

# Oasis

Refuge from the busy city

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Oasis

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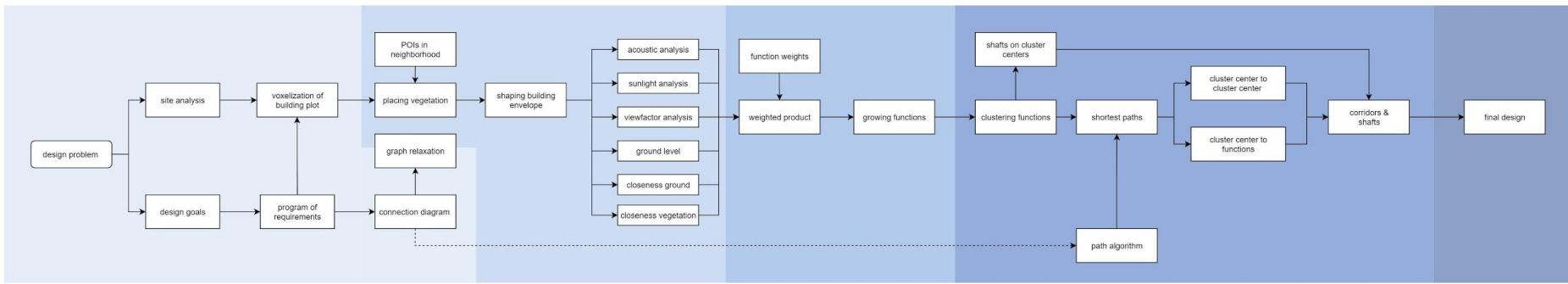
# Project Flowchart

conceptualising

massing

forming

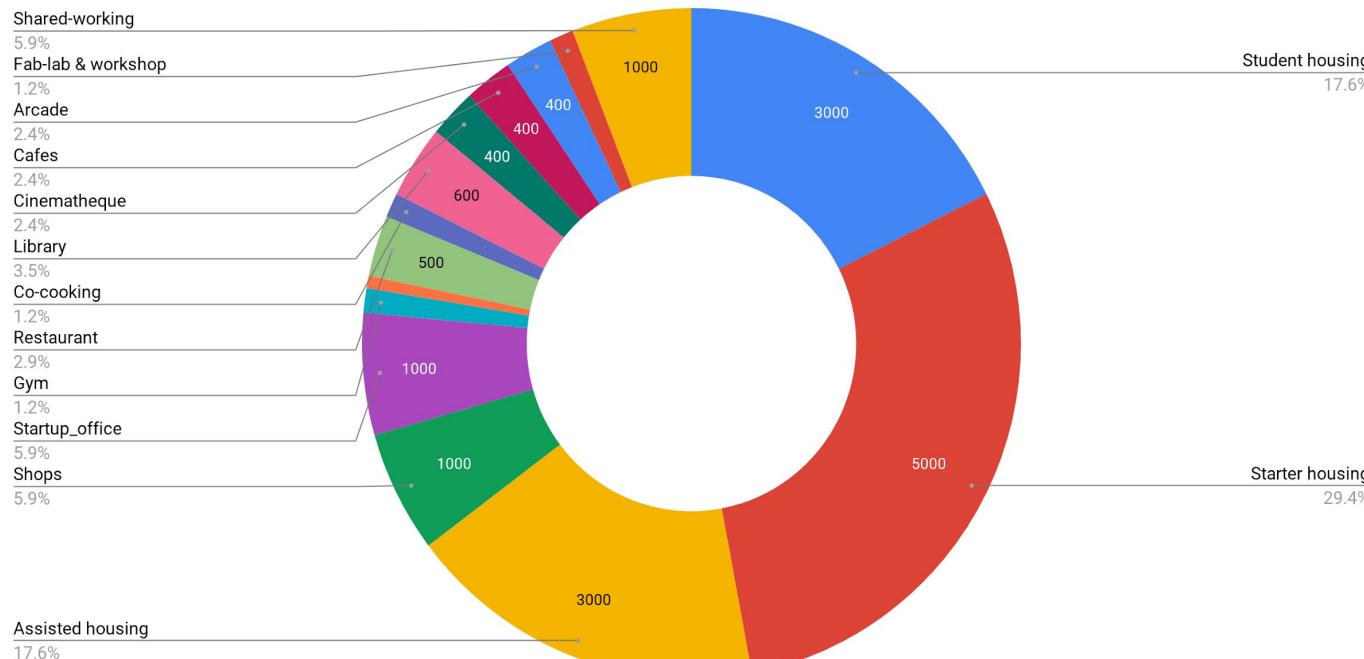
detailing



# Design Ambitions

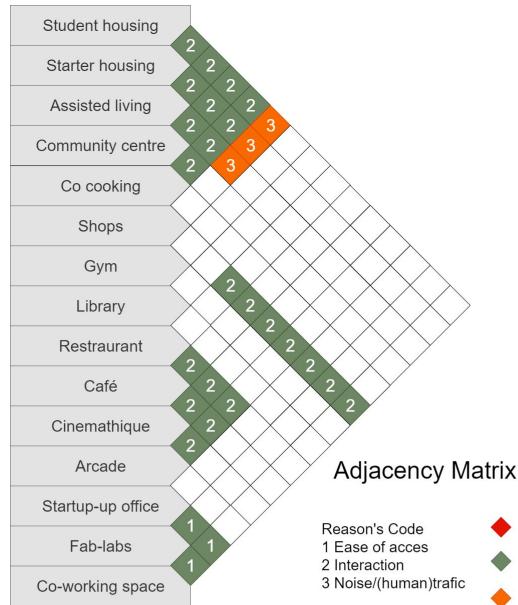
# Building Brief

Area (square meters)

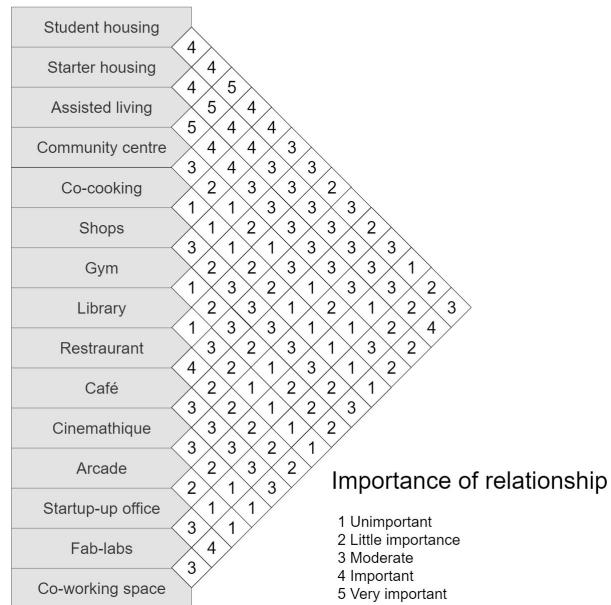


# Function Relations and weights

Adjacency matrix

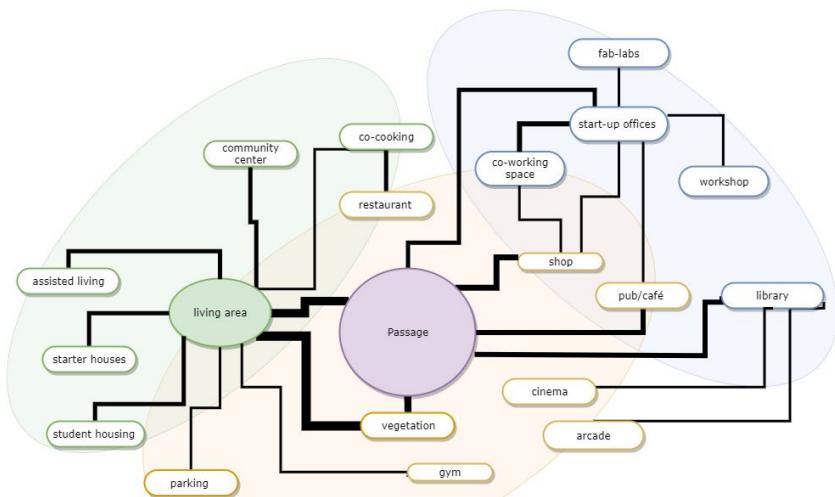


REL - chart

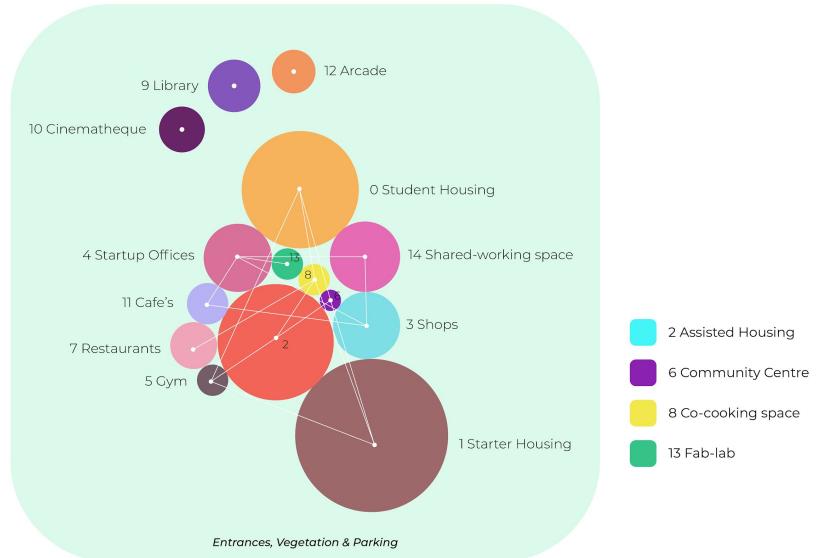


# Connection Graph Goal

Initial Concept



Relaxed Graph State



# Oasis

## Design Goals

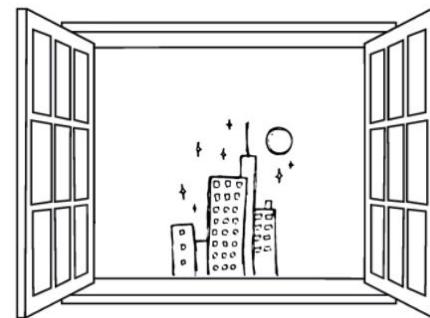
- Healthy & Comfortable
  - Sunlight & daylight in homes.
  - Minimal noise.
  - Greenery nearby.
- Social
  - Public space on ground level for social interaction.
- Engaging
  - Pleasant view over the city.
- Productive & Dynamic
  - Stimulating location.
  - Opportunities for meeting.

# Design Goals

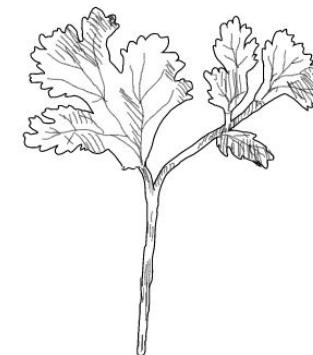
Minimal Noise.



Good view over the city.



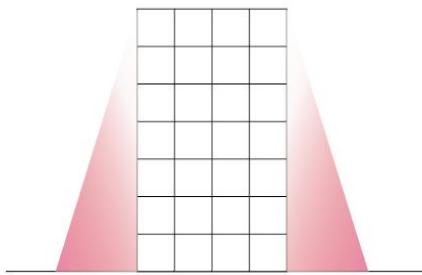
Greenery nearby.



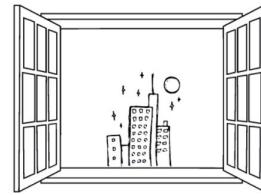
## Minimal noise



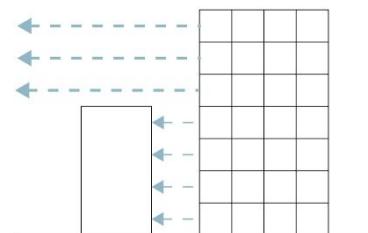
Building envelope shaped by acoustic analysis.



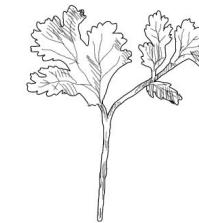
## Good view over the city



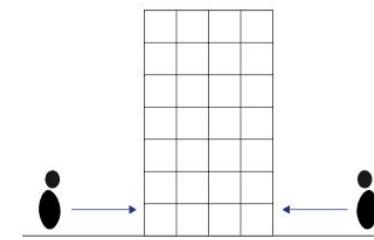
A calming view over the city while working, in the gym or at home.



## Greenery nearby



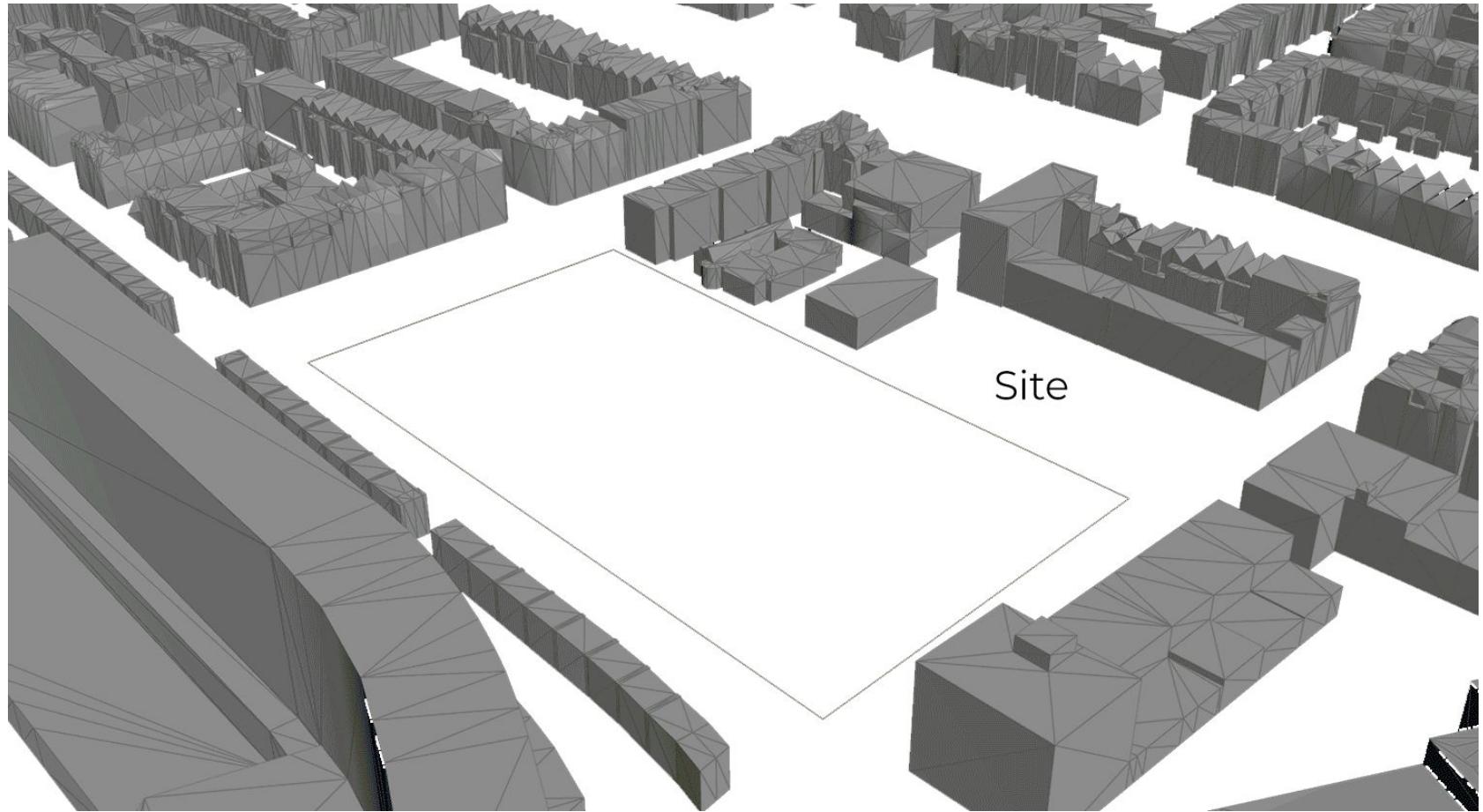
Greenery located at entrances of building, en route to points of interest in the neighborhood.



