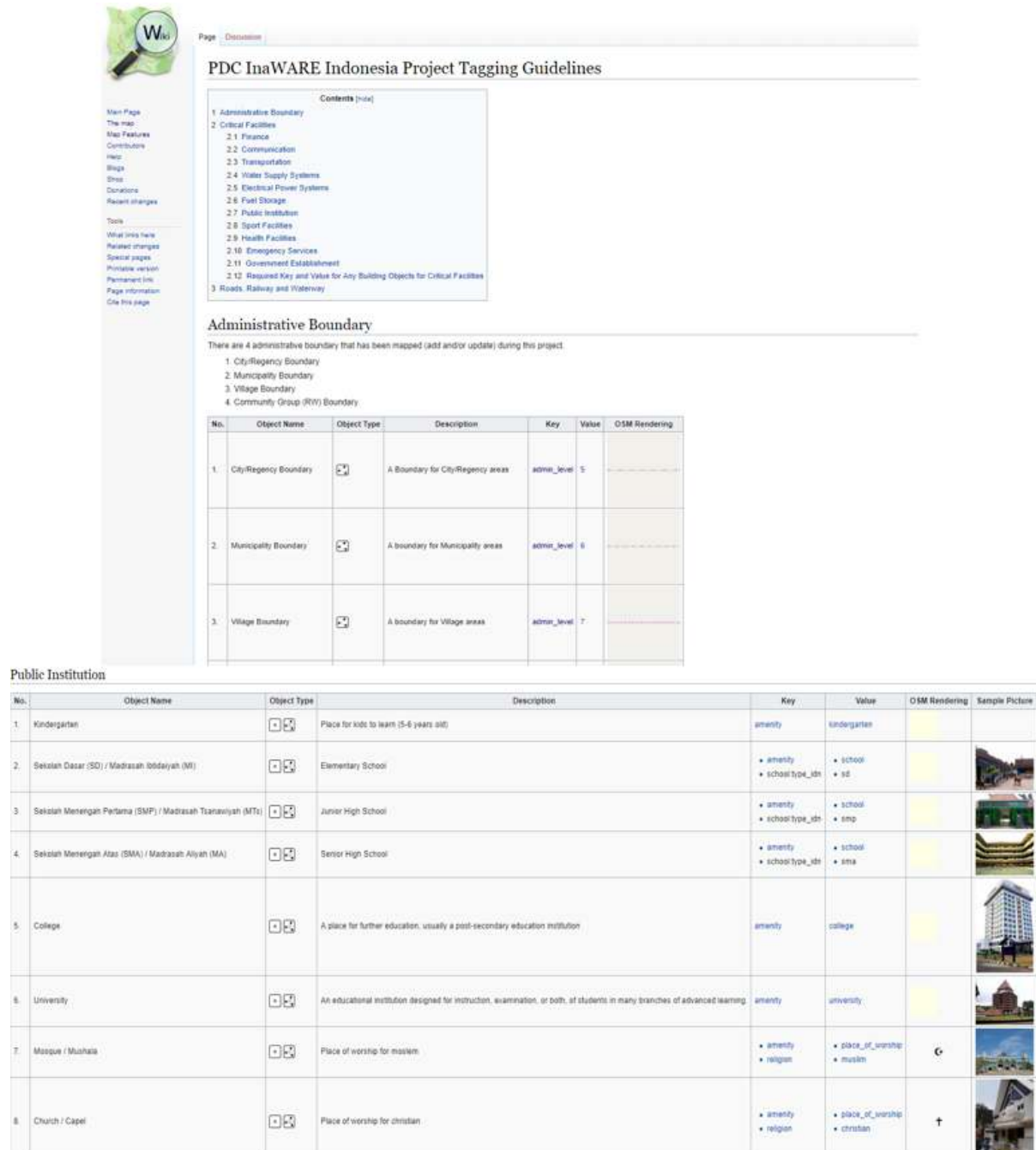
As a one of mapping participatory platform, OpenStreetMap has millions of contributors all around the globe. Therefore to produce and ensure a good quality data and information in OpenStreetMap, the contributors together established rules and standardization guidelines and put into one open-source platform site called wikipedia.

