



THE URBAN
SYMBIOSIS

1. *Analysis*

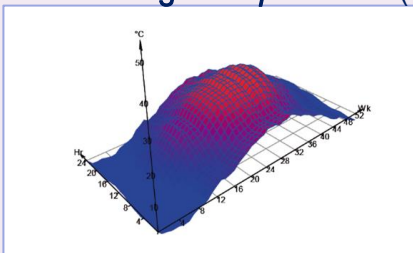
2.

3.

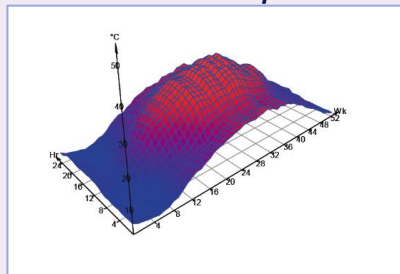
4.

1.

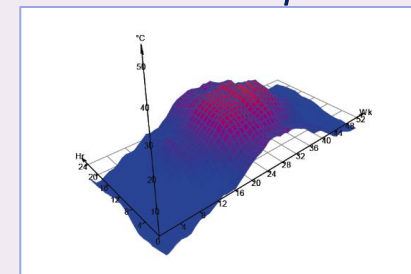
Average *temperature* ($^{\circ}\text{C}$)



Maximum *temperature* ($^{\circ}\text{C}$)

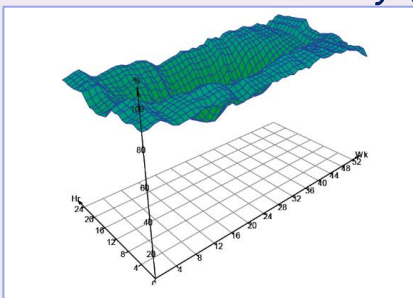


Mininum *temperature* ($^{\circ}\text{C}$)

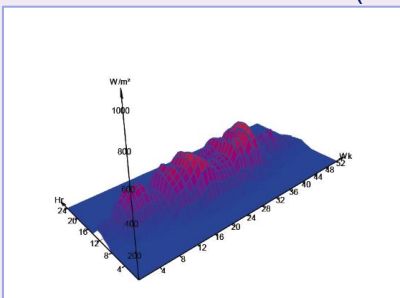


2.

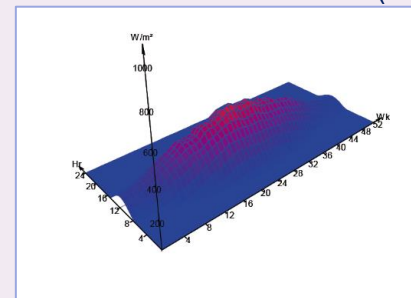
Relative *humidity* (%)



Direct *solar radiation* (W/m^2)

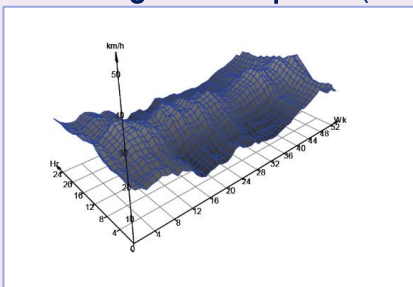


Difuse *solar radiation* (W/m^2)

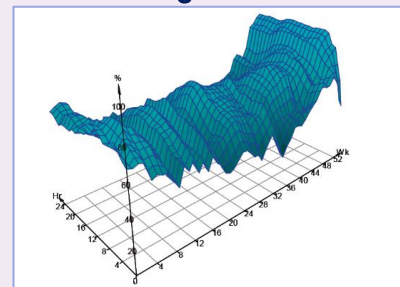


3.

Average *wind speed* (km/h)



Average *cloud cover* (%)



4.

Our Warsaw's climatic *analysis*

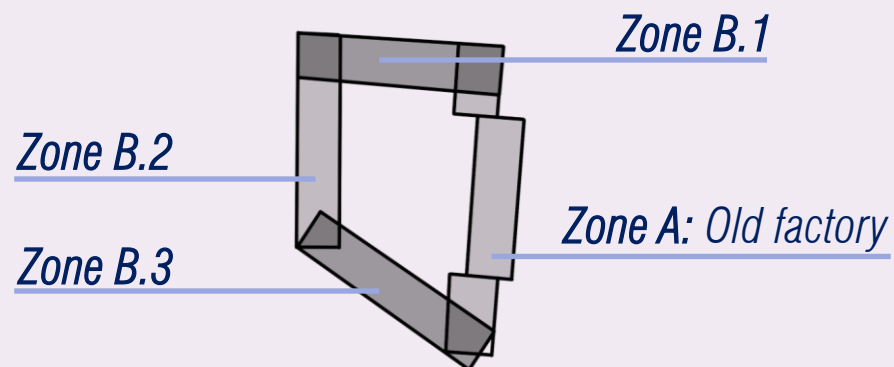
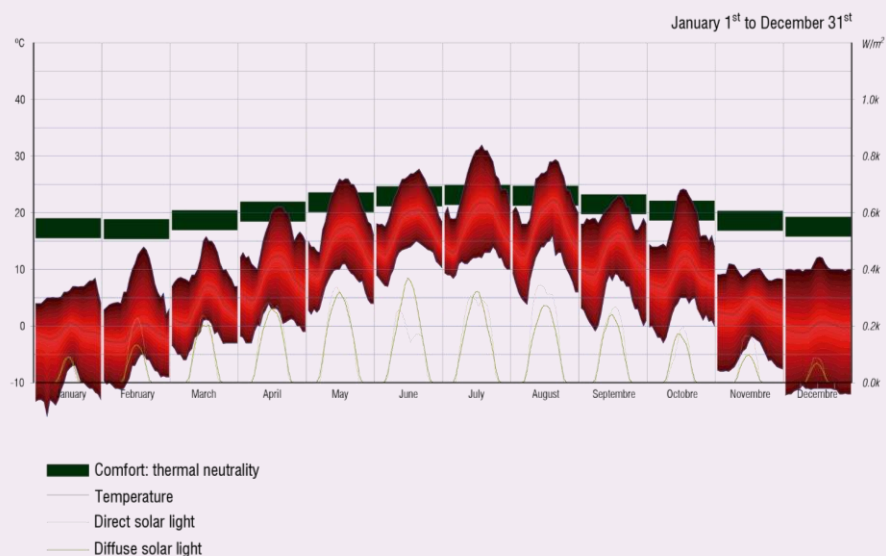
1.

