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*.

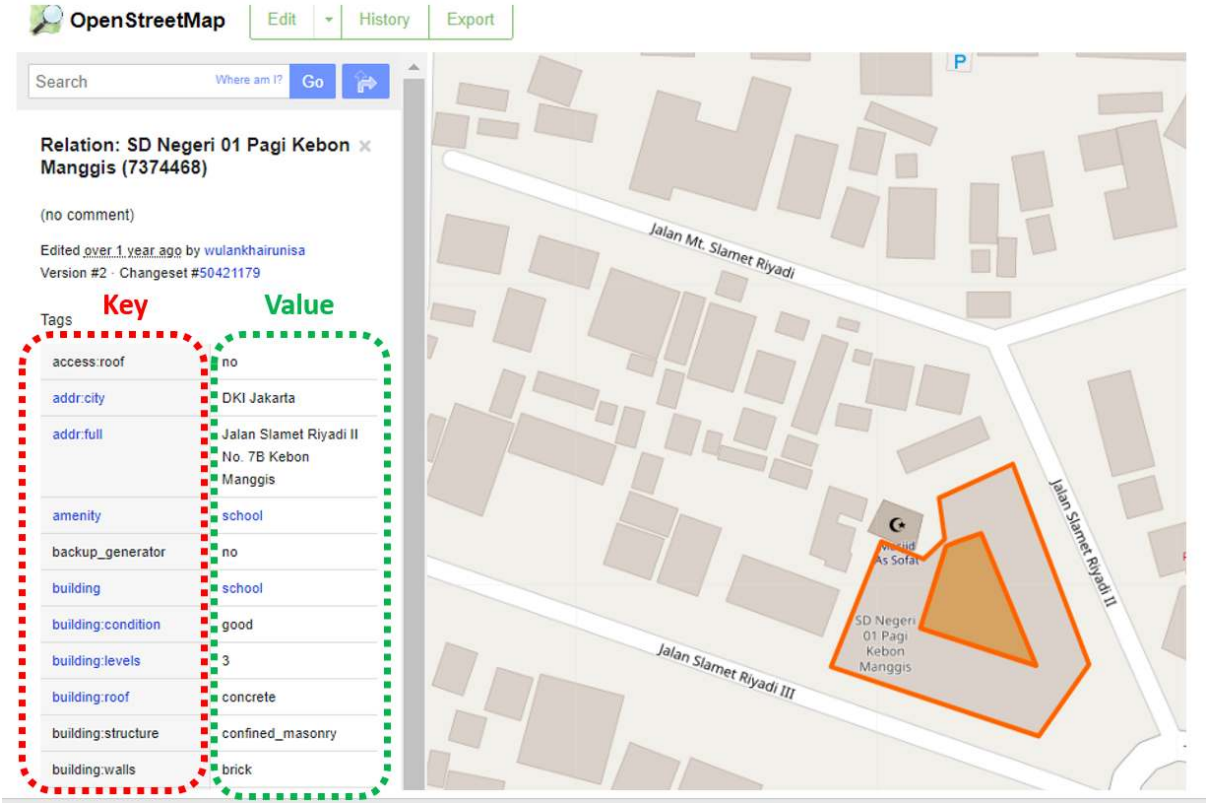
For instance, there is a school in your area. Therefore, the school should be **Tagged** as a school in OpenStreetMap. The school's tag has some details information that make the school being different from other schools. Those information such as name, address, building level, school type, etc. In OpenStreetMap,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

