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Katedra Softwarového inženýrství

Obor: Webové inženýrství

FIT ČVUT 2016

DIPLOMOVÁ PRÁCE

Plány budov na platformě OpenStreetMap

ZADÁNÍ PRÁCE

- ▶ Nastudovat a popsat problematiku mapování vnitřků budov
- ▶ Zaměřit se na tvorbu a správu pomocí OSM
- ▶ Analyzovat existující přístupy v OSM
- ▶ Navrhnut úpravy metodiky
- ▶ Navrhnut uživatelské rozhraní a naprogramovat rozšíření editoru iD

PLATFORMA OPENSTREETMAP



WIKIPEDIA
The Free Encyclopedia

PLATFORMA OPENSTREETMAP



- ▶ Vektorová databáze pod ODbL
- ▶ Topologická
- ▶ Uzly, cesty, plochy, relace
- ▶ Zachování historie
- ▶ cca 2 mil. tvůrců, 50 000 aktivních



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REŠERŠE EXISTUJÍCÍCH INDOOR MAP

- ▶ Google Maps indoor
- ▶ Microsoft Bing Maps
- ▶ Micello indoor maps
- ▶ platforma Anyplace
- ▶ ČVUT Navigátor
- ▶ i-locate consortium



Relations/Proposed/Level X Proposed features/Indoor X Relations/Proposed/Level X IndoorOSM - OpenStreetMap X

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Relations/Proposed/Level Map

< Relations

Level Maps

Status: Abandoned (inactive)

Proposed by: marl

Applies to: level_map

Definition: Creating and interconnecting stacked levels, core part of multi-storey buildings, vertical elevators (lifts) and ladders

Rendered as: None

Drafted on: 2011-09-25

Contents [hide]

- 1 Proposal
- 2 Rationale
- 3 Concept
 - 3.1 Level Maps
 - 3.2 Level Definition
 - 3.3 Member Classification
 - 3.4 Object Instantiation
 - 3.5 Connections to the outside
 - 3.6 Vertical Ways
 - 3.7 Instance Tagging
 - 3.8 Levels and Layers

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Relations/Proposed/Level

< Relations

Relation Proposal edit edit

```
Relation
type=site
site-level
level=-1 (number of levels)
name=Subwaystation
```

A level is a floor in a building or subway station. All elements that are on one level shall...

The 3D Development team are currently working on unifying 3D related tags. For first results see Simple 3D Buildings.

Contents [hide]

- 1 Relation Proposal
- 2 3D-Object Metarelation
- 3 Rationale
- 4 See also
- 5 Discussion

Relations/Proposed/Level X Proposed features/Indoor X Relations/Proposed/Level X IndoorOSM - OpenStreetMap X

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Proposed features/indoor

< Proposed features

indoor

Status: Obsoleted (inactive)

Proposed by: saerdnaer

Tagging: room, level, type=level, type=building, outdoor=*

Applies to: multiple icons

Contents [hide]

- 1 Intention of this project

IndoorOSM was a proposed tagging schema for Indoor Mapping which has problems (tag collisions, massive use of relations and direct use of osm elements). (One of several possible schemes. See Indoor Mapping#Tagging proposals.) You might be looking for IndoorOSM on Android.

Relations/Proposed/Level X Proposed features/Indoor X Relations/Proposed/Level X IndoorOSM - OpenStreetMap X

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IndoorOSM

Status: Obsoleted (inactive)

Proposed by: Gomar1985

Applies to: multiple icons

Definition: The main characteristics of the model proposal are:

- mapping of indoor spaces including different levels (floors, rooms, etc.)
- mapping of doors and windows (inside as well as facade)
- 3D properties

Drafted on: 2011-11-29

Relations/Proposed/Level X Proposed features/Indoor X Relations/Proposed/Level X IndoorOSM - OpenStreetmap.org

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Relations/Proposed/Level Map

< Relations

Level Maps

Status: Abandoned (inactive)

Proposed by: marl

Applies to: level_map

Definition: Creating and interconnecting stacked levels, core part of multi-storey buildings, vertical elevators (lifts) and ladders

Rendered as: None

Drafted on: 2011-09-25

Contents [hide]

