

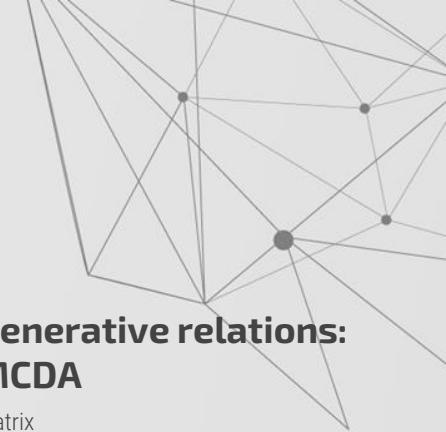
ZOHO's Pearl

BK7083 - '20/'21

Jirri van den Bos (4801792)

Milou Mulder (4833813)

Nancy Nguyen (4785029)



Generative relations: MCDA

Matrix
Entrance map
Flowchart
Visualisations

Generative relations: corridors

Metronetwork
Flowchart
Visualisation

Technical Drawings

Urban plan
Facades
Floorplans
Stencils

07

Renders

01

Fundamental Design Philosophy

Resident stories
Design Goals
Programme

Voxelated model and Sun analysis

Flowchart
Visualisations

02

Sound and Sky view

Flowchart
Visualisations
Rhino.Inside Revit Pipeline

03

TABLE OF CONTENTS

04

05

06

Renders

01

Fundamental Design Philosophy



Design goals



Optimise the building for Sunlight and Sound Pollution



Develop a layout that suits the residents

Create a pleasant Living Environment



Add possibilities to the Rotterdamse Maakkwartier



Future residents



Starters



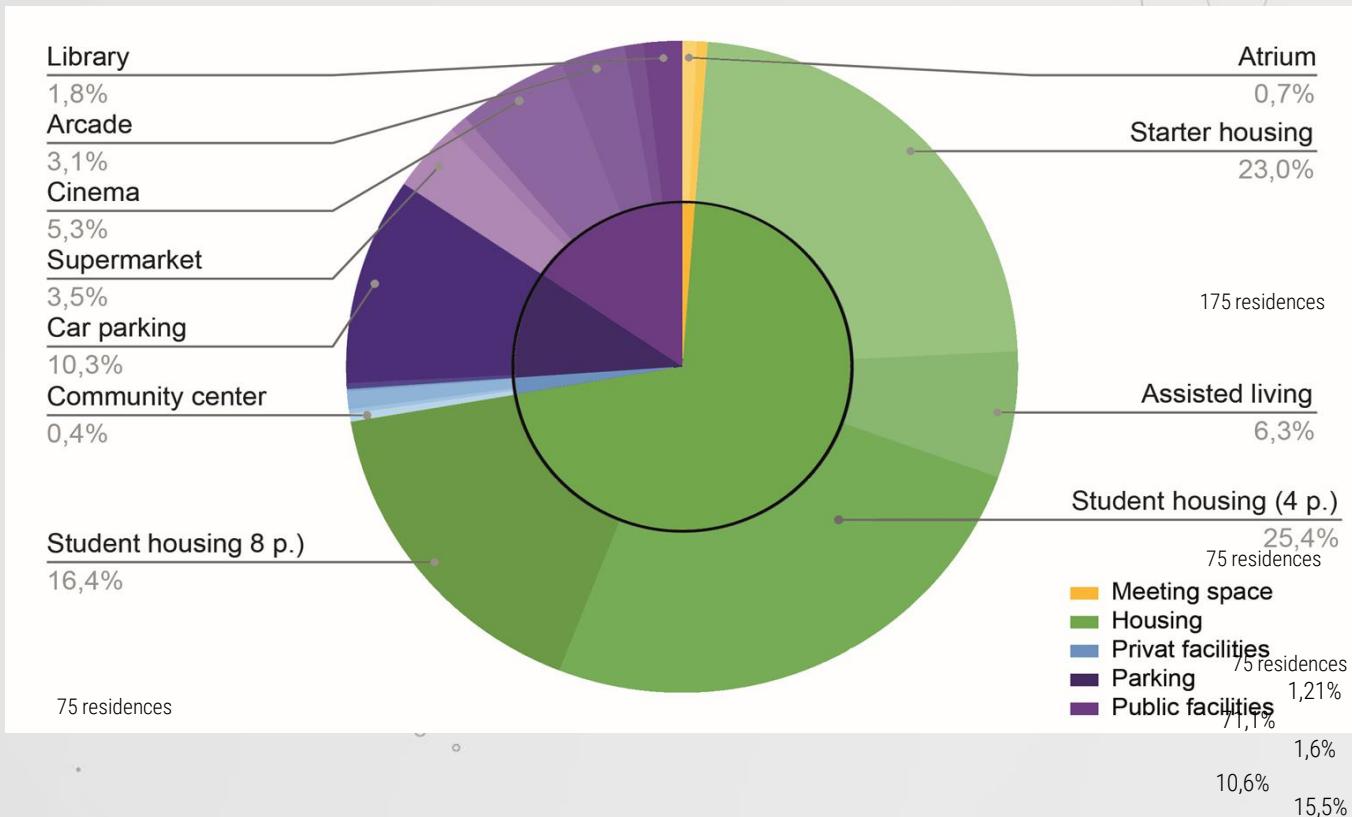
Assisted living



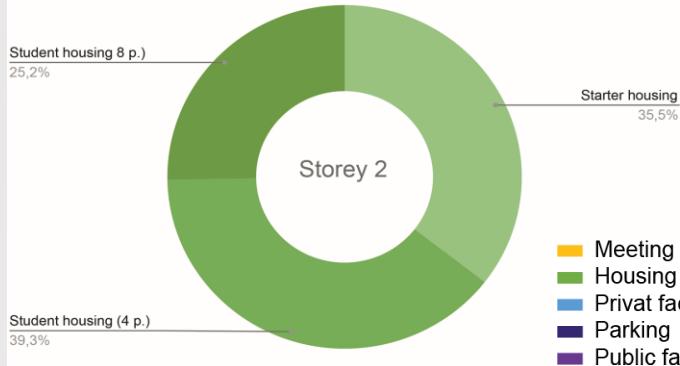
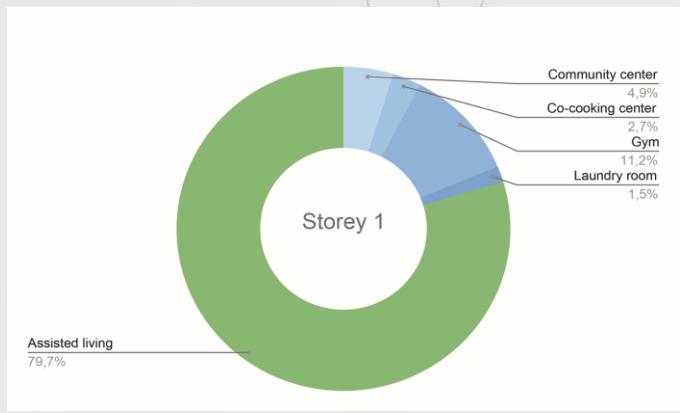
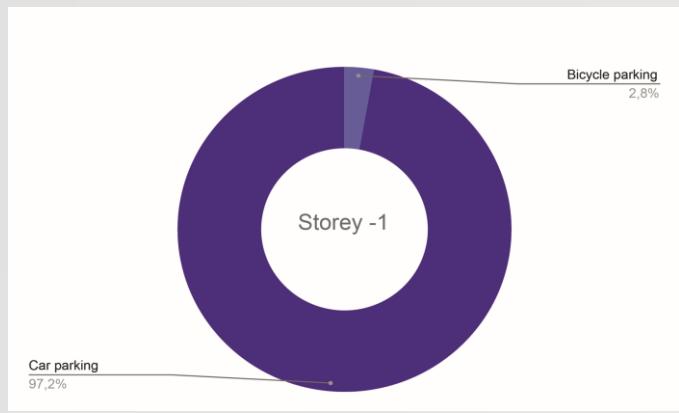
Students



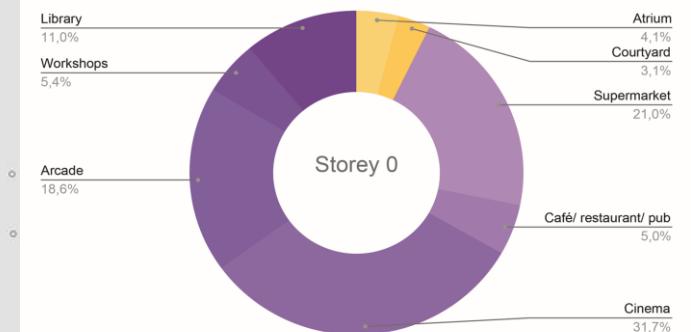
Programme



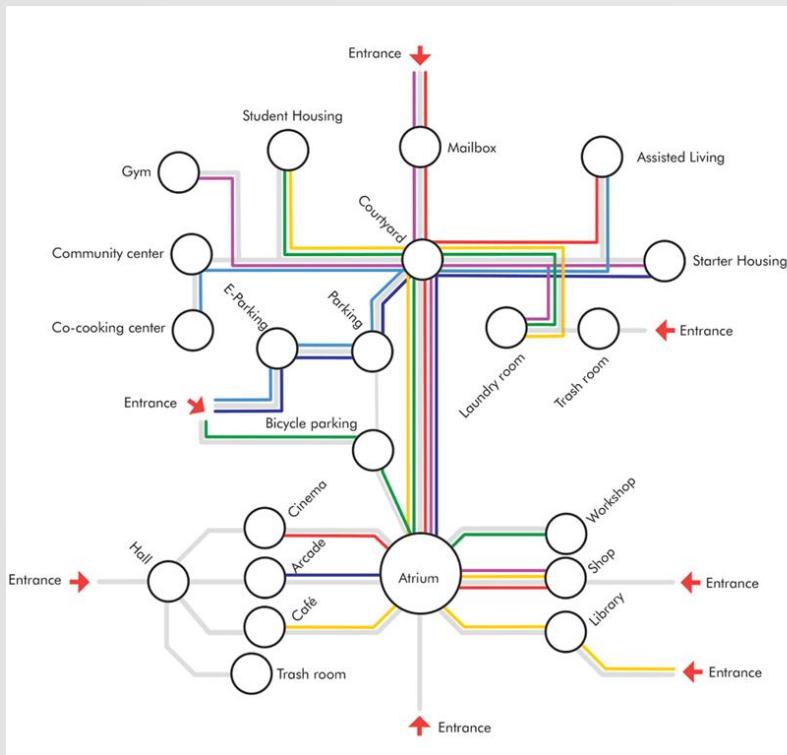
Programme



- Meeting space
- Housing
- Privat facilities
- Parking
- Public facilities



Metro network - Resident stories



1
Chunlin, 26, is an Arts student who enjoys social contacts and working with different forms of art. He gives workshops to other residents and outsiders to pay the bills.



2
Mila, 20, is an international student who usually studies in the library and goes for a cup of coffee in the café. She uses the shop to buy lunch and groceries.



3
Robert, 79, is retired after a career in construction. After a recent knee operation he moved into assisted living. Since his greatest passion is movies he is often found in the buildings cinema



4
Fabien, 70, is a retired widower who enjoys social contacts with his fellow residents. He can often be found cooking in the co-cooking center for anyone who likes to join.

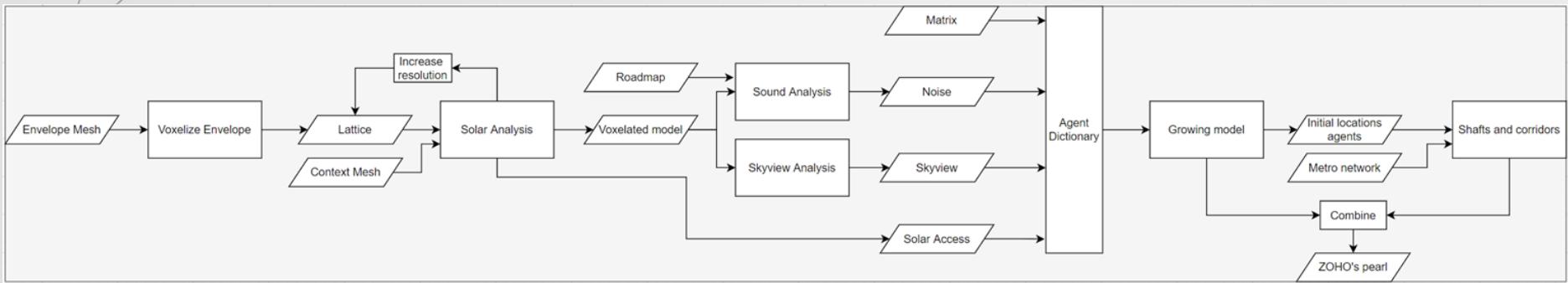


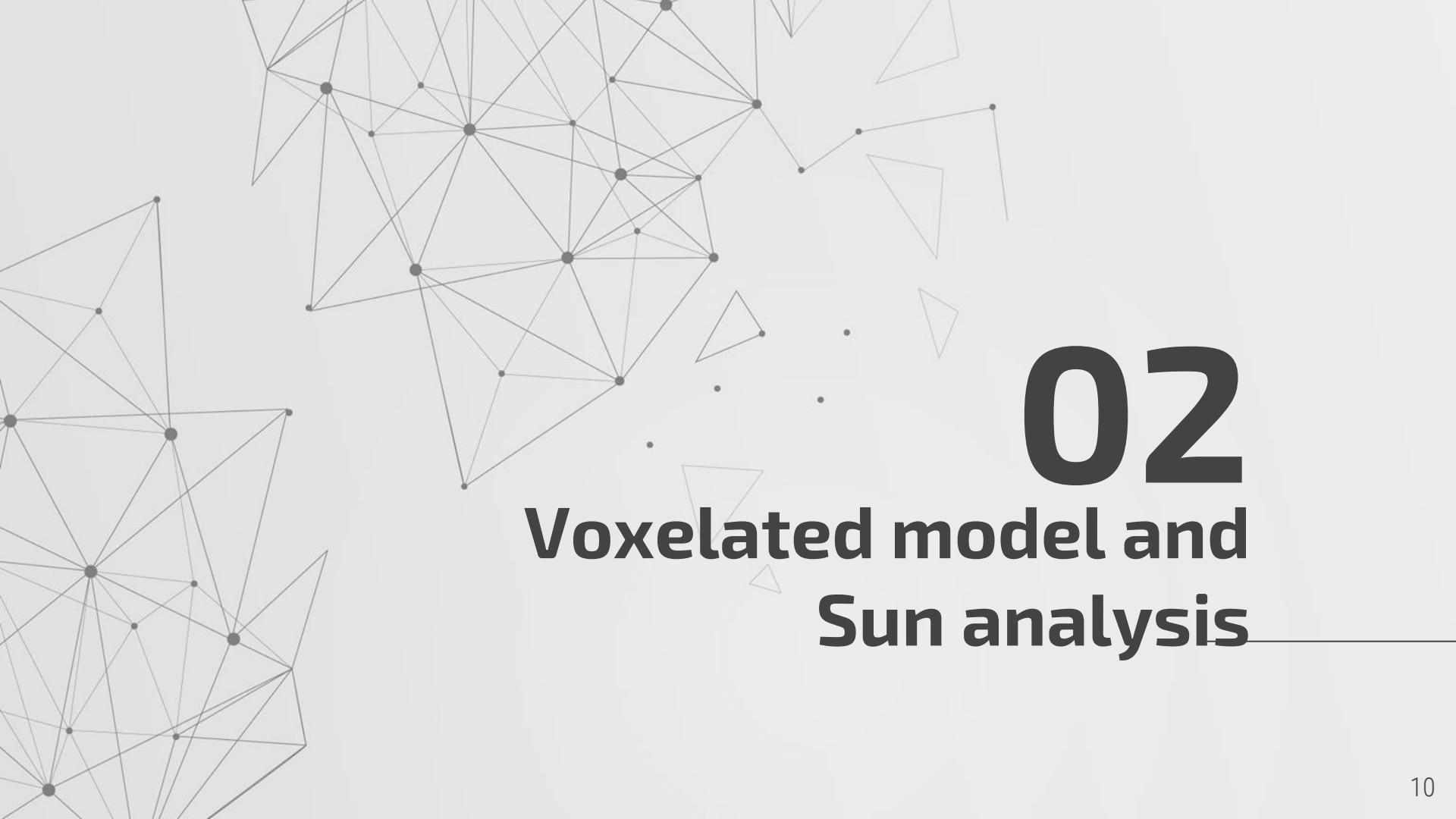
5
Helen, 34, is a motivated starter who is anxious about covid-19 and therefore only works at home and uses the sports and shopping facilities in her building.