2.

3.

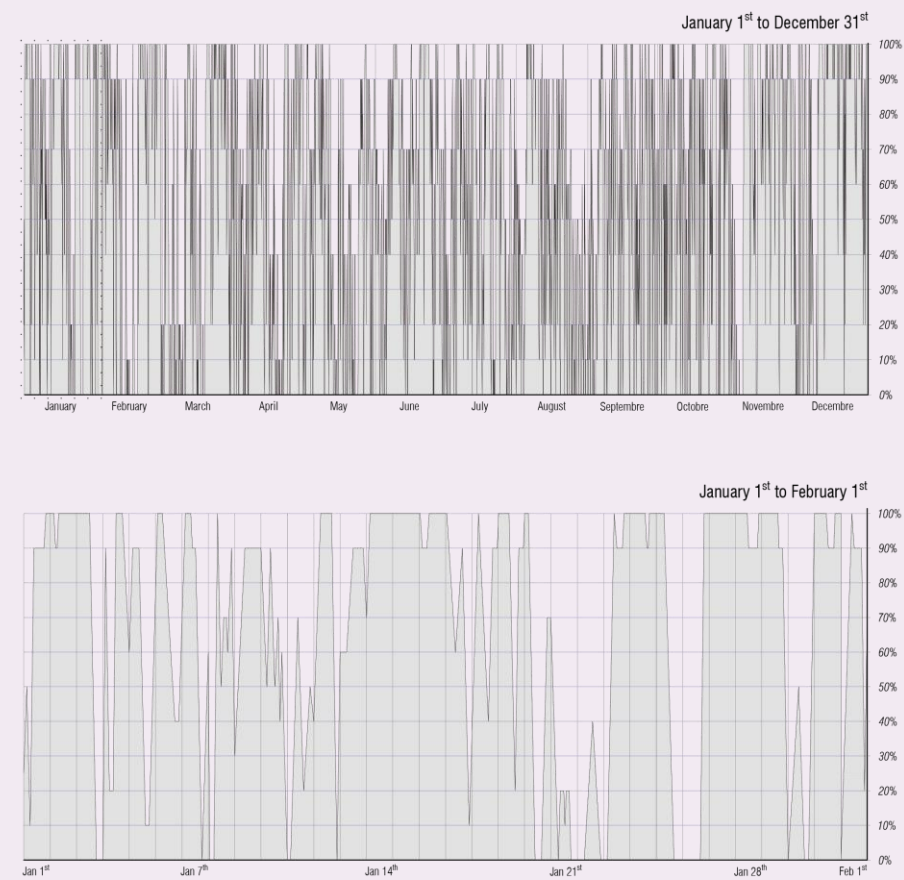
4.

MONTHLY AVERAGE DIURNAL TEMPERATURES



Our intervention area *analysis*

CLOUD COVER



Our Warsaw's climatic *analysis*

1.

2. *Concept*

3.

4.

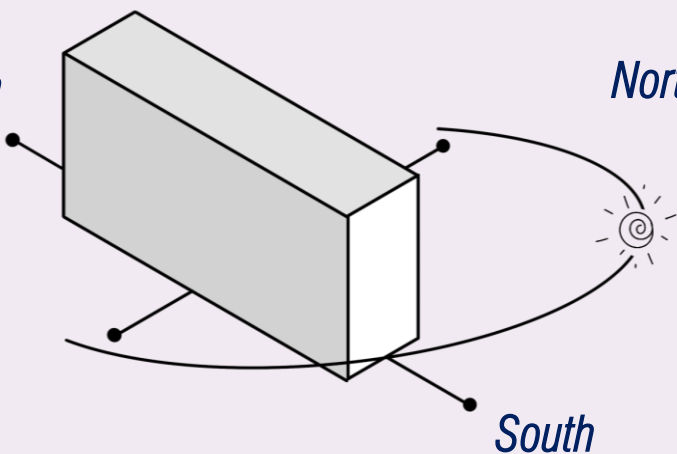
1.

2.

3.

4.

