

Bringing Validation to Users

Integrating Quality Assurance Checks
into Map Editors

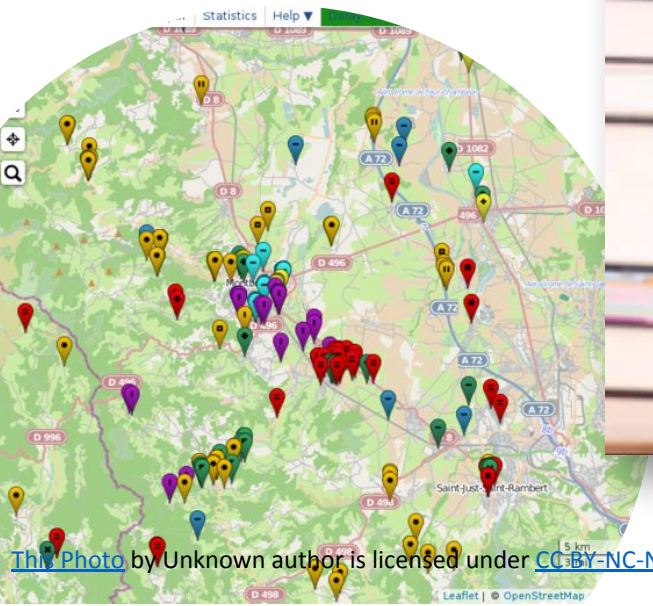
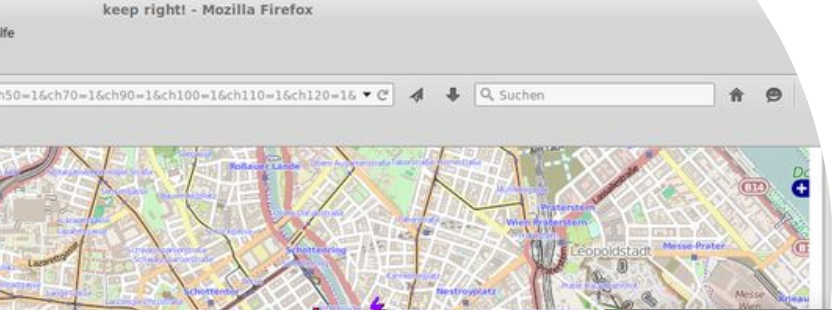
Clarisse Abalos
@map2save

Matthew Gibb
@giblet22



The Problem

- Abundance of data issues waiting to be cleaned up
- There are more mappers than validators
- Mappers need more guidance while mapping