6
Sharron, 26, is a young video game developer at the start of career with great prospects. She enjoys spending time in the Arcade and drives her electric car to work.

Fundamental Flowchart



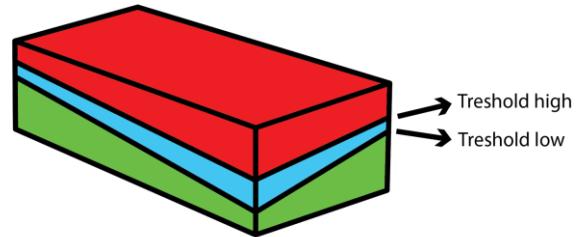
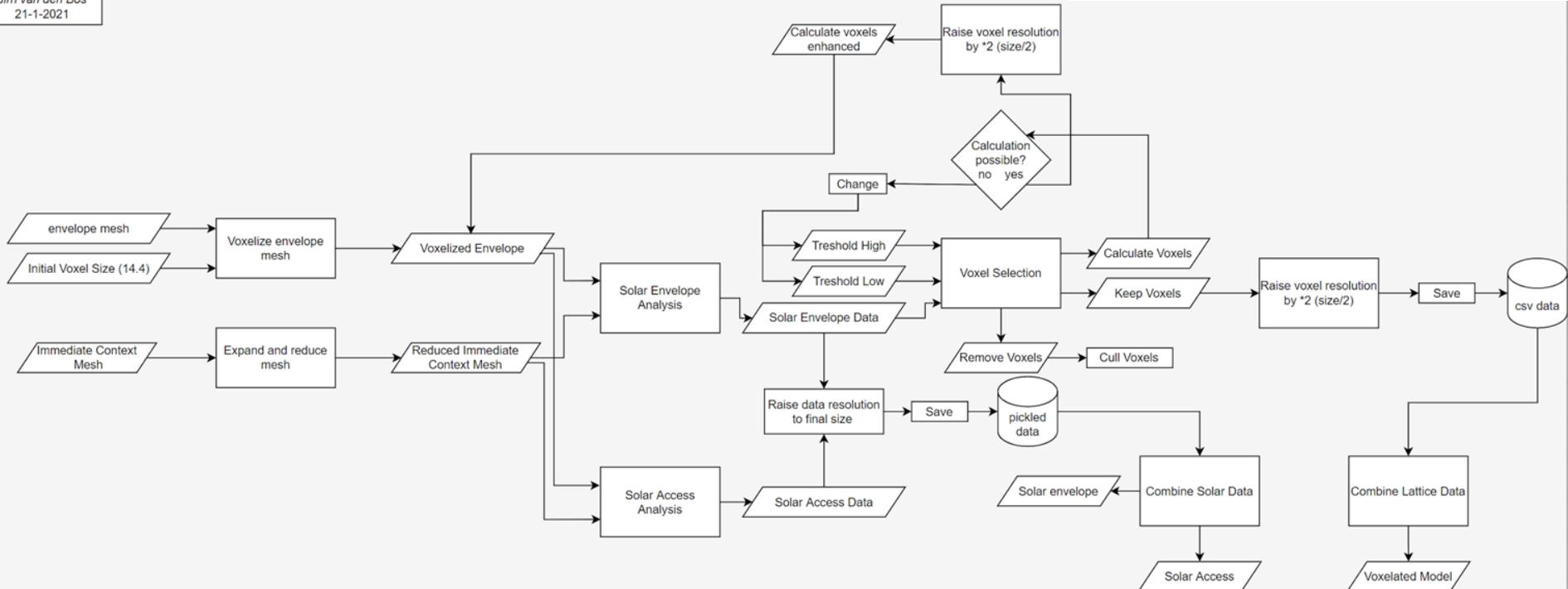


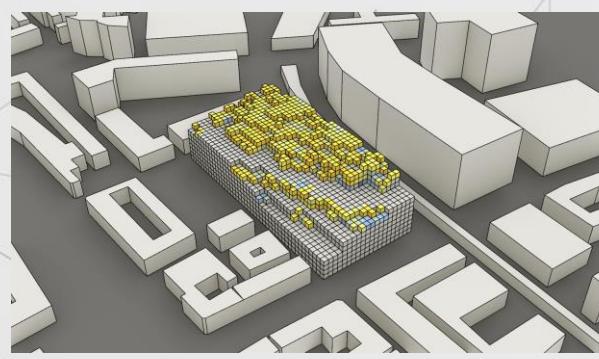
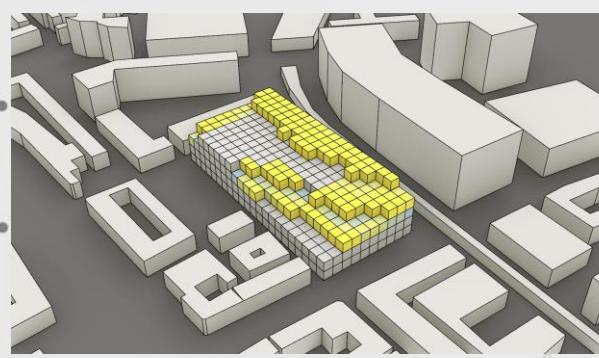
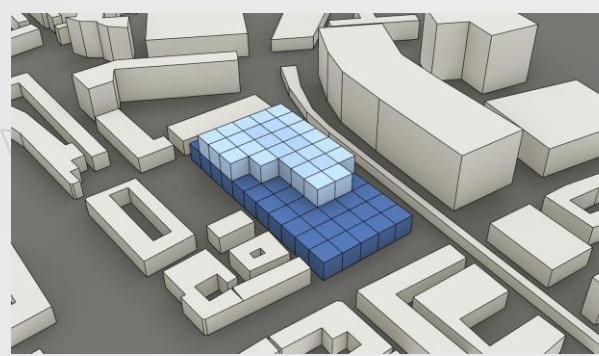
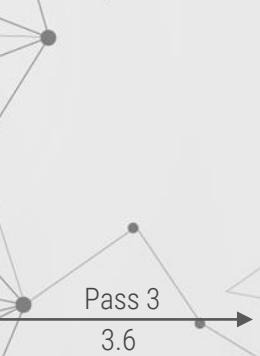
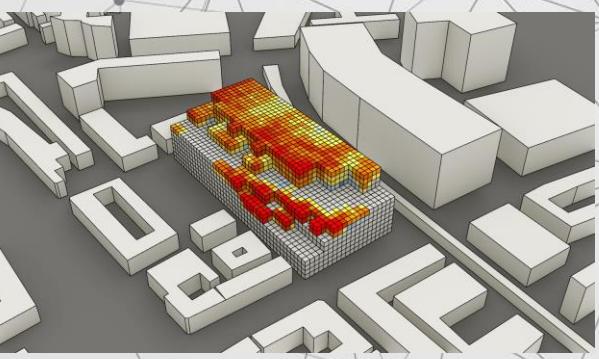
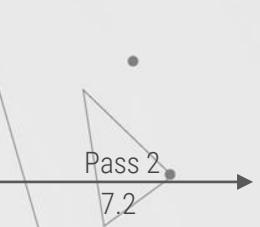
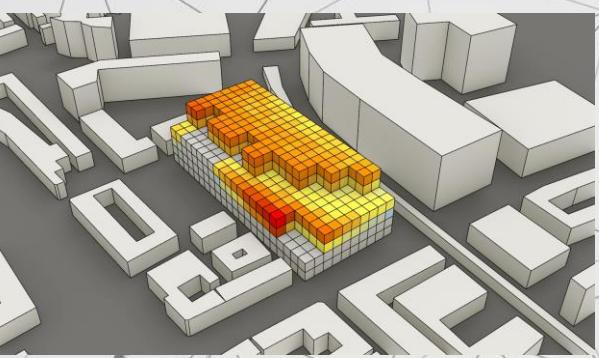
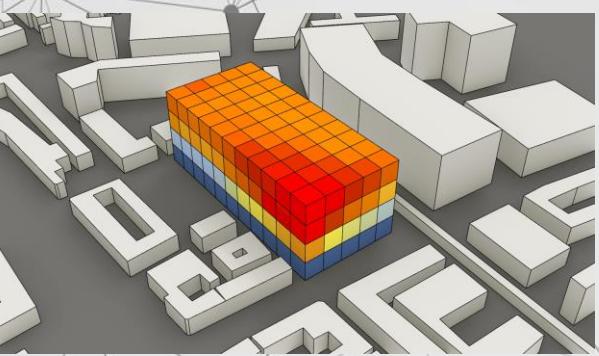
02