# Data types

1. Acoustic
2. Sunlight
3. Daylight
4. View Quality
5. Closeness ground
6. Closeness vegetation

# Summary Animation



# Method

# Envelope

## Points of Interest



Noordsingel



Vijverhofstraat



Schiekade



Noordmolenstraat



Home Development



Grafisch Lyceum

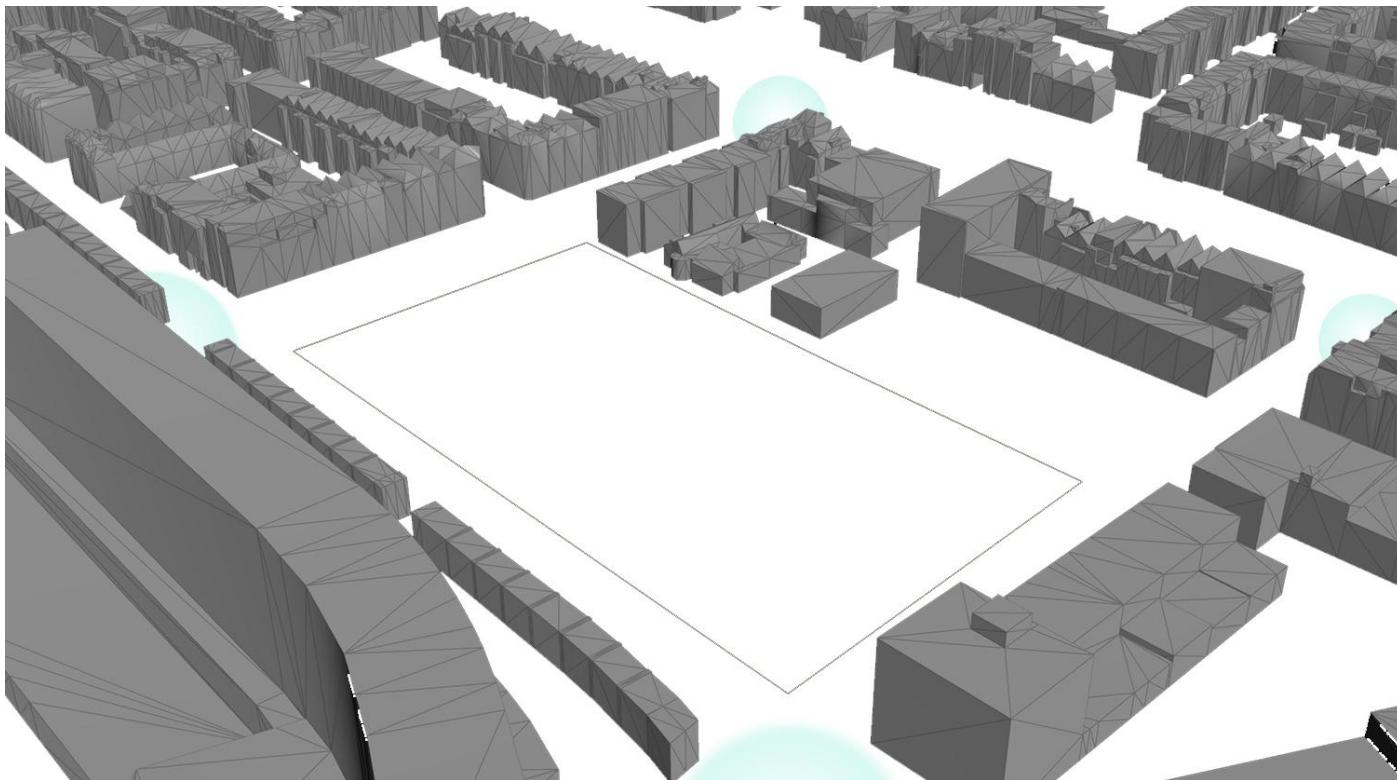


Central Station



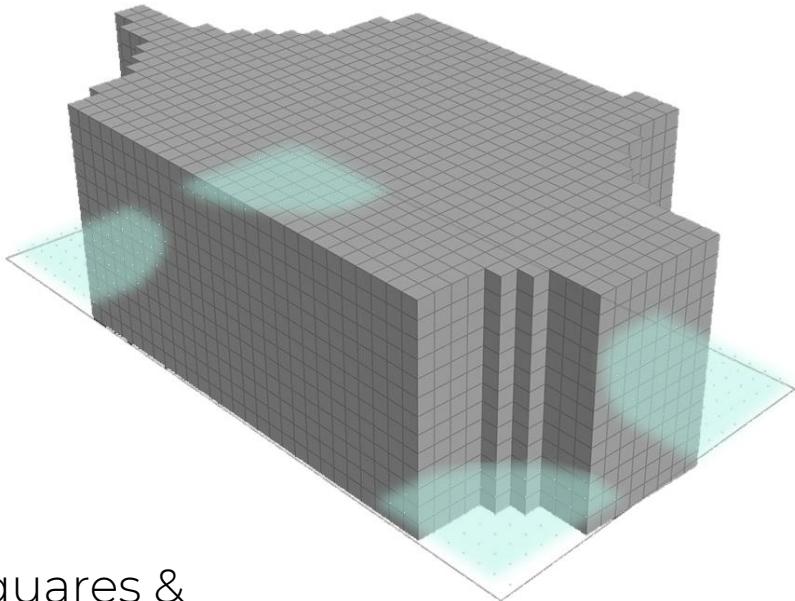
BIRD Restaurant

# Envelope

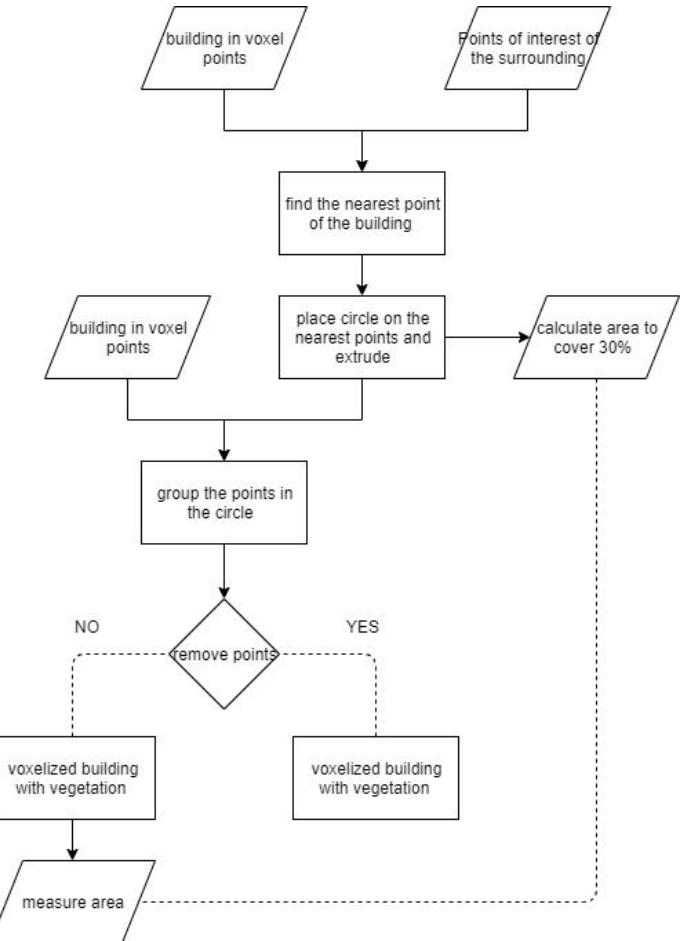


Points of  
interest in the  
neighborhood

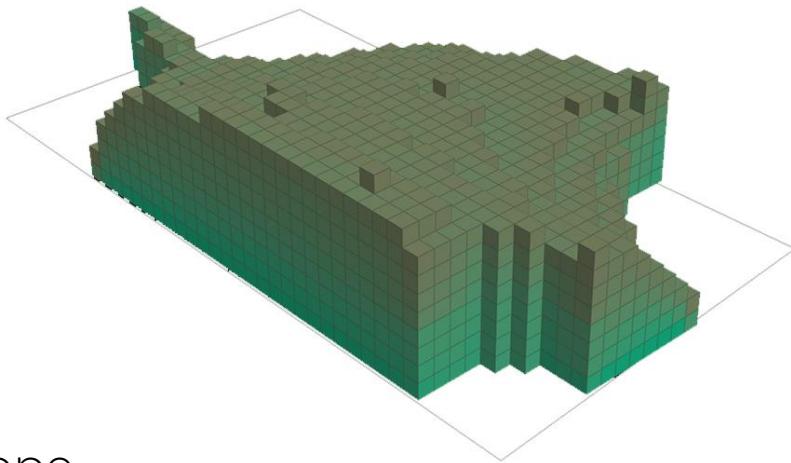
# Envelope



Entrance squares & vegetation

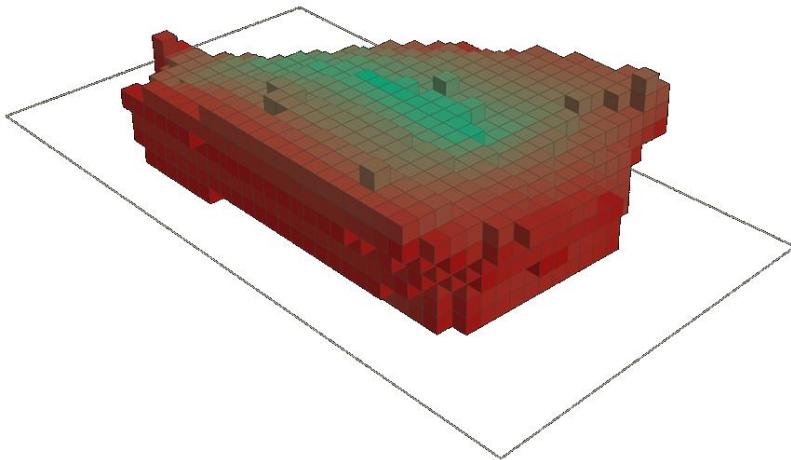


# Envelope



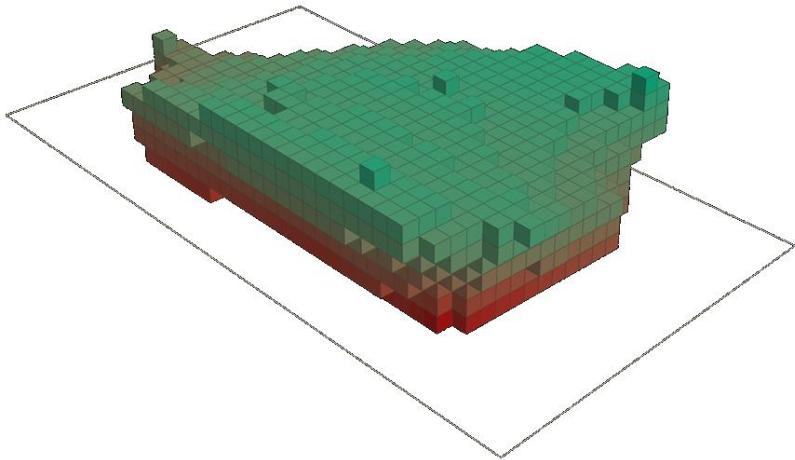
Solar envelope

# Analysis



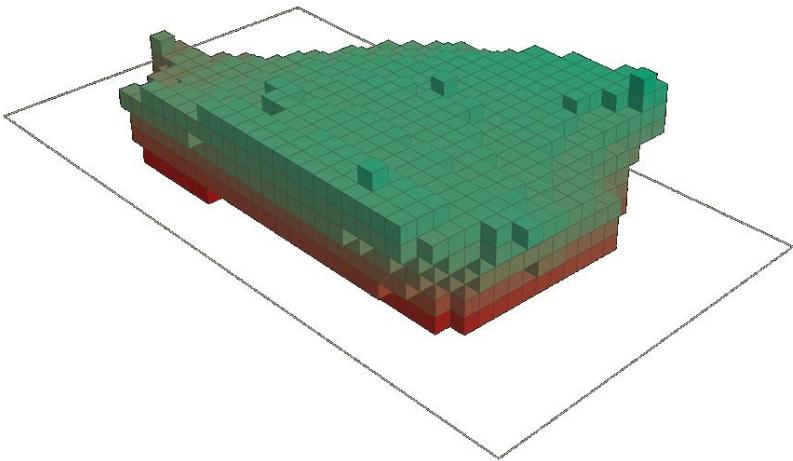
Acoustic

# Analysis



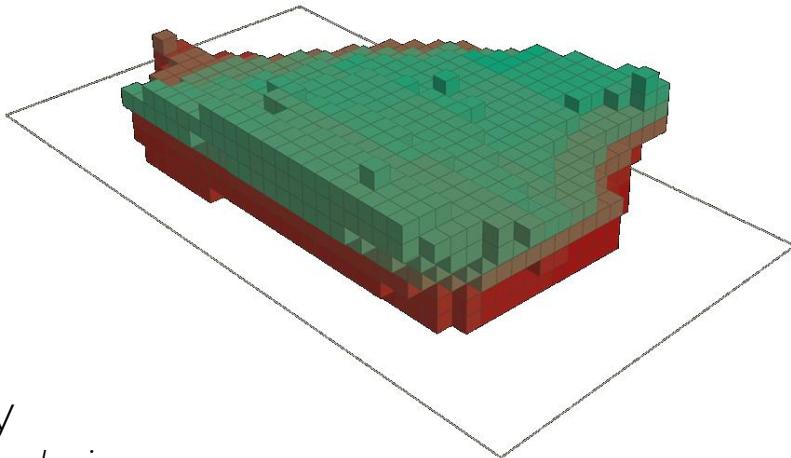
Sunlight

# Analysis



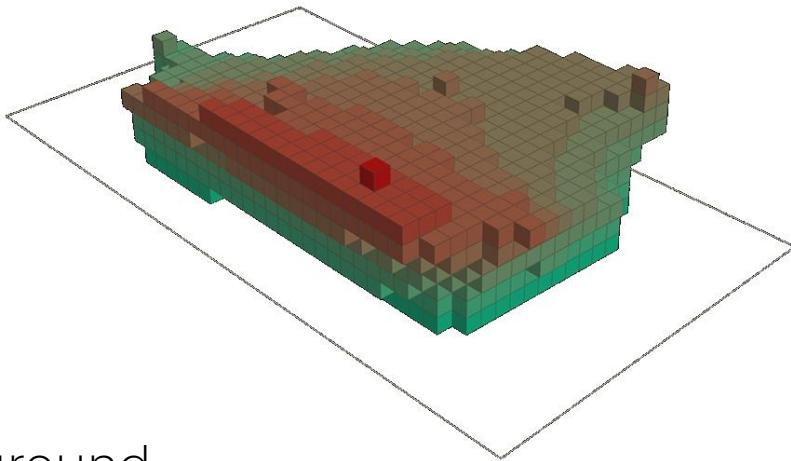
Daylight

# Analysis



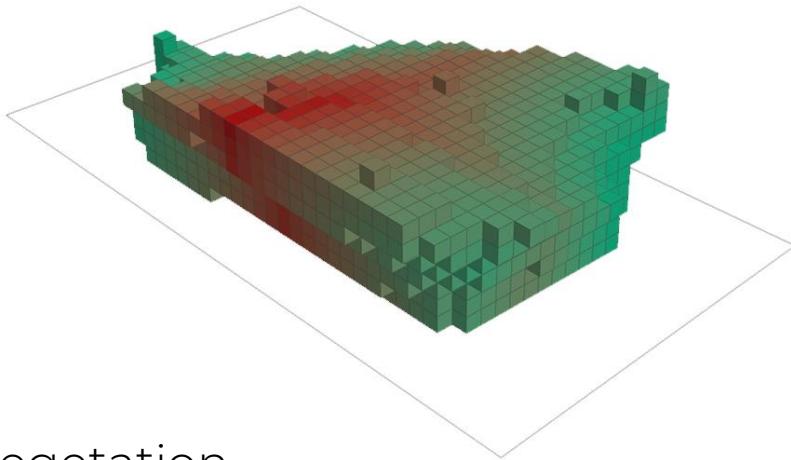
View quality  
*using isovist analysis*  