North

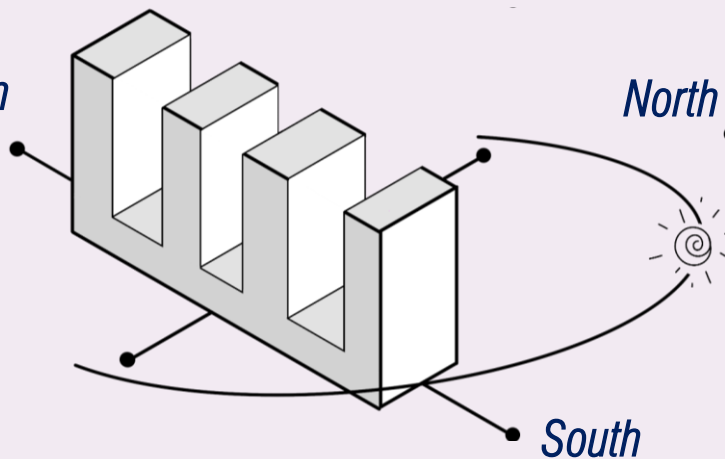


South

A bar whose main axis is orientated *north-south* exposes it's side with the smallest surface to the south, the best and our desired orientation.

First situation

North

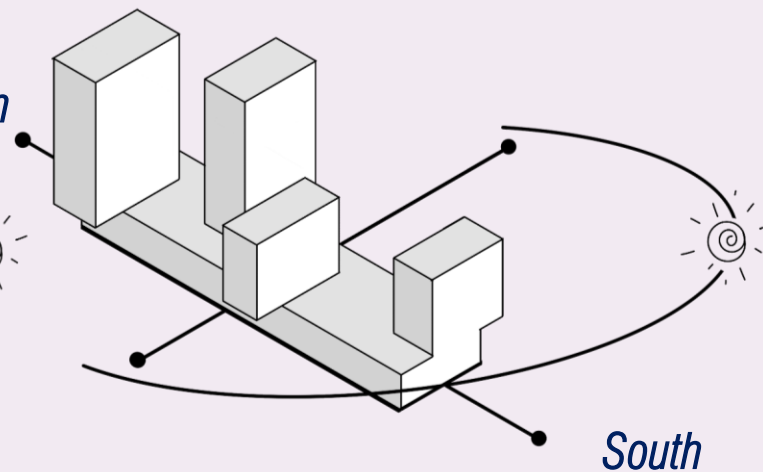


South

But if we are able to *empty* enough this bars, we can expand considerably the amount of surface (or the *façade*) with the opposite direction.

Second situation

North



South

Because of the sun rays inclination, we modified our new *towers* in two different ways: we offset them from the axis and varied it's height.

Final situation

1.

2.

3. *Program and spatial distribution*

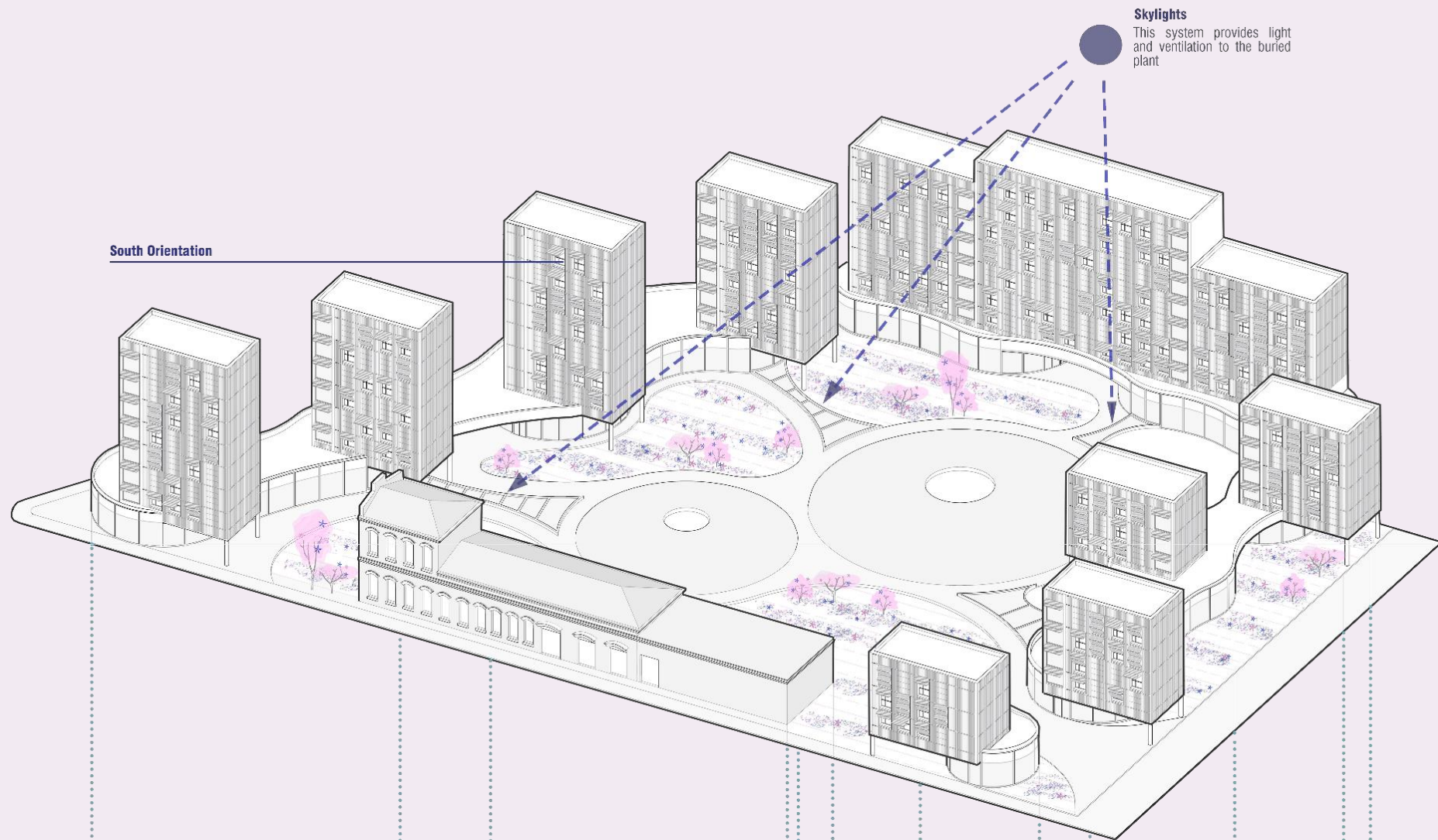
4.