- 1 Proposal
- 2 Rationale
- 3 Concept
- 3.1 Level Maps

RELACE



Relations/Proposed/Level X Proposed features/Indoor X Relations/Proposed/Level X IndoorOSM - OpenStreetmap.org

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Proposed features/CompoundFacility

< Proposed features

Compound Facility

Status: Draft (under way)

Proposed by: Addict user

Tagging: compound_facility=*

Applies to:

Definition: Model of a compound facility for pedestrians

Drafted on: 2013-11-29

1 Page details

- 1.1 Applies
- 2 Rationale
- 3 Use cases
- 4 The Model / T
- 4.1 Model
- 4.2 Model
- 4.2.1 M
- 4.2.2 M
- 4.2.3 M

Relation

< Relations

The 3D Development team are currently working on unifying 3D related tags.
For first results see Simple 3D Buildings.

Relation Proposal

Contents [hide]

- 1 Relation Proposal
- 2 3D-Object Metarelation
- 3 Rationale
- 4 See also
- 5 discussion

Relation
Type=site
site-level
level=-1 (number of levels)
name=Subwaystation

A level is a floor in a building or subway station.
All elements that are on one level shall have the same level tag.

Proposed features/indoor

< Proposed features

indoor

Status: Obsoleted (inactive)

Proposed by: saerdnaer

Tagging: room, level, type=level, type=building, outdoor=*

Applies to:

Special pages
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Definition:

- mapping of indoor spaces including different levels (floors)
- mapping of doors and windows (inside as well as facade)
- 3D properties

Drafted on: 2011-11-29

Contents [hide]

- 1 Intention of this project

Relations/Proposed/Level X Proposed features/Indoor X Relations/Proposed/Level X IndoorOSM - OpenStreet X Proposed features/Comp X Simple Indoor Tagging - C Pavel

wiki.openstreetmap.org/wiki/Simple_Indoor_Tagging

English Zby-cz Talk Preferences Watchlist Contributions Log out

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Simple Indoor Tagging

Available languages – *Simple Indoor Tagging*

· English · italiano

Other languages – Help us translate this wiki

show

Simple Indoor Tagging is a proposed tagging schema for [Indoor Mapping](#). It is simple to use but still holistic to even cover complicated cases. A list of indoor tagging schemes can be found [here](#).

Simple Indoor Tagging

Status: [Draft \(under way\)](#)

Proposed by: [SimonPoole](#), [Tordanik](#), [Peda](#), [Andi](#)

Applies to: 

The main characteristics of proposal are:

Definition:

- mapping of indoor spaces including different levels (floors)
- mapping of doors and windows
- mapping of POIs on levels

Contents [hide]

1 Intention of this project

1.1 Summary

2 Use Cases

3 The Model / Tagging Schema

wiki.openstreetmap.org/wiki/User_talk:Zby-cz

wiki.openstreetmap.org/wiki/Simple_Indoor_Tagging

Relations/Proposed/Level × Proposed features/Indoor × Relations/Proposed/Level × IndoorOSM - OpenStreet × Proposed features/Comp × Simple Indoor Tagging - × Pavel

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Simple Indoor Tagging

Available languages – *Simple Indoor Tagging*

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show Help

Simple Indoor Tagging is a proposed tagging schema for [Indoor Mapping](#). It is simple to use but still holistic to even cover complicated cases. A list of indoor tagging schemes can be found [here](#).

Simple Indoor Tagging

Status: [Draft \(under way\)](#)

Proposed by: [SimonPoole](#), [Tordanik](#), [Peda](#), [Andi](#)