a. Global Wikipedia *OpenStreetMap*

Further explanation and list of key and value in OpenStreetMap have been made and put into specific OSM wikipedia page called *Map Feature*. In this page, you can search and find any key and value that used in OpenStreetMap globally. To access this page please visit at: https://wiki.openstreetmap.org/wiki/Map_Features

facilities also has various type depending of its type such as Rumah Sakit (Hospital), Puskesmas (hospital in village level) , Posyandu (hospital in rural area). These information are essential in Indonesia therefore they have been placed in Indonesia OpenStreetMap Wikipedia page. Another example is you only can find name kiosk as a name and key of small store in Map Feature while the name is not familiar and known by most of Indonesian in Indonesia OpenStreetMap Wikipedia page this small store has been given a local name called “warung” even though still has key=kiosk for its tag in OpenStreetMap.







You can see list of objects information in Indonesia OpenStreetMap Wikipedia page by click this link: https://wiki.openstreetmap.org/wiki/Id:Indonesian_Tagging_Guidelines



























Administrative Boundary

There are 4 administrative boundary that has been mapped (add and/or update) during this project:

1. City/Regency Boundary
2. Municipality Boundary
3. Village Boundary
4. Community Group (RT/RW) Boundary

No.	Object Name	Object Type	Description	Key	Value	OSM Rendering
1.	City/Regency Boundary		A Boundary for City/Regency areas	admin_level	5	
2.	Municipality Boundary		A boundary for Municipality areas	admin_level	6	
3.	Village Boundary		A boundary for Village areas	admin_level	7	

Public Institution

No.	Object Name	Object Type	Description	Key	Value	OSM Rendering	Sample Picture
1.	Kindergarten		Place for kids to learn (5-6 years old)	amenity	kindergarten		
2.	Sekolah Dasar (SD) / Madrasah Ibtidaiyah (MI)		Elementary School	• amenity • school_type_idn	• school • sd		
3.	Sekolah Menengah Pertama (SMP) / Madrasah Tsanawiyah (MTs)		Junior High School	• amenity • school_type_idn	• school • smp		
4.	Sekolah Menengah Atas (SMA) / Madrasah Aliyah (MA)		Senior High School	• amenity • school_type_idn	• school • sma		
5.	College		A place for further education, usually a post-secondary education institution	amenity	college		
6.	University		An educational institution designed for instruction, examination, or both, of students in many branches of advanced learning	amenity	university		
7.	Mosque / Mushalla		Place of worship for muslim	• amenity • religion	• place_of_worship • muslim		
8.	Church / Chapel		Place of worship for christian	• amenity • religion	• place_of_worship • christian		

Page of Indonesia OpenStreetMap Wikipedia Page

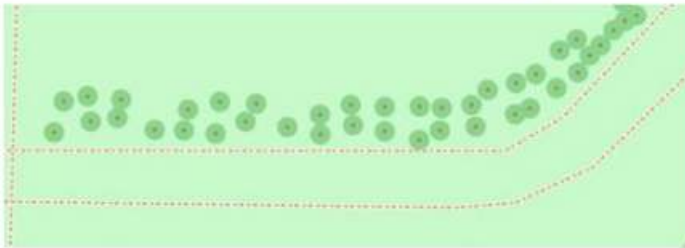
III. Mapping Objects in OpenStreetMap

a. Data types in OpenStreetMap

In this module, you have been explained about data types in OpenStreetMap: point (*Nodes*), line (*Ways*) and area (*Polygon/Relation*). These are further explanation of each data type in OpenStreetMap.