1.

2.

3.

4.



Public spaces

1.

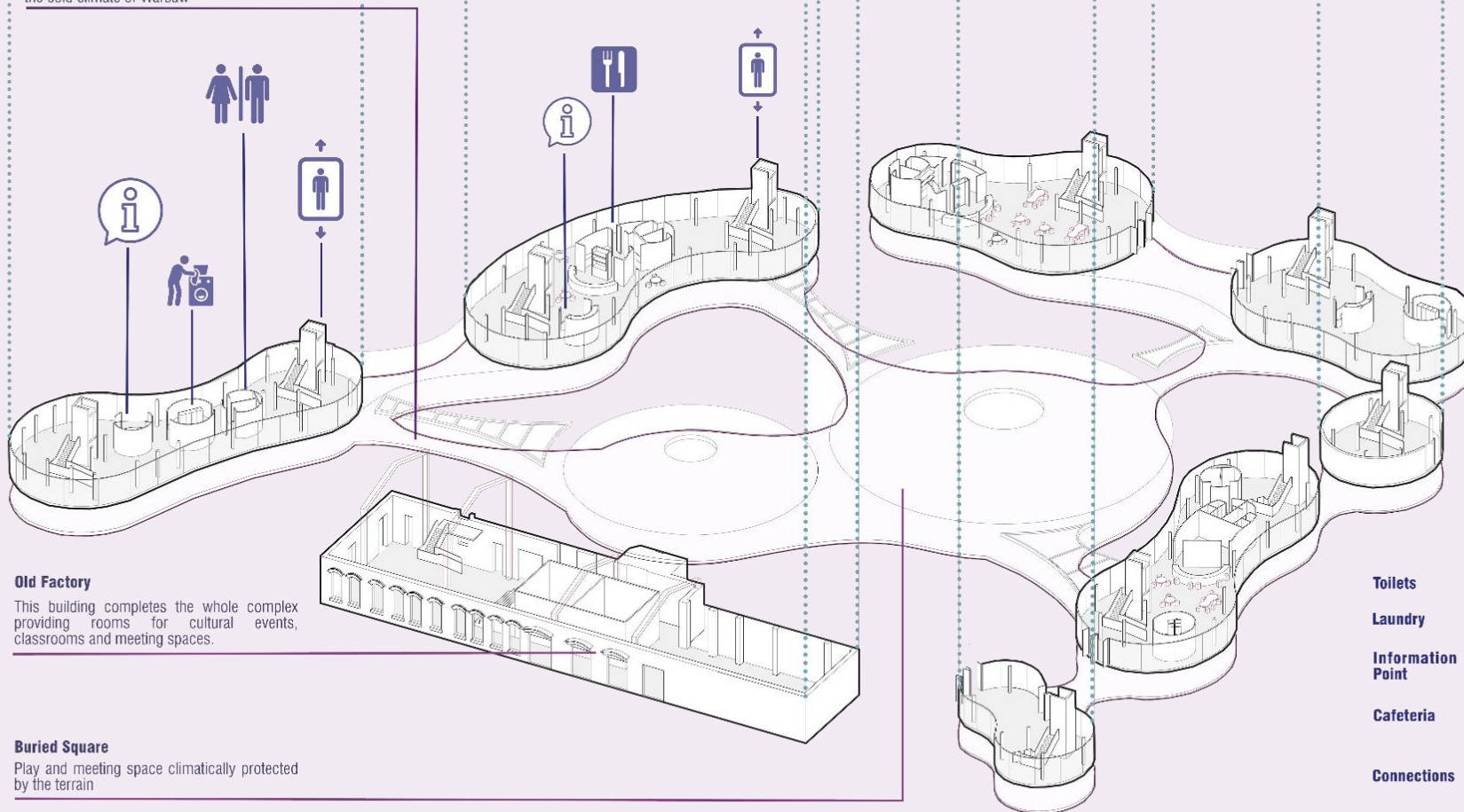
2.

3.

4.

Buried connections

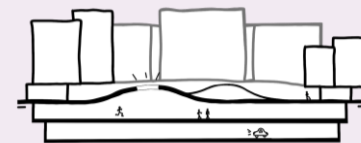
The terrain provides us with a natural conditioning of the connections. All areas are connected underground to cope with the cold climate of Warsaw

**Old Factory**

This building completes the whole complex providing rooms for cultural events, classrooms and meeting spaces.