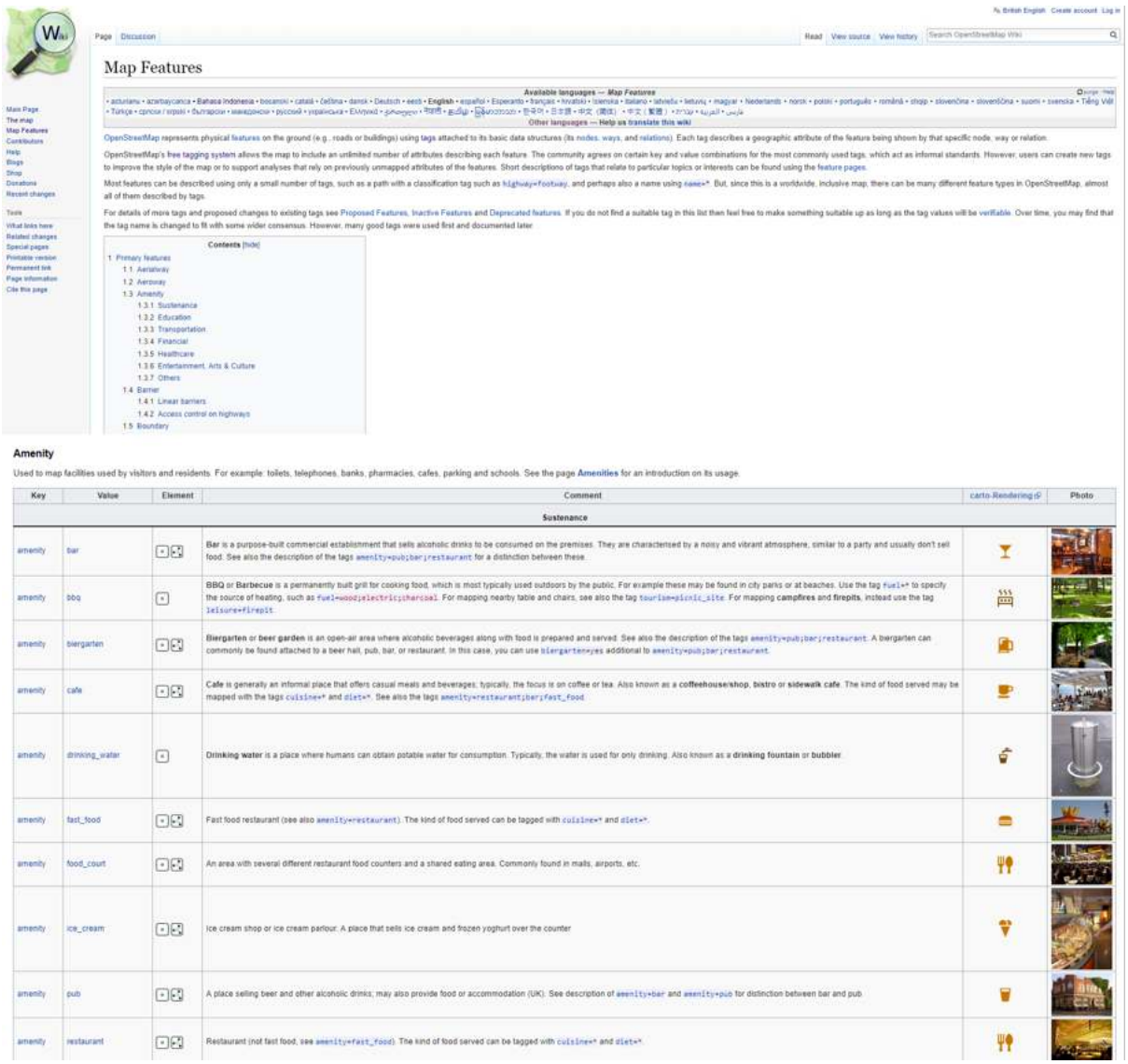
As you can see on the picture above, key and value always written in english according to the OpenStreetMap standard. You do not need to remember all key and value in OpenStreetMap because you can find them in wikipedia *OpenStreetMap* website which will be explained in this module.

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



Map Features

Amenity

Used to map facilities used by visitors and residents. For example: toilets, telephones, banks, pharmacies, cafes, parking and schools. See the page Amenities for an introduction on its usage.

Key	Value	Element	Comment	carto-Rendering	Photo
			Sustenance		
amenity	bar		**Bar** is a purpose-built commercial establishment that sells alcoholic drinks to be consumed on the premises. They are characterised by a noisy and vibrant atmosphere, similar to a party and usually don't sell food. See also the description of the tags amenity=pub;bar;restaurant for a distinction between these.		
amenity	bbq		**BBQ** or **Barbecue** is a permanently built grill for cooking food, which is most typically used outdoors by the public. For example these may be found in city parks or at beaches. Use the tag fuel=* to specify the source of heating, such as fuel=wood;electricity;charcoal. For mapping nearby table and chairs, see also the tag tourism=picnic_site. For mapping **campfires** and **firepits**, instead use the tag leisure=firepit.		
amenity	biergarten		**Biergarten** or **beer garden** is an open-air area where alcoholic beverages along with food is prepared and served. See also the description of the tags amenity=pub;bar;restaurant. A biergarten can commonly be found attached to a beer hall, pub, bar, or restaurant. In this case, you can use biergarten=yes additional to amenity=pub;bar;restaurant.		
amenity	cafe		**Cafe** is generally an informal place that offers casual meals and beverages; typically, the focus is on coffee or tea. Also known as a **coffeehouse/shop**, **bistro** or **sidewalk cafe**. The kind of food served may be mapped with the tags cuisine=* and diet=*. See also the tags amenity=restaurant;bar;fast_food.		
amenity	drinking_water		**Drinking water** is a place where humans can obtain potable water for consumption. Typically, the water is used for only drinking. Also known as a **drinking fountain** or **bubbler**.		
amenity	fast_food		Fast food restaurant (see also amenity=restaurant). The kind of food served can be tagged with cuisine=* and diet=*.		
amenity	food_court		An area with several different restaurant food counters and a shared eating area. Commonly found in malls, airports, etc.		
amenity	ice_cream		Ice cream shop or ice cream parlour. A place that sells ice cream and frozen yoghurt over the counter.		
amenity	pub		A place selling beer and other alcoholic drinks; may also provide food or accommodation (UK). See description of amenity=bar and amenity=pub for distinction between bar and pub.		
amenity	restaurant		Restaurant (not fast food, see amenity=fast_food). The kind of food served can be tagged with cuisine=* and diet=*.		