with view radius of 200m

# Analysis



Closeness ground

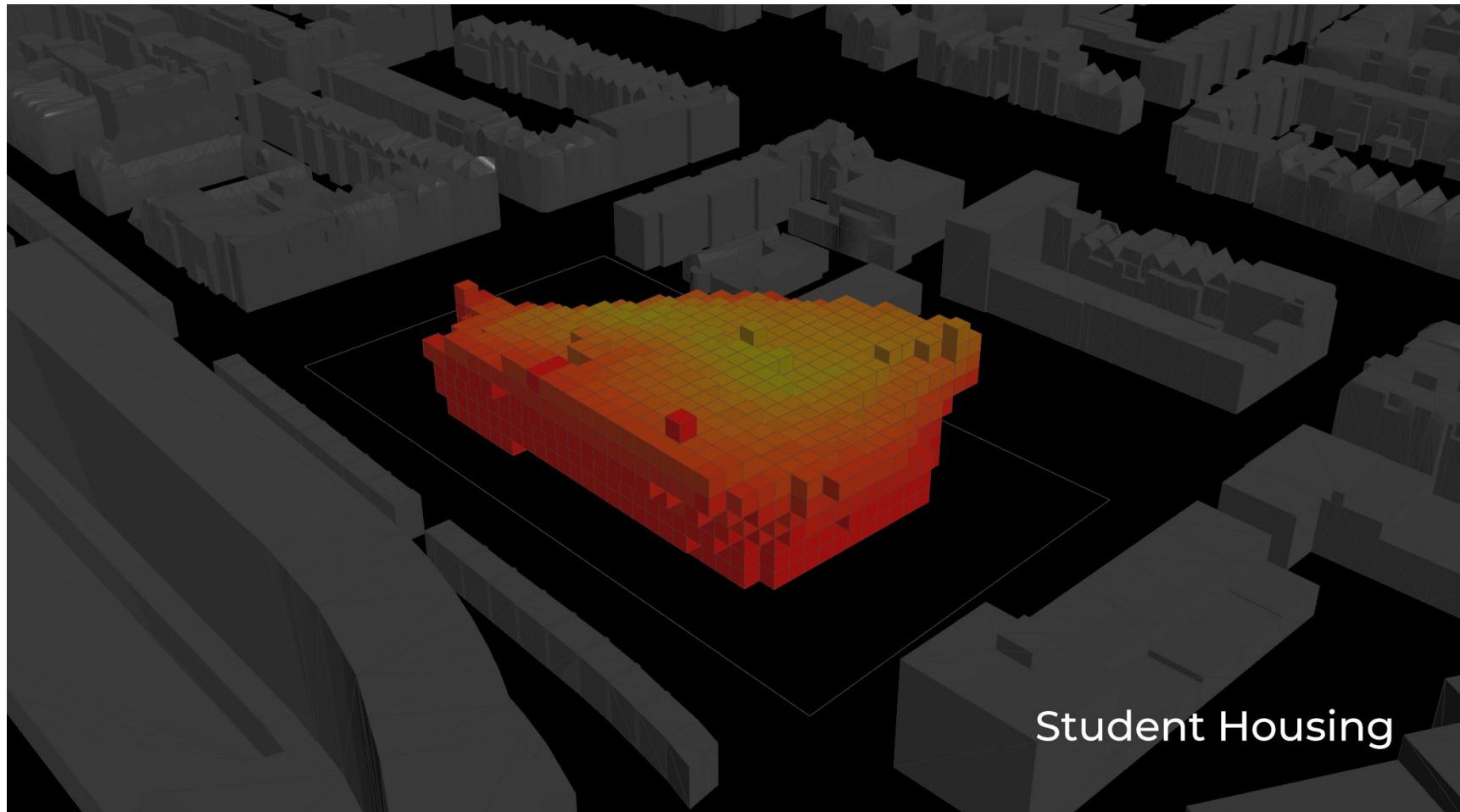
# Analysis



Closeness vegetation

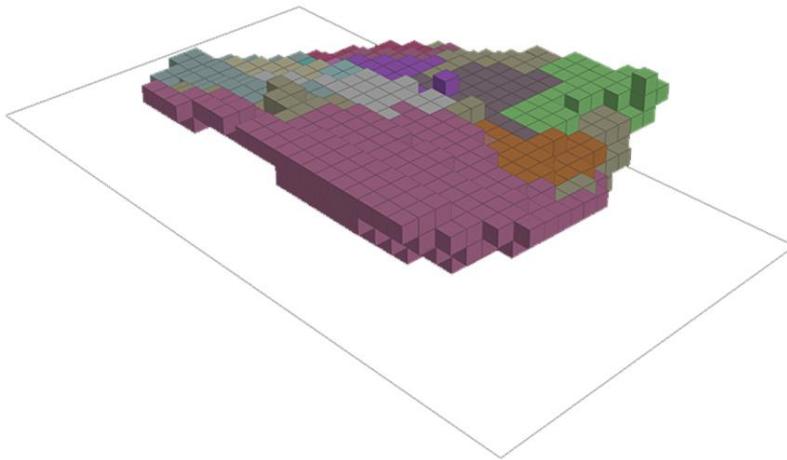
# Weighing Points

Function	Acoustic	Sunlight	Daylight	View Quality	Closeness Ground	Closeness Vegetation
Student_housing	0.7	0.7	1	0.5	0.3	0.2
Starter_housing	1	0.9	1	1	0.3	0.5
Assisted_housing	1	0.5	1	0.5	1	0.5
Shops	0.2	0.1	0.1	0.2	1	0.2
Startup_office	0.7	0.5	1	0.5	0.3	0.5
Gym	0.3	0.1	0.3	0.1	0.3	0.2
Community_centre	0.7	0.3	0.5	0.5	0.6	0.1
Restaurant	0.5	0.3	0.5	0.9	0.3	0.1
Co_cooking	0.3	0.6	0.6	0.2	0.3	0.1
Library	1	0.4	0.4	0.5	0.5	0.3
Cinematheque	0.1	0.1	0.1	0.1	0.3	0.1
Café	0.7	0.5	0.5	0.5	0.3	0.4
Arcade	0.3	0.1	0.1	0.1	0.3	0.1
Fab_lab_workshop	0.1	0.1	0.5	0.1	0.3	0.1
Shared_working	0.5	0.2	0.6	0.3	0.4	0.4



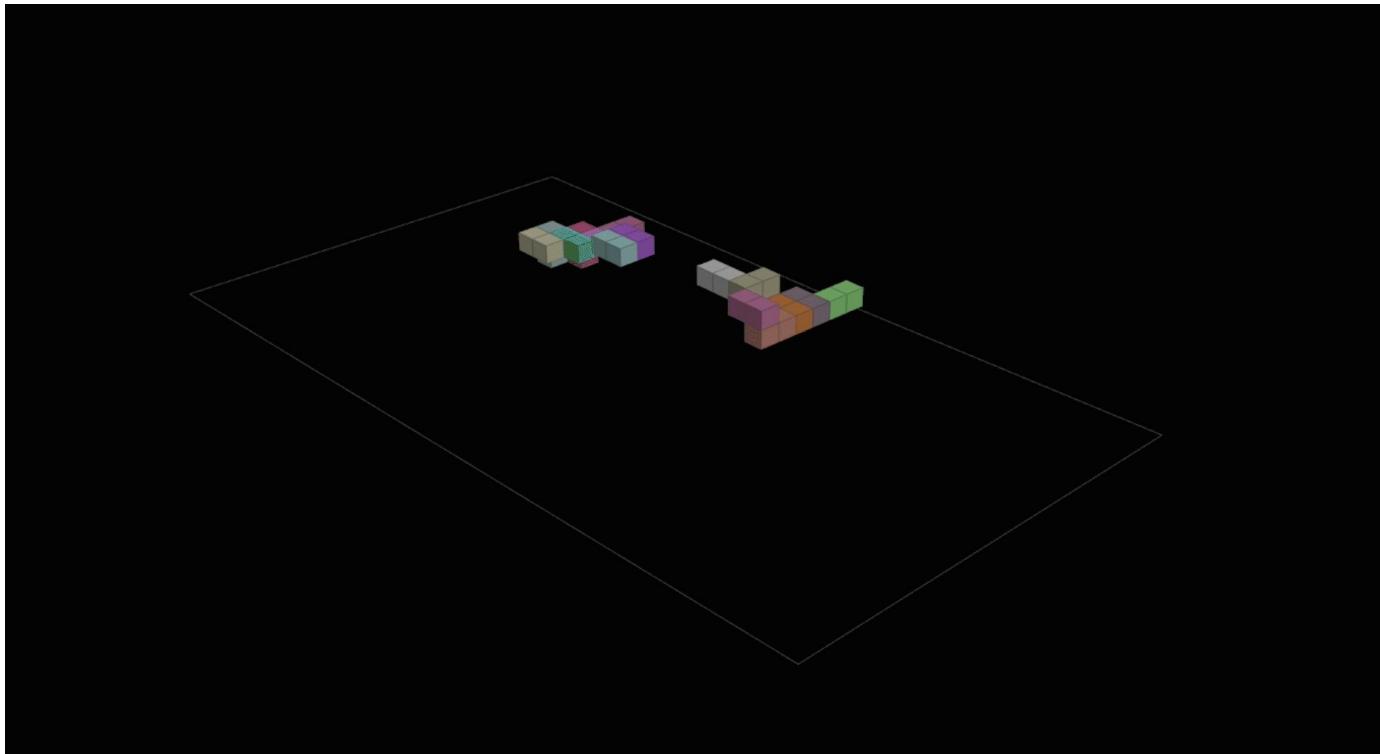
Student Housing

# Growing Functions



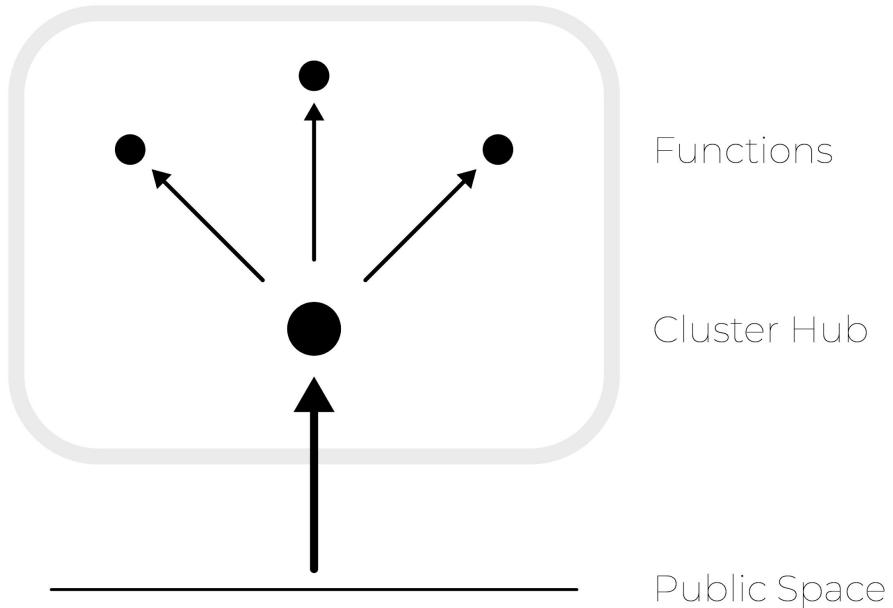
Added blockiness per function  
instead of global blockiness.