- **Point (*Nodes*)**

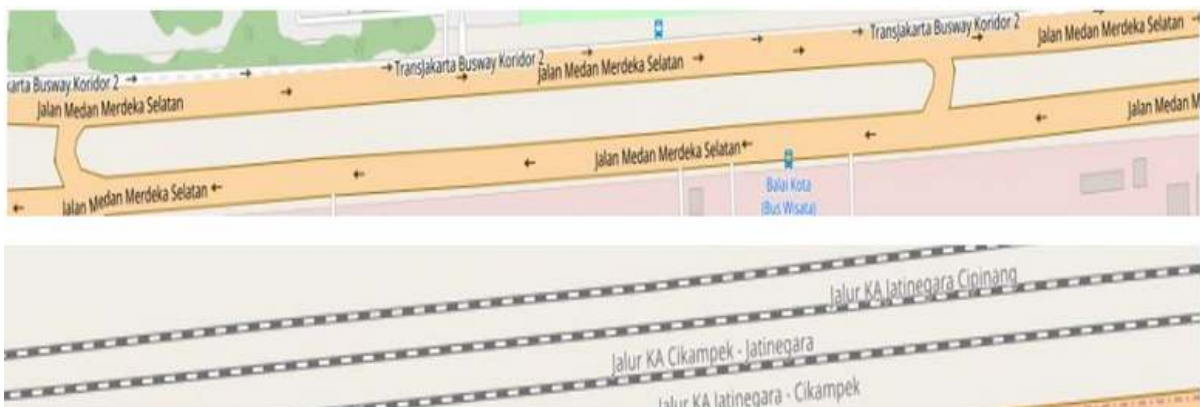
Point usually being used to represent position or location of certain object. For instance, objects which drawn as a point (nodes) in OpenStreetMap such as traffic light, gas station or restaurant in a mall or shopping center.



Example of Points in OpenStreetMap

- **Line (*Ways*)**

Line is an object that is formed by sequence of points (*nodes*) which connect one to another. Some objects which usually drawn as a line in OpenStreetMap such as road, river, railway and administration boundary.



Example of lines in OpenStreetMap

- **Area (*Polygon*)**

Area is formed by sequence of lines (*ways*) which connect one to another. Some objects in OpenStreetMap such as building, park, land use and lake are drawn as area.



Example of area (polygon) in OpenStreetMap

b. Mapping Objects in HOT-PDC Project

In *OpenStreetMap*, you can map any object on earth surface as long as it is real and permanent. Real means that the object has physical form and can be seen such as building and roads whereas non-real object such as high level or population density. Permanent means the object has specific location and not moving in particular time.

Choosing what objects that we want to map in OpenStreetMap depends on the purposes of the mapping project itself. In HOT-PDC InAWARE, the purpose is to collecting critical infrastructures which can be used for disaster management. These are list of objects that has been mapped into OpenStreetMap in HOT-PDC InAWARE project:

1. Economic Facilities

- Traditional Market
- Supermarket
- Bank

2. Education Facilities

- University
- College
- School (SD, SMP, SMA)
- Kindergarten

3. Health Facilities

- Hospital
- Clinic

4. Communication

- Communication Tower

5. Emergency Service

- Police Office
- Fire Station
- Evacuation Center
- Hydrant

6. Government

- Government Office (Governor, Mayor, District, Sub-district, village and sub-village office)
- Embassy
- Government Institution (Ministry)

7. Electricity

- Power tower
- Power substation
- Power Plant

8. Transportation

- Airport
- Bus Station
- Train Station
- Harbour / Dock

9. Public Facilities

- Place of Worship (Mosque, Church, Temple)
- Sport Facility (Sport Center, Stadium, Sports Field)
- Public Spaces

10. Water

- Water Tower
- Water Gate
- Pump House
- Embankment
- River
- Lake / Dam

11. Gas Station

12. Administration Boundary

- City / District Boundary
- Sub-district boundary
- Village boundary
- Sub-village boundary

13. Road Network

IV. Data Mapping Model in *OpenStreetMap*

Data model is a compilation of some information for an object where consisted from key and value in OpenStreetMap. A data model does not have a standard for what information that should be put in an object. The model should be followed the purposes of mapping project. For instance, if you want to map school in you area and you need information of **school name**, **address**, **school type**, **school operator**, and **building level** then your data model should be like this:

School Tag Information Table

key	(possible) values
amenity	school

key	(possible) values
building	school
school:type_idn	sd [SD/MI (Elementary School)], smp [SMP/MTs (Junior High School)], sma [SMA/SMK/MA (Senior High School)]
name	(building name)
addr:full	(address)
operator:type	government, private, community
building:levels	(number of building floor)

amenity=school is a compulsory tag for the school information. *Key* and *value* in this tag are main information that identify the object as a school.

building=school is a tag that show the school has its own building. Some schools are located in another building such as government office area therefore if that was the case then this tag is unnecessary.

a. HOT-PDC InAWARE Data Model

The purpose of HOT-PDC InAWARE mapping project is to gather information of critical infrastructures in context of disaster management. Therefore, you need to create data model that can help the survey team to collect the information in the field and upload them into OpenStreetMap. These are data model for each priority object in HOT-PDC InAWARE mapping project:

Color Information:

- Blue color means the *key* and *value* are compulsory for the object.
- Red color means the *key* and *value* are information for building of the object. This tag /information only collected if the object has its own building. Otherwise, the tag is unnecessary.
- Black color means the *key* and *value* **should be** added regardless the object has its own building or not.

1.Economic Facilities

- Table of Traditional Market Data Model

key	possible values
amenity	marketplace
building	marketplace
name	(traditional market name)
addr:full	(address)
addr:city	(mapping city)
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018

- Table of Supermarket Data Model

key	possible values
amenity	supermarket

key	possible values
building	supermarket
name	(supermarket name)
addr:full	(address)
addr:city	(mapping city)
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018

• Table of Bank Data Model

key	possible values
amenity	bank
building	bank
name	(bank name)
addr:full	(address)
addr:city	(mapping city)
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018

2. Education Facilities

• Table of University Data Model

key	possible values
amenity	university
building	university
name	(university name)
addr:full	(address)
addr:city	(mapping city)
operator:type	government, private, community
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame

key	possible values
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018
evacuation_center	yes, no
shelter_type	tent, building
water_source	water_works, manual_pump, powered_pump
kitchen:facilities	yes, no
toilet:facilities	yes, no
toilets:number	(number of toilets)

• Table of College Data Model

key	possible values
amenity	college
building	college
name	(college name)
addr:full	(address)
addr:city	(mapping city)
operator:type	government, private, community
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018
evacuation_center	yes, no
shelter_type	tent, building
water_source	water_works, manual_pump, powered_pump
kitchen:facilities	yes, no
toilet:facilities	yes, no
toilets:number	(number of toilets)

• Table of School Data Model (SD, SMP, SMA)

key	possible values
school:type_idn	sd (Elementary School)], smp (Junior High School)], sma (Senior High School)
amenity	school
building	school
name	(school name)
addr:full	(address)

key	possible values
addr:city	(mapping city)
operator:type	government, private, community
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018
evacuation_center	yes, no
shelter_type	tent, building
water_source	water_works, manual_pump, powered_pump
kitchen:facilities	yes, no
toilet:facilities	yes, no
toilets:number	(number of toilets)

- Table of Kindergarten Data Model

key	possible values
amenity	kindergarten
building (Early education / Play group / Kindergarten)	school
name	(kindergarten name)
addr:full	(address)
addr:city	(mapping city)
operator:type	government, private, community
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018

3. Health Facilities

- Table of Hospital Data Model

key	possible values
amenity	hospital
building	hospital
name	(hospital name)

key	possible values
addr:full	(address)
addr:city	(mapping city)
operator:type	government, private, community
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018
evacuation_center	yes, no
shelter_type	tent, building
water_source	water_works, manual_pump, powered_pump
kitchen:facilities	yes, no
toilet:facilities	yes, no
toilets:number	(number of toilets)

• Table of Clinic Data Model

key	possible values
amenity	clinic
building	clinic
name	(clinic name)
addr:full	(address)
addr:city	(mapping city)
operator:type	government, private, community
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018
evacuation_center	yes, no
shelter_type	tent, building
water_source	water_works, manual_pump, powered_pump
kitchen:facilities	yes, no
toilet:facilities	yes, no
toilets:number	(number of toilets)