Buried Square

Play and meeting space climatically protected by the terrain



Buried square

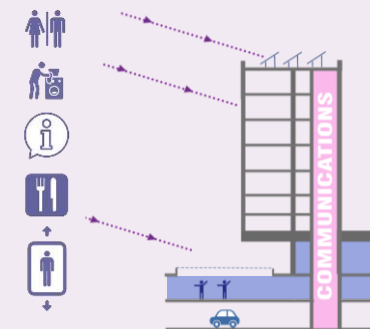
Toilets

Laundry

Information
Point

Cafeteria

Connections



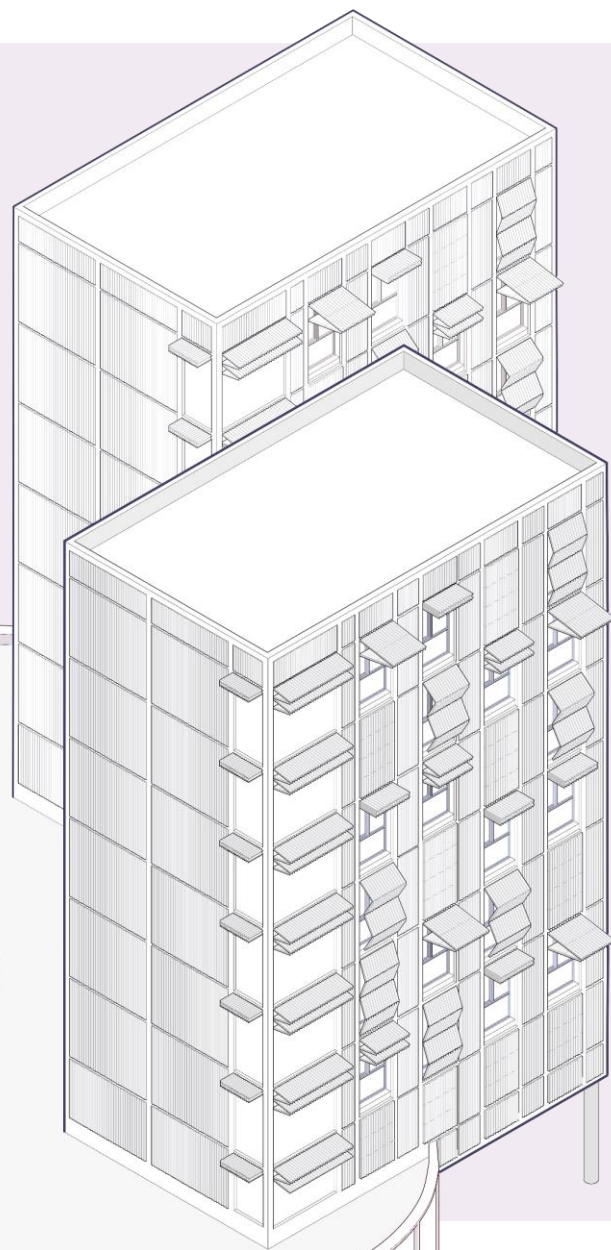
Public spaces

1.

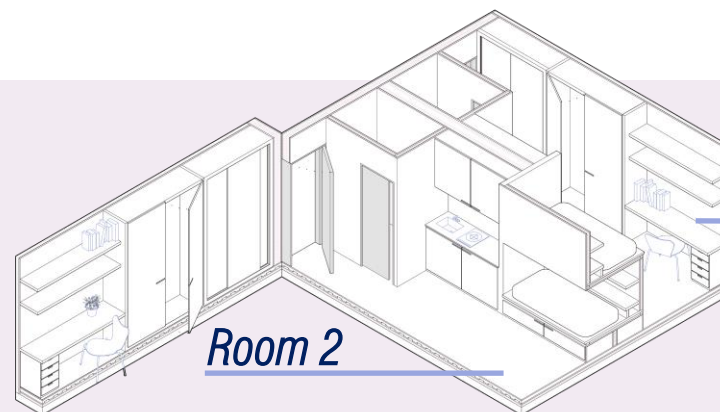
2.

3.

4.



Single room



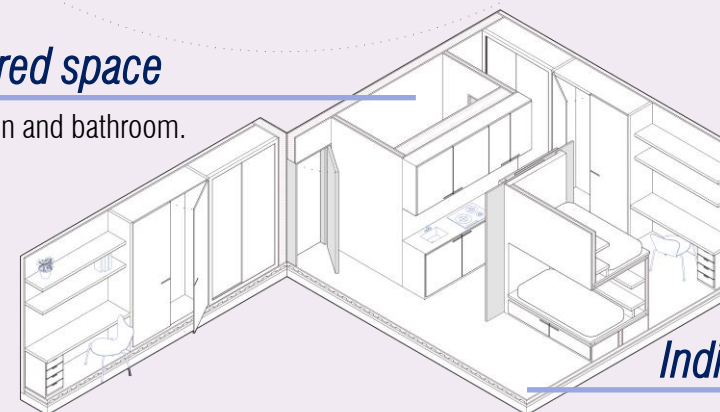
Room 1

Room 2

Shared space

Kitchen and bathroom.

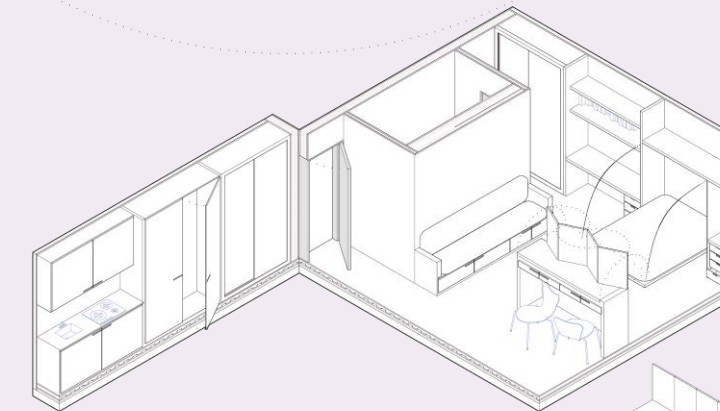
Double room 1



Individual spaces

Bed and desk.