Osmose

Keep Right

Atlas

To-Fix

Improve OSM

OSM Lint

OSM Inspector



Quality Assurance Approach

Stop bad or incomplete data from being created



Solutions



Validation rules in
JOSM and iD

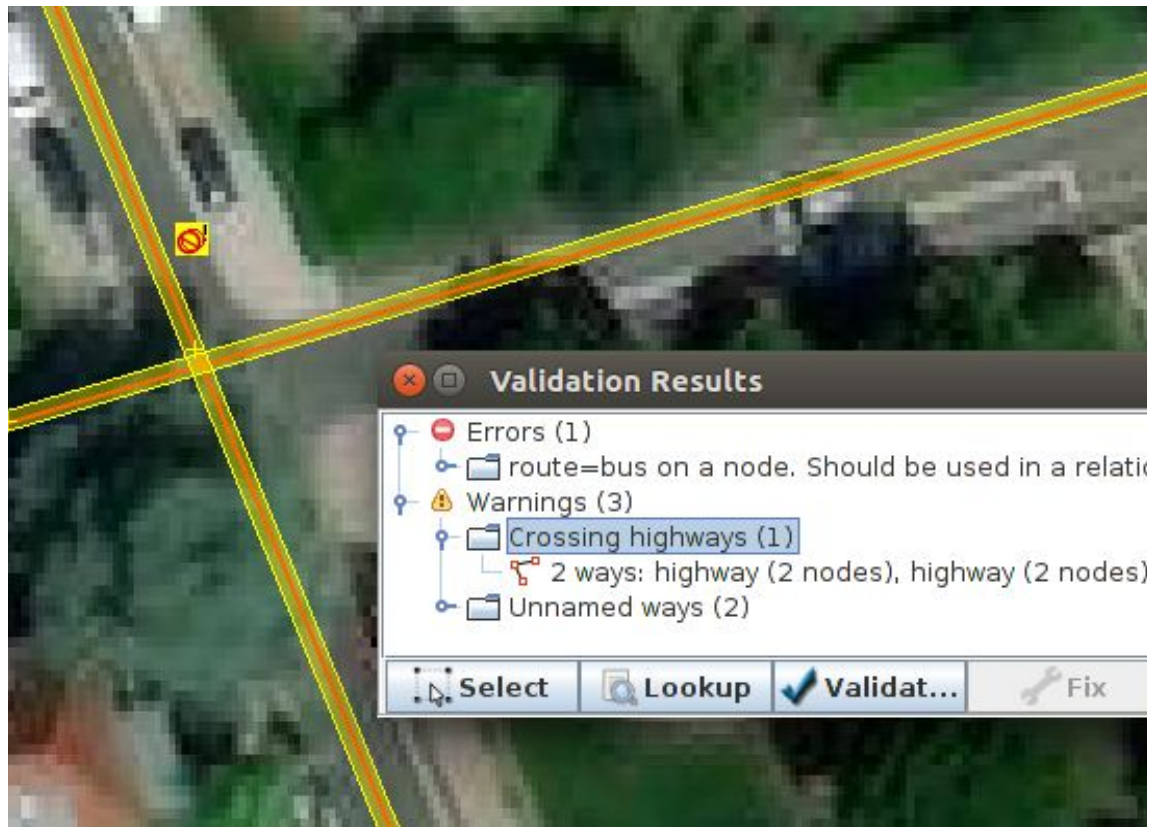


Custom Presets and
Validation Rules

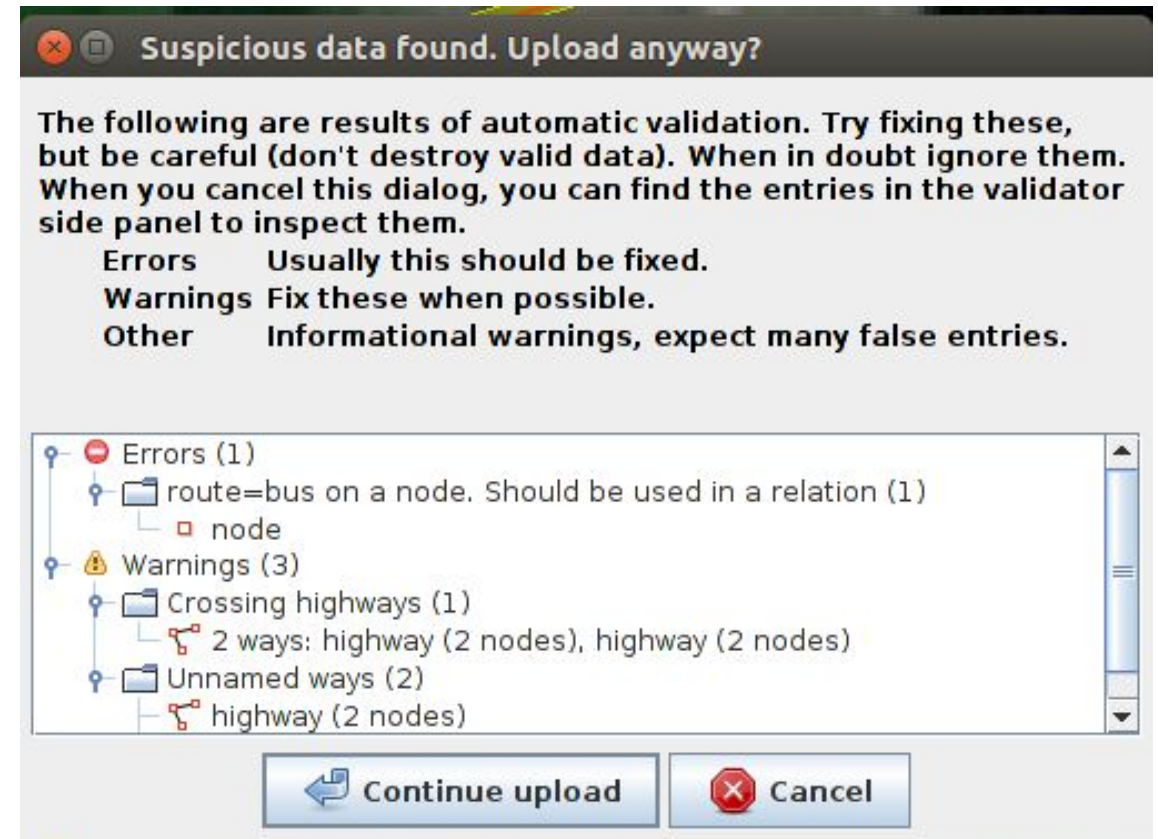


Validation-centric
Overpass Queries

Validation in JOSM



Validation on dataset while editing features



Warnings before upload

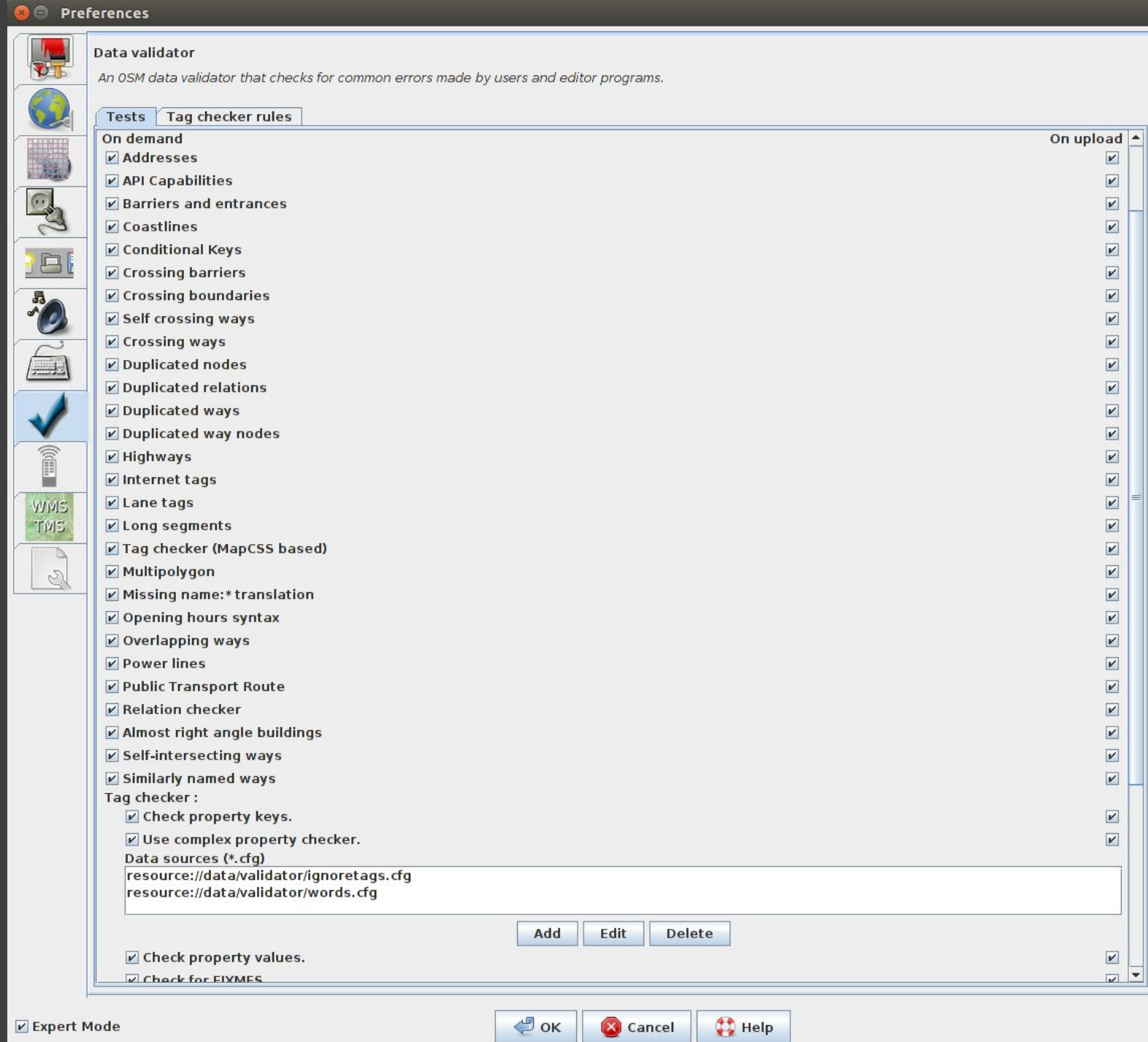
JOSM Data Validator Types

Tag Checker Rules (MapCSS)

- Great for basic topology and tag checks

Tests (Java)

- Able to handle more complex geometry checks





- CSS-like language for map stylesheets
- Used in JOSM for map styling and data validation

What is MapCSS?



Each color represents a building with a different name

Basic MapCSS Validation Checks

```
geometry[key=value] {  
    throwWarning: "Fix this";  
}
```

Selector: what feature the rule is looking for

Instructions on what to do with the feature

```
*[amenity=hospital][!name] {  
    throwWarning: "Hospital without a name tag";  
}
```

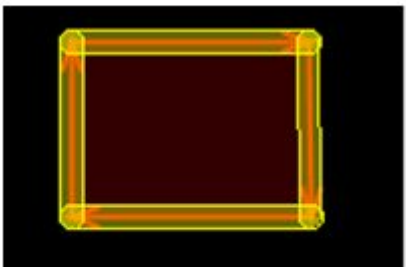
Selector: * = all geometries (node,way,relation), Features tagged as **amenity=hospital** that does not have a **name** tag.

Warning in JOSM validator window

Tags: 1 / Memberships: 0

+ Facilities/Health/Hospital ...

Key	Value
amenity	hospital



Validation Results

Warnings (1)

Hospital without a name tag (1)

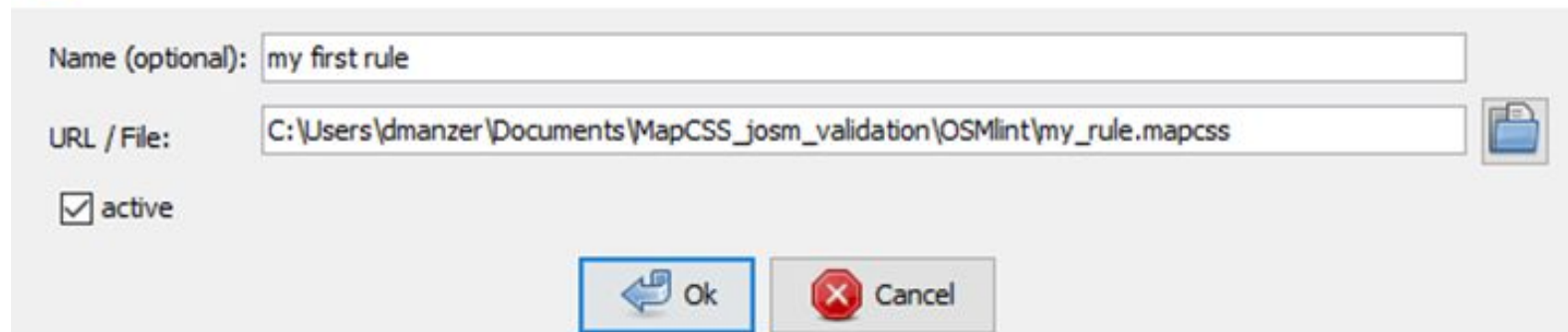
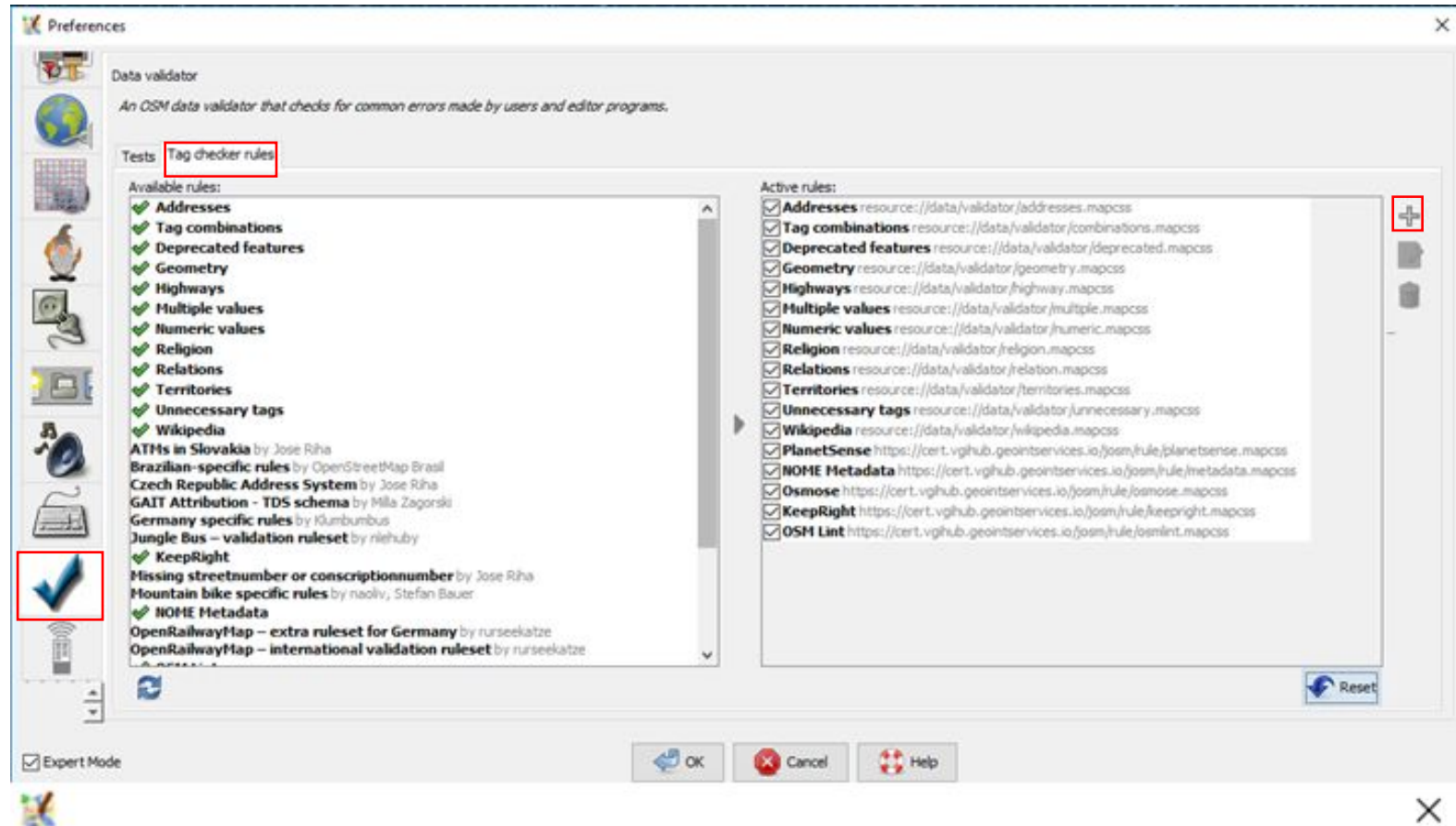
0 (4 nodes)