# Growing Functions



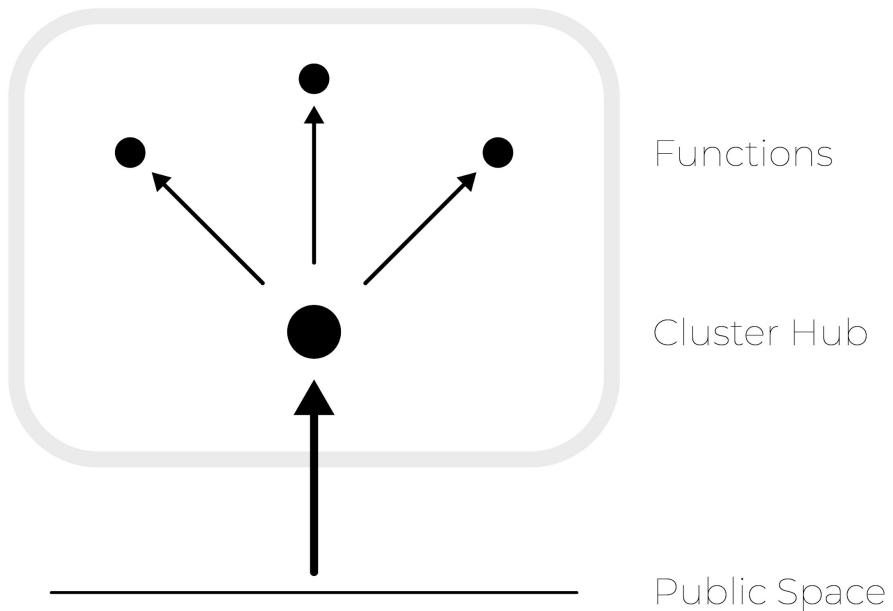
# Circulation

- How to reach functions?
  - From public space to cluster hubs.
  - From cluster hubs to function centres



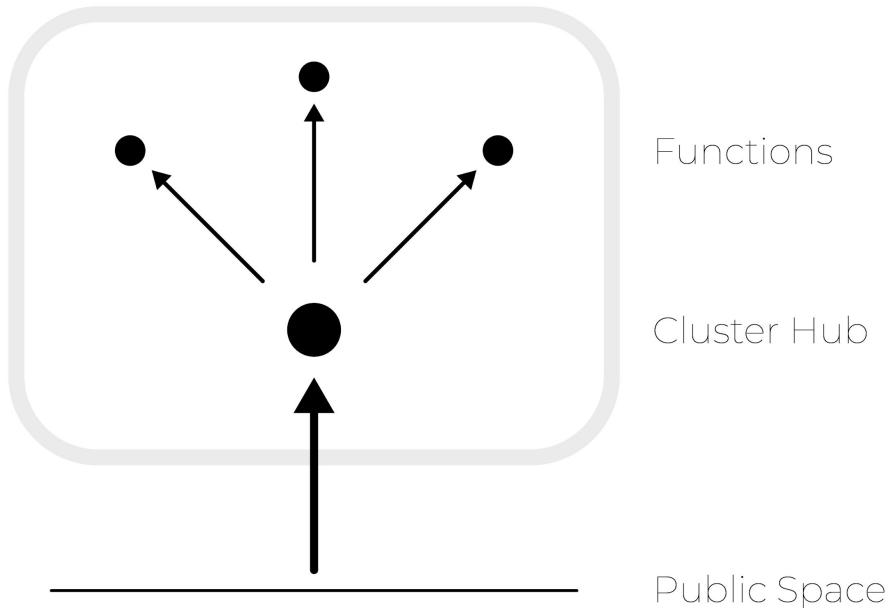
# Circulation

- Why?
  - Initial system of connecting from function to function not efficient: lots of double routes.
  - Some functions left out.

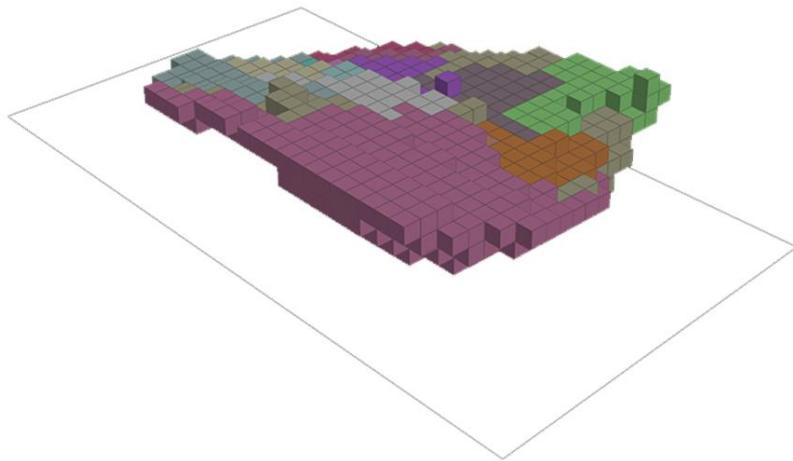


# Circulation

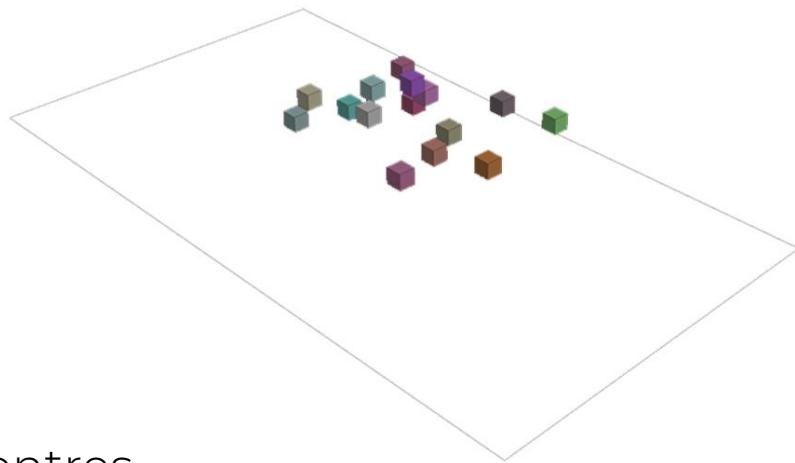
- Trade-off:
  - No implementation of connectivity graph.
  - No implementation of strengths of connections between functions (also already lacking in growth system).



