

Boost the c3nav Editor: Smart Tools for Indoor Maps

Imagine making indoor navigation smarter and smoother - not just for end users, but for the map creators behind the scenes.

Your challenge is to build editor tools that simplify and speed up the creation of indoor maps using c3nav (<https://github.com/c3nav>), an Open Source indoor navigation system designed for real-time, multi-floor guidance in complex buildings (think campuses, conference venues, ...).

It's what helps people find their way - but it needs a hand behind the curtain.

For users:

- Point & Click
- Searching functionality (POIs, Categories, etc.)
- Color-coded spaces
- Routing (with ETA and advanced options)

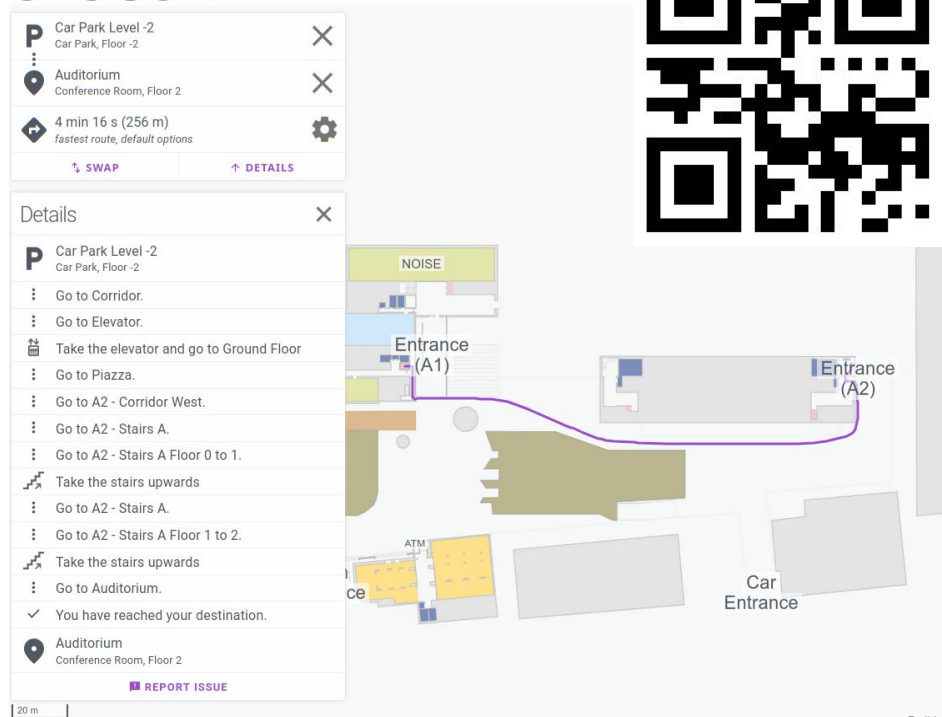
For hackers:

- Backend language: Python
- Frontend/editor language: Javascript
- Container-ready (docker), CI/CD including data of SFSCON is provided *

Get a sneak peek:

<https://maps.sfscon.it>

SFSCON



* Please note that the CI/CD configuration is provided as reference/guideline to jumpstart your deployment only. You will not be able to use the SFSCON/NOI infrastructure during the Hackathon.

1. Stairway creator

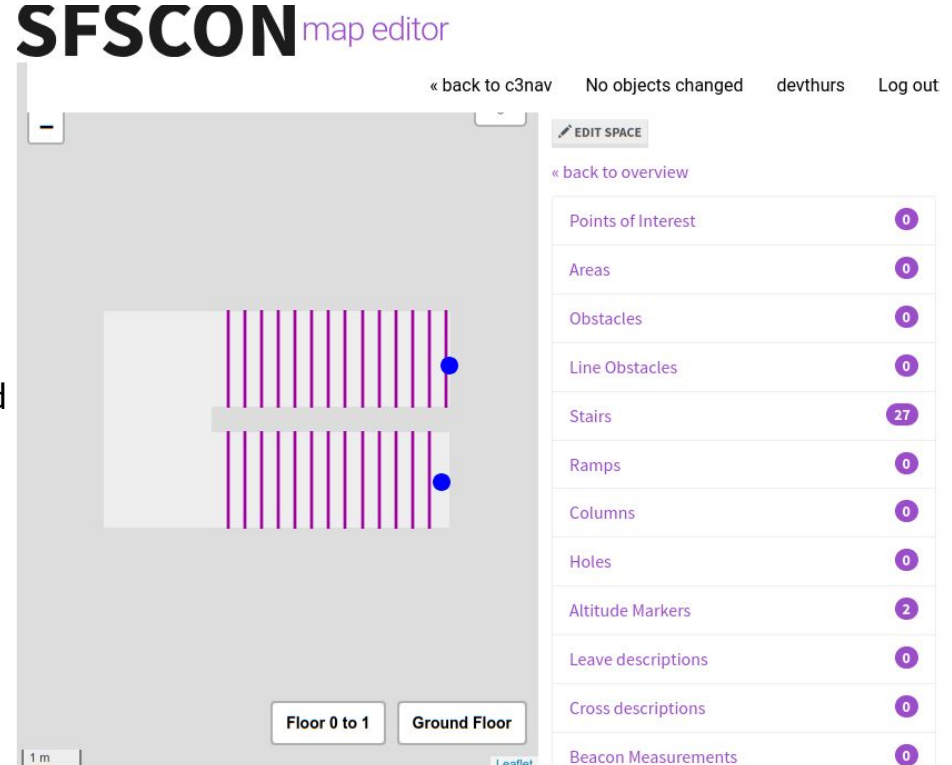
Mapping staircases manually is slow and error-prone.