Select Lookup Validation

Features that meet the rule criteria appear in the JOSM Validation Results window

Create your own MapCSS checks locally

1. Write the rule -
save as .mapcss or
.validator.mapcss
file
2. Add as an Active
Rule in JOSM
3. Click “Validation”



Converting other QA tools to MapCSS

```
/* Keep Right motorways connected directly 270 */
/* Message: This node is a junction of a motorway and a highway other than motorway, motorway_link, trunk, rest_area or construction.
Service or unclassified is only valid if it has access=no/private or if it is a service=parking_aisle. */

way[highway=motorway] >[index=1] node:connection,
way[highway=motorway] >[index=-1] node:connection {
    set kr_270_end_motorway;
}

way[highway][highway!=motorway] node:connection {
    set hwycon270;
}

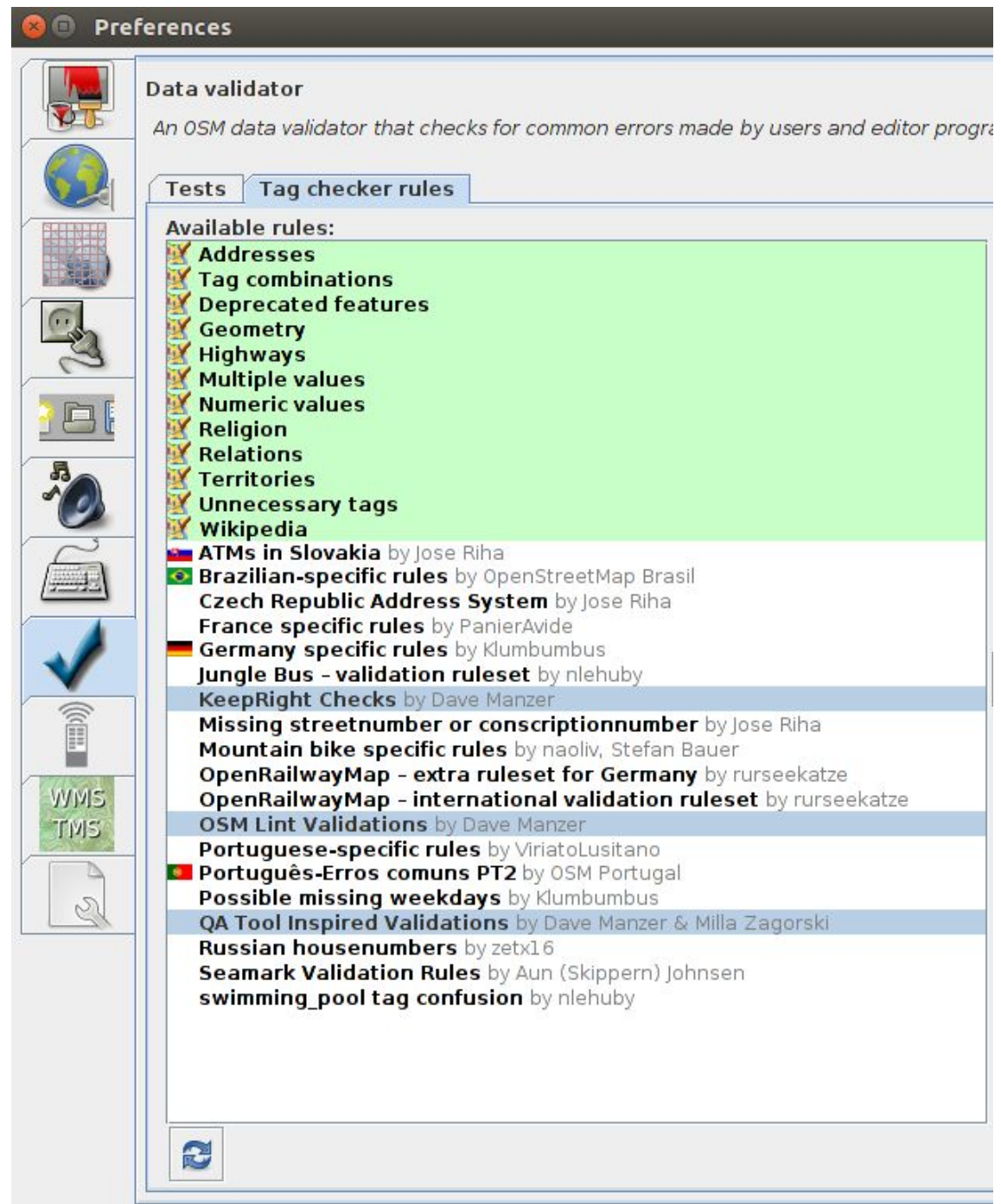
/* allowed junctions */
way[highway=service][access=no] node:connection,
way[highway=service][access=private] node:connection,
way[highway=service][service=parking_aisle] node:connection,
way[highway=unclassified][access=no] node:connection,
way[highway=unclassified][access=private] node:connection,
way[highway=unclassified][service=parking_aisle] node:connection,
way[highway=motorway_link] node:connection,
way[highway=motorway_junction] node:connection,
way[highway=construction] node:connection {
    set kr_270_allowed;
}

way[highway=motorway] node:connection.hwycon270!.kr_270_allowed!.kr_270_end_motorway {
    throwWarning: "270: motorways connected directly";
    group: "KeepRight";
}

/* KeepRight missing maxspeed 300 */
/* Message: missing maxspeed tag */
way[highway=~/(motorway|trunk|primary|secondary)$/][junction!=roundabout][!bridge][!tunnel][!maxspeed] {
    throwOther: "300: missing maxspeed on major road";
    group: "KeepRight";
}
```

Available JOSM Tag Checker Rules

- ❑ Osmose (QA Tool Inspired Validations)
- ❑ KeepRight
- ❑ OSM Lint



JOSM Wiki Rules

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

Create new rules

If you want to add your rules to this list use one of the two options:

- Simply create a page in this wiki with your rule, e.g. [Rules/MyRuleName](#). This is similar to [Styles](#) and [Presets](#). See there for more information about this topic.
- Externally hosted rule URLs can be entered when editing the [RulesSource page](#).

If your rule applies to a limited area, use [Territory selectors](#), to limit the execution to the area.

Rules managed in JOSM wiki

JOSM wiki based Rules is the preferred method.

- [Rules/AtmsSlovakia](#)
- [Rules/CzechRepublicAddressSystem](#)
- [Rules/FranceSpecificRules](#)
- [Rules/GermanySpecific](#)
- [Rules/KeepRight](#)
- [Rules/MissingStreetnumberOrConscriptionnumber](#)
- [Rules/MissingWeekdays](#)
- [Rules/OSMLint](#)
- [Rules/Portuguese-Errors-PT2](#)
- [Rules/Portuguese-Specific](#)
- [Rules/QAToolInspiredValidations](#)
- [Rules/SuspiciousSwimming_Pool](#)

Osmose-QA : MapCSS, OpenData and Mapillary

Focus on MapCSS rules set as common rules validation. Explore integration of OpenData and Mapillary AI vision extracted data.

Room: Großer Hörsaal

Frédéric Rodrigo (Makina Corpus)

Monday, 09:30

At the beginning, Osmose-QA is a Quality Assurance tool pointing issues on map, but also able to compare external data set to OpenStreetMap.

[Back to schedule](#)

First talk part is about the new support of MapCSS rules in Osmose-QA. MapCSS language was primarily designed as way to style map objects, it look like the web styling language CSS. The base of MapCSS is to use selectors to filter objects. JOSM already use it for map styling and validator. This new implementation of MapCSS in Osmose-QA allows to write rules more easily. It also allow to reuse JOSM validator rules set. Next step would be to run Osmose rules in JOSM. It's a great opportunity to share rules across tools and projects. But come the question on how to share and manage this rules while considering tools particularities.

What's behind JOSM?

Presentation of the JOSM development model: how is it made, by who? How can I help?