# Clustering

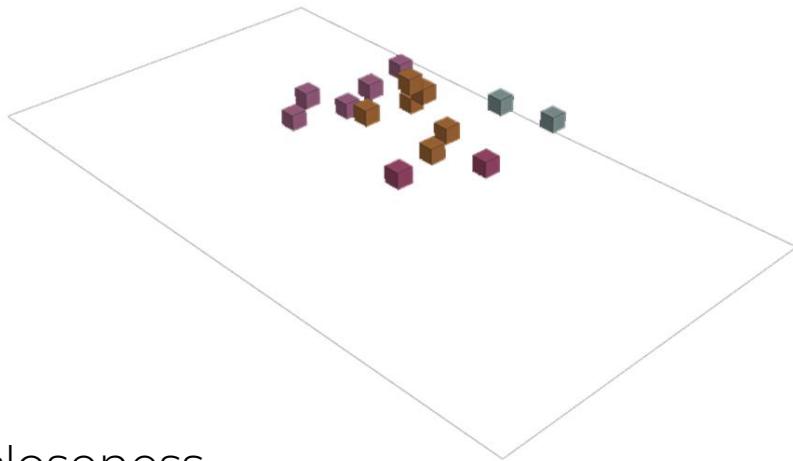


# Clustering



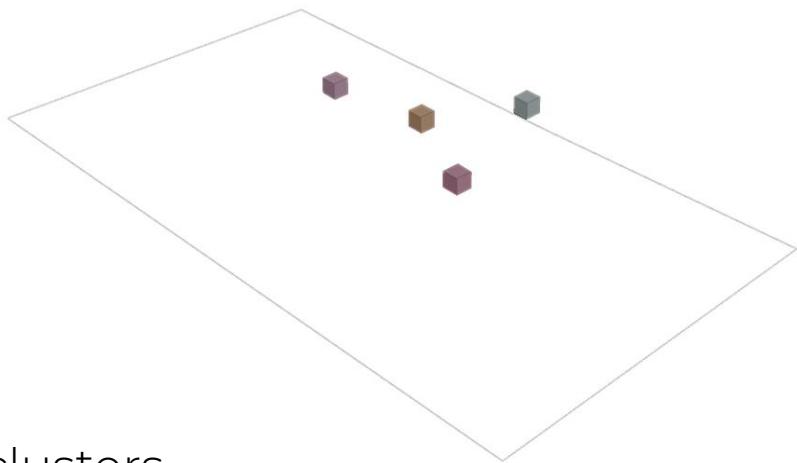
Function centres

# Clustering



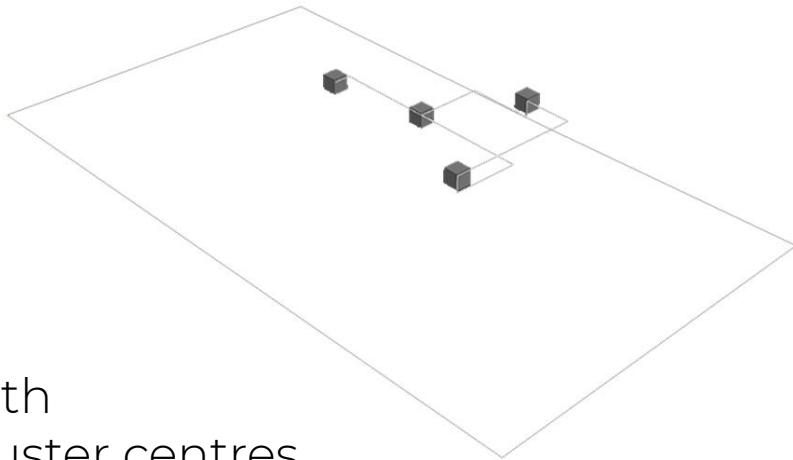
Cluster by closeness

# Clustering



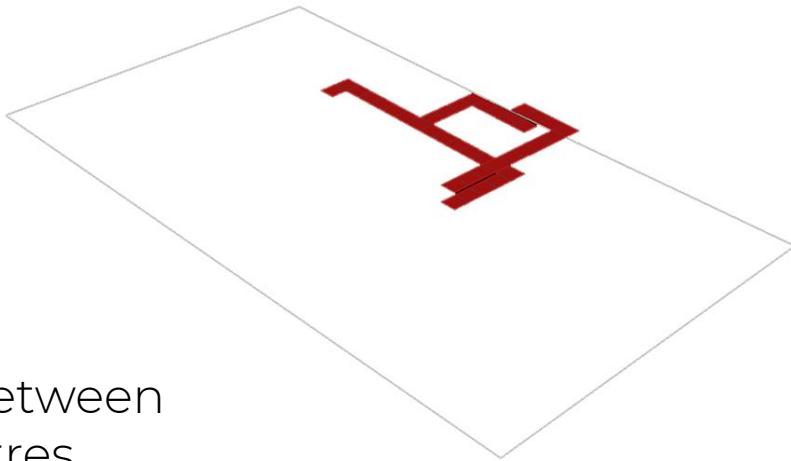
Centres of clusters

# Corridors & Shafts



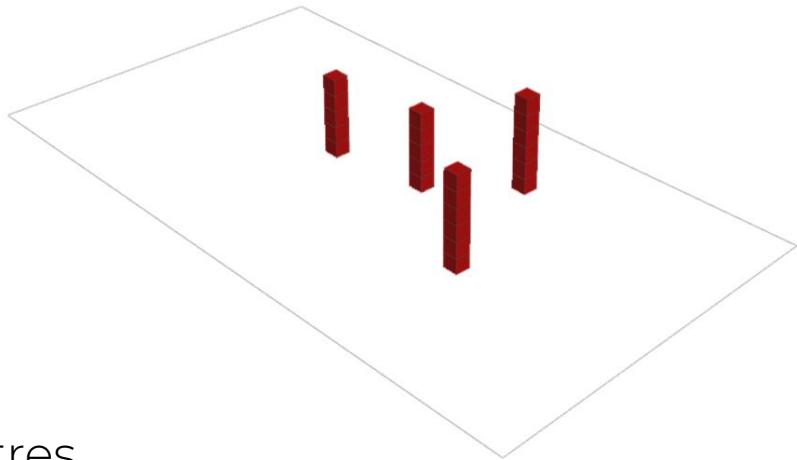
Shortest path  
between cluster centres

# Corridors & Shafts



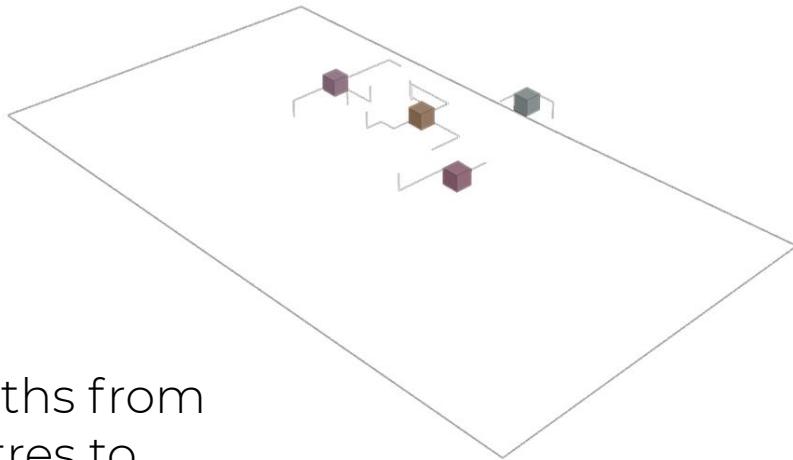
Corridors between  
cluster centres

# Corridors & Shafts



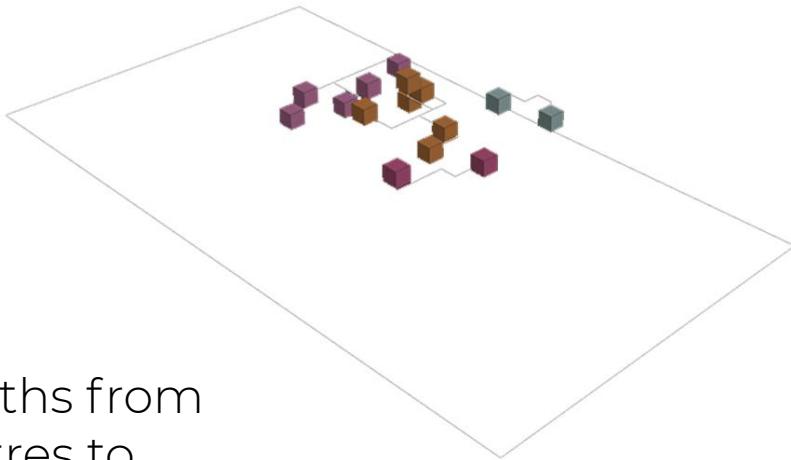
Shafts on  
cluster centres

# Corridors & Shafts



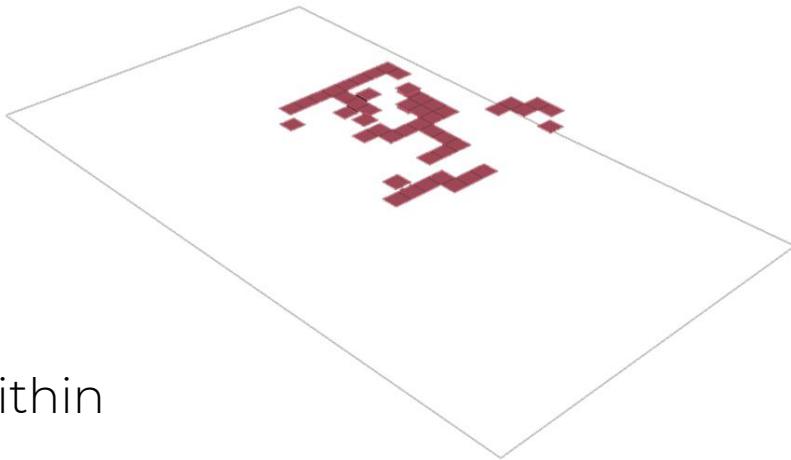
Shortest paths from  
cluster centres to  
functions

# Corridors & Shafts



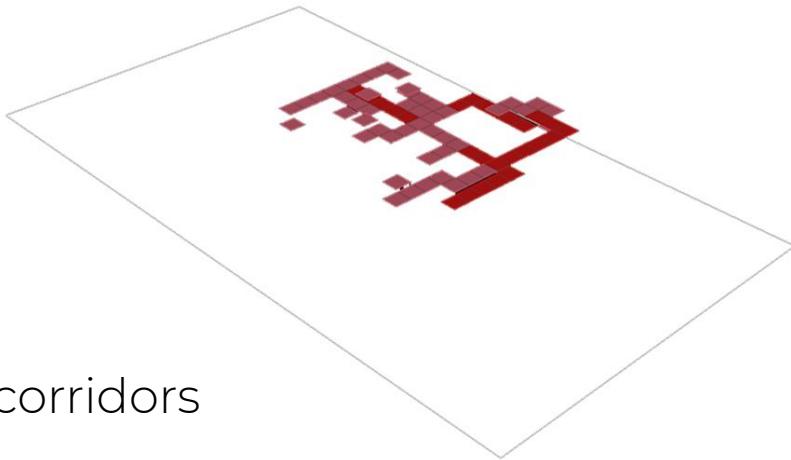
Shortest paths from  
cluster centres to  
functions

# Corridors & Shafts



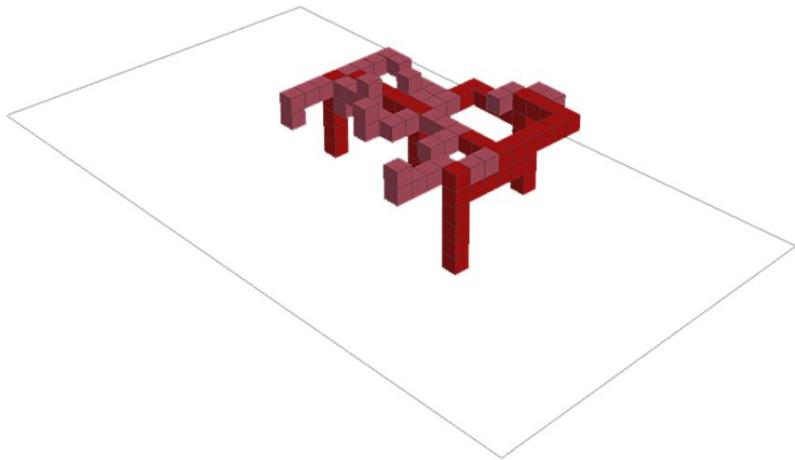
Corridors within  
clusters

# Corridors & Shafts



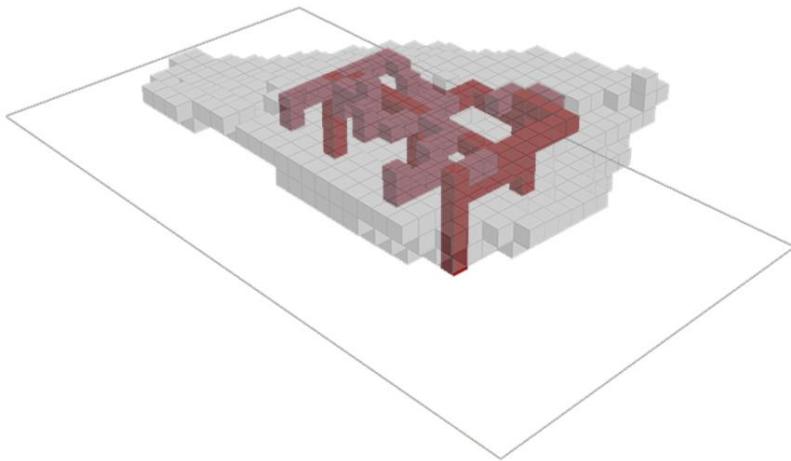
Combined corridors

# Corridors & Shafts

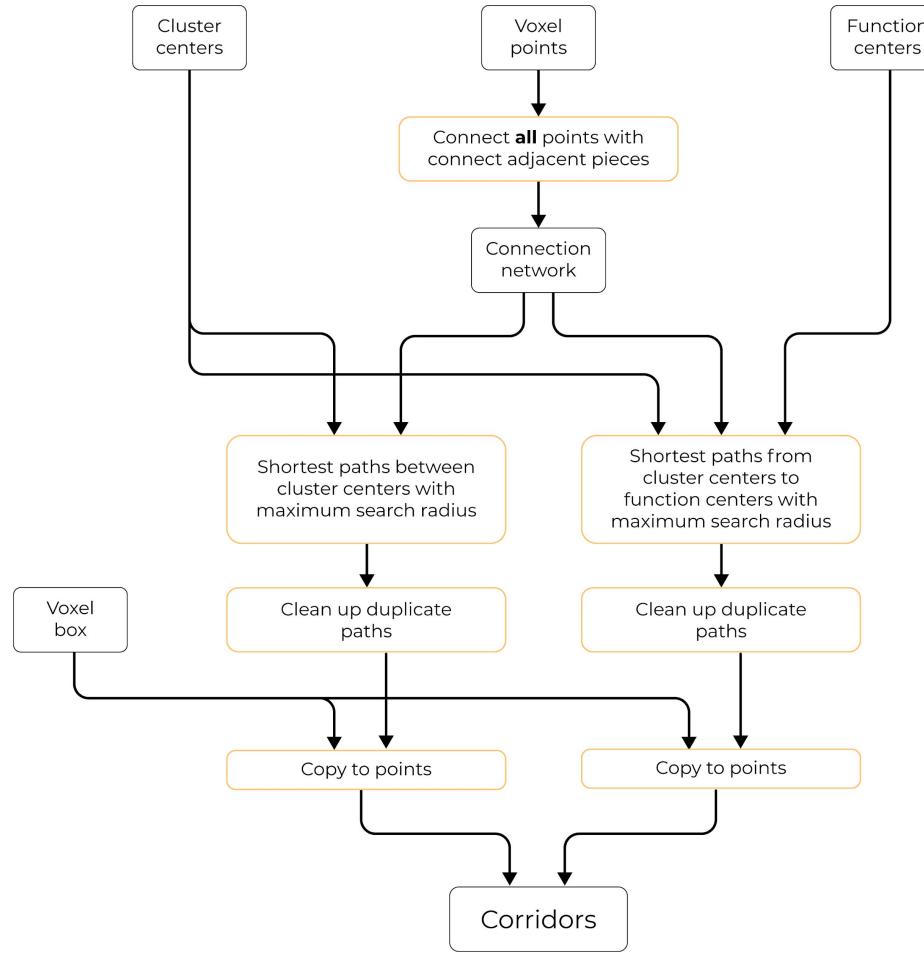


Circulation

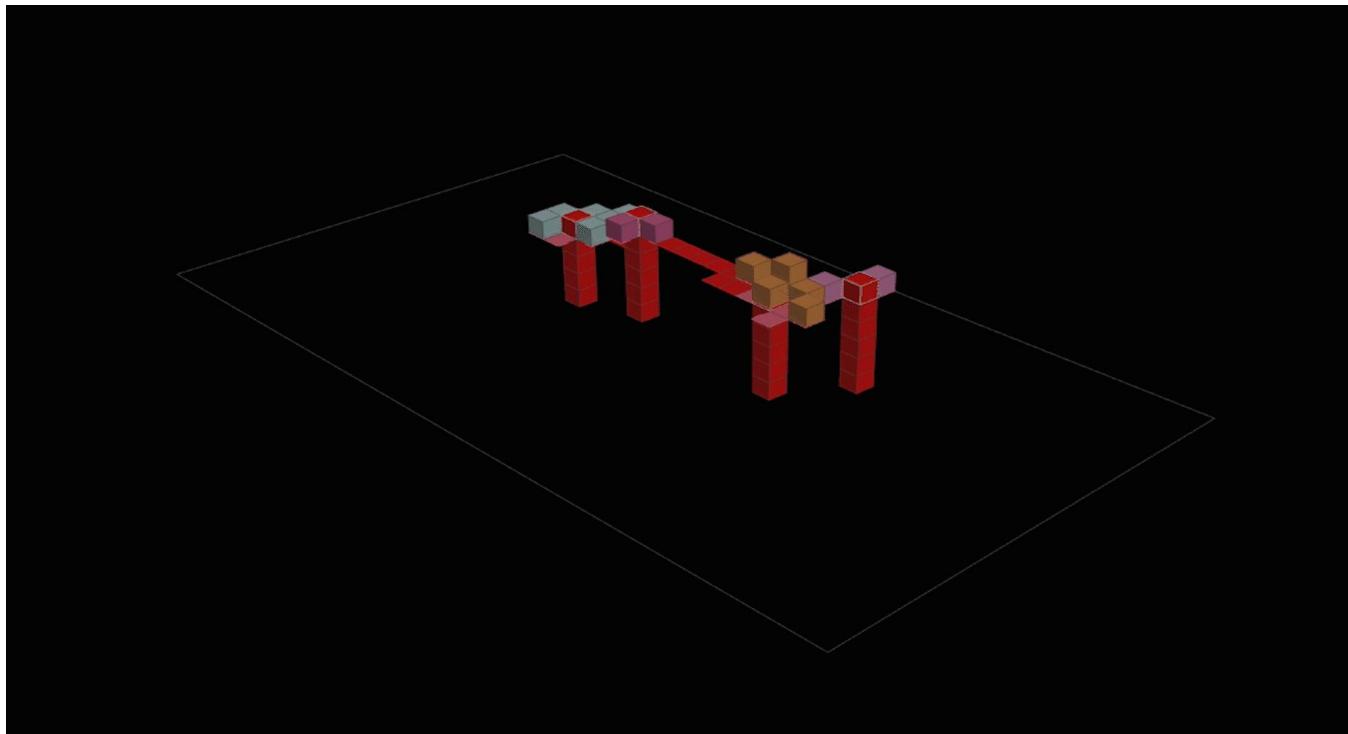
# Corridors & Shafts



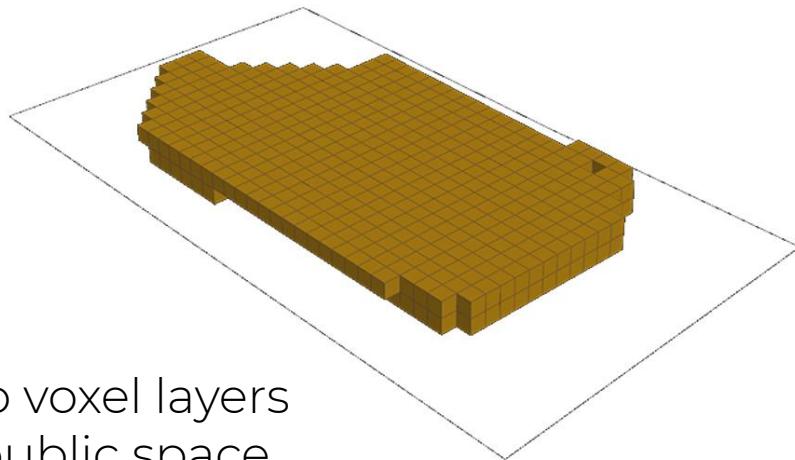
# System



# Corridors & Shafts - versatility

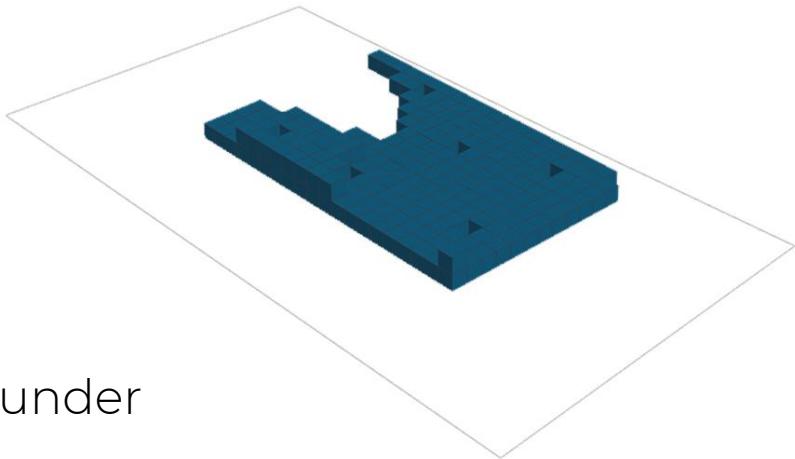


# Final Building Configuration



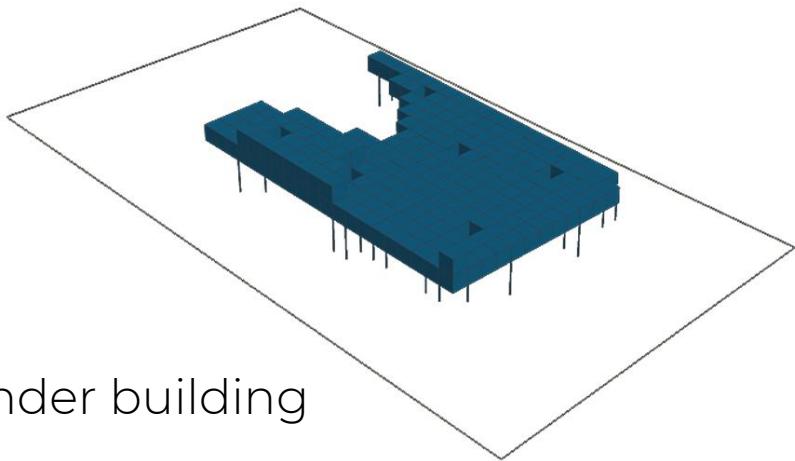
Bottom two voxel layers  
empty for public space