Double room 2

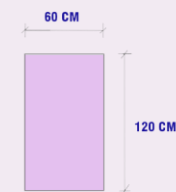


Furniture positions

Each floor's tower is composed by two modular spaces that are thought to be shared by two students.

Depending on the user's relationship, they will be assigned to one of the three models developed.

FURNITURE MODULATION



EASY MANUFACTURING



EASY TRANSPORTATION



Private spaces

1.

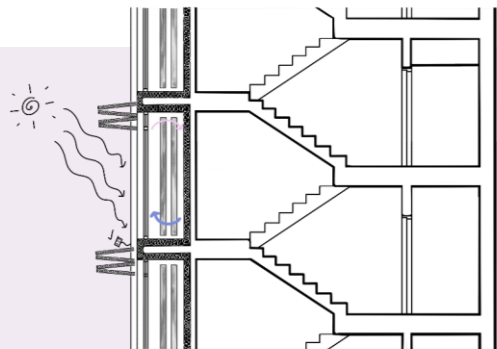
2.

3.

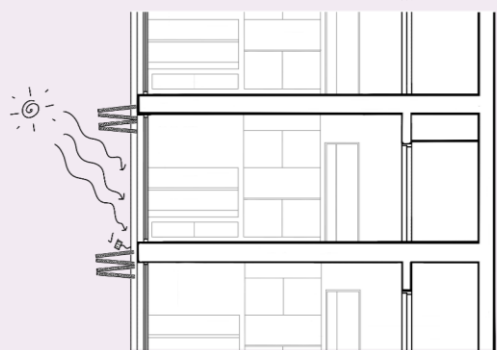
4.

Bioclimatic strategies and technical approach

1.

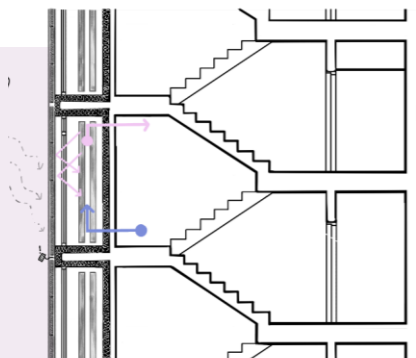


2.



3.

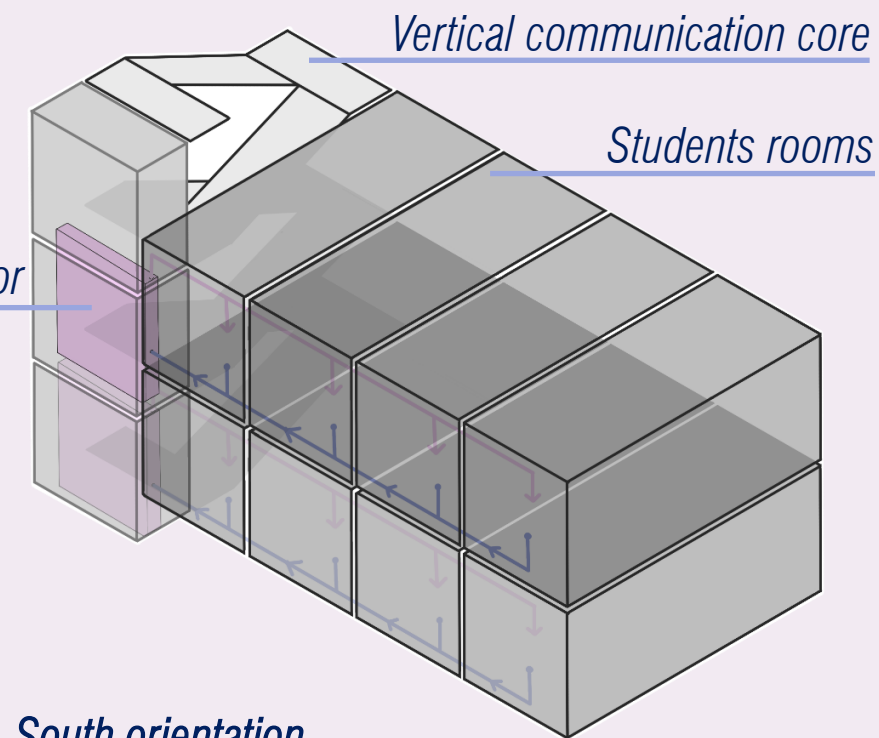
WHEN THERE IS
SOLAR LIGHT AVAILABLE



WHEN THERE IS
NO SOLAR LIGHT AVAILABLE

Winter situation

Heat
accumulator

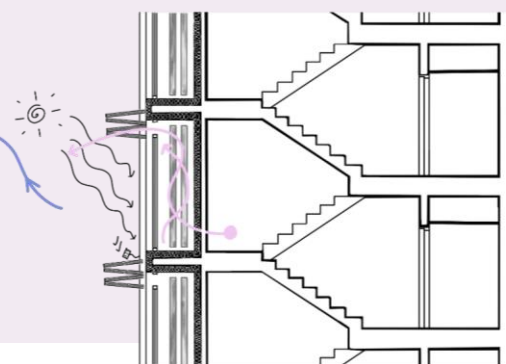
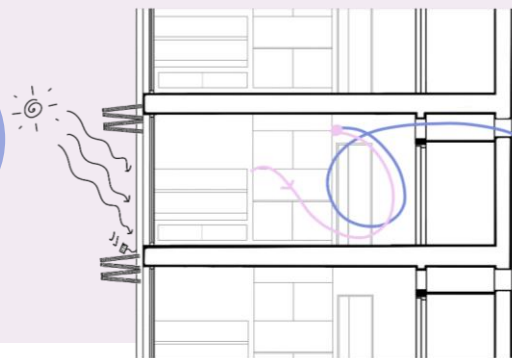


South orientation

Also works as a *trombe wall*: sun heats air camera and by making small apertures we can renew students rooms air naturally.