Room: Großer Hörsaal

Vincent Privat

Sunday, 14:00

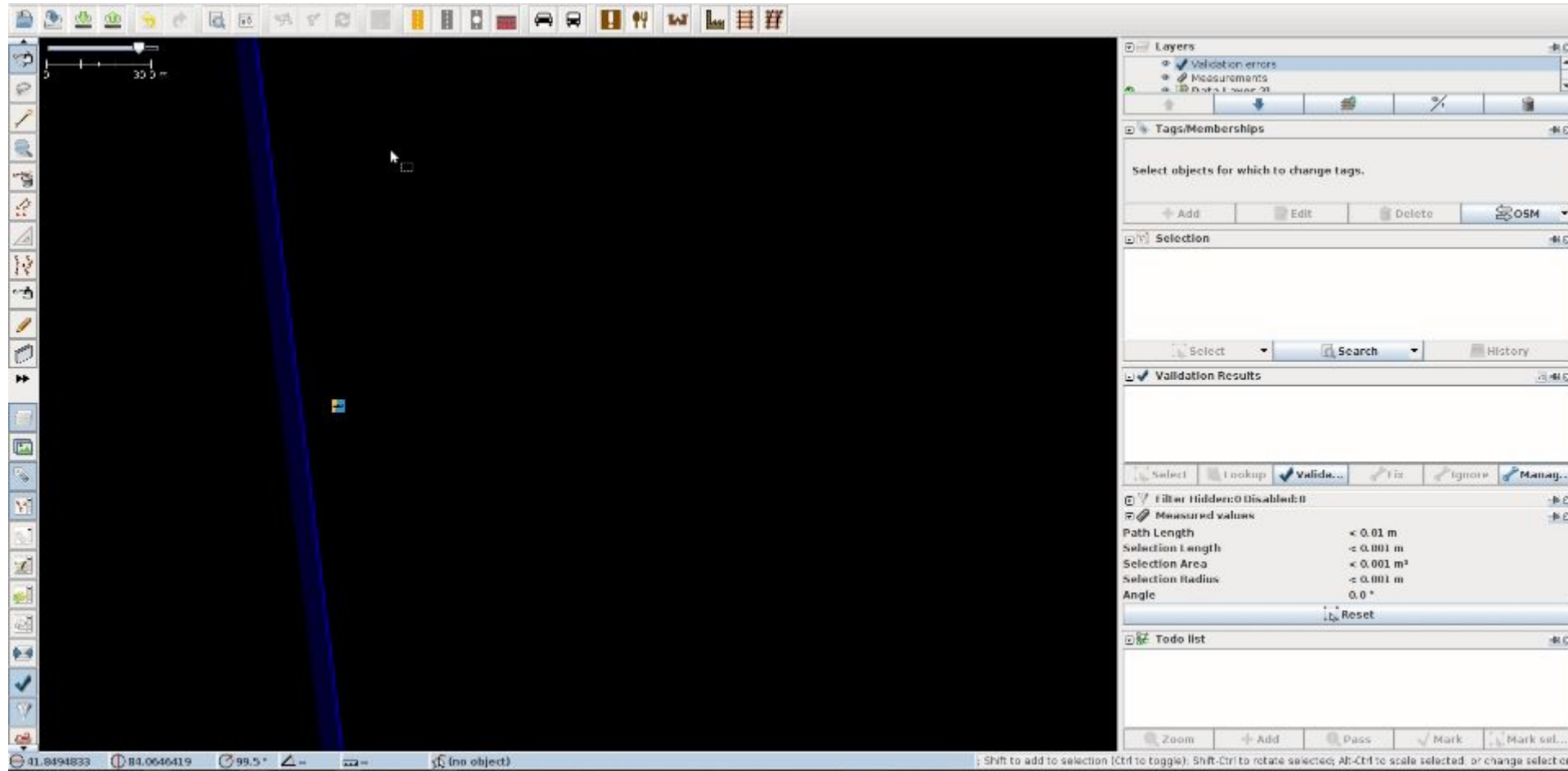
JOSM is almost as old as OSM but few people really know what it takes to maintain your preferred editor. We'll present the development model of JOSM and who's part of its active community: developers, translators, testers, plugin authors, end users, sponsors, etc. We'll talk about the project difficulties, the major achievements made in the past years, what work is currently in progress and what will happen in the near future!

[Back to schedule](#)

JOSM Validator – Water Structures

☒ Water Structures

Inspired by Osmose analyser: #1221 “Far from water”

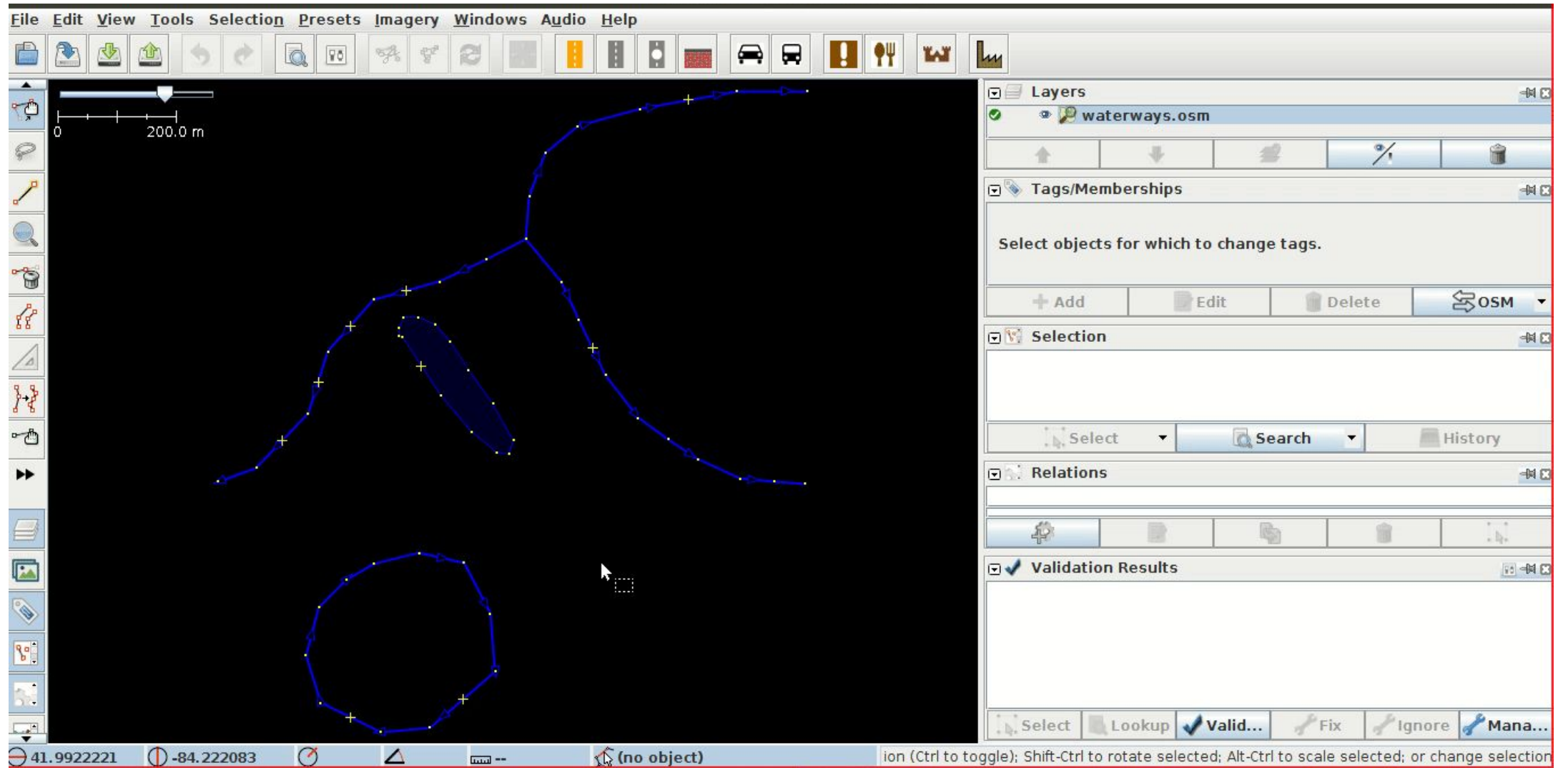


(Developed by: Milla Zagorski)

JOSM Validator - Waterways

☒ Waterways

Inspired by Osmose analyser: #1220 "Waterway"