# Final Building Configuration



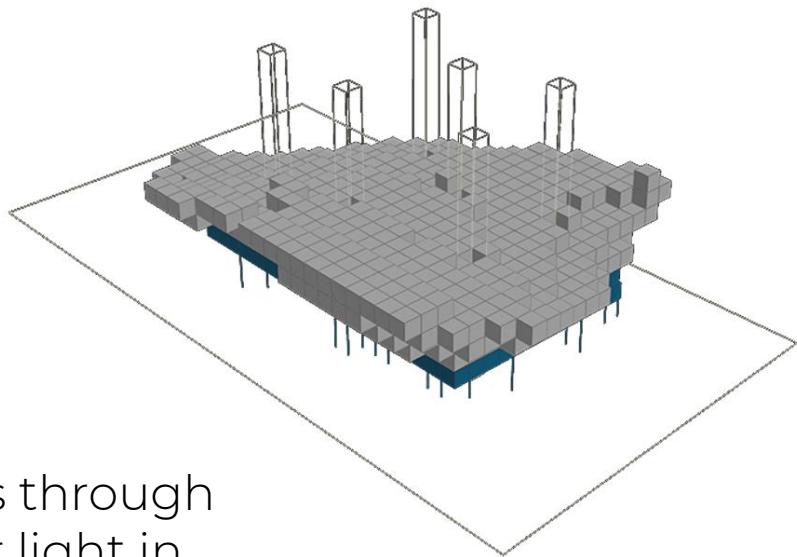
Parking lot under  
functions

# Final Building Configuration



Columns under building

# Final Building Configuration



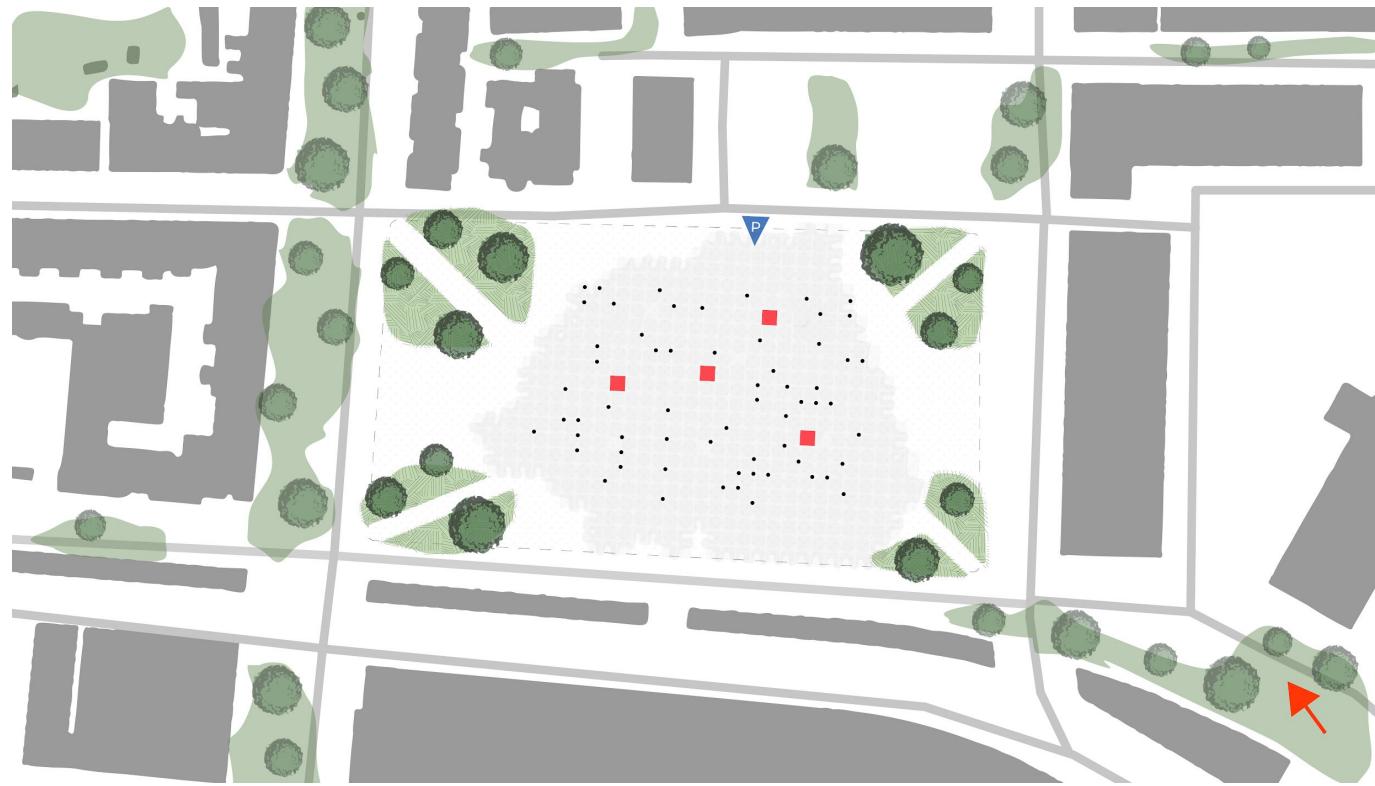
Light shafts through  
building for light in  
public space