Passive system: *heat accumulator*

4.



Summer situation

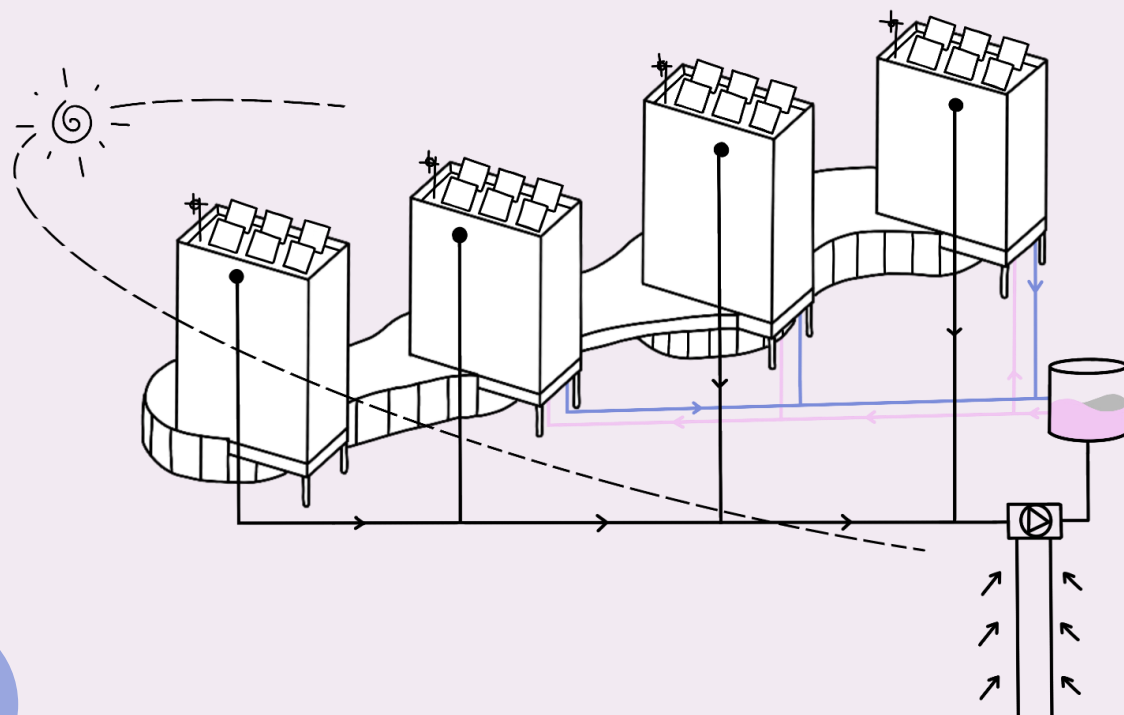
1.

2.

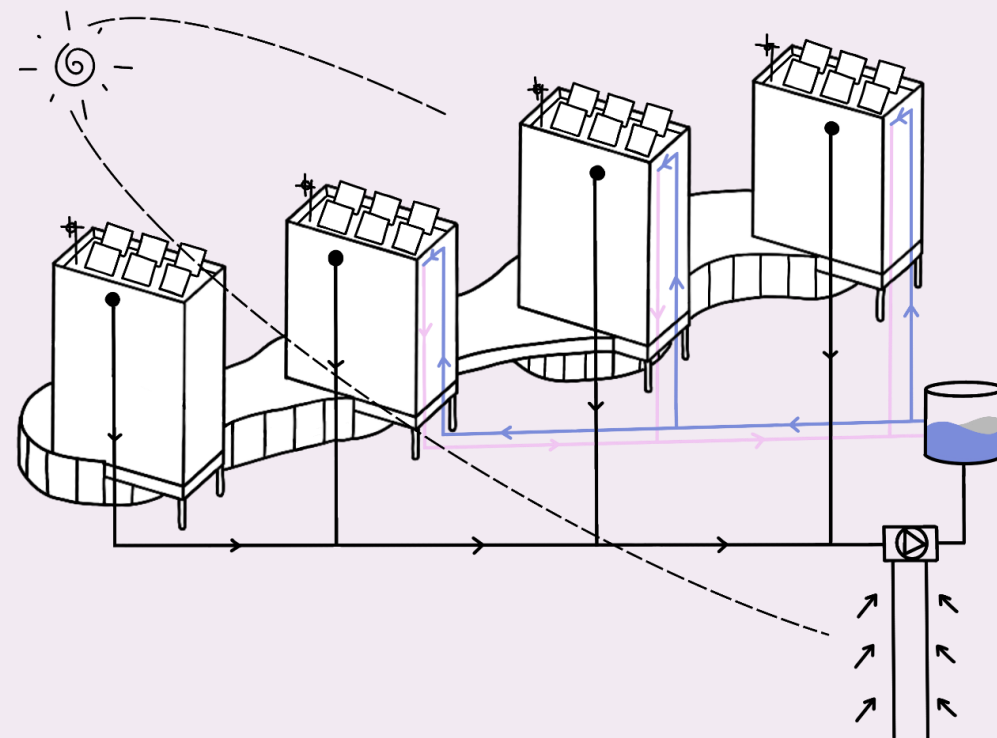
3.

