RETHINKING FUTURE LIVING.

A BLUEPRINT FOR ACTION

come and discover the new way of living.

Rethinking Future Living // Jasmijn van der Harst // j.vanderharst@student.tudelft.nl // 4437527 // +31621681902 // Graduation Studio Architectural Engineering // One Million Homes programme

I

II

III

IV

V

challenge

research

manifesto

toolkit

design

challenge

Today, our world is in crisis..

04 Challenge.


PARIS
aforet
PRESSE
AXA
PIZZA
IMMOBILIER

‘We can’t solve global warming because I f*#&ing changed light bulbs in my house. It’s because of something collective.’

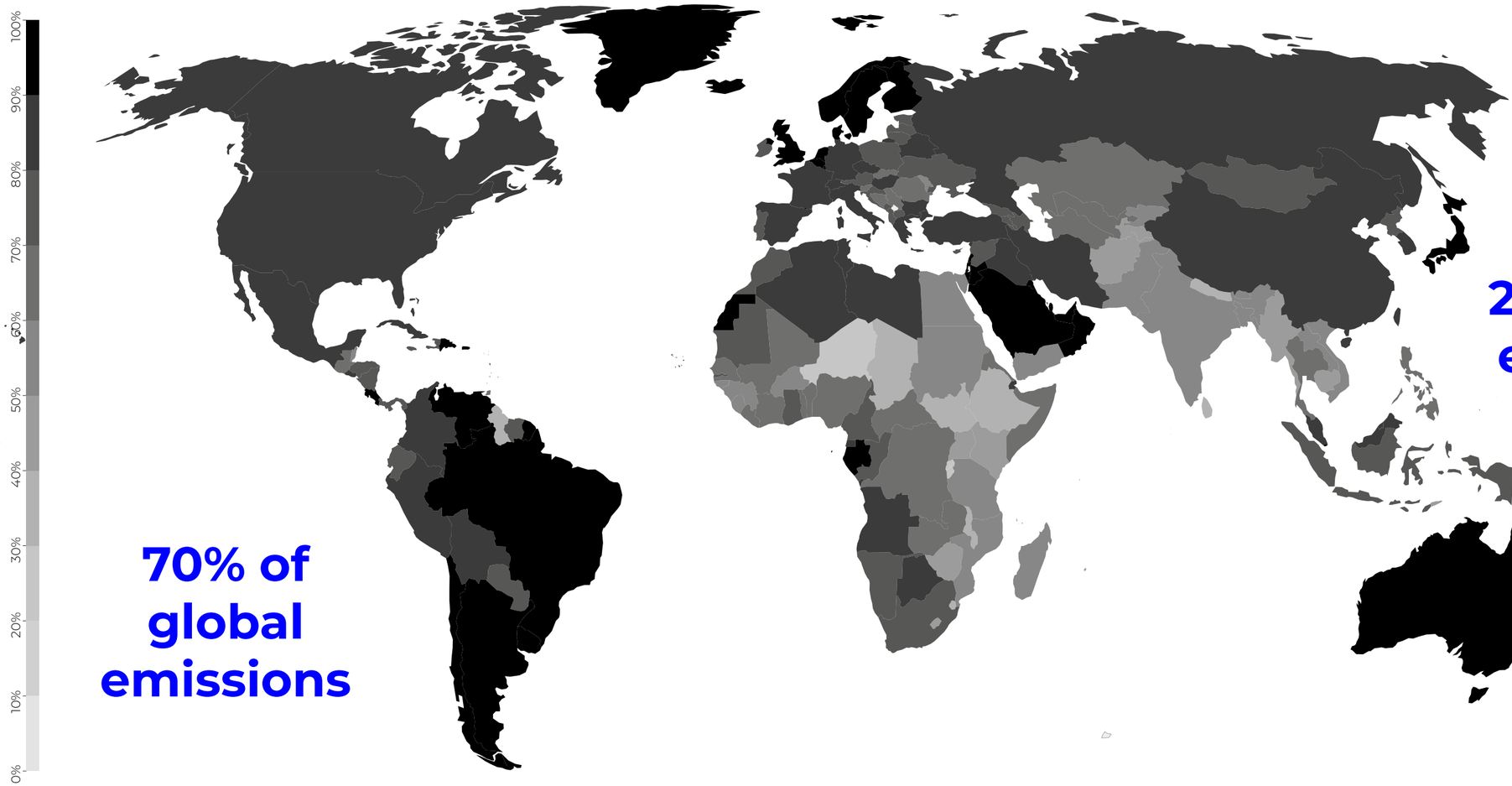
Barack Obama

‘In situations of crisis, **visionary thinking** is especially important, because it enables us to challenge hidebound conventions and **to open a path for innovative approaches and solutions.”**