# Final Building Configuration

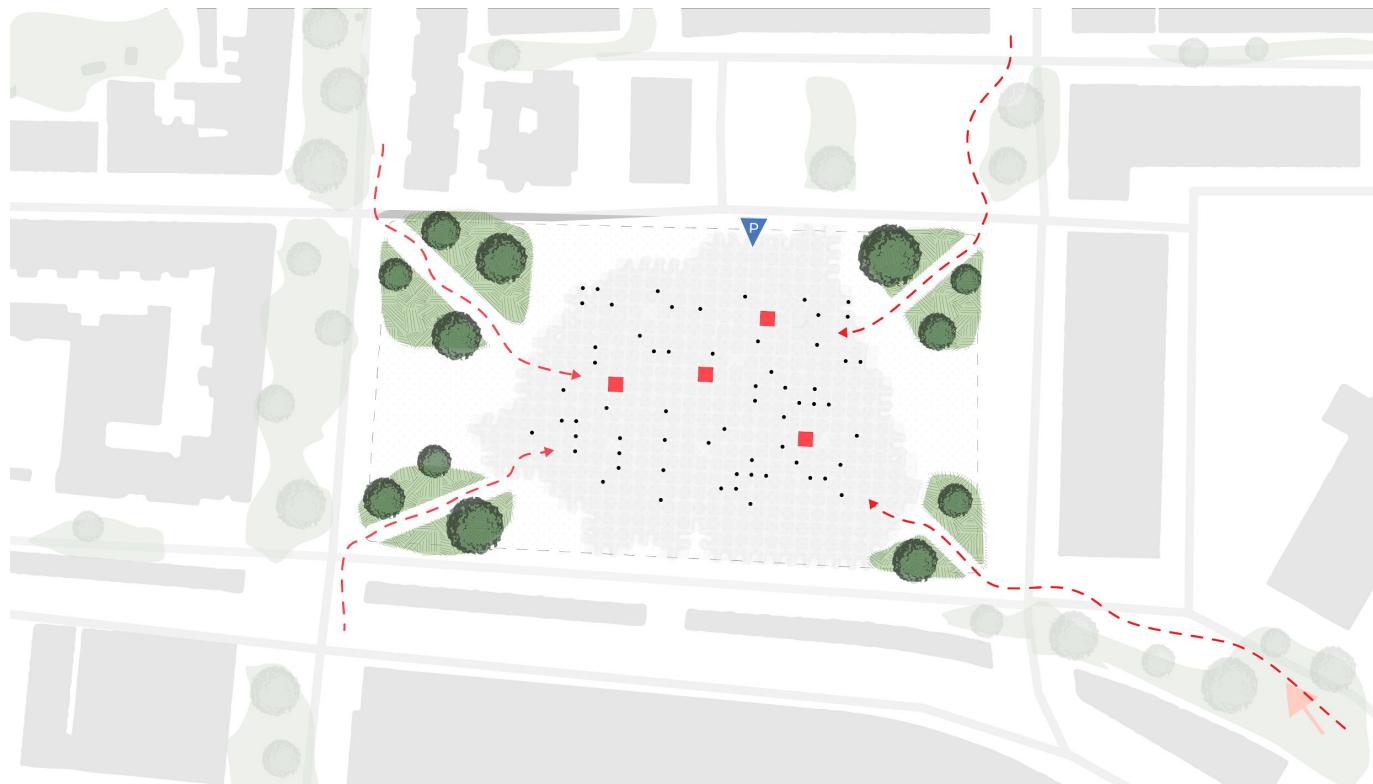


# Architecture

# Masterplan

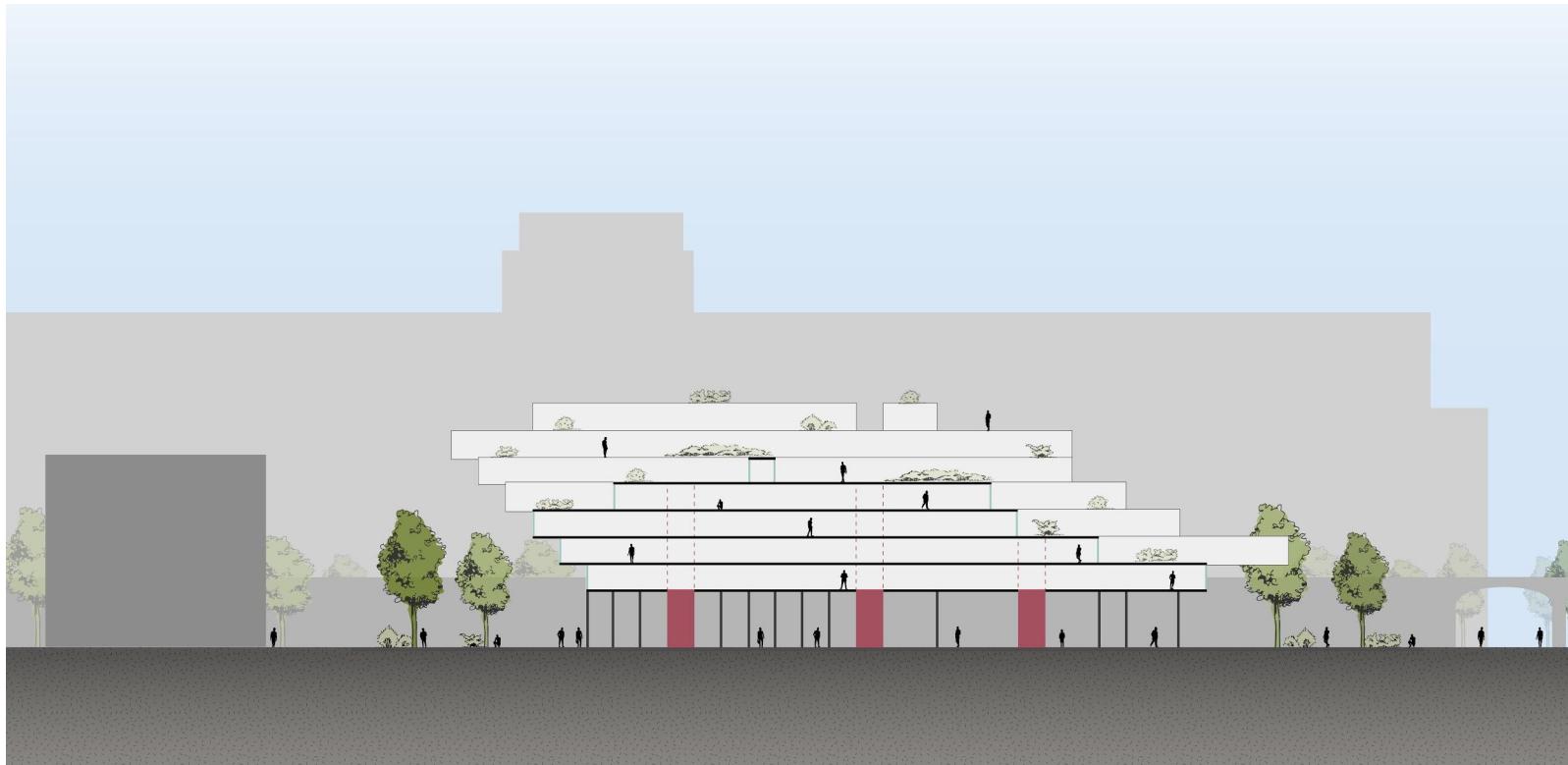


# Masterplan



Approach

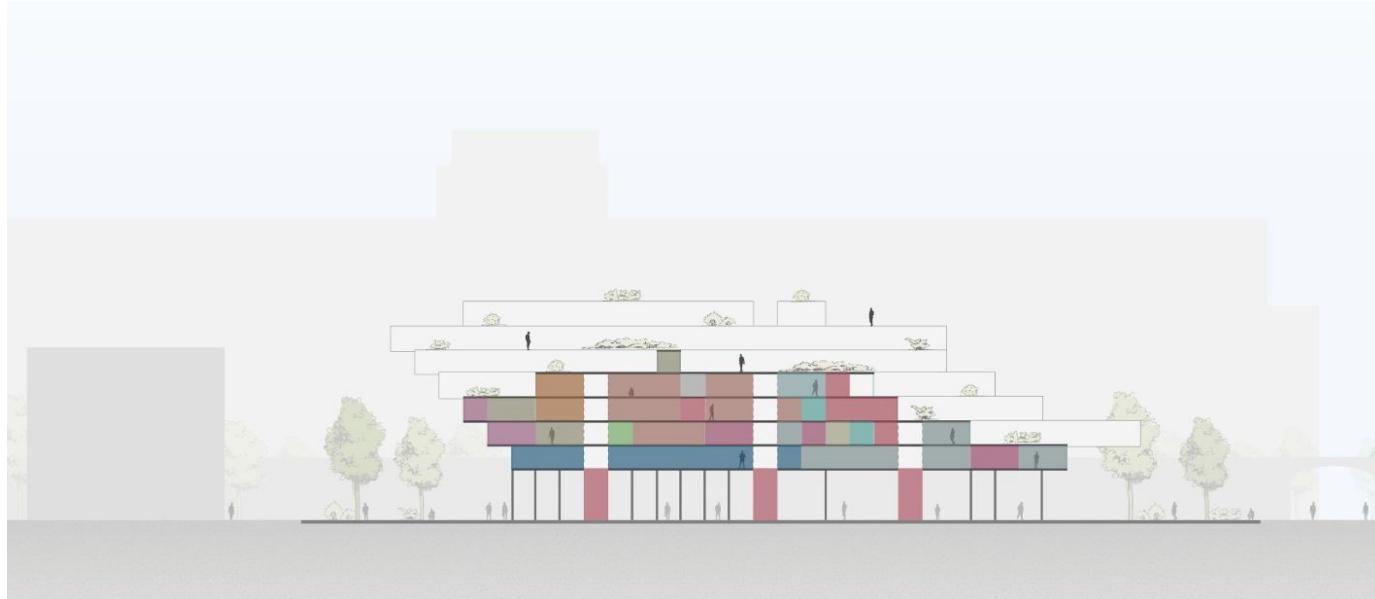
# Section



# Section

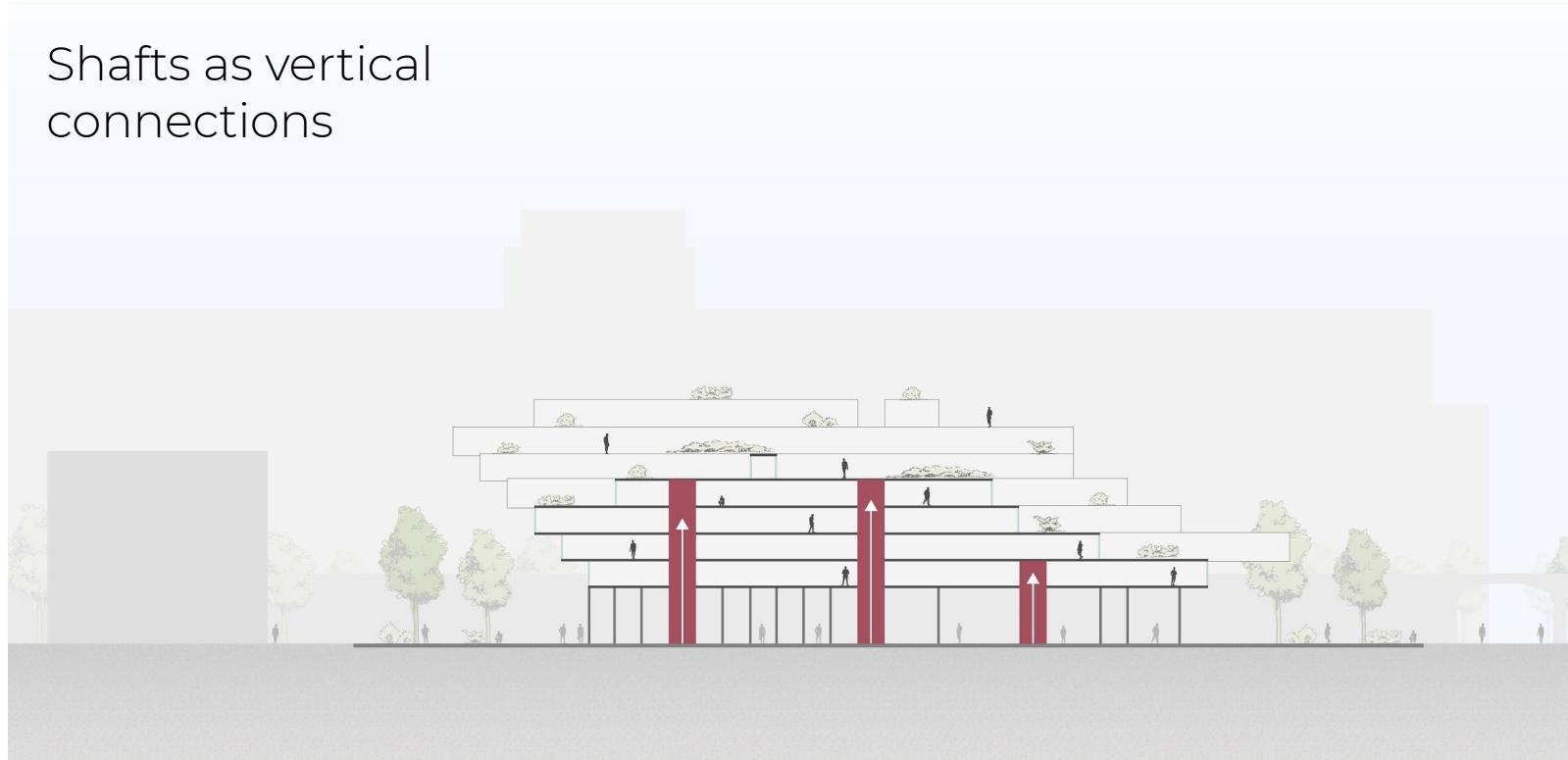
Diversity of functions

start-up offices	library	gym
starter housing	co-cooking	shops
student housing	restaurants	arcade
parking	community centre	fab-lab workshops
shared working	assisted housing	entrances



# Section

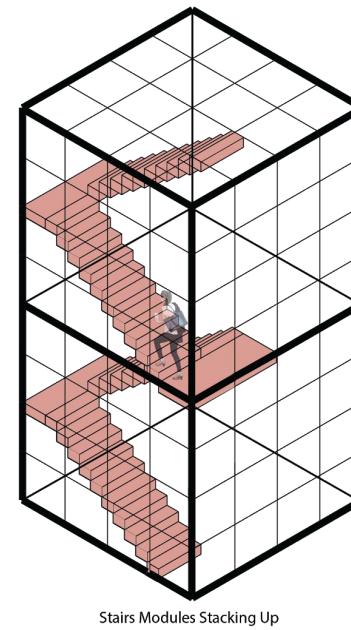
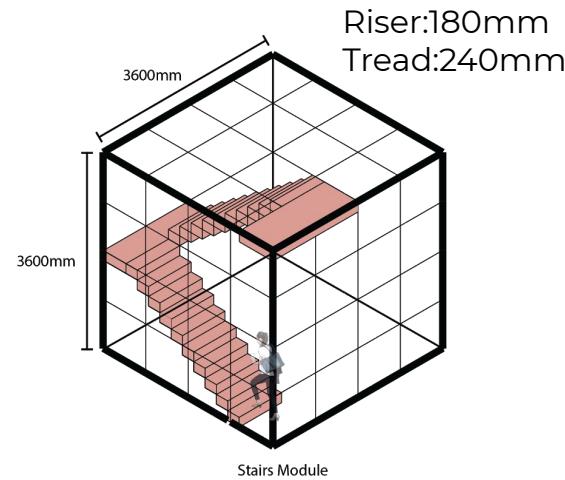
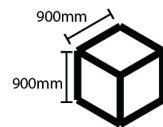
Shafts as vertical  
connections



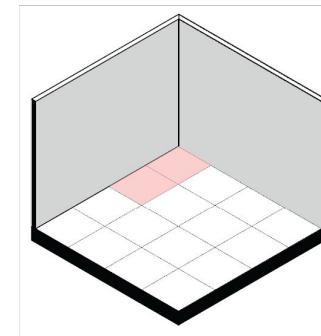
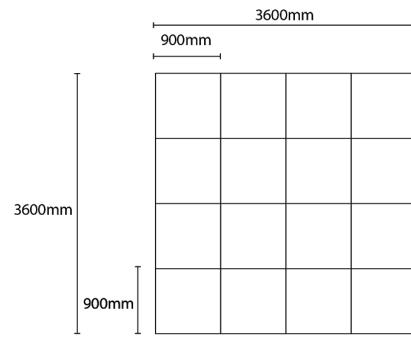
# Reference Project



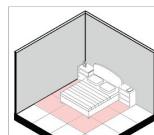
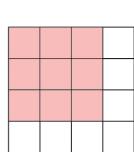
# Stair Modules



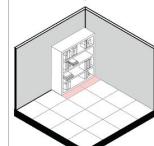
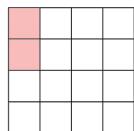
# Voxel Size



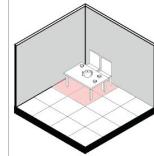
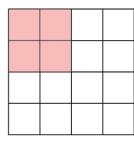
# Furniture Module



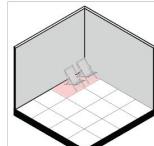
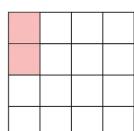
Bed Room



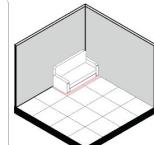
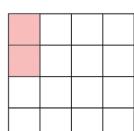
Book Shelf



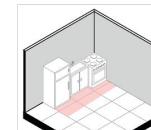
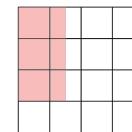
Dinning



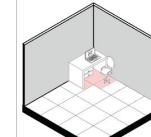
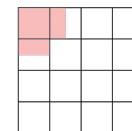
Outdoor/Balcony Chair



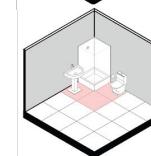
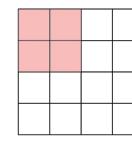
Sofa (2-3 ppl)



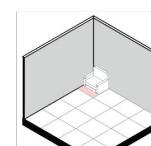
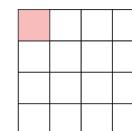
Kitchen



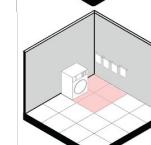
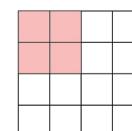
Working



Bath Room



Sofa(1 ppl)



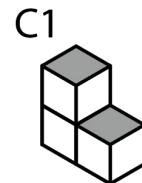
Laundry

# Minimum Size Housing

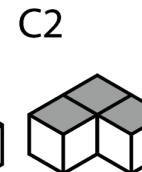


A1

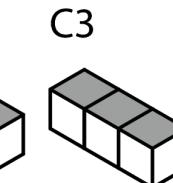
3600\*3600\*3600  
12.6m<sup>2</sup>  
Residence  
1 People



C1



C2

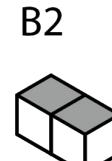


C3

3600\*3600\*3600  
37.8m<sup>2</sup>  
Residence  
2 - 3 People

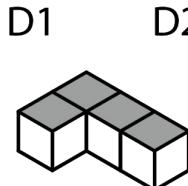


B1

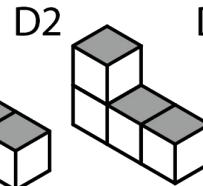


B2

7200\*3600\*3600  
25.2m<sup>2</sup>  
Residence  
1 - 2 People



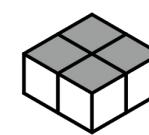
D1



D2



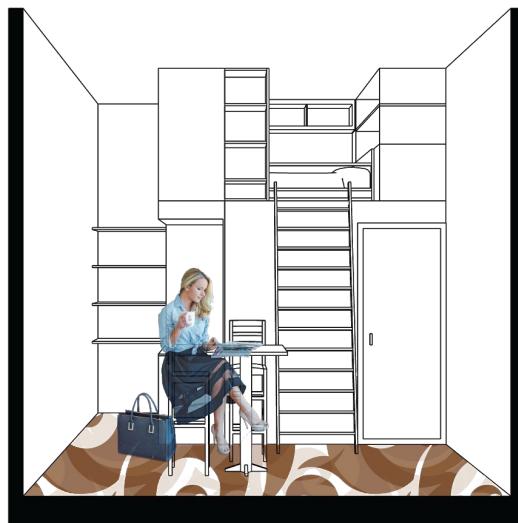
D3



D4

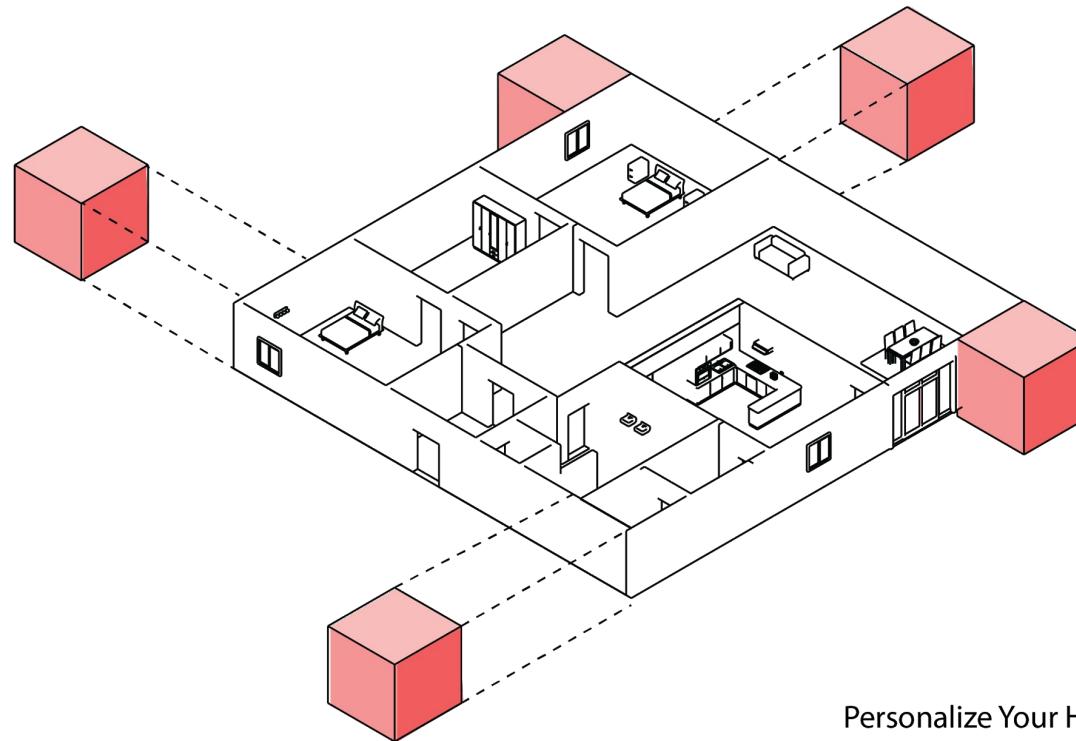
7200\*7200\*7200  
50.4m<sup>2</sup>  
Residence  
2 - 3 People