Interface of Map Features Website Page

Every key and value in this page is absolute and has been standard information for any object that you want to map in OpenStreetMap and cannot be changed or modified as you want. Therefore, this page is a guideline for all OSM contributors all over the world to find any information about their mapping object in OpenStreetMap.

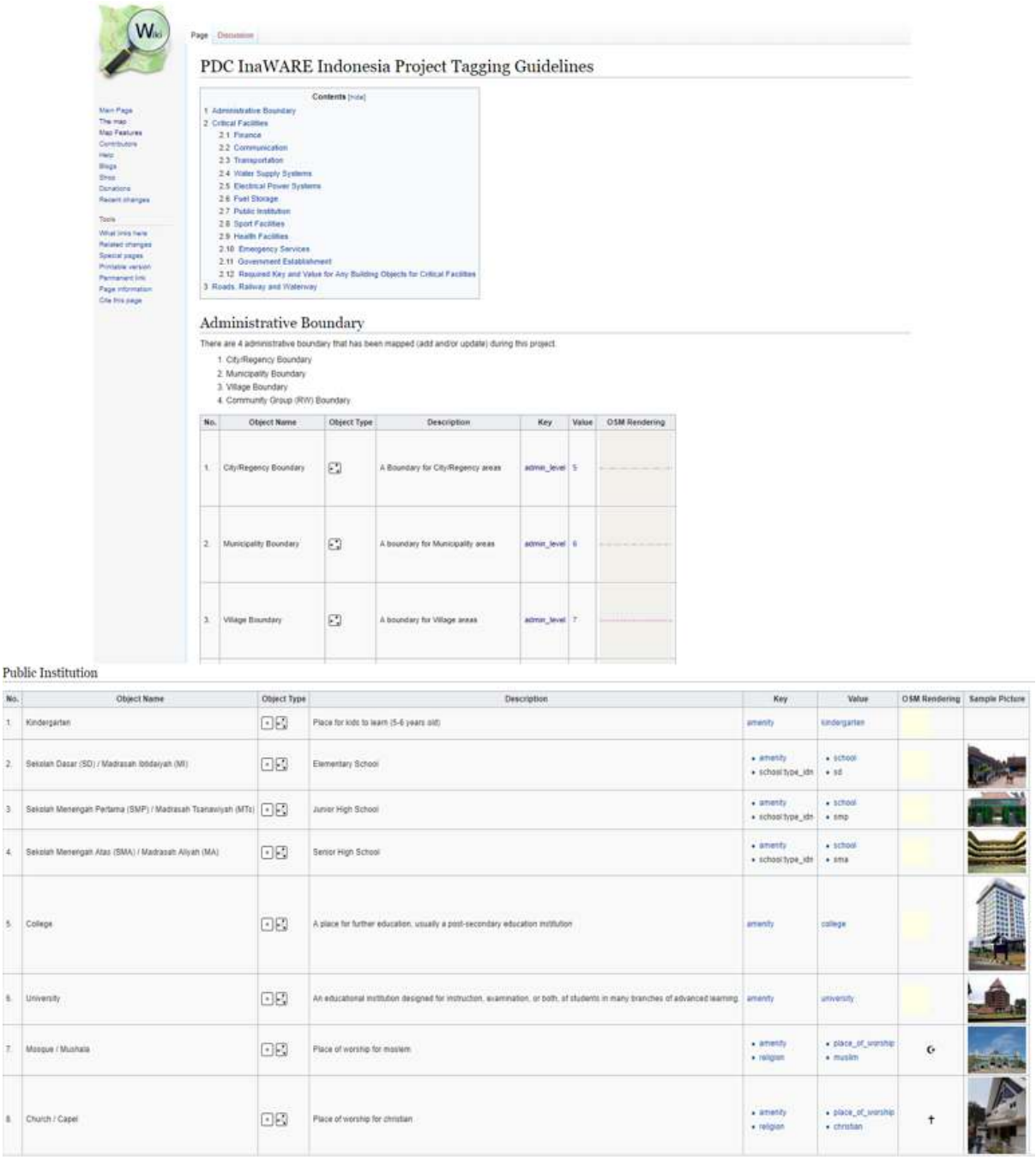
b. Indonesia OpenStreetMap Wikipedia

Number of OSM Contributors in Indonesia has been increasing in recent years. As one of biggest OSM contributors in the world, Indonesia OSM contributors need a guideline about key and value information especially particular information for objects in Indonesia. However, they are usually difficult to find a tag that match with the mapping object. There are so many information in the Map Feature page yet sadly most of them are unneeded or unnecessary for objects in Indonesia. Moreover, object's name in Map Feature often can not be recognized by OSM contributors in Indonesia because it is using global name while Indonesia using local name. Therefore, Humanitarian *OpenStreetMap* Team (HOT) Indonesia made another page in OSM wikipedia that shows specific information about key and value mapping objects in Indonesia as a guideline for Indonesia OSM contributors.