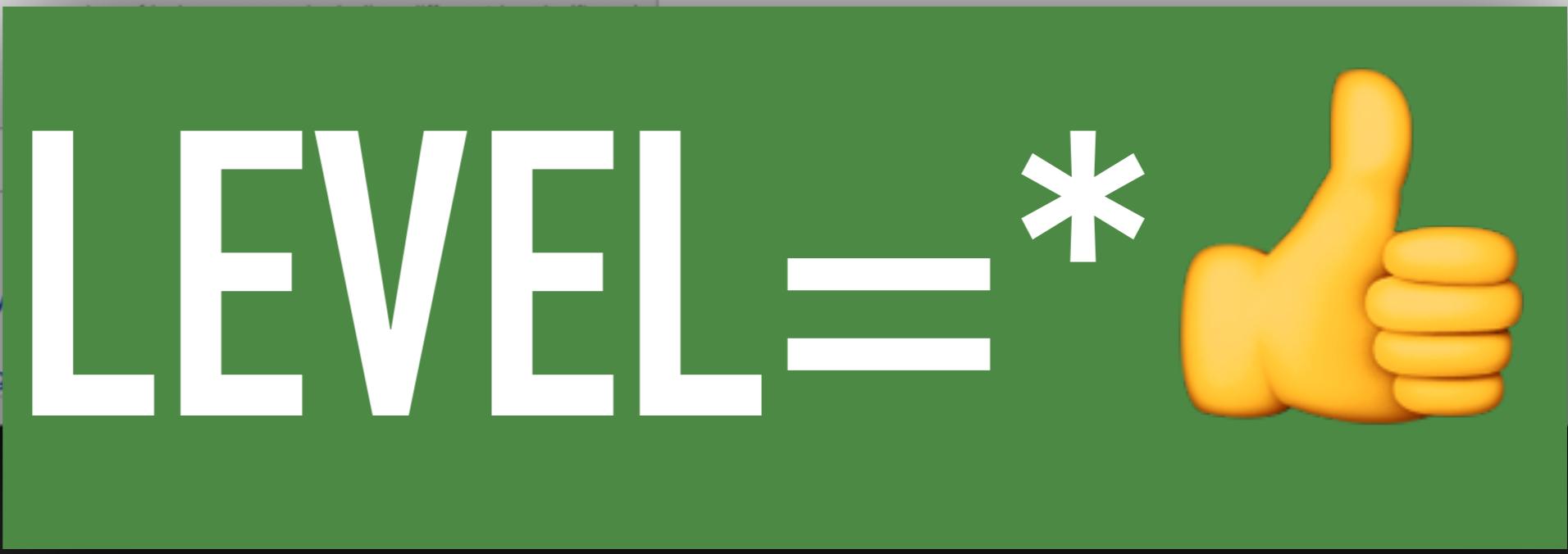
Applies to: 

The main characteristics of proposal are:

Definition:

1 Intention of this
1.1 Summary
2 Use Cases
3 The Model / Tag

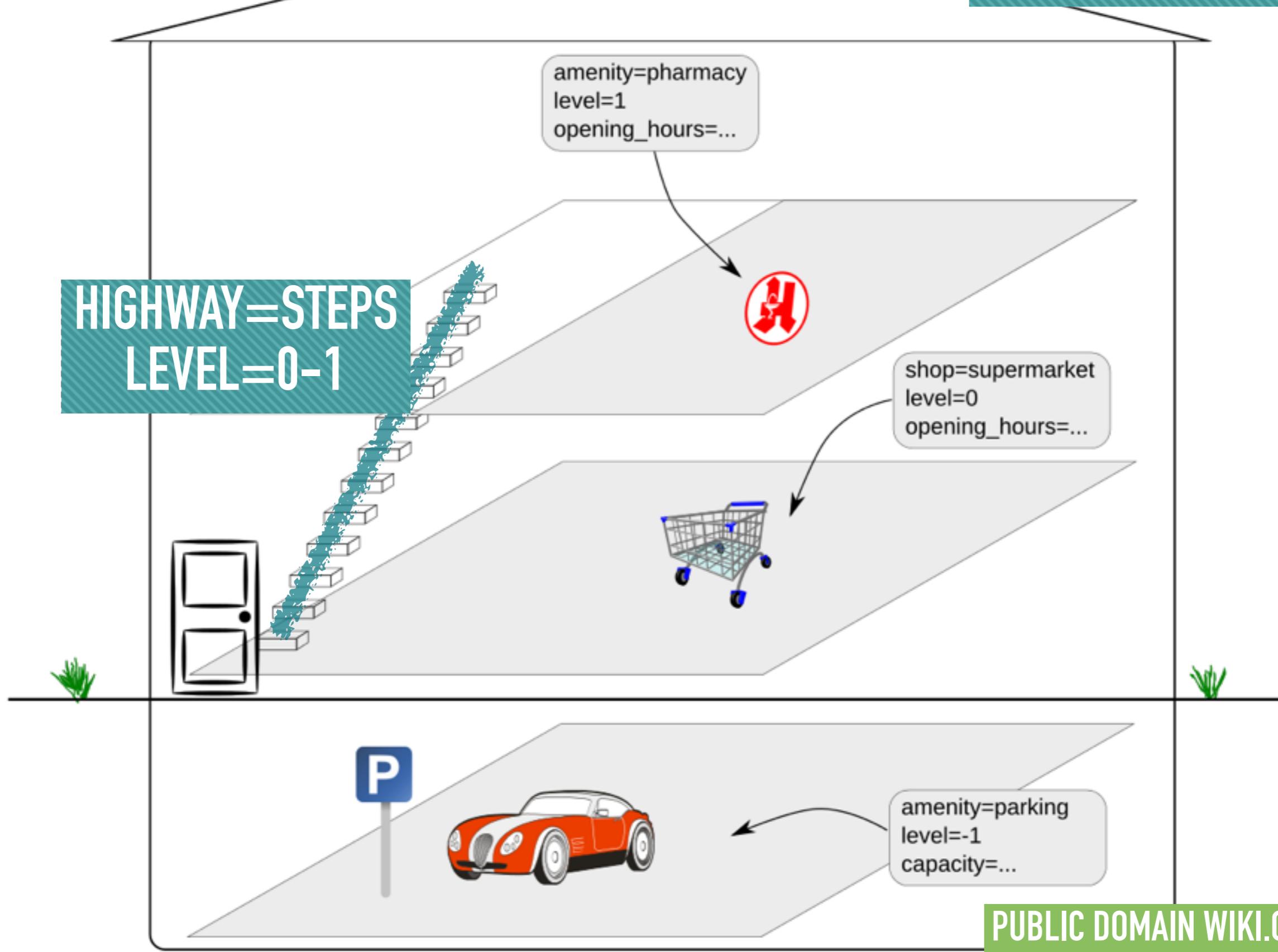
LEVEL = *



wiki.openstreetmap.org/wiki/User_talk:Zby-cz

Simple Indoor Tagging

ÚPRAVA METODIKY



EDITOR ID

- ▶ HTML5 editor pomocí vizualizační knihovny D3.js
- ▶ vykreslování přes SVG
- ▶ stylování mapy pomocí CSS
- ▶ iterace návrhu uživatelského rozhraní
- ▶ výsledek k dispozici na openstreetmap.cz/edit
- ▶ několik budov zmapováno

Editor iD – vstup do indoor módu

z 18
13

The screenshot shows the OpenStreetMap iD editor interface. At the top, there's a toolbar with icons for saving, zooming, and navigating. The address bar displays the URL openstreetmap.cz/edit/#background=Bing&map=18.02/14.38894/50.10430. A message box at the top left says "Právě jste upravil/a OpenStreetMap!" (You have just edited OpenStreetMap!). Below it, a note informs users that changes will appear on the standard layer within a few minutes. There are links to "Více" (More) and "Zobrazit na OSM" (View on OSM). On the right, a button labeled "Indoor" is visible. The main area is a map of the CVUT campus, featuring several buildings outlined in red and brown. Roads are shown in grey with white dashed lines, and green areas represent parks and lawns. Numerous white location markers are scattered across the map. The map includes street names like "Kolejová", "Thákurova", "Technická", and "Studentská". A copyright notice at the bottom left reads "© 2016 DigitalGlobe, © 2016 GeoEye, © GeoContent / (pl) Intergraph, © 2016 Microsoft Corporation". At the bottom right, there are social media sharing buttons for Facebook, Twitter, and Google+, along with a link to "Přispěl zby-cz, JandaM, Salamandr, a 17 další." and version information "1.9.3".

Editor iD – patro 0

z 18
14

Screenshot of the OpenStreetMap iD editor interface showing a map of a building's interior and surrounding area.