Voxelated model and Sun analysis

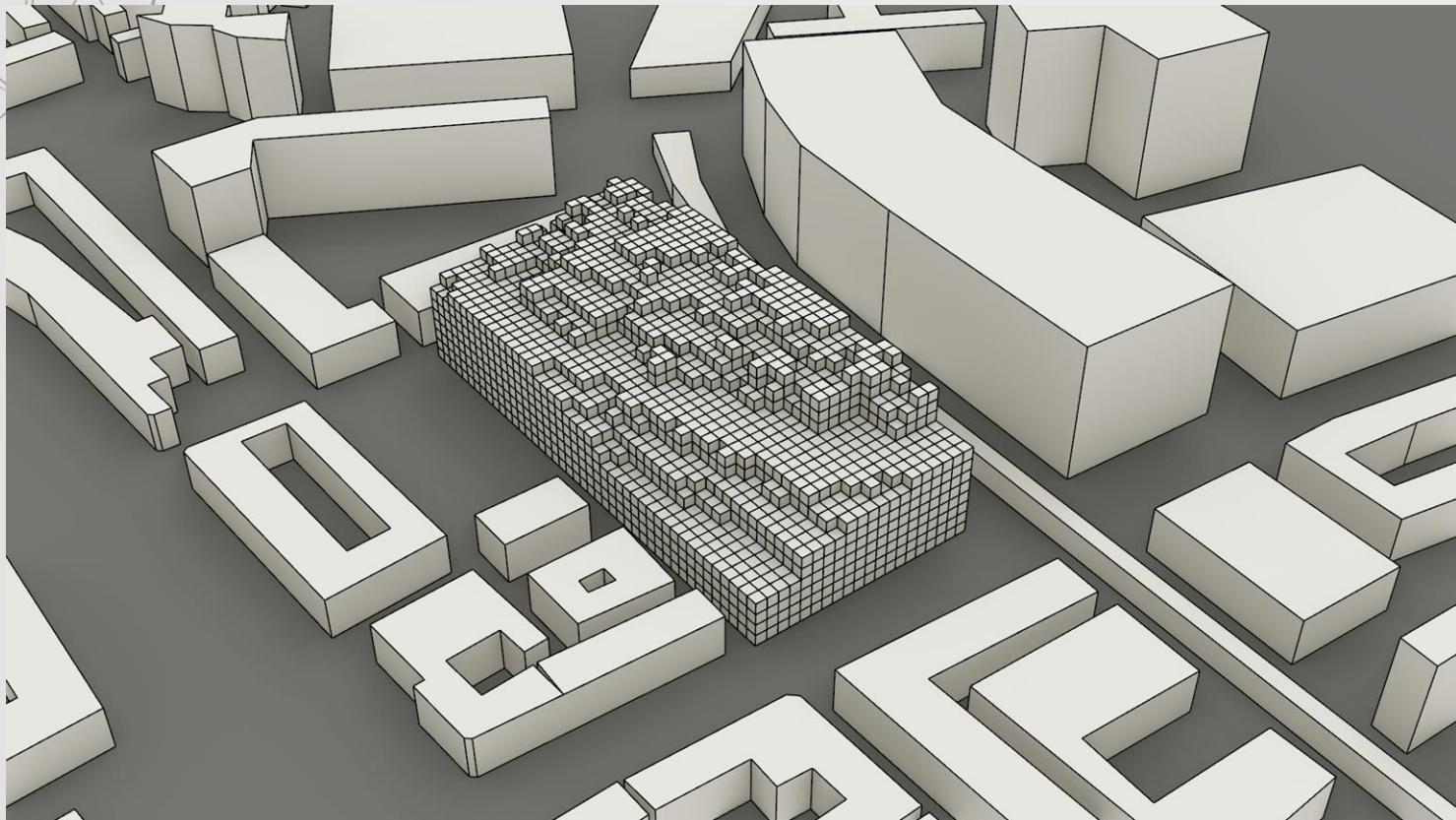
Flowchart

Voxelization
Jirri van den Bos
21-1-2021





Result Solar voxelization



03

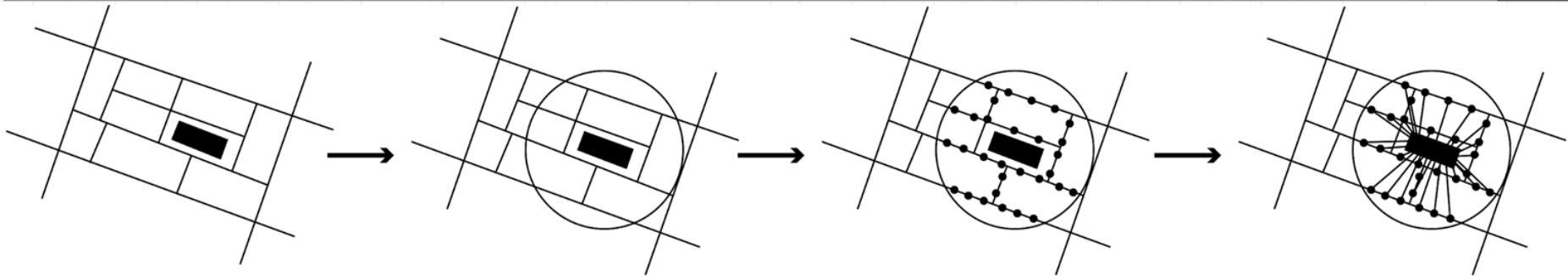
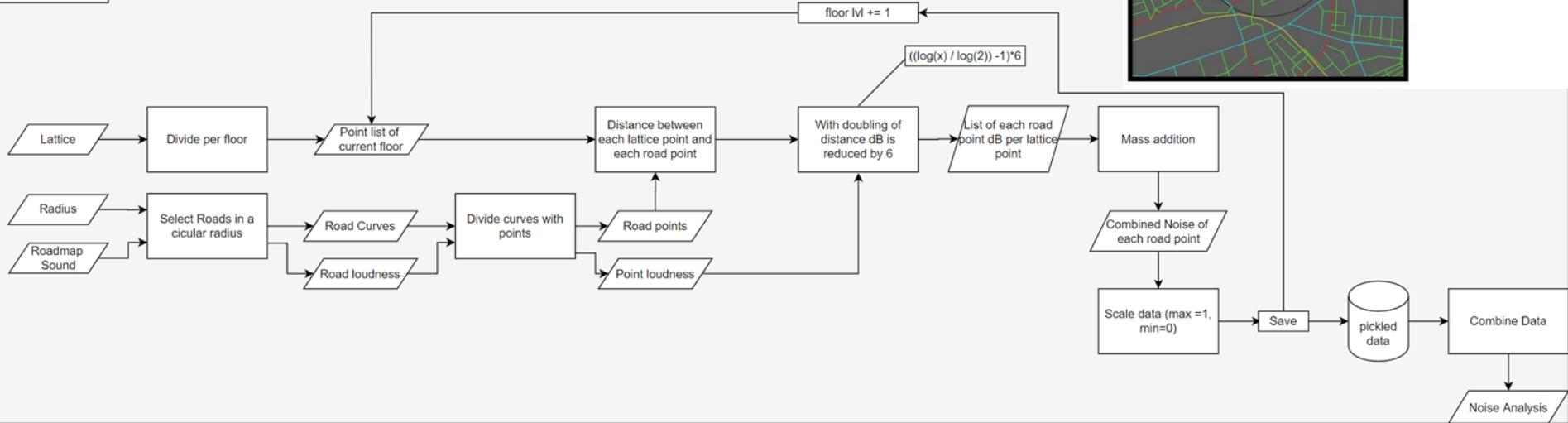
Sound and Sky view

Flowchart Sound

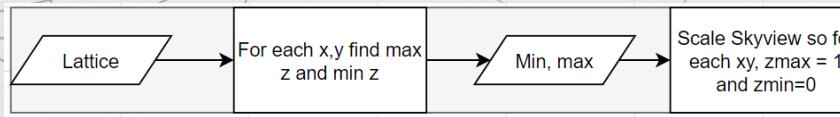
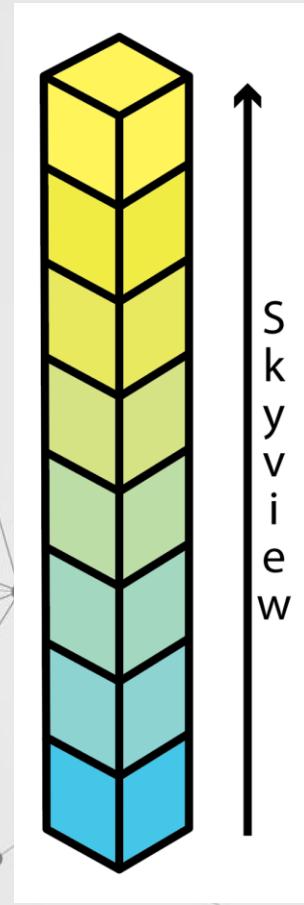