# One Voxel Unit Example



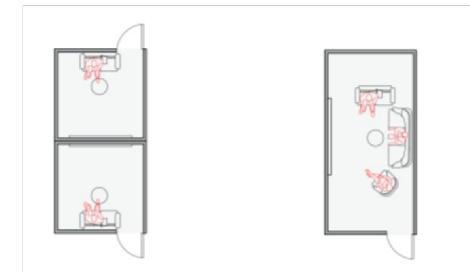
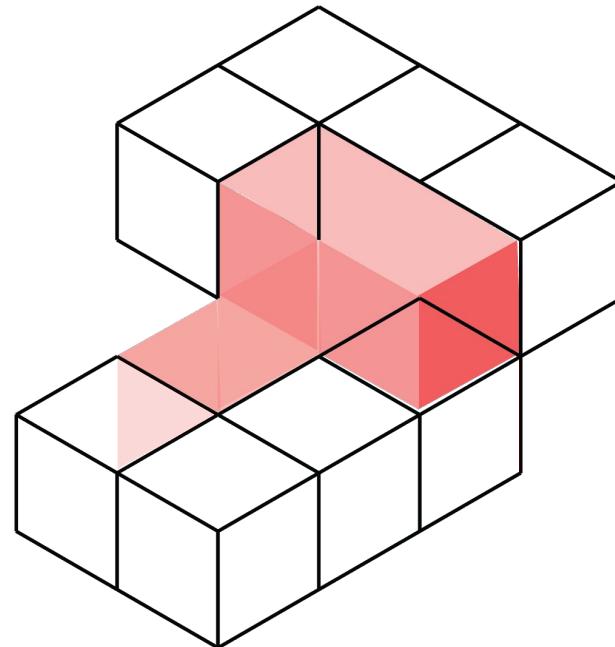
One Voxel Unit

# Personalize Plan



Personalize Your Home

# Shared Module



Shared Module Plugin

# Visualization



# Visualization



# Reflection

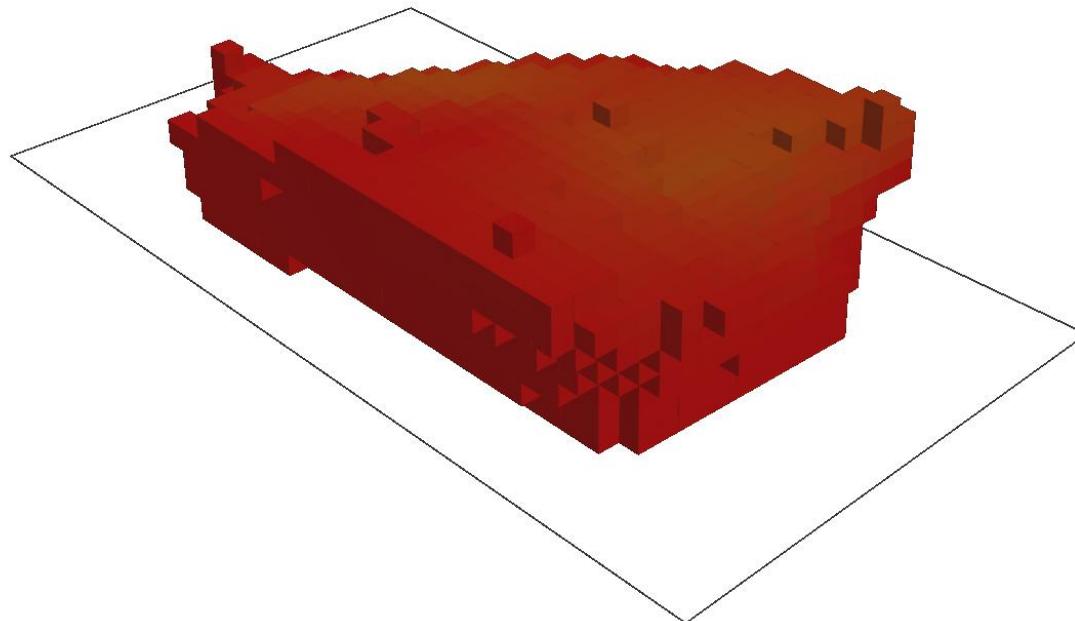
# Variations on weighted product

Extreme case: high weights

Function	Acoustic	Sunlight	Daylight	View Quality	Closeness Ground	Closeness Vegetation
Student_housing	1	1	1	1	1	1
Starter_housing	1	1	1	1	1	1
Assisted_housing	1	1	1	1	1	1
Shops	1	1	1	1	1	1
Startup_office	1	1	1	1	1	1
Gym	1	1	1	1	1	1
Community_centre	1	1	1	1	1	1
Restaurant	1	1	1	1	1	1
Co_cooking	1	1	1	1	1	1
Library	1	1	1	1	1	1
Cinematheque	1	1	1	1	1	1
Café	1	1	1	1	1	1
Arcade	1	1	1	1	1	1
Fab_lab_workshop	1	1	1	1	1	1
Shared_working	1	1	1	1	1	1

# Variations

Extreme case: high weights



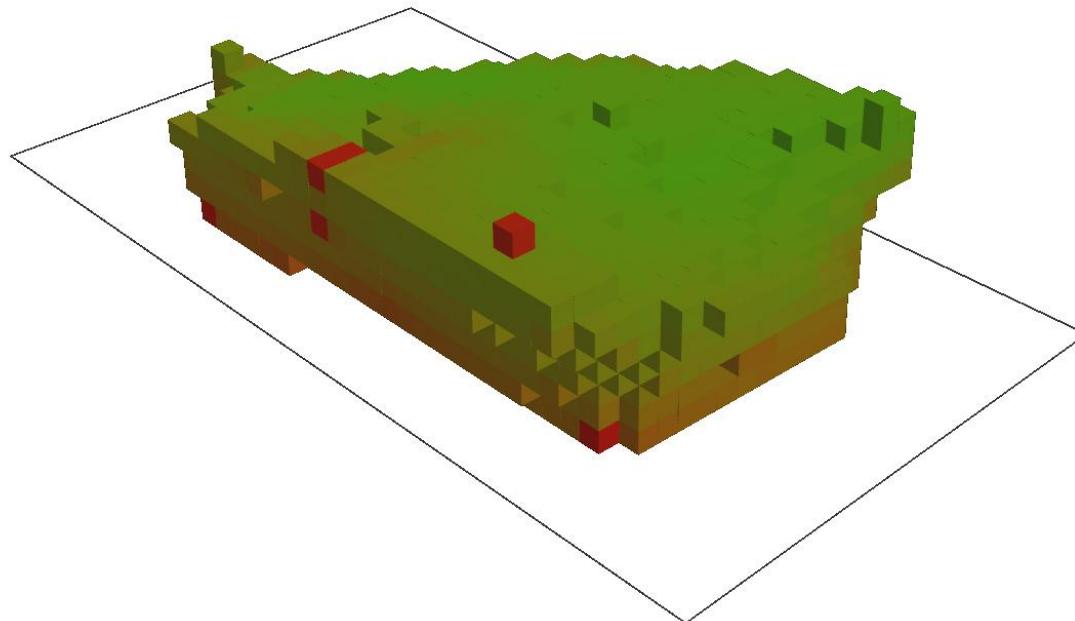
# Variations on weighted product

Extreme case: low weights

Function	Acoustic	Sunlight	Daylight	View Quality	Closeness Ground	Closeness Vegetation
Student_housing	0.1	0.1	0.1	0.1	0.1	0.1
Starter_housing	0.1	0.1	0.1	0.1	0.1	0.1
Assisted_housing	0.1	0.1	0.1	0.1	0.1	0.1
Shops	0.1	0.1	0.1	0.1	0.1	0.1
Startup_office	0.1	0.1	0.1	0.1	0.1	0.1
Gym	0.1	0.1	0.1	0.1	0.1	0.1
Community_centre	0.1	0.1	0.1	0.1	0.1	0.1
Restaurant	0.1	0.1	0.1	0.1	0.1	0.1
Co_cooking	0.1	0.1	0.1	0.1	0.1	0.1
Library	0.1	0.1	0.1	0.1	0.1	0.1
Cinematheque	0.1	0.1	0.1	0.1	0.1	0.1
Café	0.1	0.1	0.1	0.1	0.1	0.1
Arcade	0.1	0.1	0.1	0.1	0.1	0.1
Fab_lab_workshop	0.1	0.1	0.1	0.1	0.1	0.1
Shared_working	0.1	0.1	0.1	0.1	0.1	0.1

# Variations

Extreme case: low weights



# Reflection

- Weighted-product system is more suited for data looking for minimization instead of maximization:
  - Maximization: 1 is the best data value.
  - Minimization: 0 is the best data value.

$1^{\text{anything}} \times 1 = 1$  so weights lose their influence

$0.1^{0.5} \times 1 = 0.32$  would make W.P. value “better” in case of minimization

# Reflection

- **Problem:**
  - Any values of 0 break the system

$0^{0.5} \times 0.5^{0.5} = 0$  making the weight useless, because there's no order in a list of zeros.

- Maximization with a **multiplier** for the data calculation to get well **distributed** values, then map range to 0 - 1.

# Conclusions

- Weighted product has some **weaknesses**.
  - “good” values lose their influence on function growth system.
  - weights lose their strength on high values.
- Initial **connection graph** was difficult to **re-incorporate** into function placement & growth.
- Had to make **concessions** in design goals, especially in connections between functions.
  - Trade off **clustering by function type** for **clustering by closeness**.
- **Circulation** system works well, is **versatile**.

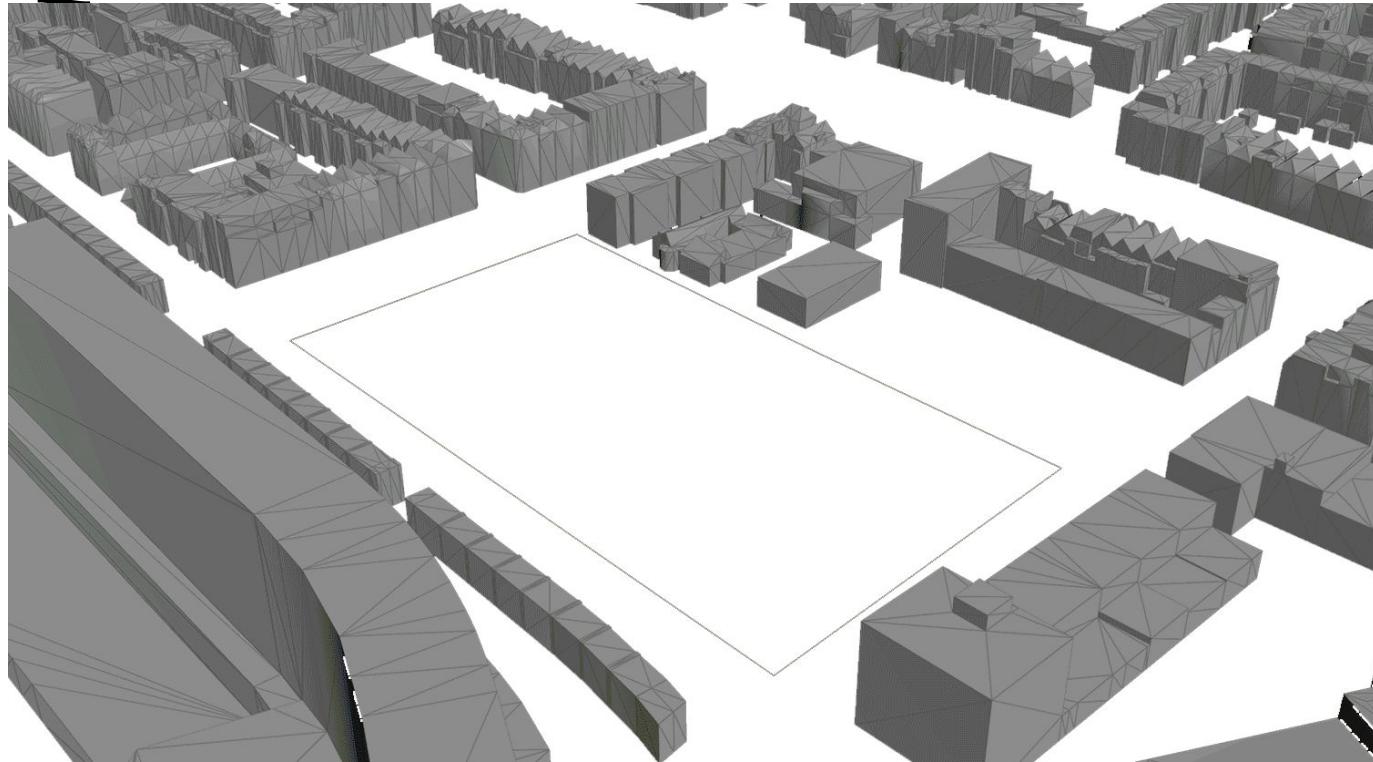
# Recommendations for the future

- **Weighted product:** search for minimization instead of maximization.
- **Weighted product:** possible to use fuzzy selection?
  - Likely drawback of no weights
- Design system to incorporate **connection graph** into placing & growing of functions and circulation between functions.

# Oasis

Thank you for listening

# Questions?



# Questions?