The map displays several buildings with red outlines. A large rectangular building on the left is labeled "Schody" (Stairs) in the object details panel. The map includes street names like "Kolejová", "Technická", "Mákuřova", and "Studentská". A scale bar indicates 50 m.

Editovat objekt (Edit object) panel:

- Název**: Schody
- Povrch**: asphalt, unpaved, paved...
- Osvětlení**: Není známo
- Šířka (v metrech)**: Není známo
- Sklon**: Nahoru, Dolů...
- Zábradlí**: Není známo

Pavel button is visible in the top right corner.

Editor iD – patro 0.5

z 18
15

openstreetmap.cz/edit/#background=Bing&level=0.5&map=18.02/14.38894/50.10430

Editovat objekt

Pěší zóna

Všechna pole

Název

Název objektu (existuje-li)

Povrch

asphalt, unpaved, paved...

Osvětlení

Není známo

Šířka (v metrech)

Není známo

Jednosměrka

Implicitně Ne

Struktura

Žádné

Uzel Čára Plocha Uložit 0.5 + - X

Kolejová Thákurova Technická Studentská

bing © 2016 DigitalGlobe, © 2016 GeoEye, © GeoContent / (p) Intergraph, © 2016 Microsoft Corporation 50 m 172 skrytých objektů A 1.9.3 zby-cz odhlásit

The screenshot shows the OpenStreetMap iD editor interface. On the left, there's a sidebar with various editing tools and dropdown menus. The main area is a map of a street network with several red-polyline features representing a pedestrian zone. The map includes labels for 'Kolejová', 'Thákurova', 'Technická', and 'Studentská' streets. A scale bar indicates 50 meters. At the bottom right, there are status indicators for '172 skrytých objektů' (172 hidden objects), the version '1.9.3', and user status 'zby-cz odhlásit'.

Editor iD – patro 13

Screenshot of the OpenStreetMap iD editor interface showing the editing of a building on the 13th floor.

Toolbar: Pavel, Back, Forward, OpenStreetMap URL, Save, Undo, Redo, Layer dropdown (set to 13), Delete icon.

Object Type Selection: Uzel (Node), Čára (Line), Plocha (Area).

Object Details: Edit object for "Uzel".

Fields:

- Název:** Název objektu (existuje-li) +
- Patro:** 13
- Přidat pole:** Adresa, Popis, Nadmořská výška

Properties: Všechny vlastnosti (3)

door	yes	edit	delete
level	13	edit	delete
ref	1331	edit	delete

Map View: Aerial view of a building complex. A red rectangular selection box highlights a specific area on the 13th floor. A trash can icon is overlaid on the map near the highlighted area. Street names visible include Kolejova, Thákurova, Technická, and Studentská. A scale bar indicates 50 m.

Bottom Navigation: Zobrazit na openstreetmap.org, 50 m, 170 skrytých objektů, A+, 1.9.3, zby-cz, odhlásit.

PULL-REQUEST EDITORU ID

- ▶ nadšené přijetí od správce projektu
- ▶ nyní se řeší jak systematicky pojmot různé "tasky" v UI editoru

A screenshot of a web browser window showing a GitHub pull request comment. The title bar says "Indoor mode by zbycz · Pul...". The address bar shows "GitHub, Inc. [US] https://github.com/openstreetmap/iD/pull/3097". The comment is from user **bhouse1** on May 3, 2018. The comment text is:

Wow, impressive work @zbycz! I really like this and would like to see this merged in some form.
I'll need some time to think about how to present the UI in a way that doesn't clutter things up too much.
I'll try to answer your questions now:

SHRNUTÍ VÝSLEDKŮ PRÁCE

- ▶ metodika, která má šanci na přijetí
- ▶ zjednodušení dle principu OSM
- ▶ úprava editoru iD, kladné přijetí
- ▶ prezentace na konferenci SotM CZ/SK v květnu 2016
- ▶ plán navržení oficiální metodiky

OSNOVA OTÁZEK OD OPONENTA

1. rozsahy pro level v záporných číslech:
level=-4 - -1
2. oficiální návrh:
ano, chystá se v nejblížší době
3. technické či ideologické překážky začlenění do iD?
do jaké míry souvisí s přijetím metodiky?