Small Roads
 Medium Roads
 Large Roads

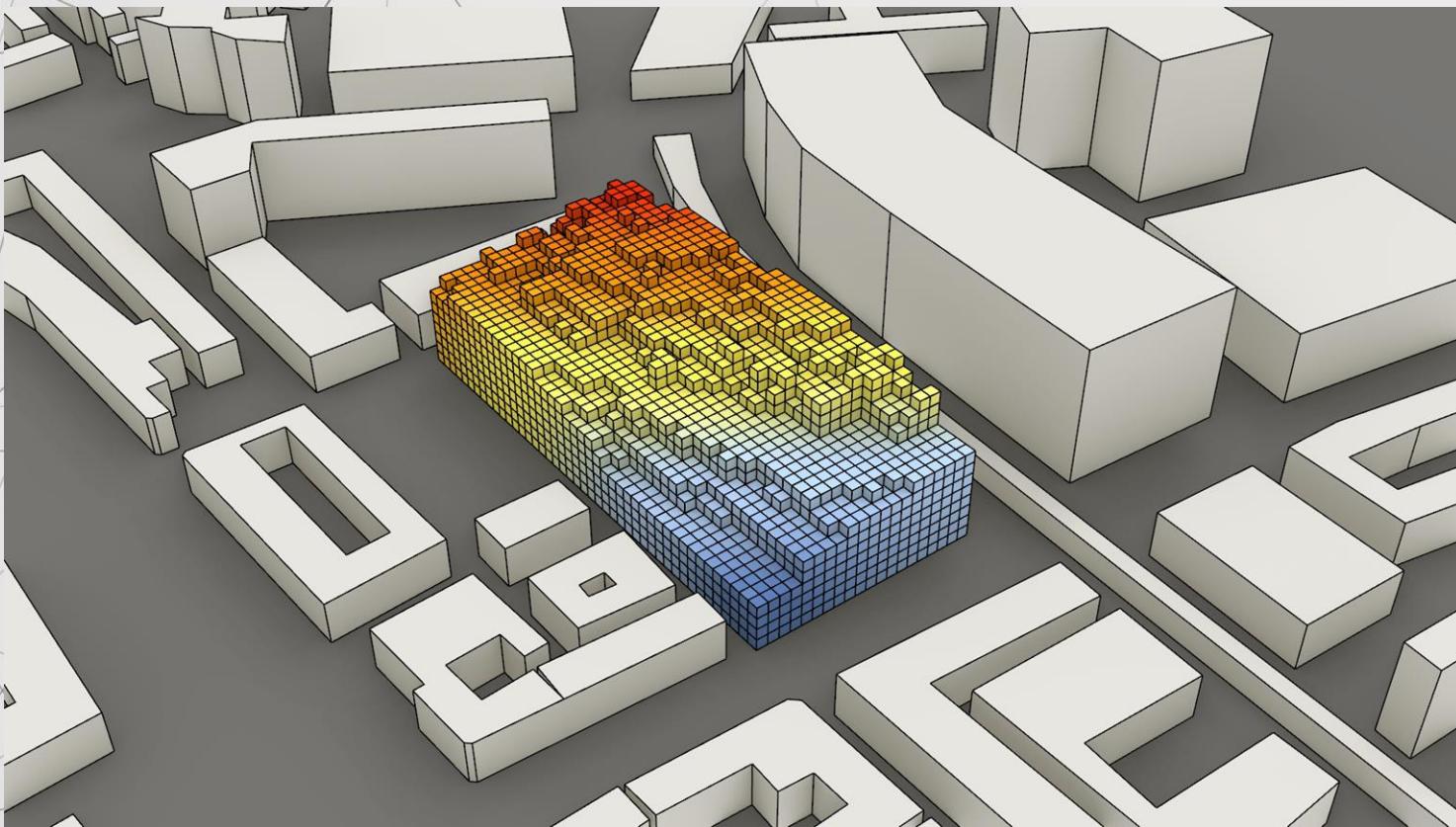
Noise
Jirri van den Bos
21-1-2021



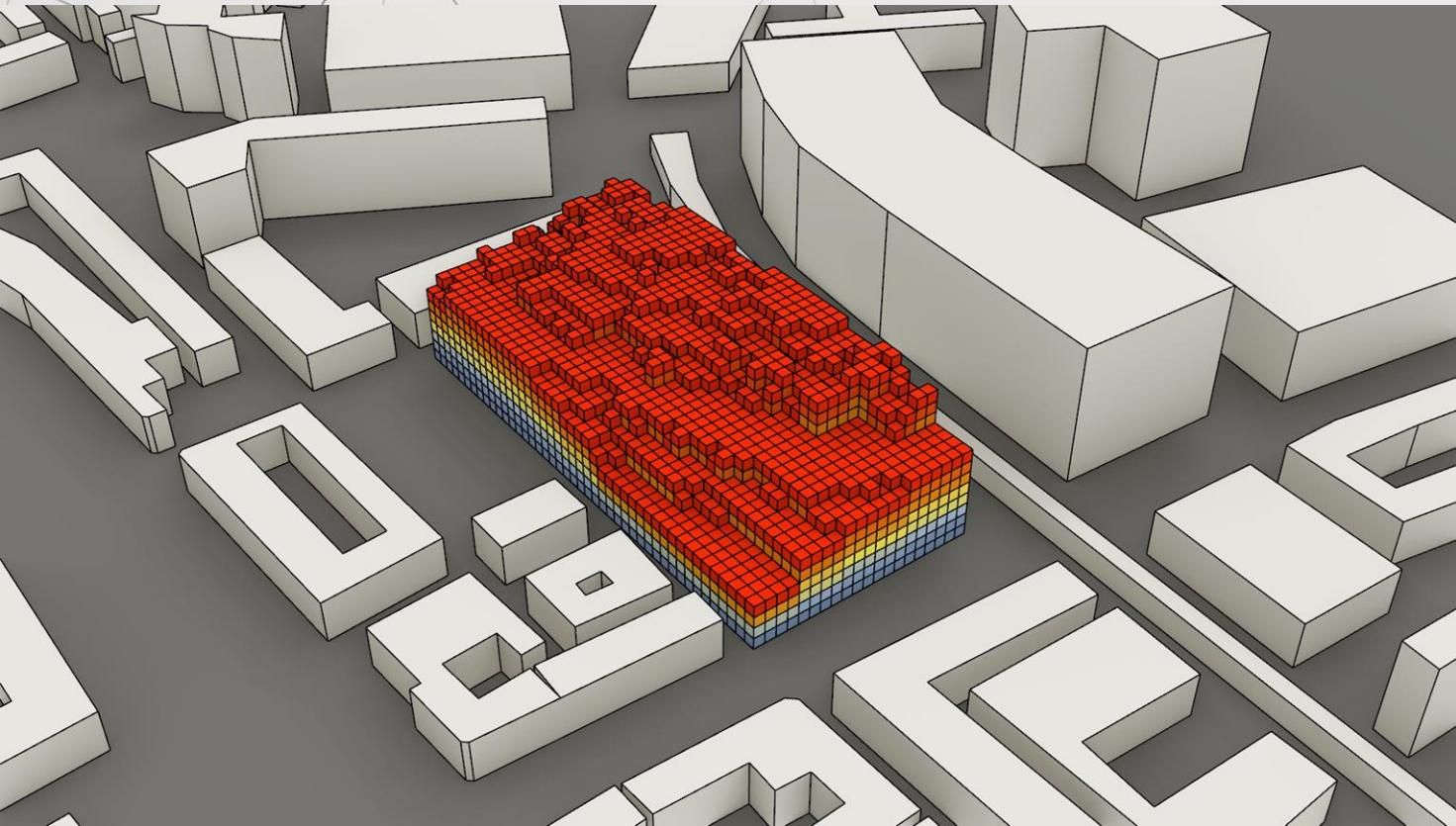
Flowchart Skyview



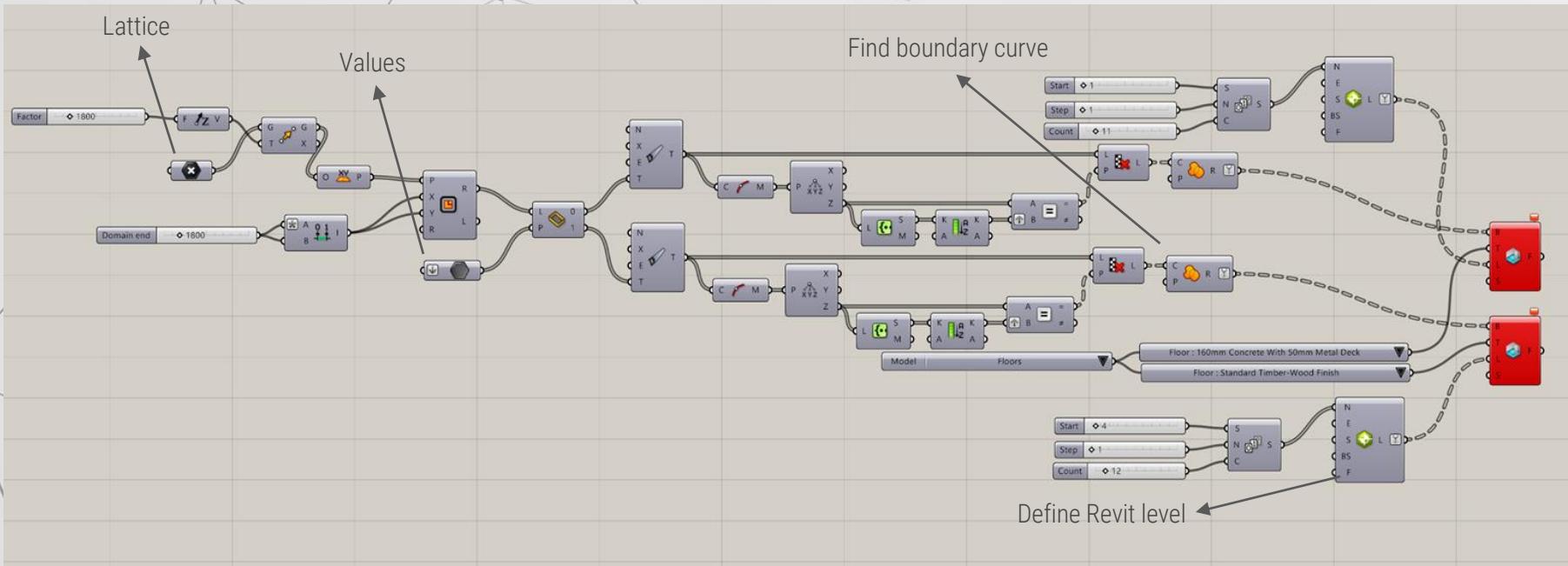
Sound Analysis Result



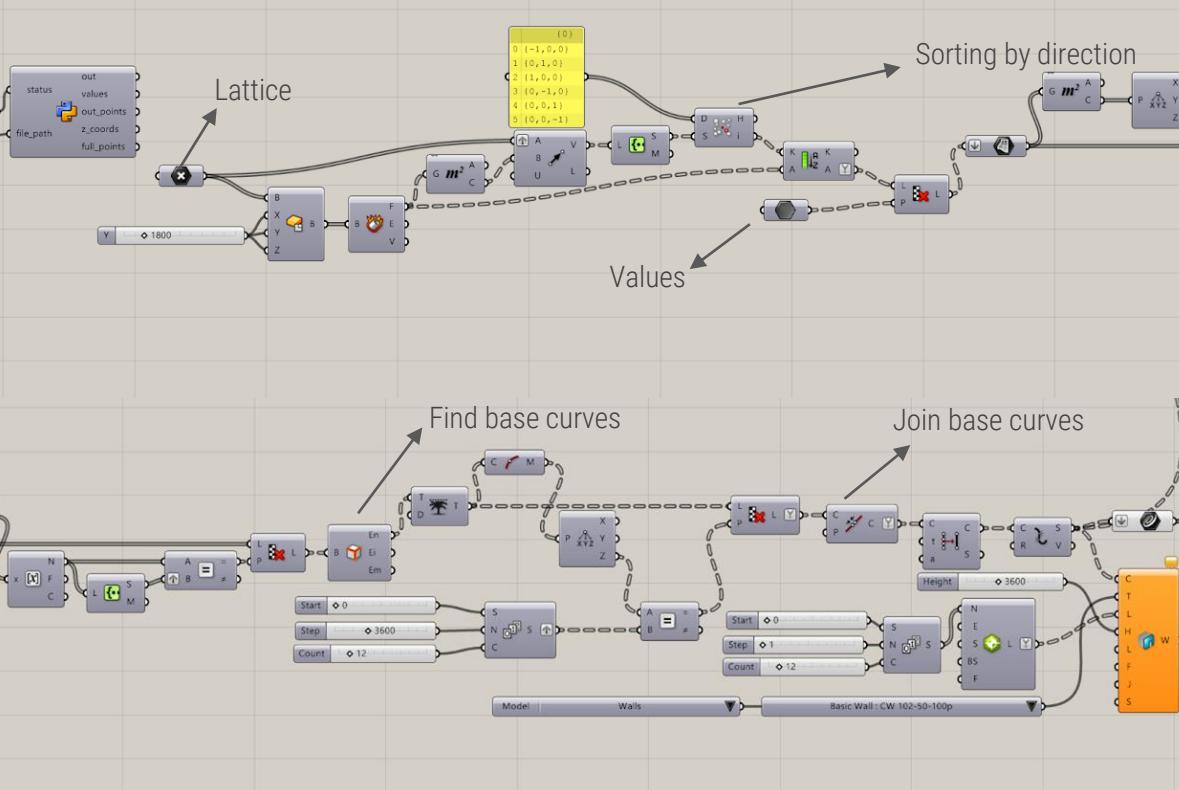
Skyview Analysis Result



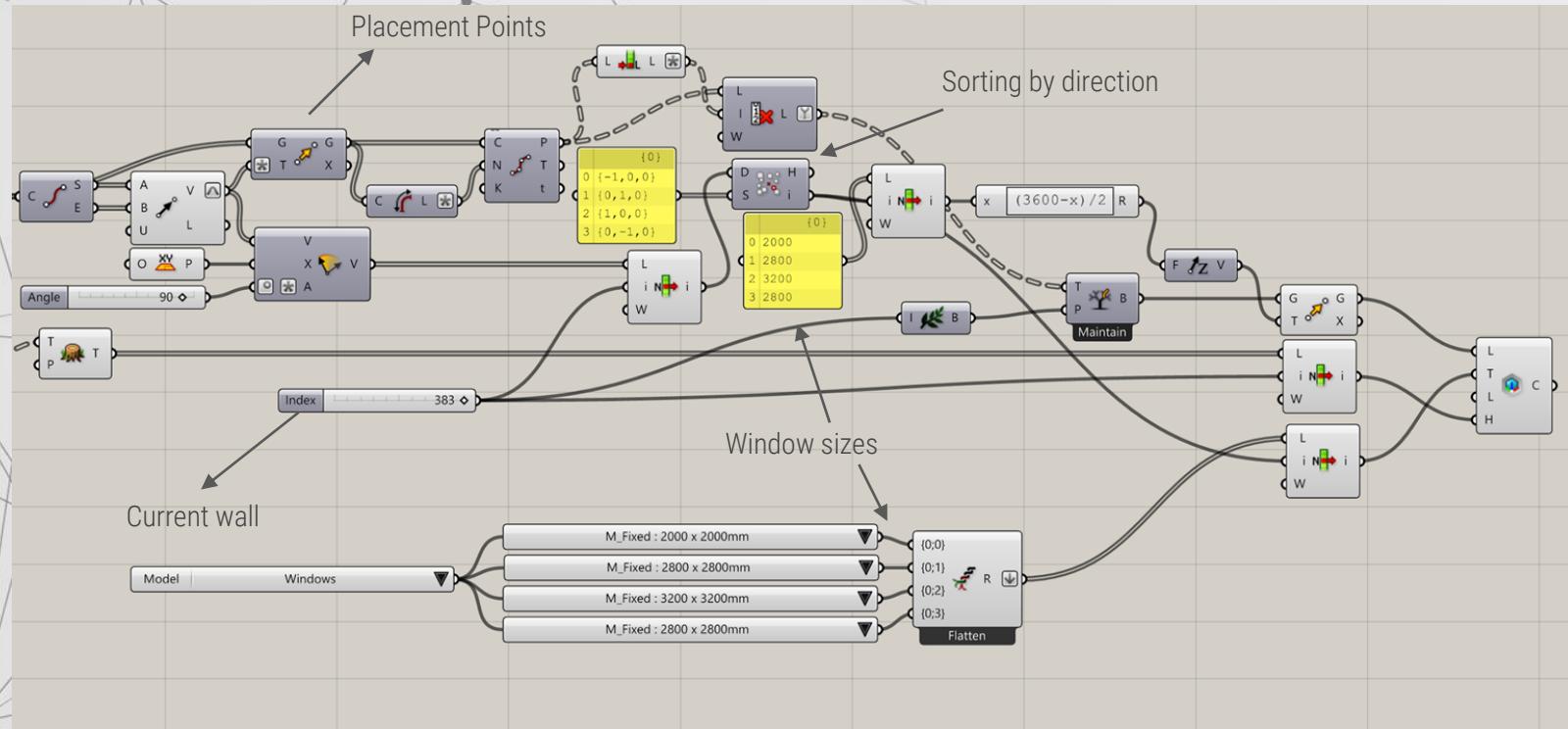
Rhino.Inside Revit Pipeline

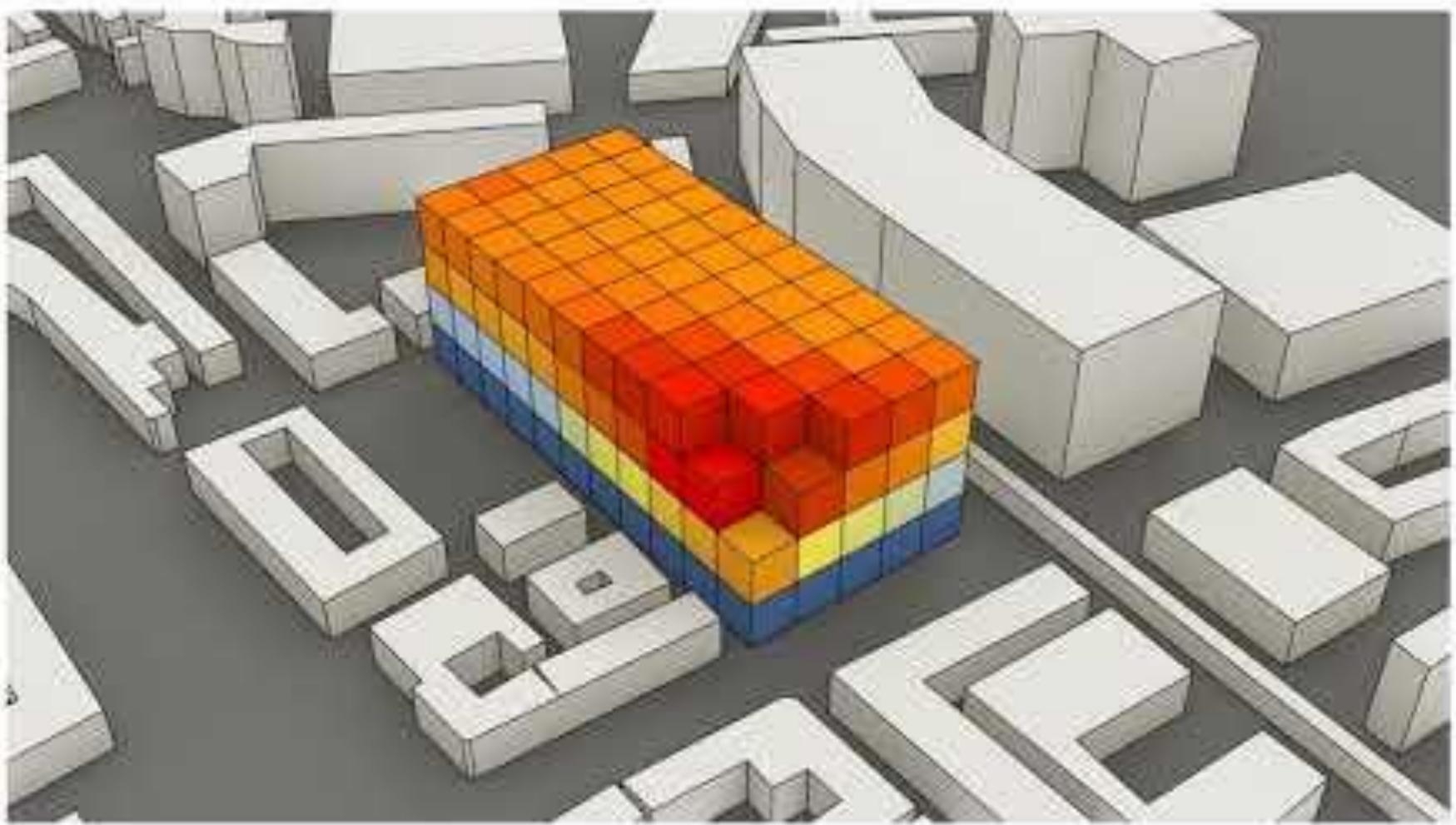


Rhino.Inside Revit Pipeline



Rhino.Inside Revit Pipeline

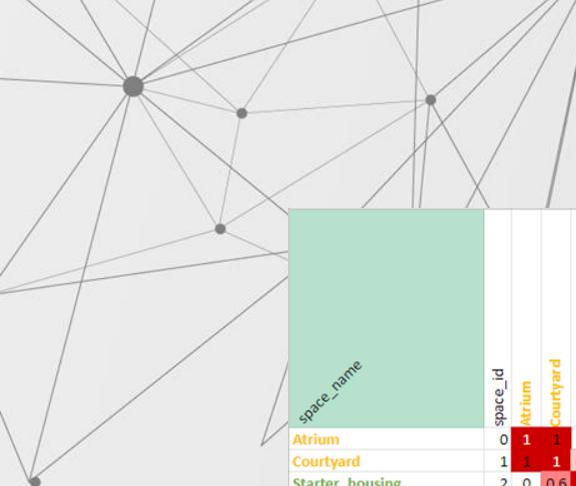




04

Generative relations: MCDA

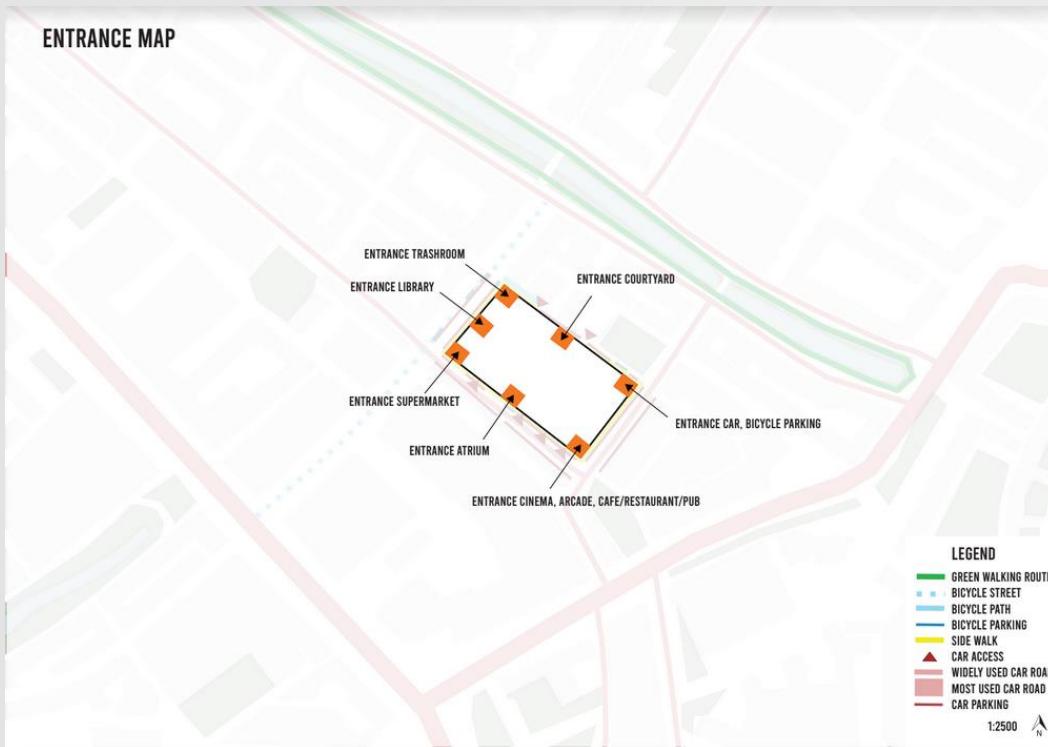
Matrix



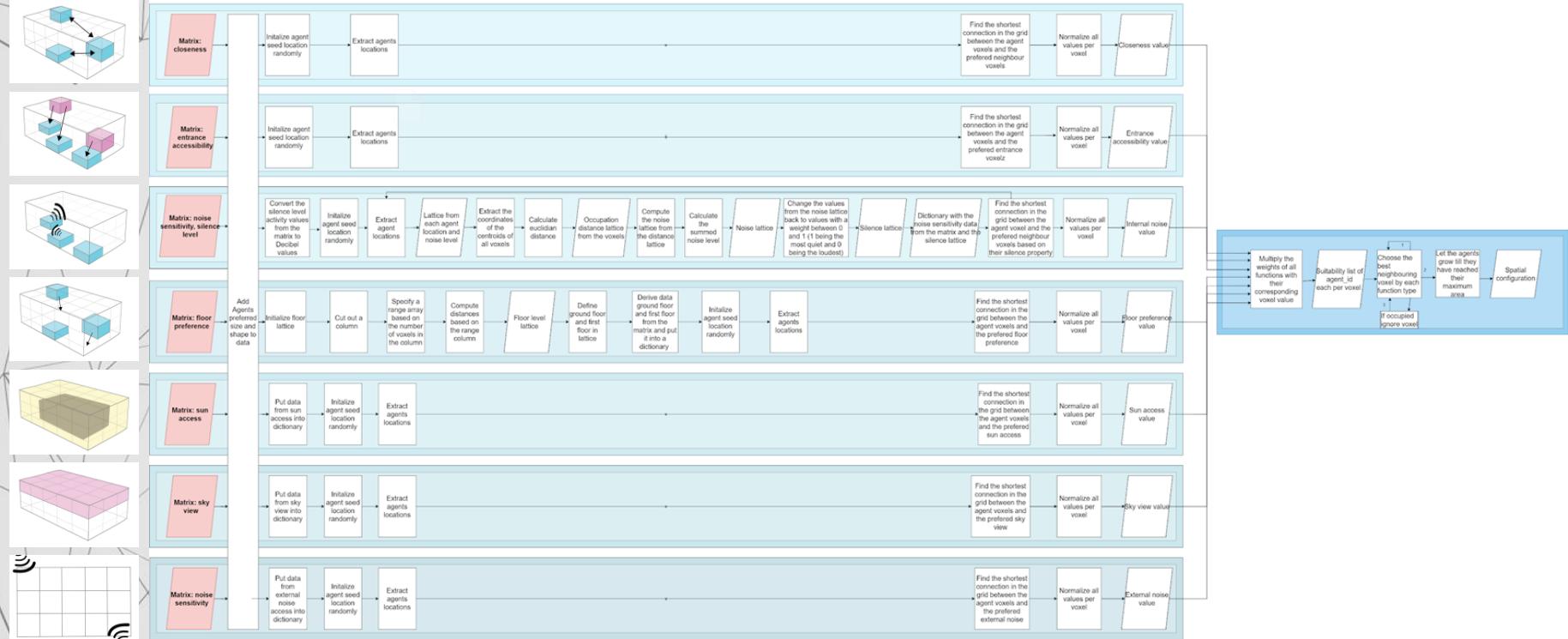
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Atrium	0	1	1	0	0	0	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.6	0	188	-1	1	0	
Courtyard	1	1	1	0.4	0.4	0.4	0	0	0	0	0	0.2	0.2	0	0.2	0	1	0	0	0	0	0	1	0	0.8	0	136	-1	1	0	
Starter_housing	2	0	0.6	1	0.2	0	0.2	0	0	0	0.2	0.2	0	0	0	0.6	0.6	0	0	0	0	0	1	0.6	1	1	7252	-1	0	1	
Assisted_living	3	0	0.8	0.2	1	0	0.4	0	0	0	0.2	0.8	0.6	0	0	0.4	0.6	0	0	0	0	0	1	0.6	1	1	2828	-1	0	1	
Student_housing	4	0	0.6	0	0	1	0.2	0.2	0	0	0	0.6	0.2	0.2	0.6	0.4	0.6	0	0	0	0	0	1	0.6	0.6	0.8	7596	-1	0	1	
Supermarket	5	0.6	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0	0	0	624	-1	1	0	
Cafe_restaurant_pub	6	0.6	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0.4	0.2	188	-1	1	0		
Cinema	7	0.4	0	0	0	0	0	0	1	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0	1296	-1	1	0		