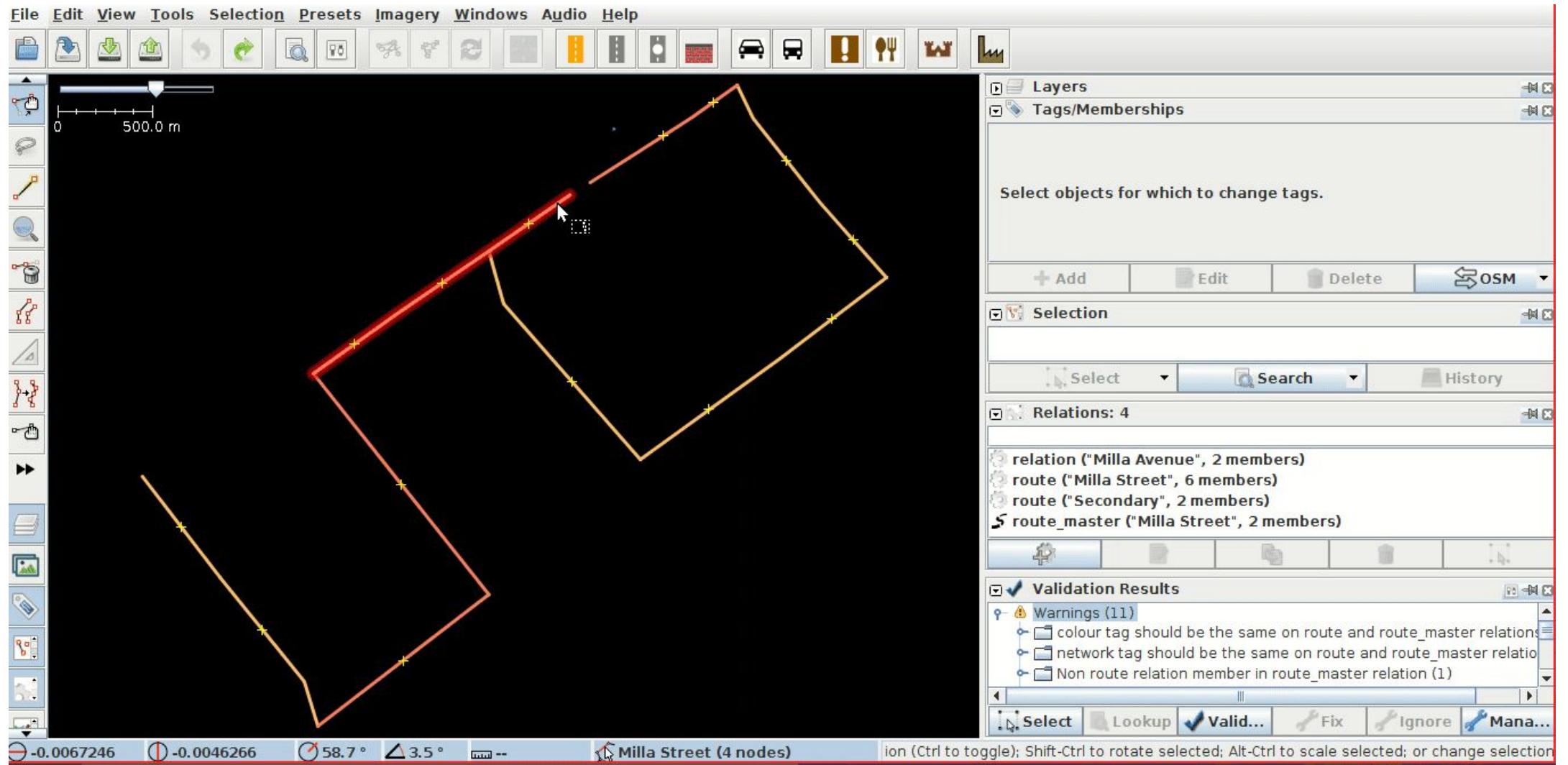


(Developed by: Milla Zagorski)

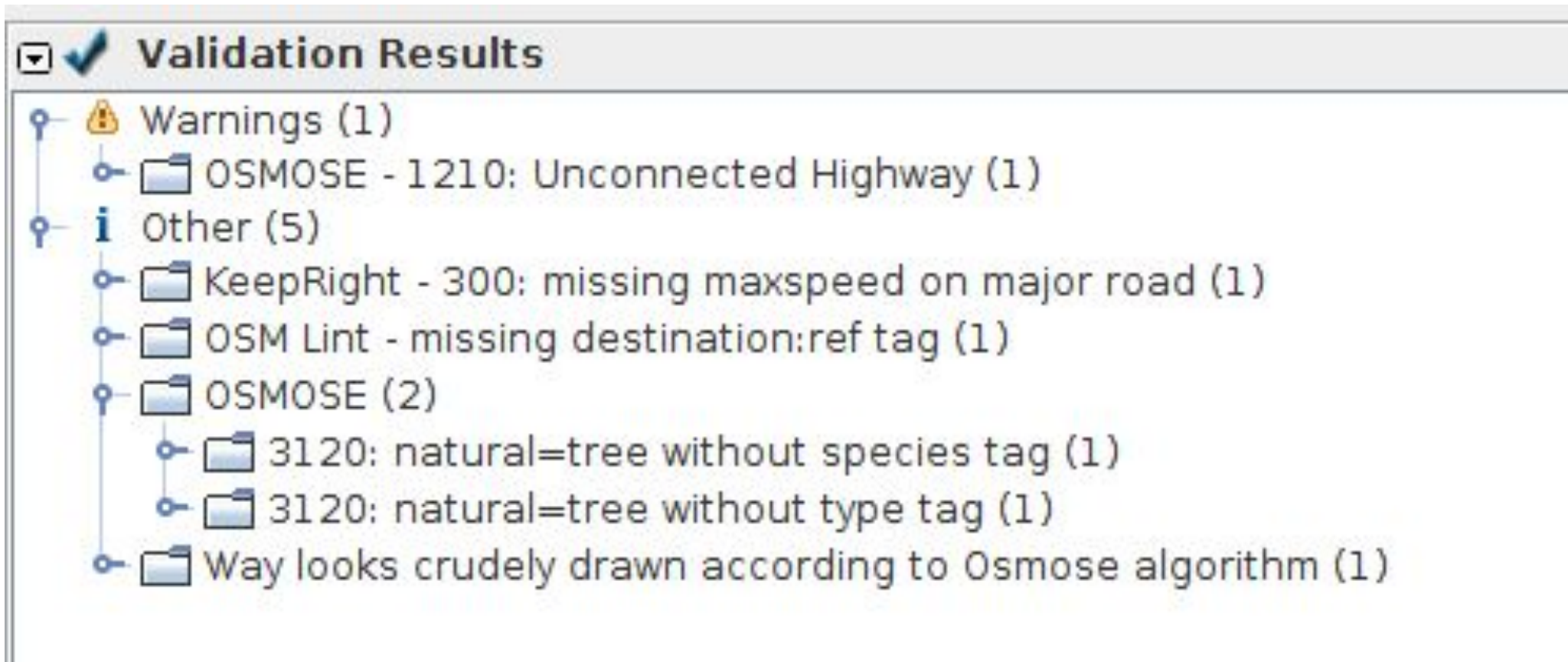
JOSM Validator – Public Transport

☒ Public Transport

Inspired by Osmose analyser: #1260 “Public Transport”



(Developed by: Milla Zagorski)

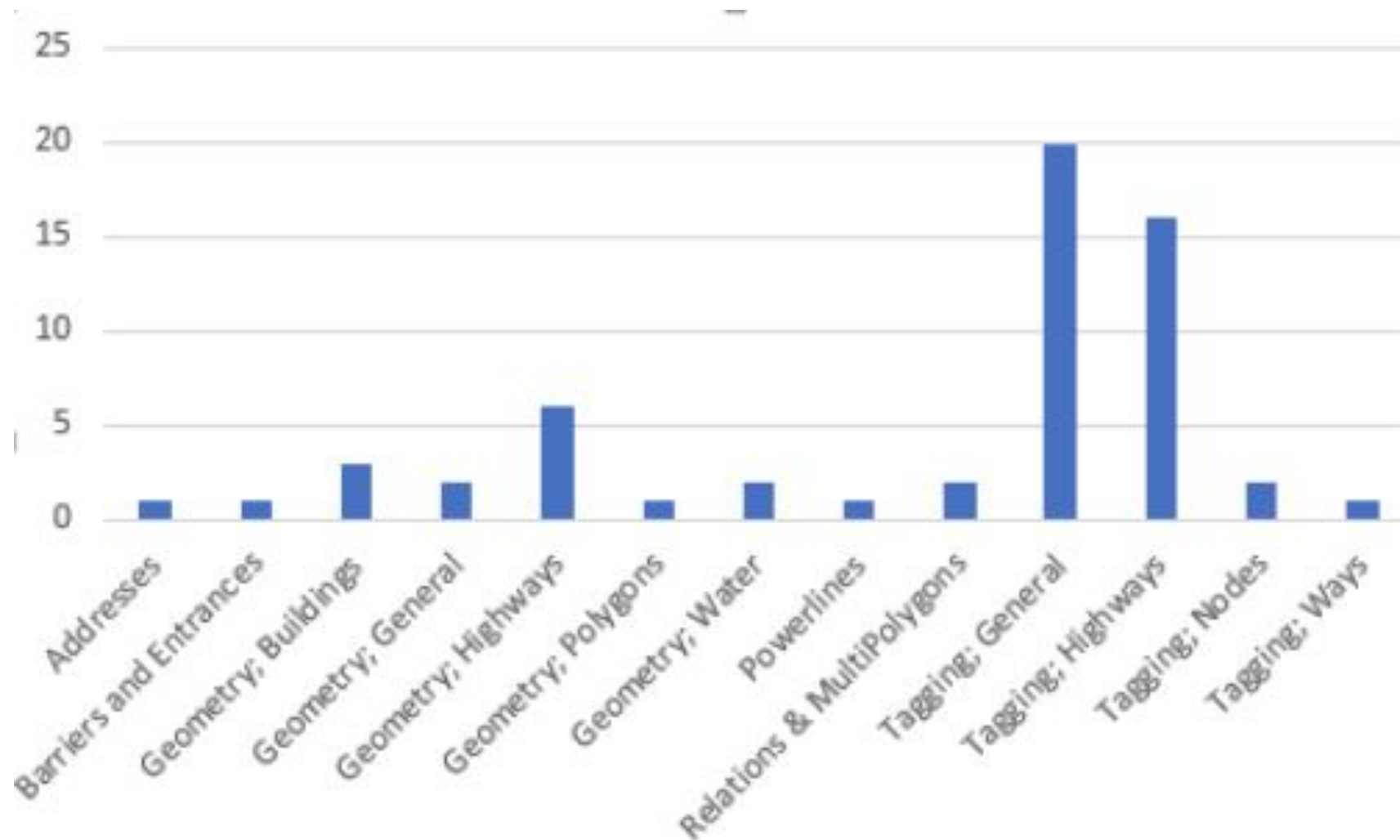


What's new in JOSM?