4.

Winter situation



Summer situation



Active system: heat bomb

1.

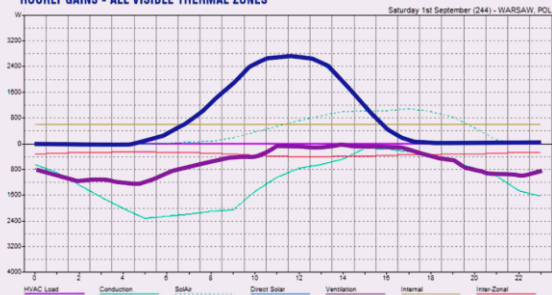
2.

3.

4.

SUMMER SUNNY DAY

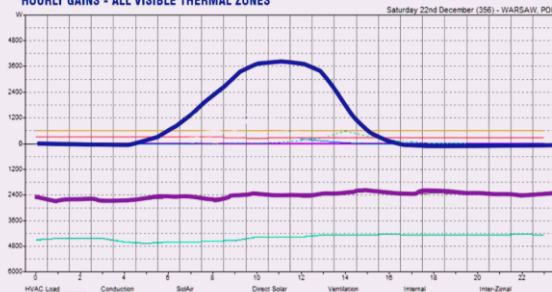
HOURLY GAINS - ALL VISIBLE THERMAL ZONES



Direct Solar
Ventilation

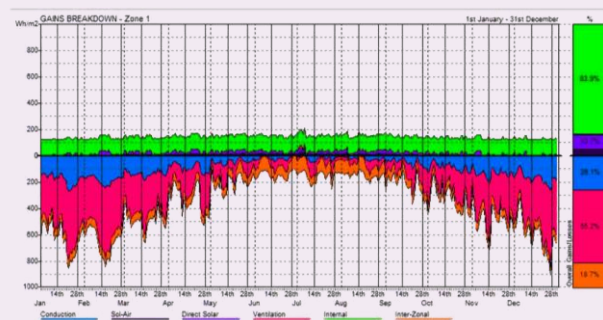
WINTER SUNNY DAY

HOURLY GAINS - ALL VISIBLE THERMAL ZONES



Direct Solar
Ventilation

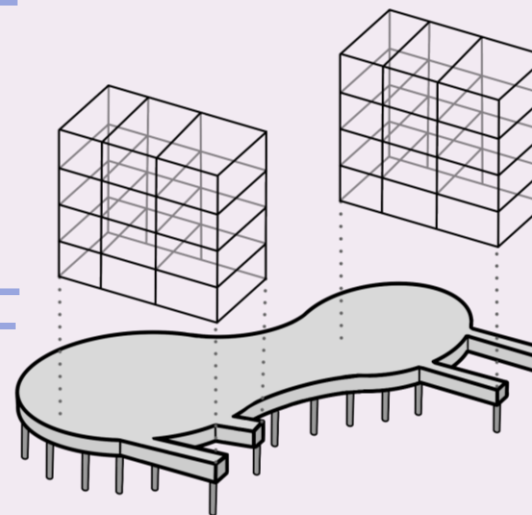
WHOLE YEAR



Climatic behaviour

PREFABRICATED
CONCRETE

IN-SITU
CONCRETE



Structural scheme

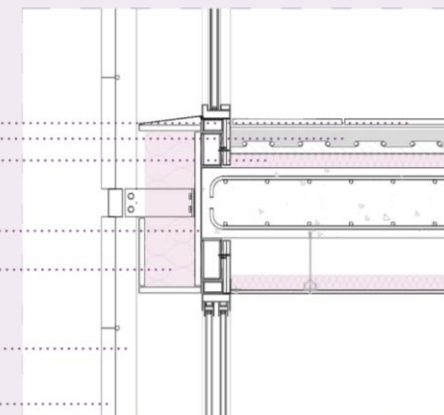
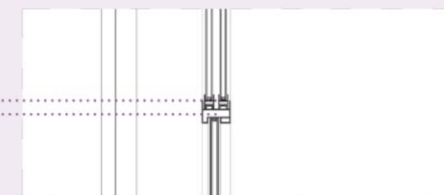
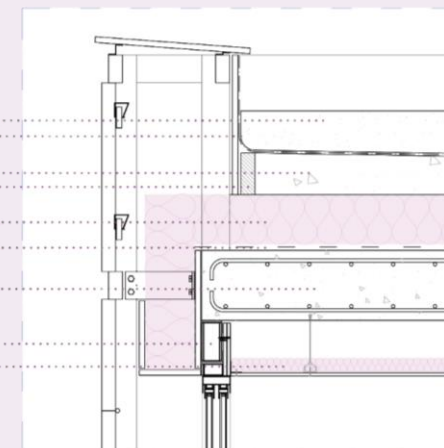
1. Gravel
2. Waterproof barrier
3. Slope Concrete
4. Expanded polystyrene
5. Isover Unislab Glass Mineral Wool Insulation
6. Vapour barrier
7. Prefabricated concrete slab
8. Placo Trasdos
9. Placo Suspending Ceiling
10. Sliding carpentry

11. Fixed carpentry
12. Ceramic tile
13. Heating and cooling floor
14. Isover Sound Deadening Floor Slab 5
15. Aquapanel
16. Isover Mineral Wool Insulation 200 m
17. Wooden stud
18. Polymer concrete plates

ISOVER
SAINT-GOBAIN

Placo
SAINT-GOBAIN

Constructive details



1.

2.

3.

4.



Thank you for watching!