Arcade	8	0.4	0	0	0	0.2	0	0	0.2	1	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0.6	632	-1	1	0		
Workshops	9	0.4	0	0.2	0.2	0.2	0	0	0	1	0.2	0	0.2	0	0	0	0	0.6	0.6	0	0	0.8	0	0.6	0.6	276	-1	1	0		
Community_center	10	0.2	0.6	0	0	0.4	0	0	0	0	0.2	1	1	0	0.4	0	0	0	0	0	0.8	0	0.8	0.4	100	-1	0	1			
Co_cooking_center	11	0	0	0	0	0	0.2	0	0	0	0	0.8	1	0	0	0	0	0	0	0	0.8	0	0.8	0.2	48	-1	0	1			
Library	12	0.4	0	0	0	0	0	0	0	0	0.2	0.2	0	1	0	0	0	0	0	1	0	0	0	1	0	500	-1	1	0		
Gym	13	0	0.2	0	0	0.6	0	0	0	0	0	0	0	1	0	0.2	0	0	0	0	0.4	0	0.4	0.2	220	-1	0	1			
Laundry_room	14	0	0.2	0.6	0.4	0.4	0	0	0	0	0	0	0	0	1	0	0.8	0	0	0	0.2	0	1	0	116	-1	0	0			
Ent_access_courtyard	18	0	0	0.6	0.6	0.6	0	0	0	0	0	0	0	0	0.2	0	1	0	0	0	0	0	0	0	1	7040	0	0	0		
Ent_access_trashroom	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8	0	1	0	0	0	0	0	0	0	1	13760	0	0	0	
Ent_access_parking	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	
Ent_access_supermarket	21	0	0	0	0	0	0	1	0	0	0	0.6	0	0	0	0	0	0	1	0	0	0	0	0	0	1	14064	0	0	0	
Ent_access_library	22	0	0	0	0	0	0	0	0	0	0	0.6	0	0	1	0	0	0	0	1	0	0	0	0	0	1	13904	0	0	0	
Ent_access_cinema_cafe_arcade	23	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	304	0	0	0	
Ent_access_atrium	24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	7344	0	0	0	

0 not important/ does not care
 0.2 barely important
 0.4 slightly important
 0.6 important
 0.8 very important
 1 extremely important/ cares a lot
 best