4. Communication

key	possible values
man_made	tower
tower:type	communication
name	(tower name)
height	(tower height in meter unit)
operator	Telkomsel, Indosat, XL, Tri, Smartfren
communication:mobile	yes, no
communication:radio	yes, no
addr:city	(mapping city)
source	HOT_InAWARESurvey_2018

5. Emergency Services

- Table of Police Office Data Model

key	possible values
amenity	police
building	police
name	(police office name)
addr:full	(address)
addr:city	(mapping city)
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekheh, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018

- Table of Fire Station Data Model

key	possible values
amenity	fire_station
building	fire_station
name	(fire station name)
addr:full	(address)
addr:city	(mapping city)
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekheh, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no

key	possible values
source	HOT_InAWARESurvey_2018

- Table of Hydrant Data Model

key	possible values
emergency	fire_hydrant
fire_hydrant:type	underground, pillar, wall, pond
name	(hydrant name)
operator	(operator name)
addr:city	(mapping city)
source	HOT_InAWARESurvey_2018

6. Government

- Table of Government Office Data Model Model (Governor, Mayor, District, Sub-district, village and sub-village office)

key	possible values
office	government
building	governor_office, townhall, subdistrict_office, village_office, community_group_office
admin_level	4 (for governor office), 5 (for townhall), 6 (for subdistrict office), 7 (for village office), 9 (for community group office)
name	(government office name)
addr:full	(address)
addr:city	(mapping city)
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018
evacuation_center	yes, no
shelter_type	tent, building
water_source	water_works, manual_pump, powered_pump
kitchen:facilities	yes, no
toilet:facilities	yes, no
toilets:number	(number of toilets)

- Table of Government Institution Data Model (Ministry)

key	possible values
office	government
building	government_office
name	(government institution name)

key	possible values
addr:full	(address)
addr:city	(mapping city)
admin_level	4 (provincial level), 5 (city level), 6 (subdistrict level), 7 (village level)
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018

7. Electricity

- Table of Power Tower Data Model

key	possible values
power	tower
name	(tower name)
addr:city	(mapping city)
operator	PT Perusahaan Listrik Negara
source	HOT_InAWARESurvey_2018

- Table of Power Sub Station Data Model

key	possible values
power	substation
substation	transmission, distribution
building	power_substation
name	(power substation name)
addr:city	(mapping city)
rating	(user defined)
operator	PT Perusahaan Listrik Negara
source	HOT_InAWARESurvey_2018

- Table of Power Plant Data Model

key	possible values
power	plant
building	power_plant
name	(power plant name)
operator	(power plant operator)
addr:city	(mapping city)
addr:full	(address)
source	HOT_InAWARESurvey_2018

8. Transportation

- Table of Airport Data Model

key	possible values
amenity	aerodrome
building	aerodrome
name	(airport name)
addr:full	(address)
addr:city	(mapping city)
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekheh, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
backup_generator	yes, no
source	HOT_InAWARESsurvey_2018

- Table of Bus Station Data Model

key	possible values
amenity	bus_station
name	(bus station name)
addr:full	(address)
addr:city	(mapping city)
source	HOT_InAWARESsurvey_2018

- Table of Train Station Data Model

key	possible values
amenity	station
name	(train station name)
ele	(train station's height above sea level)
operator	PT Kereta Api Indonesia
addr:full	(address)
addr:city	(mapping city)
source	HOT_InAWARESsurvey_2018

- Table of Harbour / Dock Data Model

key	possible values
amenity	ferry_terminal
building	ferry_terminal
name	(ferry terminal name)
addr:full	(address)
addr:city	(mapping city)
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass

key	possible values
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
backup_generator	yes, no
source	HOT_InAWARESurvey_2018

9. Public Facilities

- Table of Place of Worship Data Model

key	possible values
amenity	place_of_worship
religion	muslim, christian, hindu, buddhist, confucian
name	(place of worhsip name)
addr:full	(address)
addr:city	(mapping city)
building	mosque, church, temple
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018
evacuation_center	yes, no
shelter_type	tent, building
water_source	water_works, manual_pump, powered_pump
kitchen:facilities	yes, no
toilet:facilities	yes, no
toilets:number	(number of toilets)