58 new validators!

- Osmose – 41
- KeepRight – 7
- OSM Lint – 9
- Atlas – 1

A really sweet bar chart



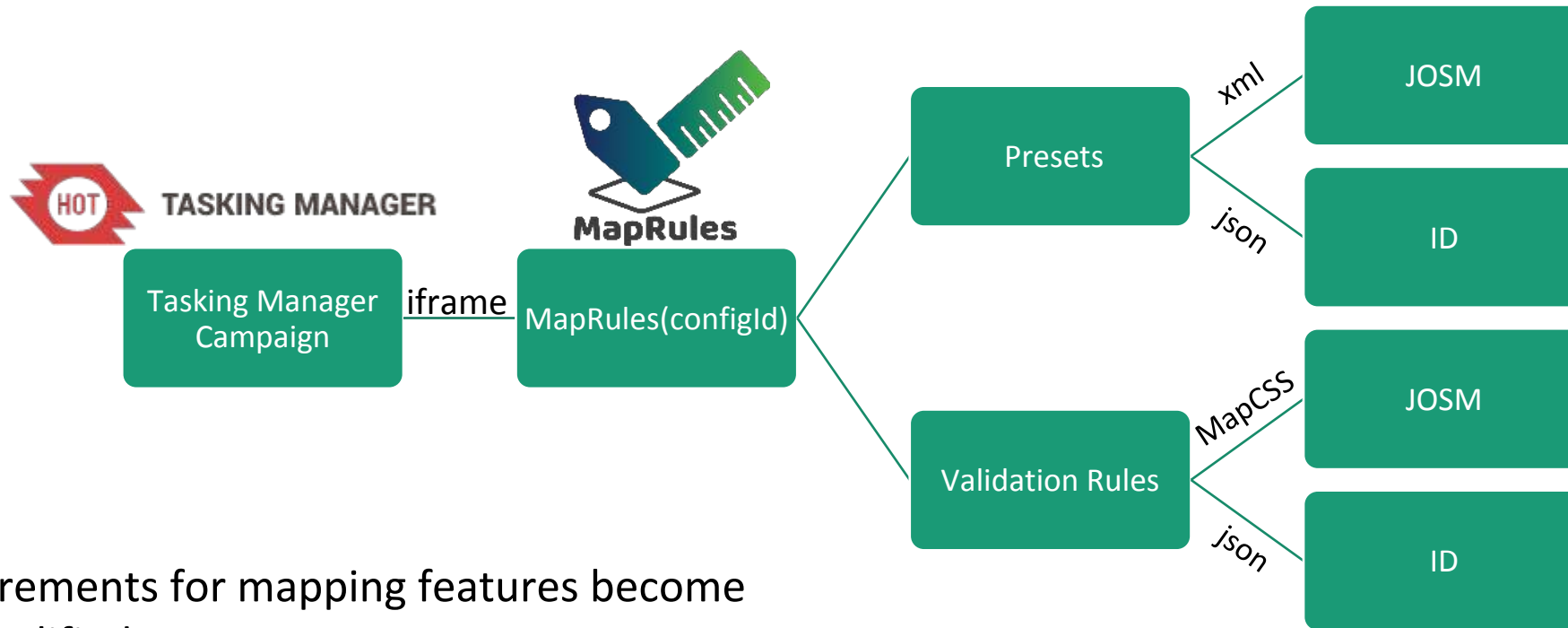
Custom Presets and Validation Rules

Simple UI to create guidelines that can be tied to campaigns and generate presets and validation rules that can tailor the editors to your campaign/organization focus specific needs



JOSM

[Edit with JOSM](#)



Requirements for mapping features become

- Simplified
- Standardized
- Streamlined



[Edit with iD editor](#)

Creating Attribution Guidelines

Presets

hospital



Identifying Tags

Key	Value
building	hospital

+ Add Identifying Tag

Geometry

☒ Area ☐ Line ☒ Point



Assisted
with taginfo popular
combinations

Fields

Key Condition	Key	Value Condition	Value(s)
must have	name	Add...	Add...
may have	emergency	Add...	Add...