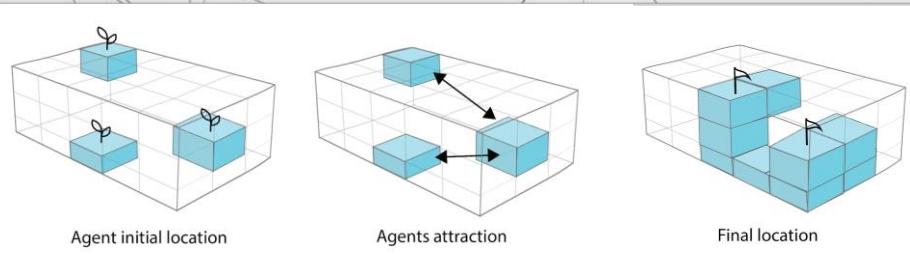
Entrance map



Flowchart



Closeness

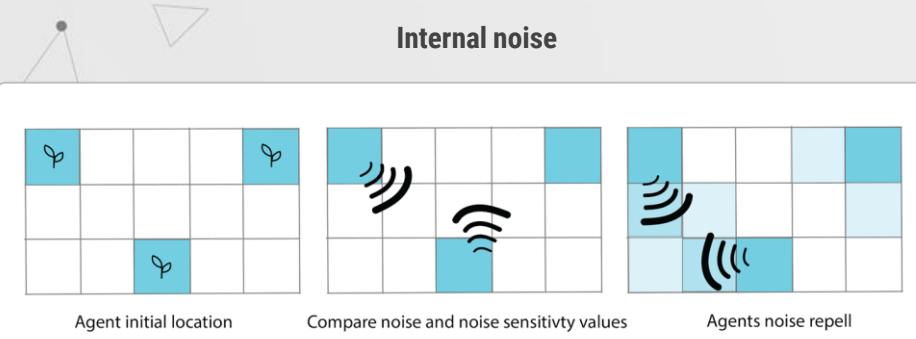


Agent initial location

Agents attraction

Final location

Internal noise

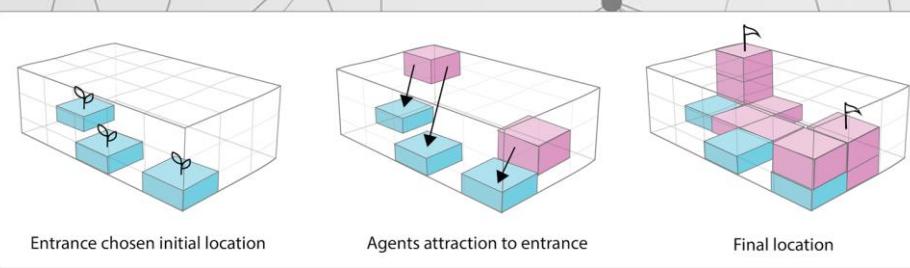


Agent initial location

Compare noise and noise sensitivity values

Agents noise repell

Entrances

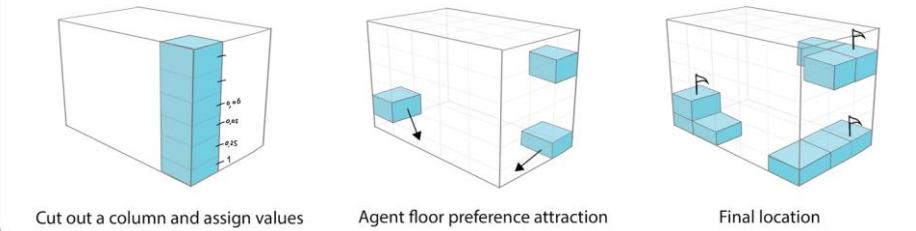


Entrance chosen initial location

Agents attraction to entrance

Final location

Floor preference

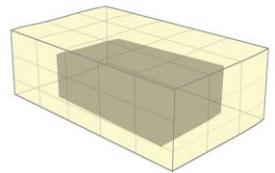


Cut out a column and assign values

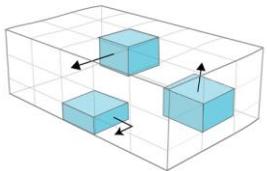
Agent floor preference attraction

Final location

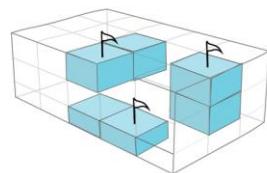
Sun access



Define the sun access

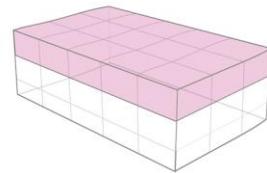


Sun preference

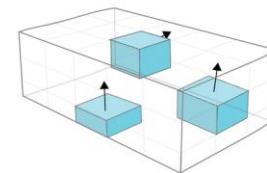


Final location

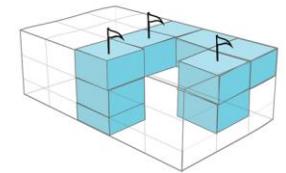
Sky view



Define sky view

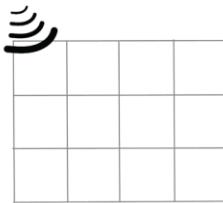


Sky view preference

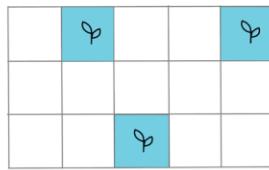


Final location

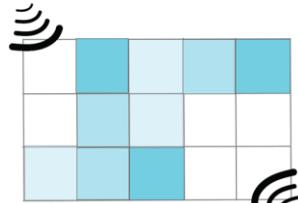
External noise



Define external noise

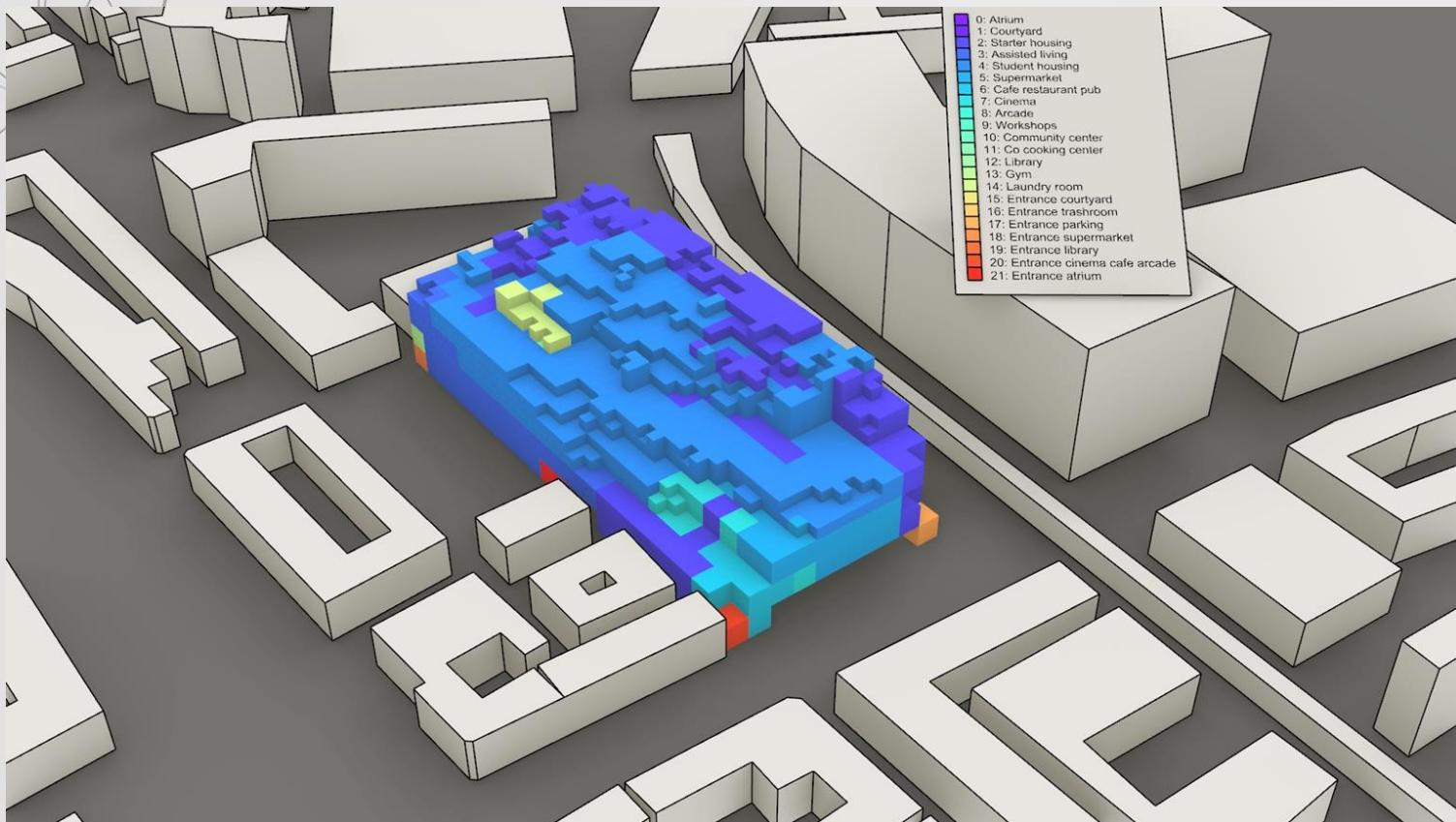


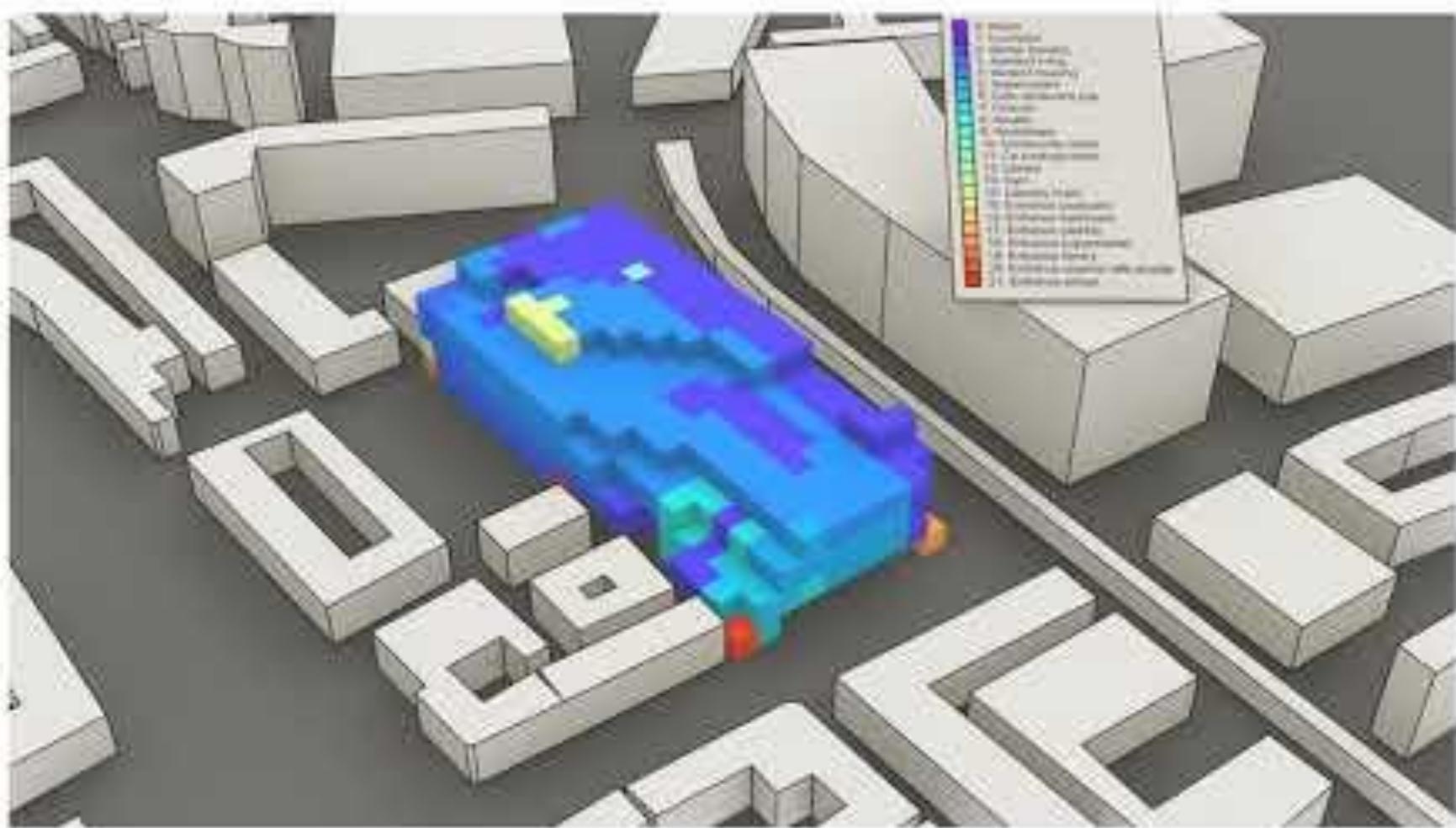
Initial agent location



Agents noise repell

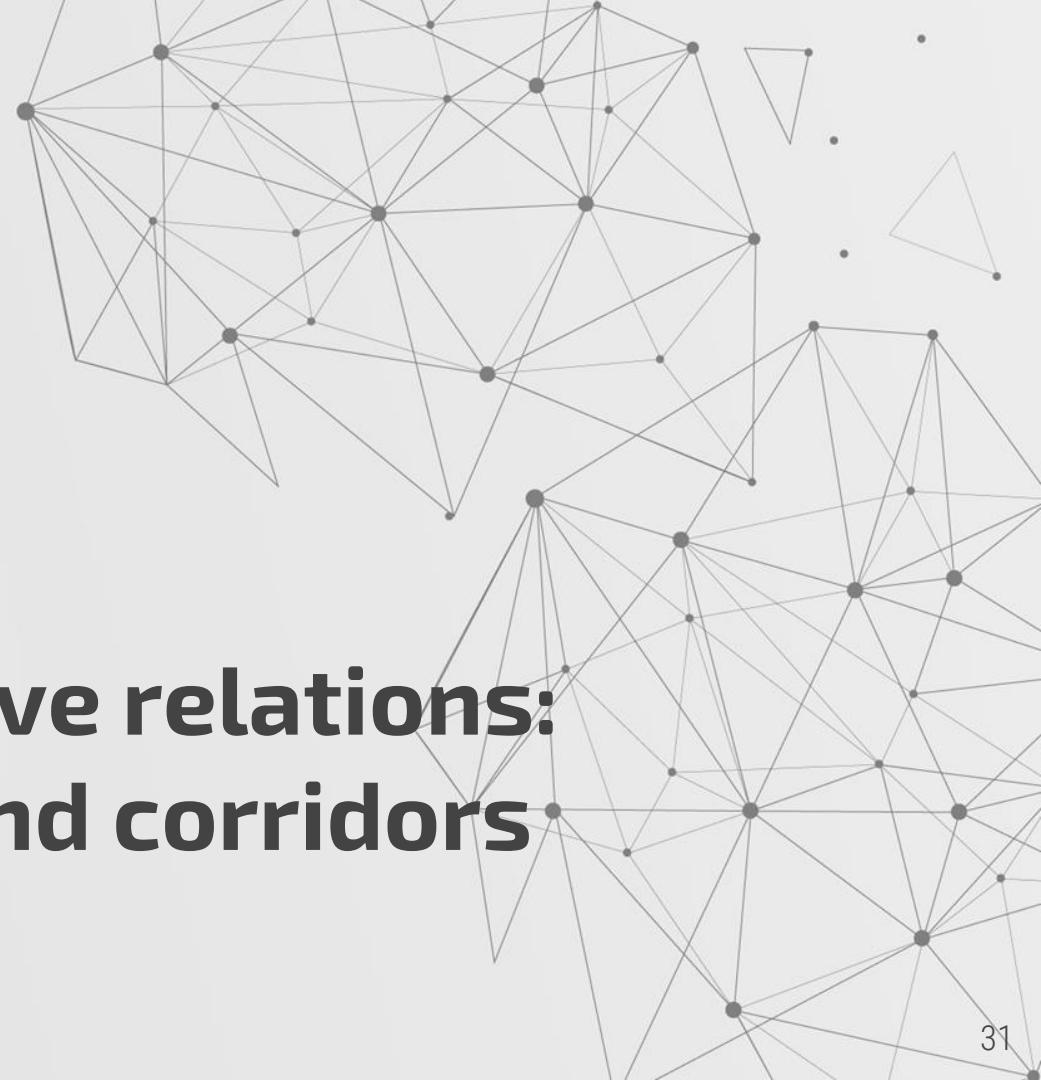
Agent growing model



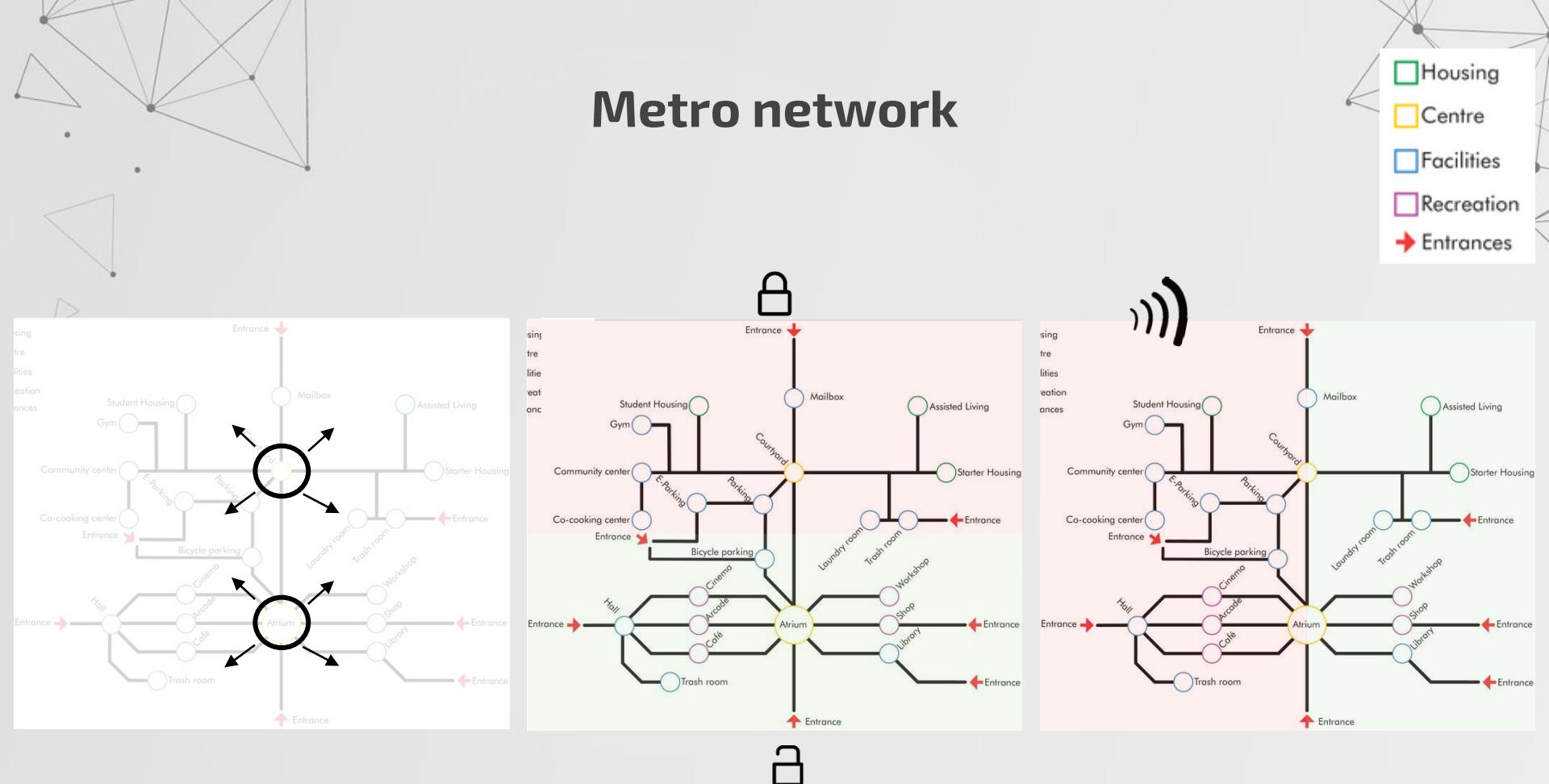


05

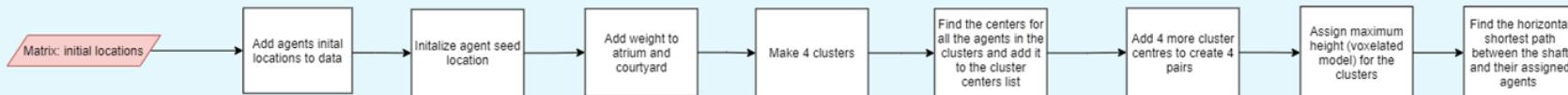
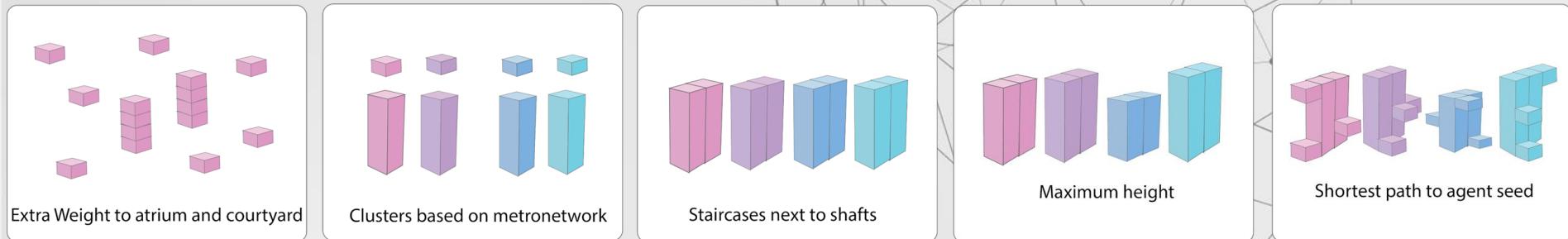
Generative relations: Shafts and corridors



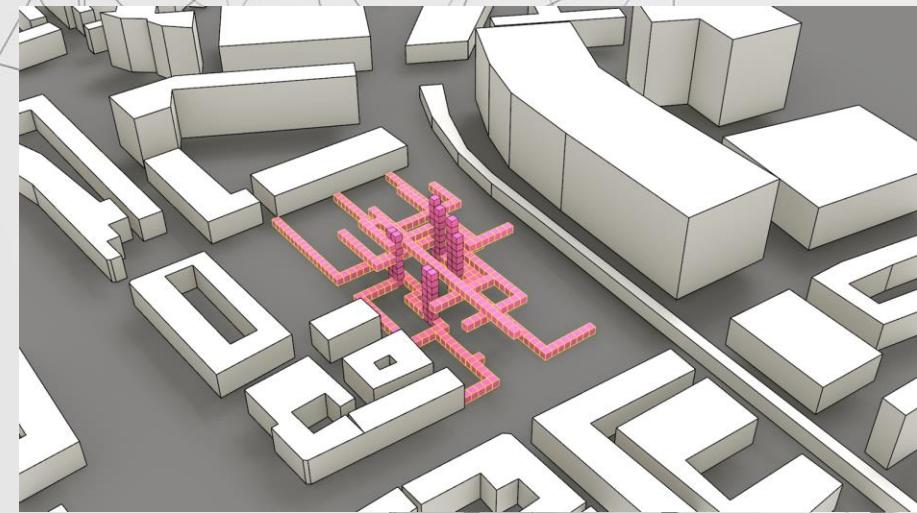
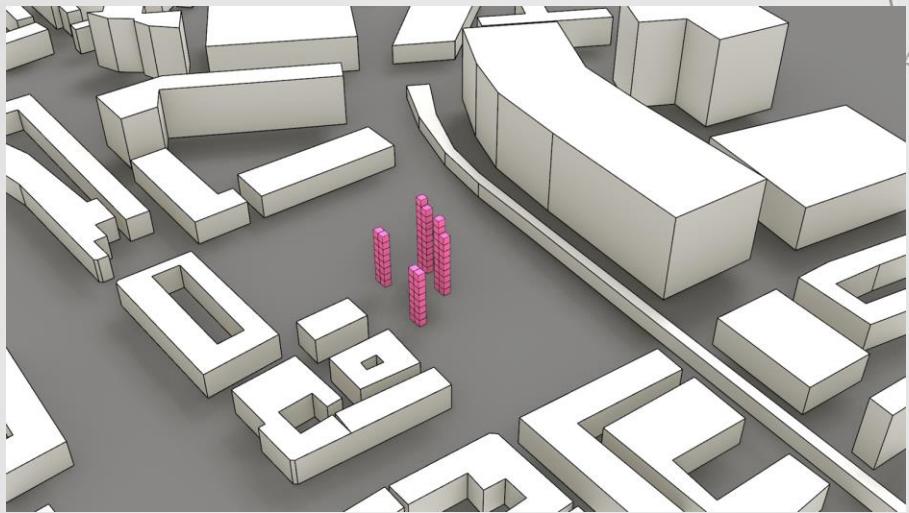
Metro network



Flowchart



Configuration



The background features a complex, abstract geometric pattern composed of numerous small, thin grey lines forming overlapping circles and triangles. Some vertices are highlighted with larger, darker grey dots, creating a sense of depth and connectivity.