- Table of Sport Facilities (Sports Center,Sport Field, Stadium)

key	possible values
leisure	stadium, sports_centre, pitch
building	stadium, sports_centre, yes (futsal field)
name	(sport facility name)
addr:full	(address)
addr:city	(mapping city)
sport	soccer,futsal,basketball,badminton,tennis,volleyball,swimming,athl baseball,cycling, multi
capacity:persons	<50, 50-100, 100-250, 250-500, >500
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics

key	possible values
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018
evacuation_center	yes, no
shelter_type	tent, building
water_source	water_works, manual_pump, powered_pump
kitchen:facilities	yes, no
toilet:facilities	yes, no
toilets:number	(number of toilets)

- Table of Park Data Model

key	possible values
leisure	park
name	(park name)
addr:full	(address)
addr:city	(mapping city)
source	HOT_InAWARESurvey_2018
evacuation_center	yes, no
shelter_type	tent, building
water_source	water_works, manual_pump, powered_pump
kitchen:facilities	yes, no
toilet:facilities	yes, no
toilets:number	(number of toilets)

10. Waterway Facilities

- Table of Water Tower Data Model

key	possible values
man_made	water_tower
name	(water tower name)
operator	(water tower operator)
addr:city	(mapping city)
source	HOT_InAWARESurvey_2018

- Table of Flood Gate Data Model

key	possible values
waterway	floodgate
name	(flood gate name)
operator	(flood gate operator)
floodgate:unit	(number of floodgate)
elevation	(flood gate's height above sea level)
condition	good, poor
addr:city	(mapping city)
source	HOT_InAWARESurvey_2018

- Tabel Model Data Rumah Pompa

key	possible values
man_made	pumping_station
building	pumping_station
name	(pumping station name)
addr:full	(address)
addr:city	(mapping city)
operator	(operator name)
pump:unit	(number of pumping station)
elevation	(pumping station's height above sea level)
capacity:persons	(pump's capacity (l/s))
building:levels	(number of building floor)
building:structure	confined_masonry , steel_frame , wood_frame , bamboo_frame
building:material	brick , concrete , wood , bamboo , glass
building:floor	ground, wood, cement, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
ground_floor:height	(building base floor height from the road (meter unit))
backup_generator	yes, no
source	HOT_InAWARESurvey_2018

- Table of Embankment Data Model

key	possible values
man_made	embankment
name	(embankment name)
material	concrete, stone, soil, sand
source	HOT_InAWARESurvey_2018

- Table of River Data Model

key	possible values
waterway	river, riverbank, canal
name	(river)
width	(river width)
source	HOT_InAWARESurvey_2018

- Table of Reservoir Data Model

key	possible values
landuse	reservoir
name	(resevoir/lake name)
operator	(operator name)
addr:city	(mapping city)
source	HOT_InAWARESurvey_2018

11. Gas Station

- Table of Gas Station Data Model

key	possible values
amenity	fuel

key	possible values
name	(gas station name)
addr:full	(address)
addr:city	(mapping city)
operator	(PT Pertamina, Shell, etc)
source	HOT_InAWARESurvey_2018

12. Administration Boundary

key	possible values
type	boundary
boundary	administrative
name	(boundary name)
admin_level	4 (Province), 5 (City / District), 6 (Sub-district), 7 (Village), 8 (Hamlet), 9 (Sub-village), 10 (Sub-sub village)
is_in:province	(province name)
is_in:city (city) / is_in:town (district)	(city/subdistrict name)
is_in:municipality	(sub-district name)
is_in:village	(village name)
is_in:RW	(sub village name)
flood_prone *only for sub village relation	yes, no
landslide_prone *only for sub village relation	yes, no
source	HOT_InAWARESurvey_2018