Each step needs to be drawn individually,
and edges must sit outside the “stairway” polygon.

Your mission:

- Develop a tool that lets editors place equally spaced steps with aligned vertices, quickly and cleanly
- Ideally support both “U” and “C” shaped staircases

Think of it as a smart, visual stair stepper.



1. Stairway creator

SFSCON map editor

« back to c3nav

No objects changed

devthurs

Log out

EDIT SPACE

« back to overview

Points of Interest0

Areas0

Obstacles0

Line Obstacles0

Stairs27

Ramps0

Columns0

Holes0

Altitude Markers2

Leave descriptions0

Cross descriptions0

Beacon Measurements0

Floor 0 to 1

Ground Floor

1 m

NOTE

27 steps per floor change (13 for the lower stairway, 14 for the higher)

space_id78

startX stairway sx267.2

endX stairway sx268.73

startX stairway dx268.93

endX stairway dx270.38

base Y198.2

Stairway SX	Y	
1	198.2	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,198.2],[268.73,198.2]]], '78', null);
2	197.9	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,197.9],[268.73,197.9]]], '78', null);
3	197.6	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,197.6],[268.73,197.6]]], '78', null);
4	197.3	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,197.3],[268.73,197.3]]], '78', null);
5	197	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,197],[268.73,197]]], '78', null);
6	196.7	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,196.7],[268.73,196.7]]], '78', null);
7	196.4	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,196.4],[268.73,196.4]]], '78', null);
8	196.1	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,196.1],[268.73,196.1]]], '78', null);
9	195.8	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,195.8],[268.73,195.8]]], '78', null);
10	195.5	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,195.5],[268.73,195.5]]], '78', null);
11	195.2	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,195.2],[268.73,195.2]]], '78', null);
12	194.9	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,194.9],[268.73,194.9]]], '78', null);
13	194.6	*INSERT INTO public.mapdata_stair(geometry, space_id, import_tag) VALUES ('type':'LineString','coordinates':[[267.2,194.6],[268.73,194.6]]], '78', null);

Stairway DX

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Example of semi-automated stairway generation using a spreadsheet.

2. Snap to Edges

In c3nav, every space must be separate — but currently there's no smart snapping. That means a lot of fiddly pixel work.

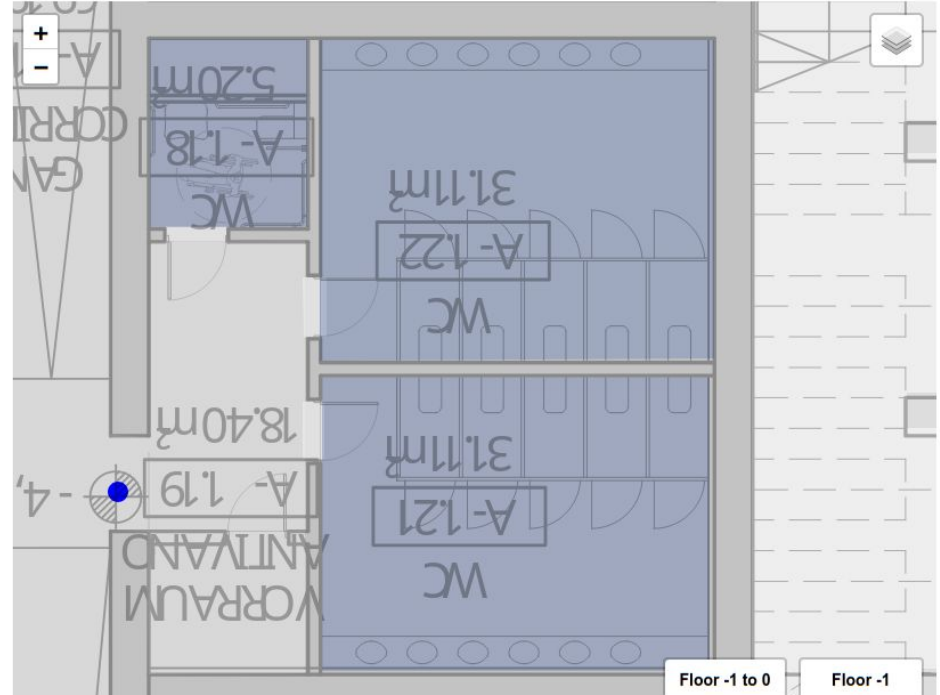
Your mission:

- Automatically snap new spaces (or obstacles like walls) to nearby edges while drawing
- Optionally allow snapping to the underlying base map too

Smooth alignment. Less frustration.