Main difference between *Map Features* and Indonesia OSM Wikipedia page is list of the mapping objects. While Map Features shows all information for mapping objects all over the world, Indonesia OSM Wikipedia only showing information about objects in Indonesia and some of them do not available in the map feature. For instance, schools in Indonesia have various information including types of school start usually called SD (elementary school), SMP (junior high school) and SMA (senior high school). Health

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



PDC InaWARE Indonesia Project Tagging Guidelines

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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 (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.	Kindergartan		Place for kids to learn (5-6 years old)	amenity	kindergartan		
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 / Musholla		Place of worship for moslem	• amenity • religion	• place_of_worship • muslim		
8.	Church / Capel		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.

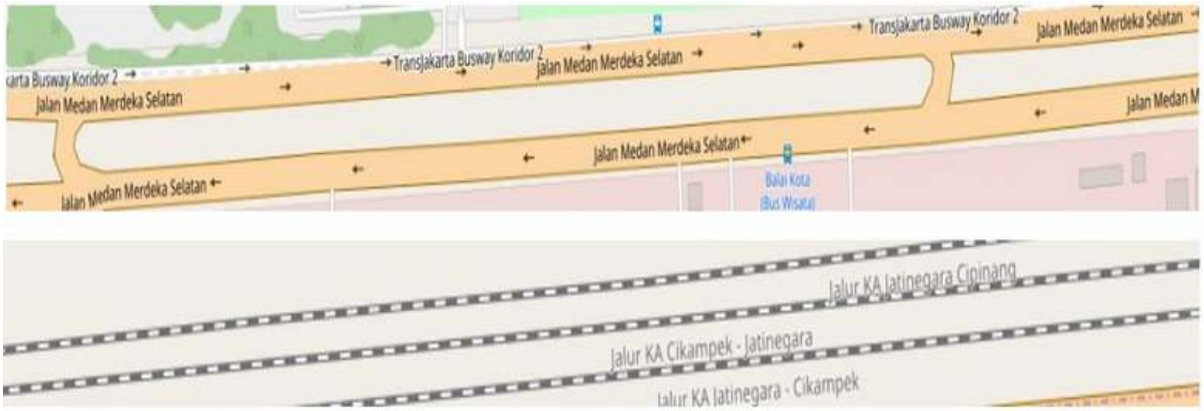
- **Point (*Nodes*)**

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*)**

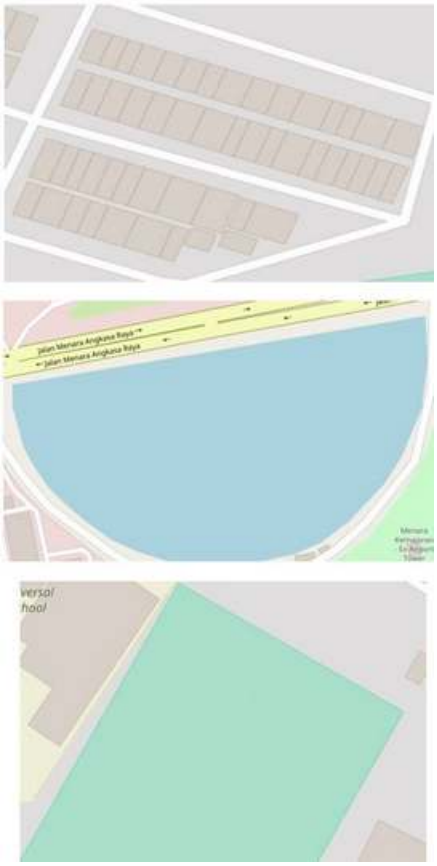
Line is an object that is formed by sequence of points (*nodes*) which connect one to another. Some objects which usually drawn as a line in OpenStreetMap such as road, river, railway and administration boundary.