Christian W. Thomsen
‘Visionary Architecture, From Babylon to Virtual Reality’

population living in urban areas - 2050

Source: UN World Urbanization Prospects 2018



70% of global emissions

2/3 of world energy use

Population growth.

Urbanization.

mental health problems

loneliness

Population growth.

CO_2

extremely high rents

Urbanization.

How can we create a <sustainable> **way of living that maximizes both density and quality of life?**

II

research

1
objective
2
literature
3
analyses
4
case studies
5
starting points
6
design principles

2.1 density

definition

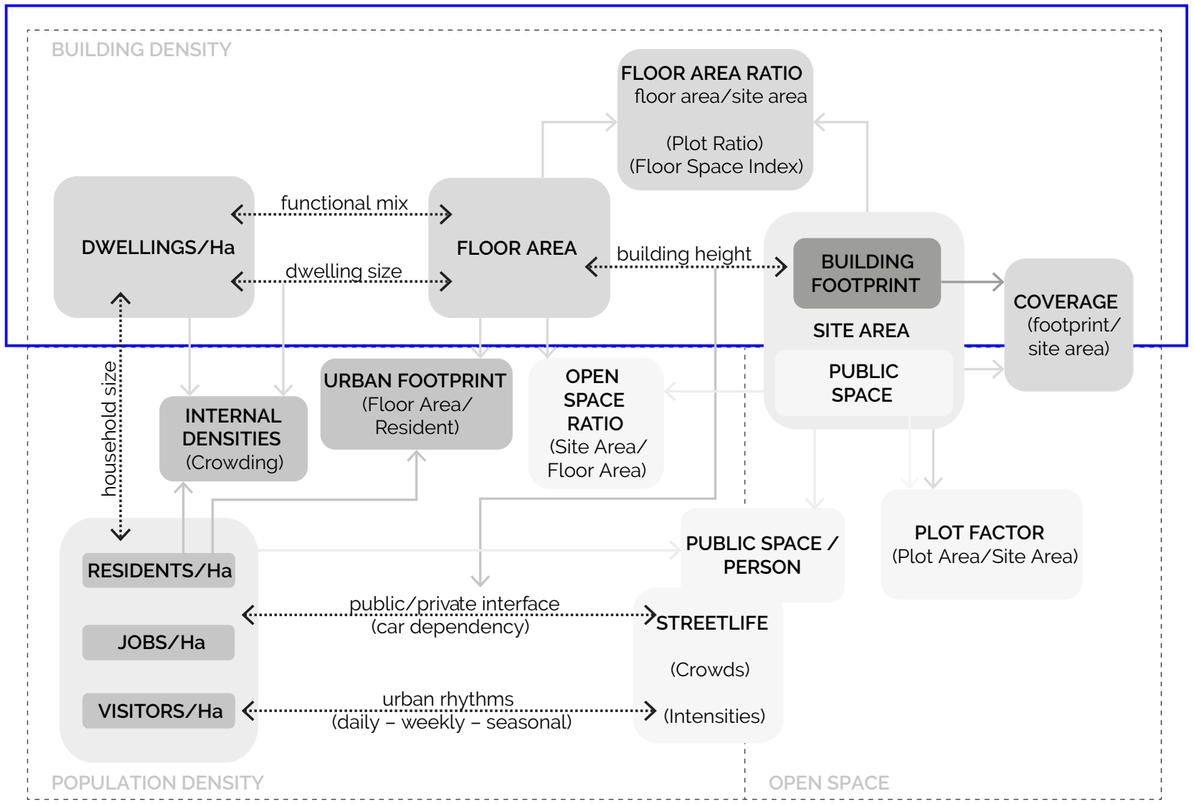
A certain **quantities per unit area.** In the urban environment it is a set of **interrelated variables** which are heavily reliant on each other for their assessment, significance and usefulness.