06

Technical drawings

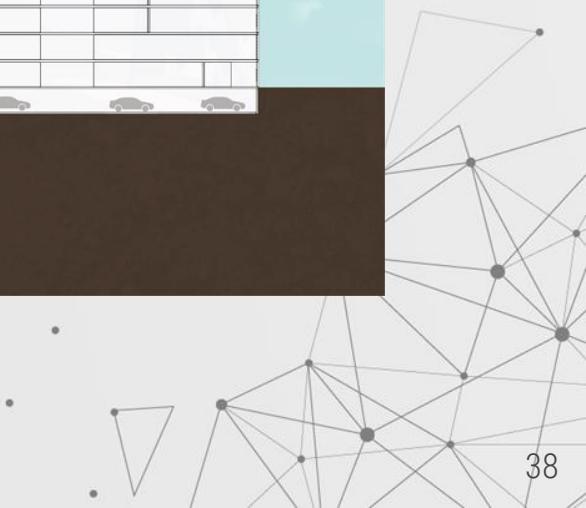
Urban plan



Section I



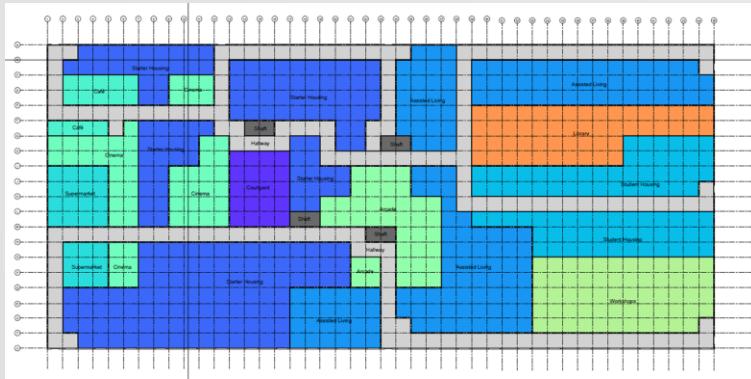
Section II



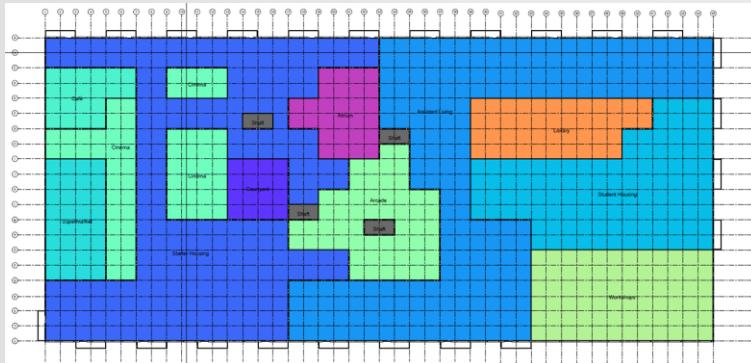


Floorplans - building I

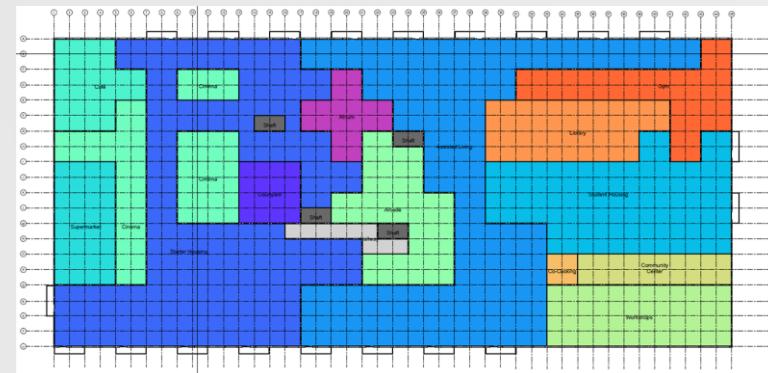
Ground floor



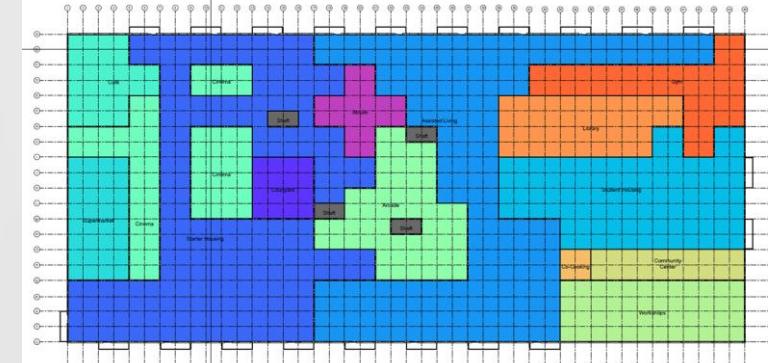
First floor



Second floor



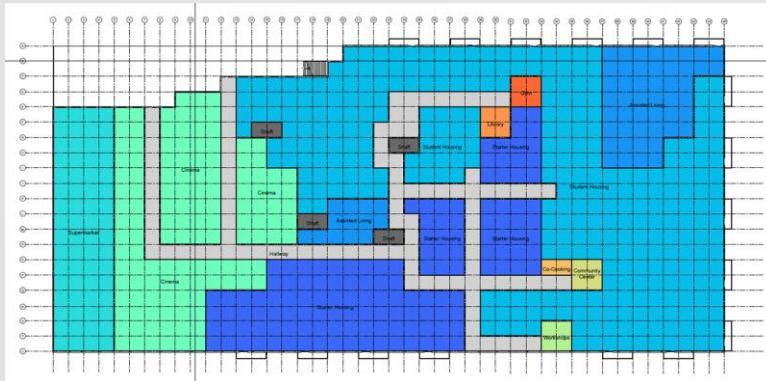
Third floor



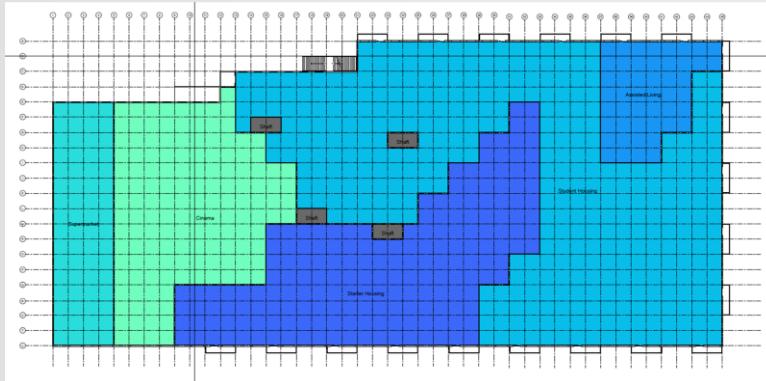


Floorplans - building II

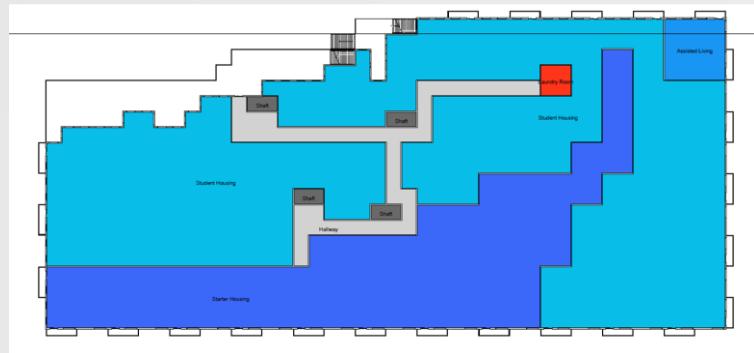
Fourth floor



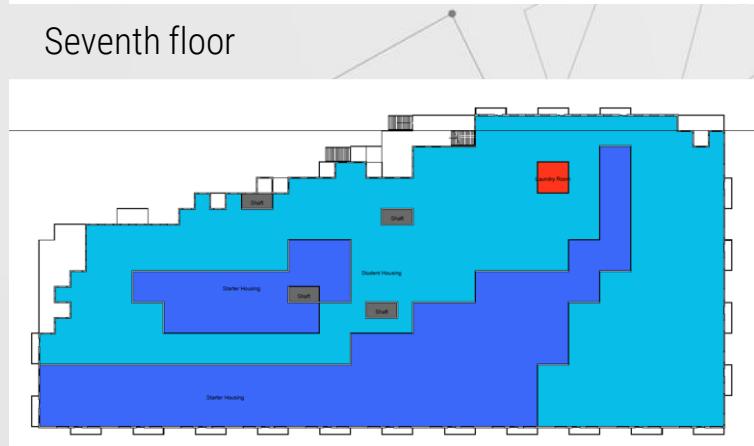
Fifth floor



Sixth floor



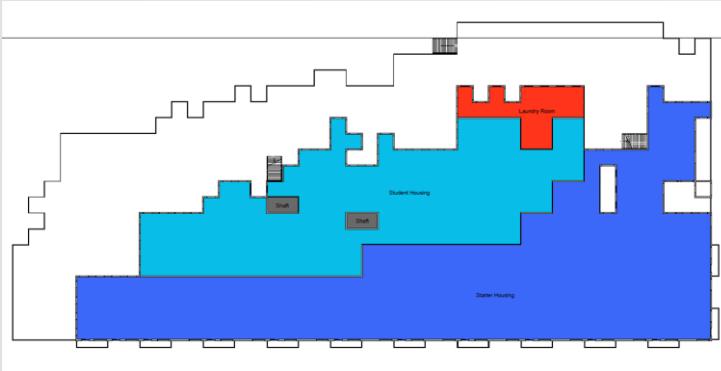
Seventh floor



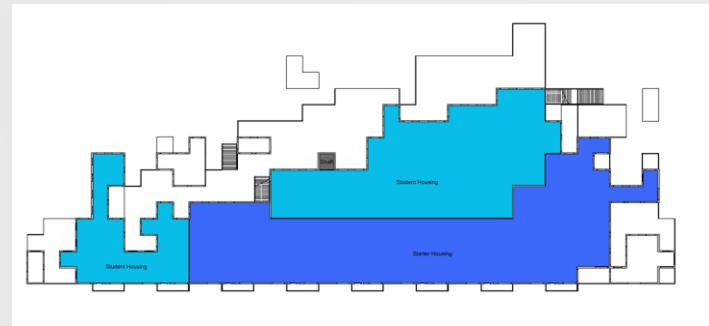


Floorplans - building III

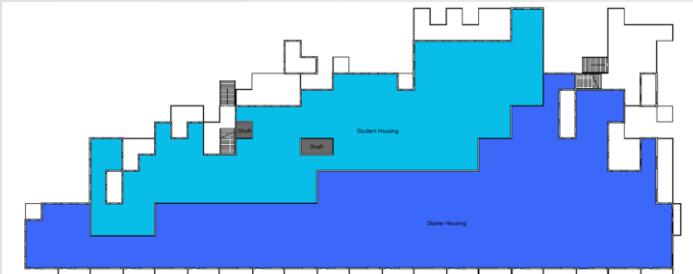
Eighth floor



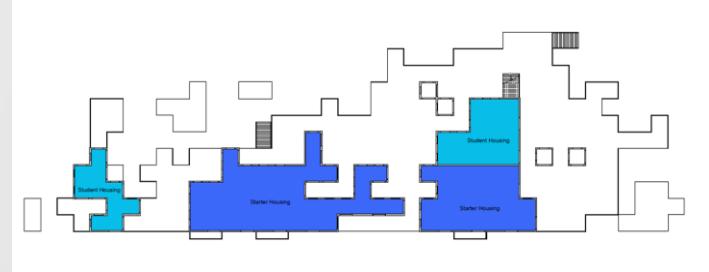
Tenth floor



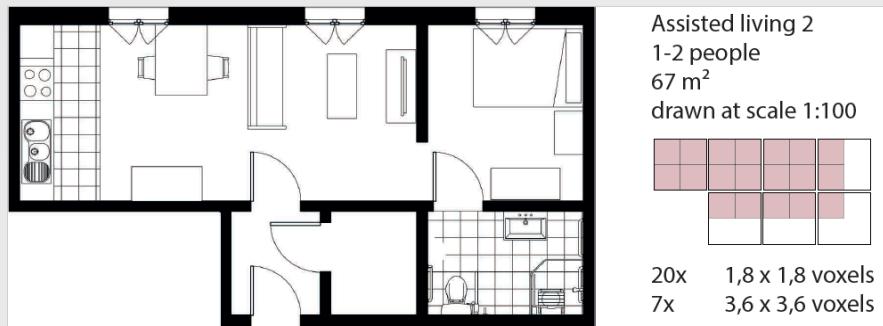
Ninth floor



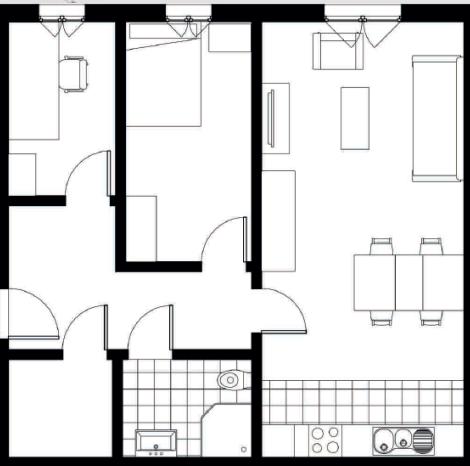
Eleventh floor



Floorplans - Assisted living

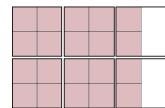


Floorplans - Starters

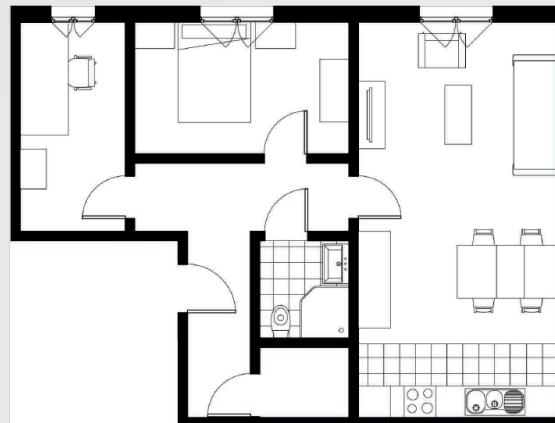


Starters 1

1-2 people
67 m²
drawn at scale 1:100

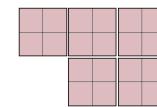


21x 1,8 x 1,8 voxels
6x 3,6 x 3,6 voxels



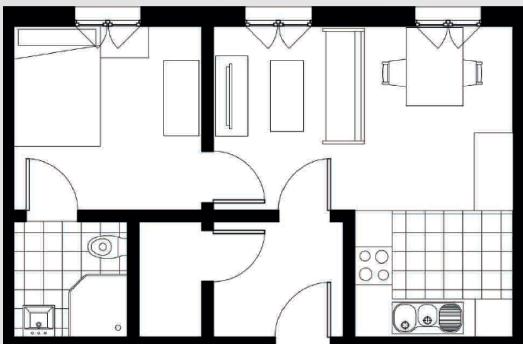
Starters 2

1-2 people
67 m²
drawn at scale 1:100

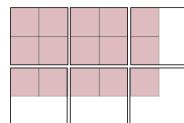


20x 1,8 x 1,8 voxels
5x 3,6 x 3,6 voxels

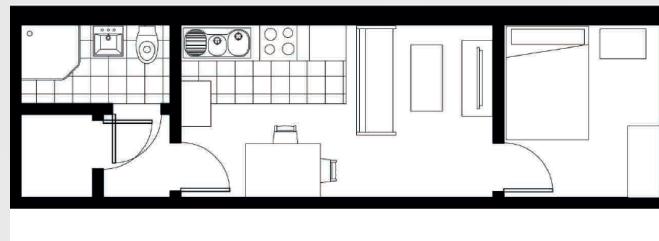
Floorplans - Studio's



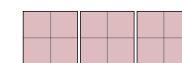
Studio 1
1 people
 45 m^2
drawn at scale 1:100



