OsmInEdit - A Simple Indoor Editor

https://osminedit.pavie.info

Adrien Pavie, Andreas Dirks, Hannes Geißelmann, Thomas Sontag

Heidelberg, September 21st 2019
Outline

OsmInEdit - A Simple Indoor Editor

- Vision
  - Mission statement
  - Open Data
  - Applications for indoor maps

- Status Quo
  - Coverage of OSM indoor maps
  - Simple Indoor Tagging schema
  - OSM mapping tools
OsmInEdit - Key Features

- Floor plan import
- Indoor editing hierarchy
- Indoor feature presets
- Web-based editing

Outlook

- Challenges to indoor mapping
- Next steps
- How can you contribute?
Vision – Applications for indoor maps

Indoor maps are applied in various fields

<table>
<thead>
<tr>
<th><strong>Indoor Navigation</strong></th>
<th>Turn-by-turn guidance, map display, shortest route, search POIs, AR-navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Simulations</strong></td>
<td>Emergency planning, optimize people flow, video games</td>
</tr>
<tr>
<td><strong>Location based ads</strong></td>
<td>Provide ads close to shops</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>Equipment map, Building Information Model (BIM)</td>
</tr>
</tbody>
</table>
Vision – Mission Statement

We aim to repeat the OpenStreetMap success story for the indoor space.
With the right tools and your help we believe that we can achieve this goal.

OSM Registered Users

Assumption: Every 10th user today will engage in indoor mapping.

- 5.2 Mio.
- 3 Mio.
- 1 Mio.
- 0.5 Mio.
- 0

Source: https://wiki.openstreetmap.org/wiki/Stats
Google & Apple already use indoor maps – we can do the same but open and accessible for everyone
Today, the majority of indoor maps are not contributed by a mapping community but by single initiatives as the one from SNCF in 2016.

Status Quo – Indoor Maps Coverage

Indoor Maps 388 train stations

Use of level tag worldwide

With the right tools we believe to enable a broad community to map indoors
Simple Indoor Tagging emerged as a community consensus on how to model indoor data.

**Status Quo – Simple Indoor Tagging**

Which floor a feature belongs to:
- level=0/1/2/...

Indoor structure:
- indoor=room/area/wall/...

No need for relations nor complex tags

Example: bakery on level 1
- indoor=room + shop=bakery
- level=1 + name="B is for Bakery"

https://wiki.openstreetmap.org/wiki/Simple_Indoor_Tagging
Popular editors such as ID or JOSM lack important features to properly map buildings indoors.

**Status Quo – Mapping Tools**

**JOSM**
- Basic floor plan management (plugin)
- Limited level filtering
- Simple Indoor Tagging (plugin)
- Not user-friendly enough for non-expert mappers because overloaded with optionality and features
- No easy access because not web-based
- No indoor specific validation rules

**ID**
- No floor plan import function.
- No function to filter data by level.
- No Simple Indoor Tagging presets
- No indoor specific validation rules
The attempt to establish a tool for indoor mapping was unsuccessful so far.

**Status Quo – Mapping Tools**

**Editors**

- **ID Indoor** (Adrien Pavie)

  - Fork of iD:
    - hard to follow regular updates
    - Basic level filtering and presets
    - No floor plan import
    - → Not really convenient

**Viewer**

- **OpenLevelUP** (Adrien Pavie)

  - Live data everywhere
  - Long loading time
  - Not a great user experience

- **OpenStationMap** (Roland Wagner, Roland Olbricht)

  - Using vector tiles: fast
  - Limited functionality
  - Focused on railway stations
Floor plan import
Indoor specific feature presets
**OsmlnEdit – Key Features**

Top-Down editing hierarchy dedicated to indoor mapping

<table>
<thead>
<tr>
<th>Mode</th>
<th>Level of Resolution</th>
<th>What can you Edit?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Street Mode</strong></td>
<td>Street View</td>
<td>• Nothing, only overview&lt;br&gt;• Only panning and zooming</td>
</tr>
<tr>
<td><strong>2. Editing Mode</strong></td>
<td>Single Building</td>
<td>• Building Outline&lt;br&gt;• Building Metadata (name, number of levels, height...)</td>
</tr>
<tr>
<td></td>
<td>Single Level</td>
<td>• Level Outline&lt;br&gt;• Features (Geometry, POIs...)</td>
</tr>
</tbody>
</table>
Our editor is simple and web-based similar to ID, to make mapping accessible for a broad user group.

Changesets in 2018

Source: https://wiki.openstreetmap.org/wiki/Editor_usage_stats
Outlook

Challenges specific to indoor mapping

Legal

• Most buildings are private property:
  • Restricted access
  • No public access to floor plans in most cases
  • Floor plans may require permission from building owner/architect. Otherwise usage infringe copyright certain countries

Technical

• No accurate GPS signal available
• Mapping 3D building in a 2D editor
Next Steps

Outcome

Community

• Improve or extend Simple Indoor Tagging schema
• Offer more documentation
• Make indoor data sources easier to access

New features

• 3D preview of your edits
• Show indoor, geo-located images
• Tools for semi-automated mapping
How can you contribute?

As Mapper

- Map as many buildings as you can!
- Talk about indoor mapping to your local community
- Report bugs or feature ideas
- Continue promoting indoor mapping
- Help local groups launch mapathons & discuss with building operators

As Developer

- **ISC License**
- Contribute new features and fix bugs
- Framagit (main): [https://framagit.org/PanierAvide/osminedit](https://framagit.org/PanierAvide/osminedit)
- Github (mirror): [https://github.com/PanierAvide/OsmlnEdit](https://github.com/PanierAvide/OsmlnEdit)

As Translator

- Get the Editor translated into other languages (today only English & French)
Check out OsmInedit here...

https://osminedit.pavie.info
Contact us

• Adrien Pavie adrien@pavie.info
• Andreas Dirks andreas.dirks@daimler.com
• Hannes Geißelmann hannes.geisselmann@daimler.com
• Thomas Sontag thomas.sontag@daimler.com