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, 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 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, 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

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, tekhel, ceramics
building:roof	tile, tin, asbestos, concrete
access:roof	yes, no
building: condition	poor, good
backup_generator	yes, no
source	HOT_InAWARESurvey_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_InAWARESurvey_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_InAWARESurvey_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	(refference)
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

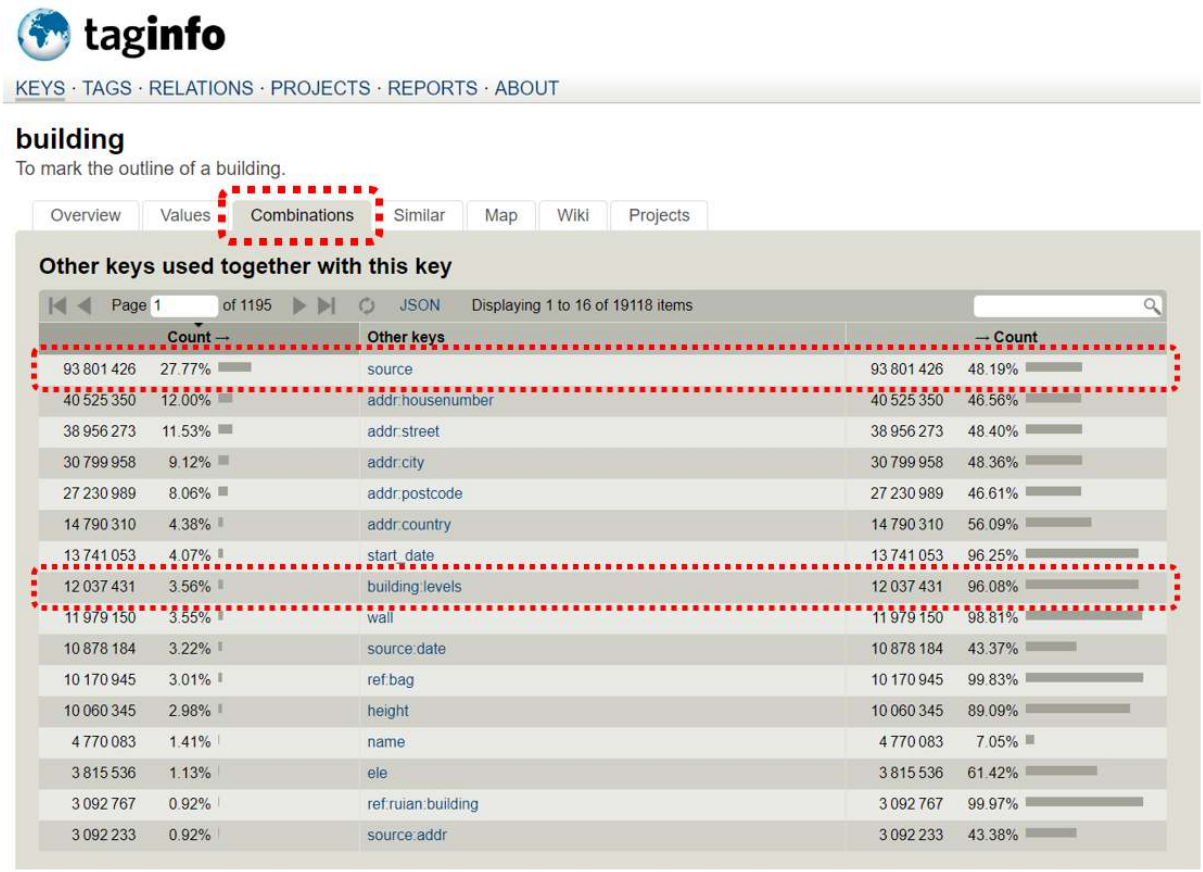
On previous subchapter, you have been explained about a guideline to see key and value in *OpenStreetMap* using *Map Features* and Indonesia OpenStreetMap Wikipedia page. However, there are certain *key* and *value* that do not explained in the page especially detail and specific information of certain 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* colom 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 colom 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* colom and you will see this:



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* colom. 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*.