hospital



Geometry

☒ Area ☐ Point

Identifying Tags

building = hospital

Required Tags

must have name

Suggested Tags

may have emergency

may have healthcare must be clinic doctor hospital

sports field



Geometry

☐ Point ☒ Area

Identifying Tags

leisure = pitch

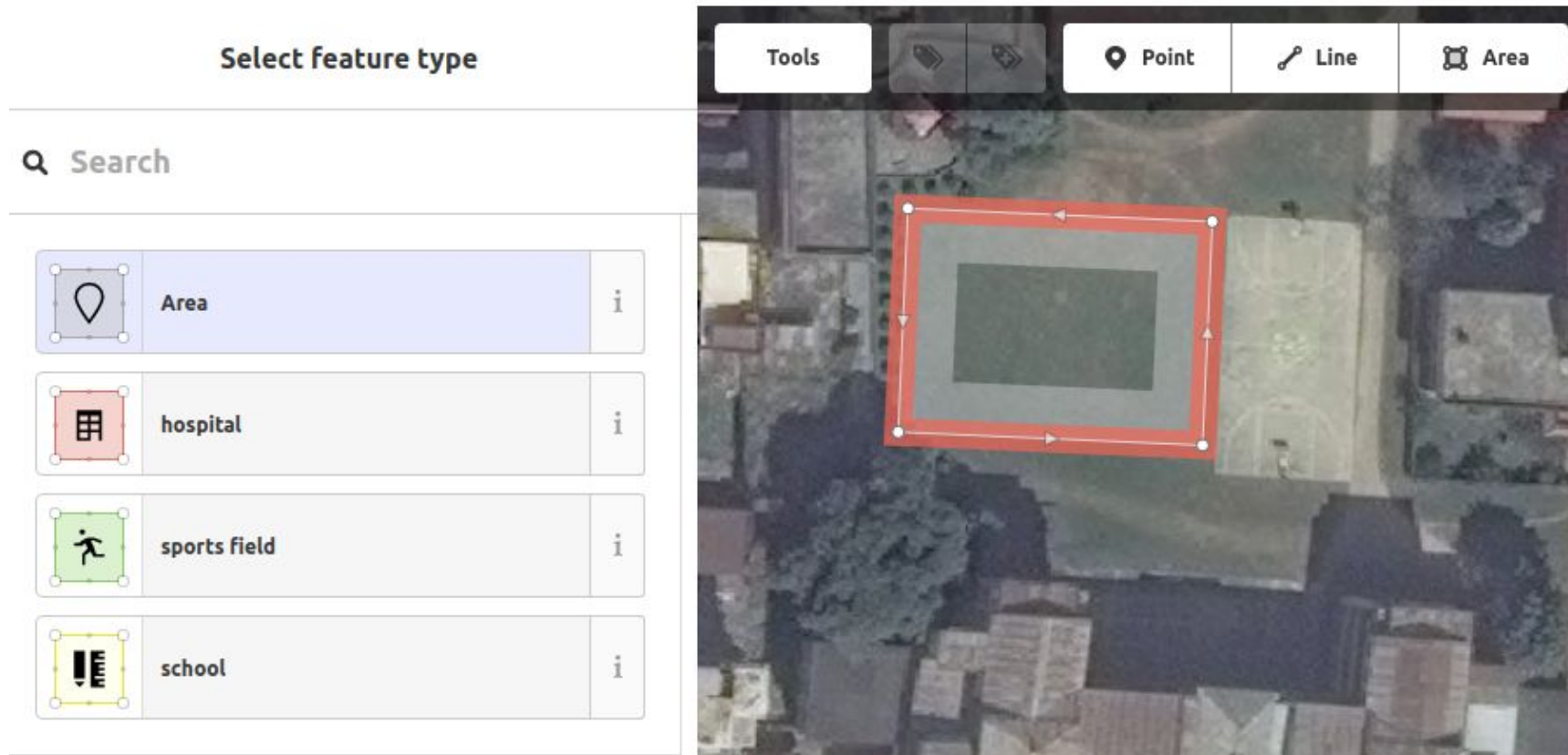
Required Tags

must have name

Suggested Tags

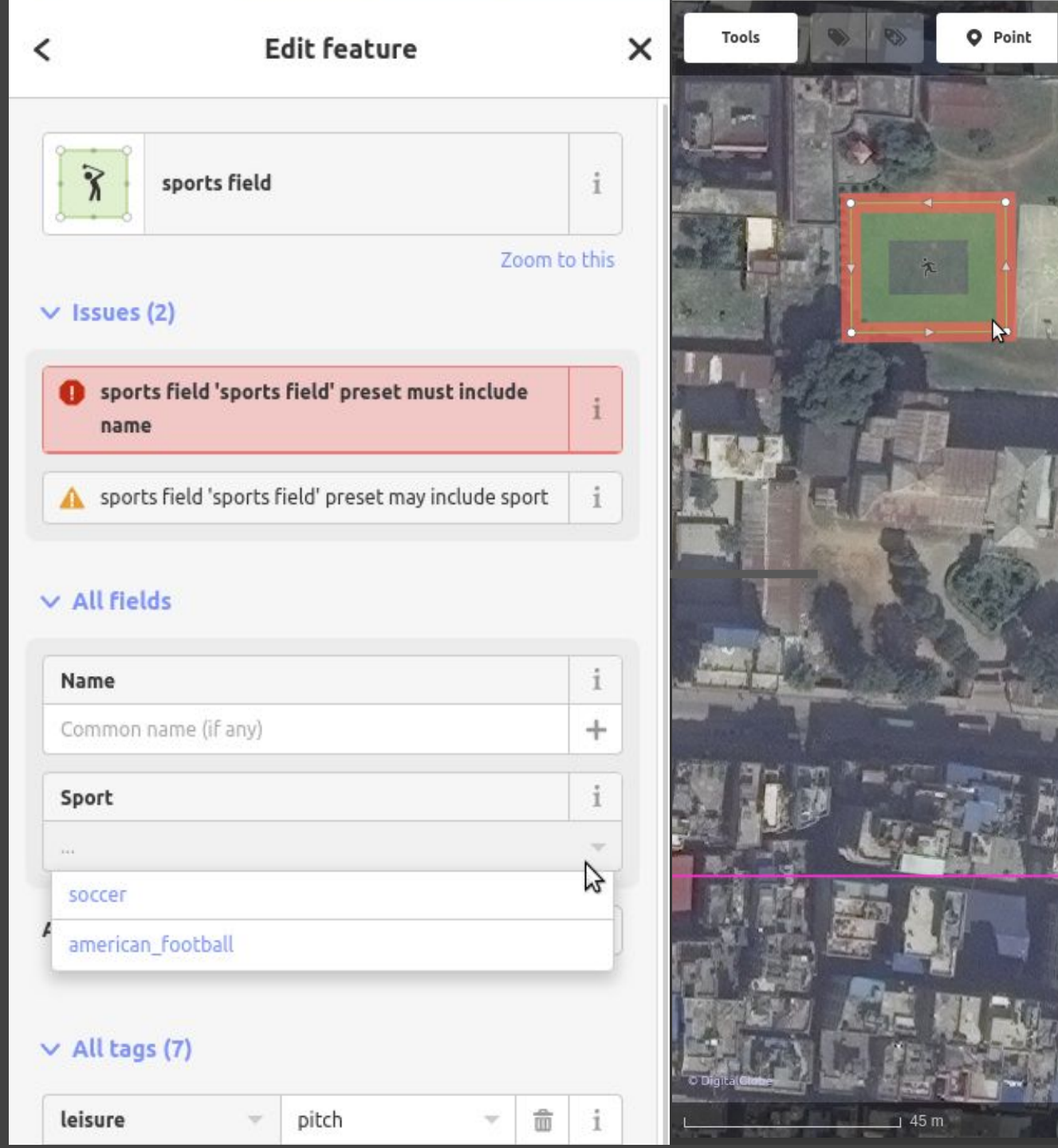
may have sport may be soccer american_football

Campaign Focused Presets



- Only show fields and values relevant to campaign
- Throw validation errors or suggestions for further information while editing

- Only show fields and values relevant to campaign
- Throw validation errors or suggestions for further information while editing



In Progress

<https://github.com/radiant-maxar/maprules>



USER PRESETS



SHARING AND
REUSING PRESETS



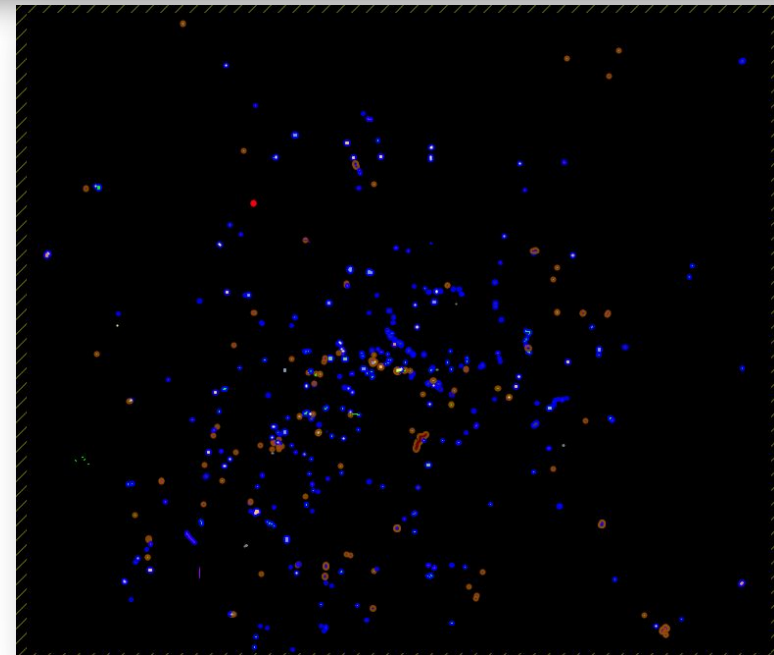
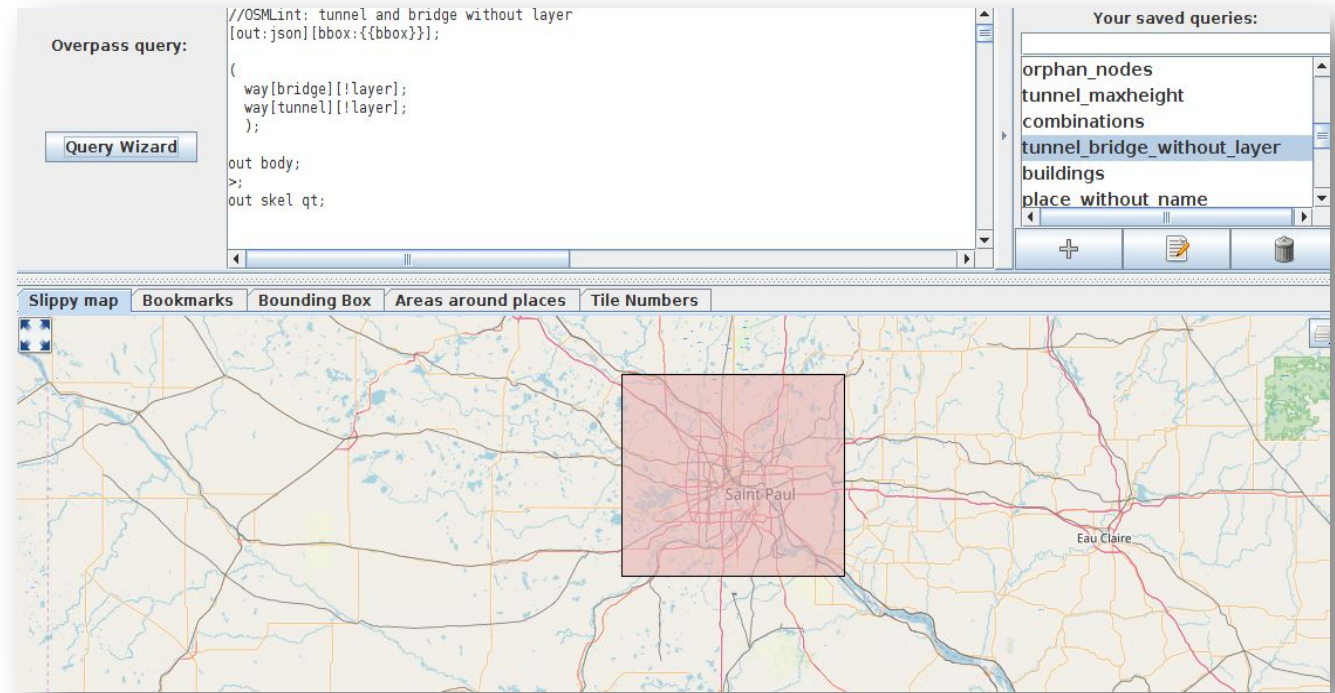
TASKING MANAGER

INTEGRATING INTO
TASKING MANAGER 4

Validation Based Overpass Queries

Why?

- Stale errors in QA databases
- Pulling in validation targeted data over larger areas
- Bulk operations



MapRoulette Challenges

GeoJSON

- Local File
- Remote Url

Overpass Query

Rebuild Challenge Tasks

Rebuilding will re-run the Overpass query and rebuild the challenge tasks with the latest data:

- Existing tasks included in the latest data will be updated
- New tasks will be added
- If you choose to first remove incomplete tasks (below), existing **incomplete** tasks will first be removed
- If you do not first remove incomplete tasks, they will be left as-is, possibly leaving tasks that have already been addressed outside of MapRoulette

Warning: Rebuilding can lead to task duplication if your feature ids are not setup properly or if matching up old data with new data is unsuccessful. This operation cannot be undone!

[Learn More](#)

☒ First remove incomplete tasks

Cancel

Proceed

add layer to bridges/tunnels in Portugal

wormitok's Project | [Contact Owner](#)

[Edit Layout](#)

Current layout: **Task Completion**

INSTRUCTIONS

add a layer to the bridge: **minimum layer=1** ascending

add a layer to the tunnel: **minimum layer=-1** descending

COMPLETION

Add MR Tags

Current Editor: [Edit in iD \(web editor\)](#)

Edit

Not an Issue

Skip

Other...