13. Road Network

key	possible values
highway	motorway, trunk, primary, secondary, tertiary, service, residential, pedestrian, path, living_street, track
name	(street name)
layer	5,4,3,2,1,-1,-2,-3,-4,-5
width	(road width)
lanes	(number of road lanes)
surface	asphalt, concrete, metal, wood, grass, ground, gravel, mud, sand, paving_stones
smoothness	good, intermediate, bad, impassable
motorcycle	yes, no
oneway	yes, no
ref	(reference)
source	HOT_InAWARESurvey_2018

b. Data Type in *OpenStreetMap* Based on Object

After knowing data model based on object tag in *OpenStreetMap* particularly in HOT-PDC InAWARE Project, you also need to know data type based on the object itself. The table below shows you what type of data for each object that you can add into *OpenStreetMap*:

Color Information:

- Green Color means the object **allowed** to be mapped in that data type.
- Red Color means the object **not allowed** and **prohibited** to be mapped in that data type.

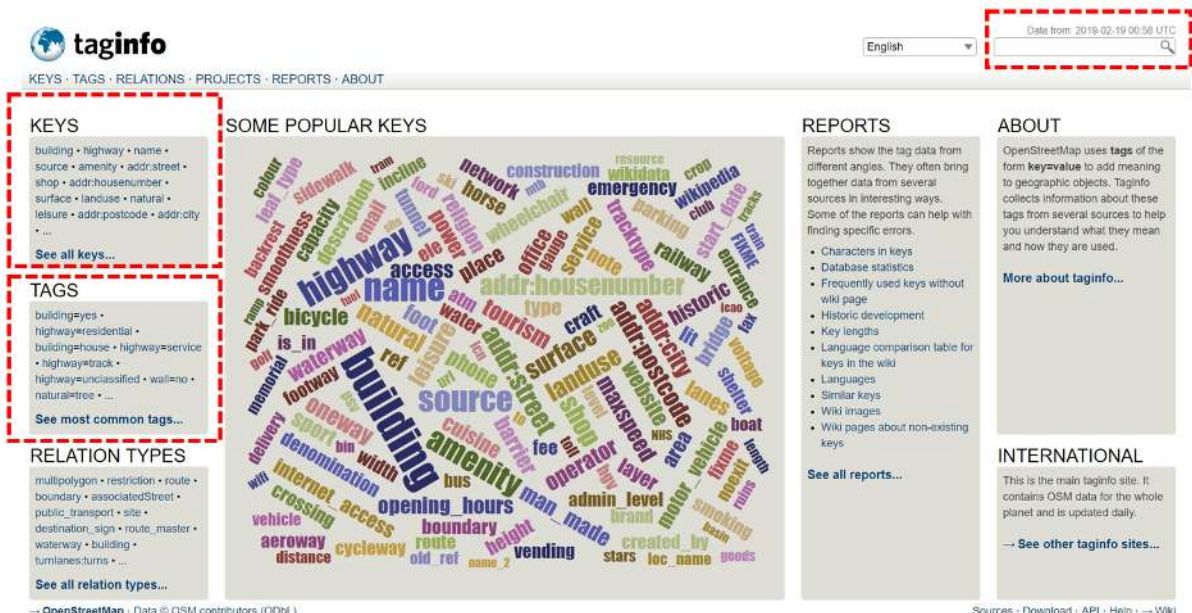
Table of Object and Its Data Type in *OpenStreetMap*

No	Infrastructure	Object	Data Type			
			Point (Nodes)	Polygon (Building)	Polygon (Area)	Line (Ways)
1	Economic Facilities	Traditional Market				
2		Supermarket				
3		Bank				
4	Education Facilities	University				
5		College				
6		School				
7		Kindergarten				
8	Health Facilities	Hospital				
9		Small Hospital, Clinic				
10	Communication	Communication Tower				
11	Emergency Services	Police Office				
12		Fire Station				
13		Hydrant				
14	Government	Government Office (Governor, Town Hall, Sub District, Village, Sub Village)				
15		Government Institution (Ministry)				
16	Electricity	Power Tower				
17		Power Sub Station				
18		Power Plant				
19	Transportation	Airport				
20		Bus Station				
21		Train Station				
22		Harbour / Dock				
23	Public Facilities	Place of Worship (Mosque, Church, Temple)				
24		Sport Facilities (Stadium, Sports Field, Sport Center)				
25		Park				
26		Gas Station				
27	Water	Water Tower				
28		Water Gate				
29		Pump House				
30		Embankment				
31		River				
32		Lake / Dam				
33	Administration Boundary	Administration Boundary (City, Sub-District, Village, Sub-Village)				
34	Road Network	Road Network				