SFSCON map editor

« back to c3na



3. Level Cloning

Mapping a multi-floor building? Right now, you have to redraw every room, wall and shape from scratch on each level.

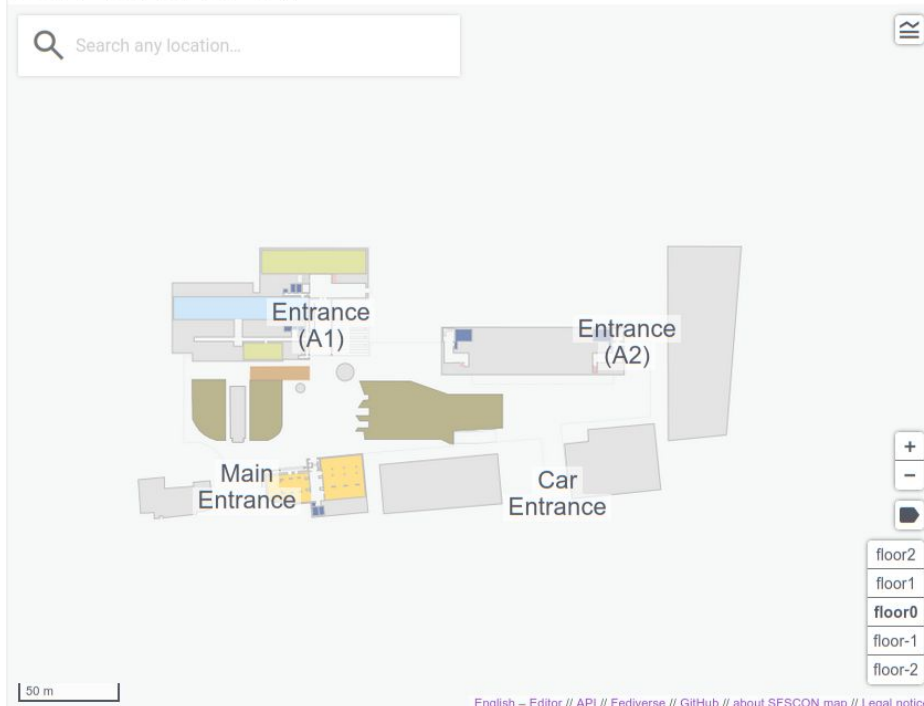
Your mission:

- Enable editors to clone selected map items to another floor
- Ideally include an option to keep cloned items in sync across levels

It's like copy-paste, but smarter.

SFSCON

devthurs



4. Indoor Data Integration from Open Data Hub

Bring real-time environmental data into the map!

The open dataset on Indoor Environmental Monitoring for rooms in NOI Techpark includes temperature, humidity, and CO₂ levels.

Your mission:

- Retrieve data from the Indoor Environmental Monitoring dataset
- Display the values directly on the map, in their corresponding rooms

Turn static maps into live, data-powered environments.

<https://databrowser.opendatahub.com/dataset-overview/fad6ba99-2f71-425a-8466-10c5d78475f6>

Indoor Environmental Monitoring

Details

Sources Availability of data Available records

Description

This dataset provides environmental monitoring data, including humidity, temperature and carbon dioxide levels, for selected rooms and areas in NOI Techpark Bolzano and Brunico. The data can be used for indoor air quality analysis, energy efficiency optimisation and health impact assessment.

Data access

View in Data Browser

Access data

Access to table view

SHOW DATASET API

MORE INFORMATION

Output	
Swagger URL	https://swagger.opendatahub.com/?url=https://mobility.api.opendatahub.com/v2/apispec/
Sources	
Open Data	All publicly (without a login) available data is either under license CC0 or CC-BY.
Contact and support	help@opendatahub.com

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Judging criteria

Your solution will be judged based on:

- Usability & Simplicity → Is it intuitive and pleasant to use?
- Integration with c3nav Editor → How feasible is the implementation? How well does it fit the existing system?
- Project Guideline Fit → How closely does it follow the technical and design spirit of the c3nav project?

By taking on this challenge, you're not just solving a technical problem. You're actively contributing to the Free and Open Source Software (FOSS) community, helping improve a tool that's freely available to the world. This is about empowering everyone - from developers to institutions - to build better, open indoor navigation systems.

Make c3nav easier to use — and help mappers map the world better.

Ready to hack?

Let's get some preliminary directions!

<https://github.com/noi-techpark/sfscon-maps> : used to manage the actual maps.sfscon.it c3nav instance!

- docker compose files: Jump-start your deployment
- SFSCON map database: Pre-populated map with all the entities you will need
- Documentation for mappers: Learn your way around the editor in no time

<https://github.com/c3nav/> : The upstream project!

- **IMPORTANT:** use the version mentioned in the sfscon-maps repository first, and only switch to a more recent version if necessary

If you need more information / advices, we're here to help!

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THANK YOU & HAPPY HACKING

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