LOCATION



Properties

osmid	243199808
bridge	yes
source	bing
highway	residential

Overpass API/Overpass API by Example/QA Tool Overpass Queries

< Overpass API | Overpass API by Example
(Redirected from Overpass API/Validation)



Validation Query	Description	Reference
Boundary Missing Source	An administrative boundary does not contain tag source=* sourcing the origin	OSMOSE 2040: Source
Building Road Intersection	Flags buildings that intersect/touch center lines of roads. This does not address cases where buildings get really close to roads, but do not overlap them.	Atlas: Building Road Intersection
Combinations	Missing tags on a given combination, suspicious tag combinations	JOSM: combinations
Deprecated Tags	Deprecated tagging that needs to be updated	JOSM: deprecated
Elevation	Some elements, including the peak (natural=peak) and mountain_pass (mountain_pass=yes), has an evelation. This is shown in OSM with tag ele=* in meters.	OSMOSE 2020: Elevation
fixme	Items tagged with fixme	KeepRight 170: fixme tagged items
Geometry	Incorrect geometry used or topological issues	JOSM: geometry
Highway	Highway validations	JOSM: highway
Missing Highway	<p>The way seems to be a highway=* .</p> <ul style="list-style-type: none">Class 20800 "Tag highway missing on junction" : the way have a tag junction=* but without highway=* .Class 20801 "Tag highway missing on oneway" : the way have a tag oneway=* but without highway=* .Class 20803 "Tag highway missing for tracktype or lanes" :	OSMOSE 2080: Missing Highway CLASS 20800, 20801, 20803, 20804
Missing Oneway on Motorlink	Detecting motorway links without oneway tag , which is connected to a highway=motorway with a oneway	OSMLint: missing oneway on motorway link
Orphan Nodes	Untagged nodes that do not belong to a way	
Place without Name	The tag place=* must always be used in combination with the tag name=* .	OSMOSE 6030: place without name
Powerlines	<p>This analysis mainly verifies the continuity of powerlines</p> <ul style="list-style-type: none">Class 1 "Lone power tower or pole" :	OSMOSE 7040: power lines Class 1
Relation	Relation validations	JOSM: relation
Tunnel and Bridge without Layer	This validator detects all the bridges that does not have the tag layer=* .	OSMLint: tunnel and bridge without layer
Tunnel/Bridge Max Height	Missing maxheight=* or maxheight: * for a tunnel or a way under a bridge.	OSMOSE 7130:Tunnel/Bridge
Two Names	tag name=* contains two street names, separated by a semicolon, a "/" or a "\". This issue was probably produced by the fusion of two way and the concatenation of the names of streets.	OSMOSE 5030 - Two names
Unnecessary	Features with unnecessary tags that can be removed	JOSM: unnecessary
Wrong Highway on Roundabout	Class 1 "Wrong highway on roundabout" : it must match the highest level of connected routes, except highway and trunk.	OSMOSE 3010: Class 1 wrong highway on roundabout
Wrong Railway Crossing	Checks level crossings if all ways have same layer=* and any way has tag bridge=* or tunnel=* .	KeepRight 160: Wrongly Used Railway Crossing Tag



Page [Discussion](#)

Overpass API/Overpass API by Example

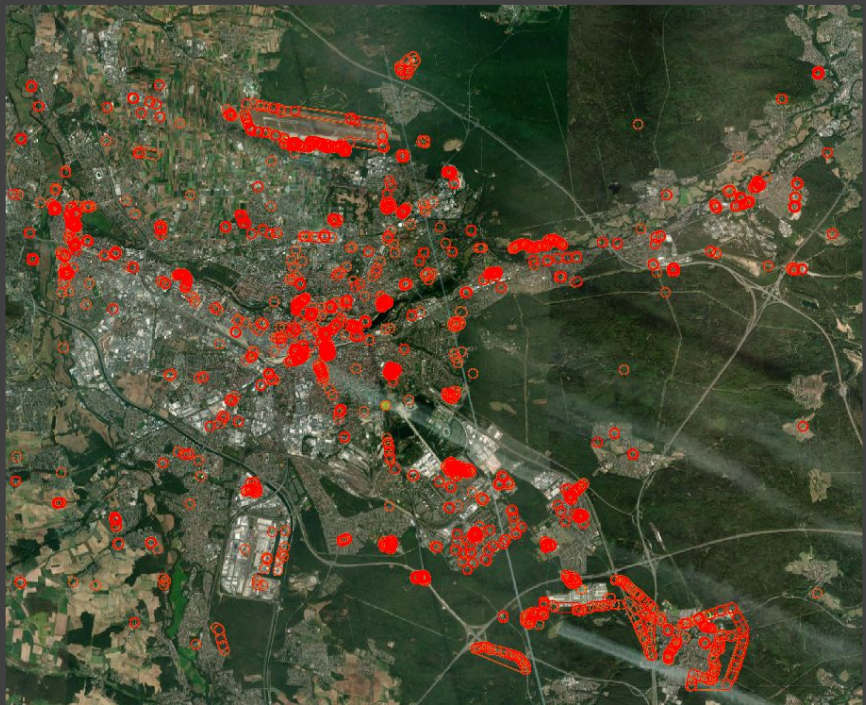
4 Quality Assurance

- 4.1 [Checking boundary relations for correct tagging](#)
- 4.2 [Find all bus stops which are not included in a relation](#)
- 4.3 [Bus relations, which are not part of a master relation](#)
- 4.4 [Counties without fire station](#)
- 4.5 [Buildings crossed by roads that are not tagged as tunnel or covered](#)
- 4.6 [Find duplicate nodes \(since 0.7.54\)](#)
 - 4.6.1 [Find duplicate nearby nodes with same tag](#)
- 4.7 [Search for untagged ways](#)
- 4.8 [Orphaned nodes \(nodes without tags, not part of any way or relation\)](#)
- 4.9 [Find broken associatedStreet-relations](#)
- 4.10 [Find house numbers without street](#)
- 4.11 [Non-matching addr:postcode=XXXXXX tags inside a boundary relation with postal code ≠ XXXXX](#)
- 4.12 [Non-matching addr:postcode=XXXXXX tags inside multiple boundary relation with postal code ≠ XXXXX \(since 0.7.54\)](#)
- 4.13 [Ways that are part of a "Bundesstraßenrelation", but do not have a ref-tag](#)
- 4.14 [POIs with websites but with incorrect opening hours](#)

Overpass turbo/Examples

Contents [\[hide\]](#)

- 1 [Complete route relation](#)
- 2 [Part of a \(route\) relation](#)
- 3 [Power substations without proper voltage tag](#)
- 4 [Living streets with a potentially wrong speed limit](#)
- 5 [Highways with lanes=1 but no other explaining tag](#)
- 6 [Nodes that only have a name tag](#)
- 7 [Bridges without maxweight=...](#)
- 8 [Tunnels without maxheight=...](#)
- 9 [More](#)
 - 9.1 [Overpass API by Example / DE:Overpass API/Beispielsammlung](#)
 - 9.2 [Quality assurance of postal codes](#)
 - 9.3 [Soldier Boy's Examples](#)
 - 9.4 [Parking areas example](#)
 - 9.5 [More various Overpass examples](#)
 - 9.6 [Public transport Quality Assurance](#)
 - 9.7 [Overpass Queries based on Quality Assurance Tools](#)



Automatically Fix Validation Errors

Tags: 26 / Memberships: 0

Man Made/Man Made/Residential Building ...
Annotation/Address ...

Key	Value
addr:city	Nürnberg
addr:country	DE
addr:housenumber	12
addr:postcode	90475
addr:street	Habsburgerstraße
amenity	hotel
angle	242.8
beds	9
building	hotel
feature_area	208.2
internet_access	wlan

+ Add Edit Delete OSM

Validation Results

- deprecated tagging (595)
 - amenity=advertising is deprecated, use advertising=* instead (6)
 - amenity=artwork is deprecated, use tourism=artwork instead (1)
 - amenity=education is deprecated, use amenity=college or amenity=school or a
 - amenity=hotel is deprecated, use tourism=hotel instead (1)**
 - Avenue Altenfurt (6 nodes)
 - amenity=kiosk is deprecated, use shop=kiosk instead (1)
 - amenity=nursery is deprecated, use amenity=childcare or amenity=kindergarte
 - amenity=preschool is deprecated, use amenity=kindergarten instead (1)
 - amenity=public_building is deprecated, use amenity=townhall or amenity=comm
 - amenity=sauna is deprecated, use leisure=sauna instead (24)

Select Lookup Validation Fix Ignore Manage...

```
*[amenity=hotel] {
  throwWarning: tr("{0} is deprecated", "{0.tag}");
  suggestAlternative: "tourism=hotel";
  group: tr("deprecated tagging");
  fixAdd: "tourism=hotel";
  fixRemove: "amenity";
}
```

Why does this matter?

- Custom validations give users and groups the directed focus they need.
 - If you're only interested in mapping railways, why not share your ``railway=switch`` validation MapCSS checker?
- Thematic validations can assist with directed editing and cleanup

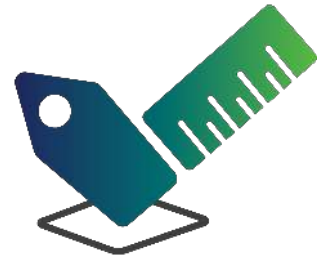
Create and Share Validation Rules



ADD TO MAPCSS
VALIDATION RULES



ADD TO JOSM
VALIDATORS



MapRules

CREATE MAPRULES

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@giblet22

Questions