15x 1,8 x 1,8 voxels
6x 3,6 x 3,6 voxels

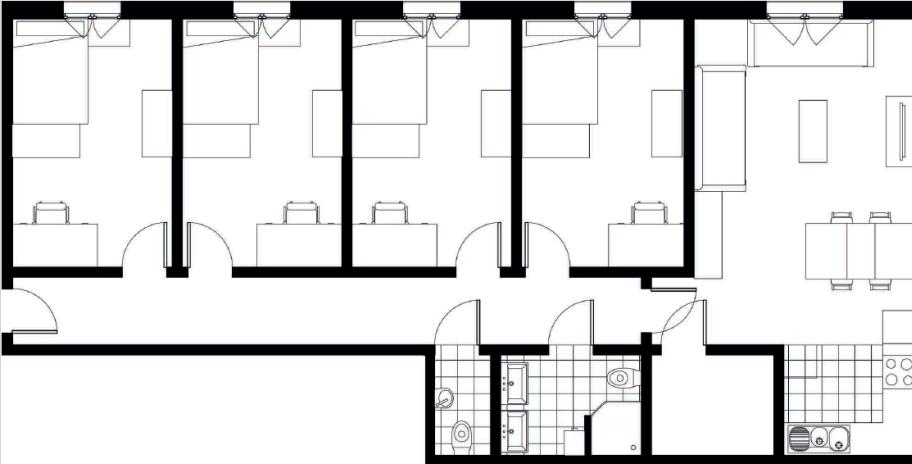


Studio 2
1 people
 40 m^2
drawn at scale 1:100

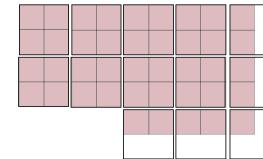


12x 1,8 x 1,8 voxels
3x 3,6 x 3,6 voxels

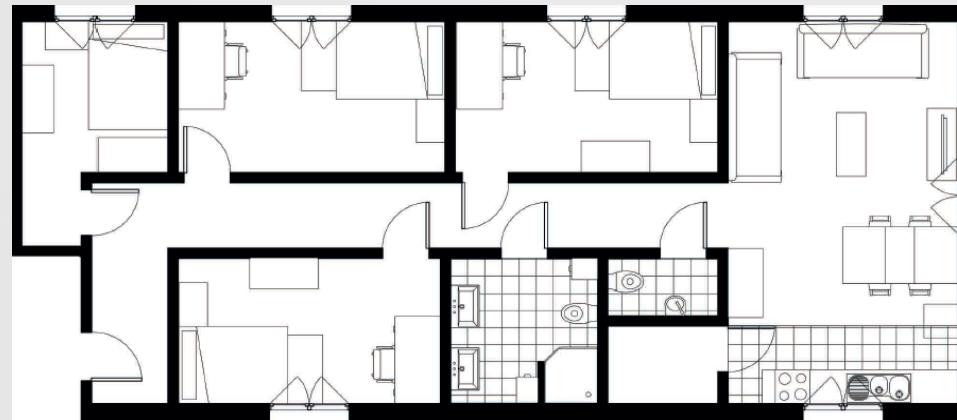
Floorplans - Student housings



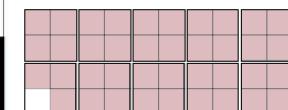
Student 1
4 people
 130 m^2
drawn at scale 1:100



41x $1,8 \times 1,8$ voxels
13x $3,6 \times 3,6$ voxels

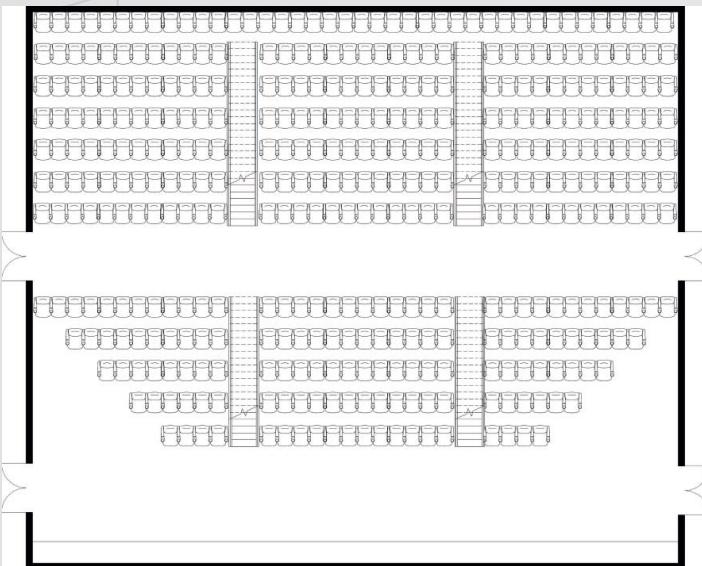


Student 2
4 people
 115 m^2
drawn at scale 1:100



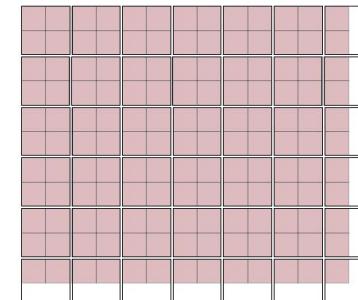
41x $1,8 \times 1,8$ voxels
13x $3,6 \times 3,6$ voxels

Floorplans - cinema

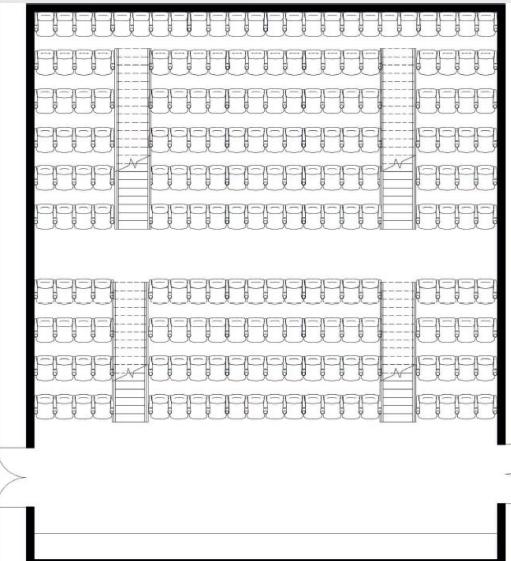


Cinema, big

400 people
490 m²
drawn at scale 1:100

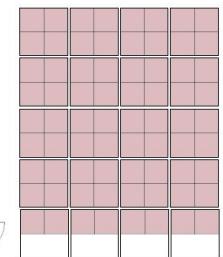


151x 1,8 x 1,8 voxels
38x 3,6 x 3,6 voxels



Cinema, small

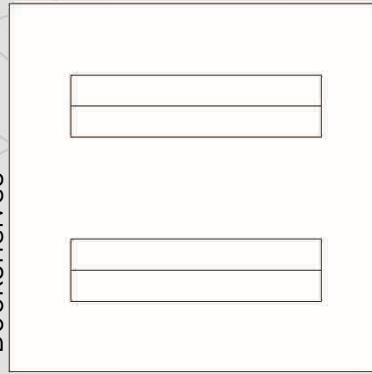
200 people
244 m²
drawn at scale 1:100



75x 1,8 x 1,8 voxels
38x 3,6 x 3,6 voxels

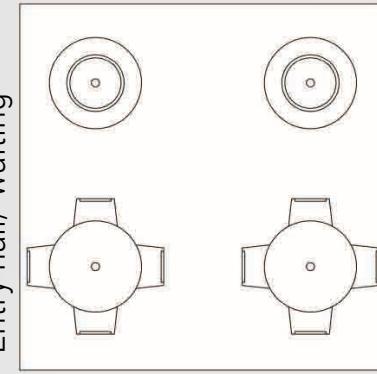
Stencils I (3,6m x 3,6m)

Library



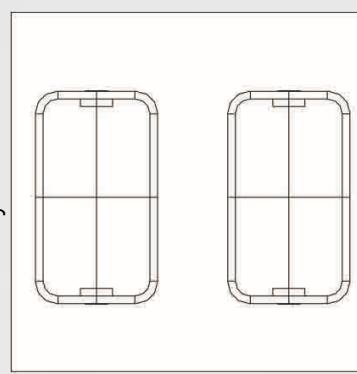
Bookshelves

Cinema



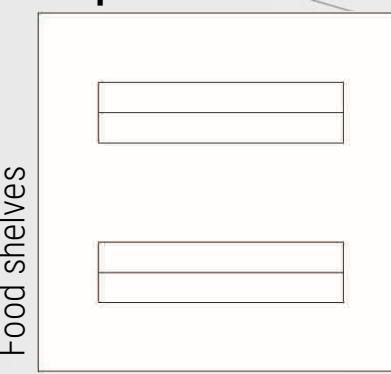
Entry hall/ waiting

Arcade

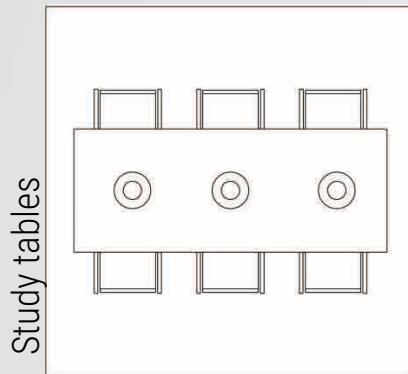


Air Hockey tables

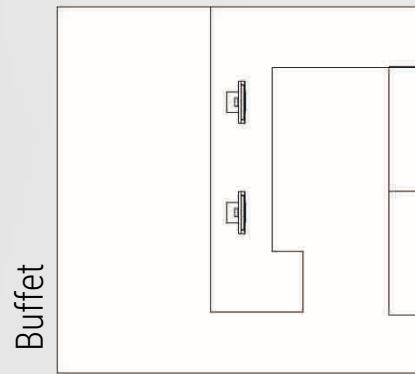
Supermarket



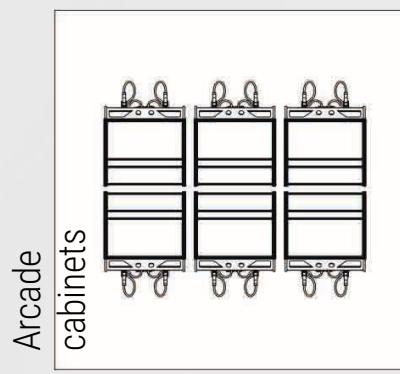
Food shelves



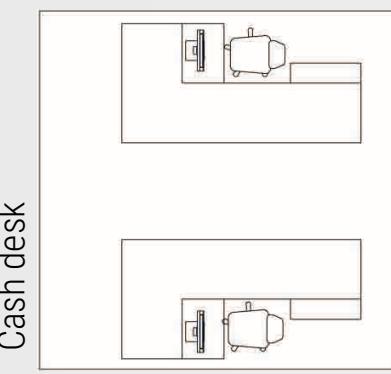
Study tables



Buffet



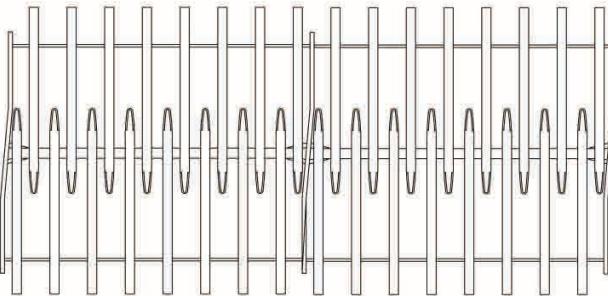
Arcade



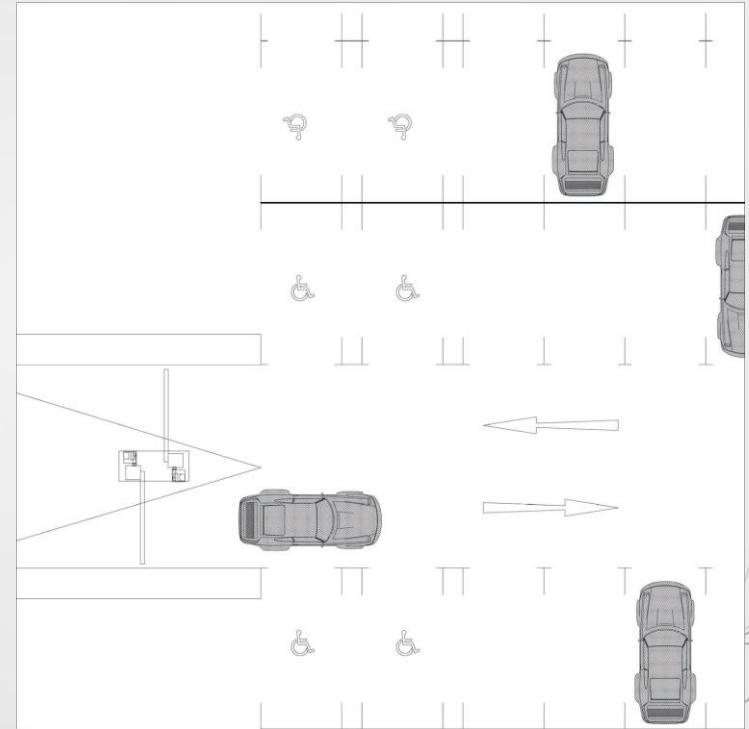
Cash desk

Stencils II

Bicycle stands (7,2m x 7,2m)



Parking garage (21,6m x 21,6m)



07

Renders



Facade views

NorthWest facade



Southeast facade



Northeast facade



Southwest facade















THANKS

Does anyone have any questions?

https://MilouMulder.github.io/spatial_computing_project_template/

Jirri van den Bos,
Milou Mulder,
Nancy Nguyen