Figure 1: Object Data Type Table

V. Search key and value in Tag Info Website

On previous subchapter, you have been explained about a guideline to see key and value in *OpenStreetMap* using *Map Features* and Indonesia *OpenStreetMap* Wikipedia page. However, there are certain key and value that do not explained in the page especially detail and specific information of certain object. For instance, for **building capacity** or **building floor material**. To see the information (tag) you can visit a website called tag info: <https://taginfo.openstreetmap.org/>



Tag Info Website Interface

The picture above shows *KEYS* column where showing some most searched keys by OpenStreetMap contributor such as *building*, *highway*, *name*, *source*, etc. Moreover, you also can see combination between certain key and value (tag) which quite common such as *building=yes* and *highway=residential*

TAGS column or you can search your key manually in search box at the top right corner on the website page.

For example, if you want to search information about **how to put your mapping activity as a source of the object** or **Level of Certain Building**, you can click building option in Keys column and you will see this:

taginfo

KEYS · TAGS · RELATIONS · PROJECTS · REPORTS · ABOUT

building
To mark the outline of a building.

Overview Values **Combinations** Similar Map Wiki Projects

Other keys used together with this key

Page 1 of 1195 JSON Displaying 1 to 16 of 19118 items

Count	Other keys	Count
93 801 426 27.77%	source	93 801 426 48.19%
40 525 350 12.00%	addr:housenumber	40 525 350 46.56%
38 956 273 11.53%	addr:street	38 956 273 48.40%
30 799 958 9.12%	addr:city	30 799 958 48.36%
27 230 989 8.06%	addr:postcode	27 230 989 46.61%
14 790 310 4.38%	addr:country	14 790 310 56.09%
13 741 053 4.07%	start_date	13 741 053 96.25%
12 037 431 3.56%	building:levels	12 037 431 96.08%
11 979 150 3.55%	wall	11 979 150 98.81%
10 878 184 3.22%	source:date	10 878 184 43.37%
10 170 945 3.01%	ref:bag	10 170 945 99.83%
10 060 345 2.98%	height	10 060 345 89.09%
4 770 083 1.41%	name	4 770 083 7.05%
3 815 536 1.13%	ele	3 815 536 61.42%
3 092 767 0.92%	ref:ruian:building	3 092 767 99.97%
3 092 233 0.92%	source:addr	3 092 233 43.38%

Example Combination of tag and value in Tag Info

You can choose *Combinations* tab and you will see some combinations for *building* key that commonly used by *OpenStreetMap* contributor. For instance, if you are looking for information about source of building and building level, you can use **source** and **building:levels**. Moreover, you can see another combination for key and value related to building. You can see how often the key have been used in *OpenStreetMap* by look at *Count* column. The bigger the number means the key more often and commonly used by *OpenStreetMap* contributors all over the world.

Notes : key and value in *OpenStreetMap* HAVE TO BE WRITTEN in English key and value in *OpenStreetMap* HAVE TO BE WRITTEN in lower case Information interface can be set to show in Bahasa Indonesia on *JOSM* by editing / make special presets Make new presets will be explained in other module called Making *OpenStreetMap* Presets

SUMMARY

Congratulation! You have learned about data model in *OpenStreetMap*. This material is important and really to be understand by *OpenStreetMap* contributors so you can do your mapping based on international standard from *OpenStreetMap* community guidelines. Moreover, you also have known about certain websites which can help you to find the information (tag) for you mapping objects such as *OSM wiki Map Feature Indonesia*, *OpenStreetMap Wikipedia page*, and *Tag Info*.