Net density: measured at the site
Gross density: integrating the larger context of public space

External density: at the level of the neighborhood
Internal density: at the level of the users per room or floor area

Three **domains** of density:
building density, population density, open space

Central Business Distric, Singapore
Source: https://www.straitstimes.com/business/banking/how-singapore-is-wooing-worlds-biggest-money-managers-with-new-law



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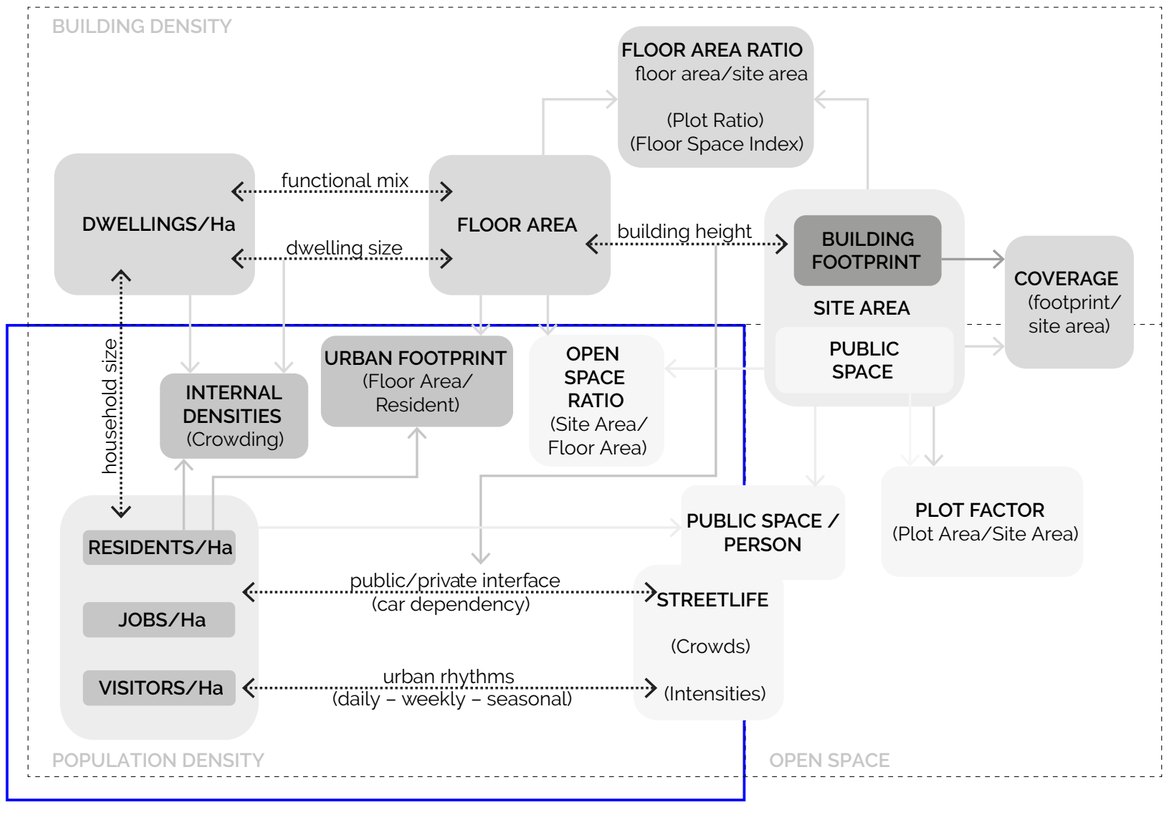

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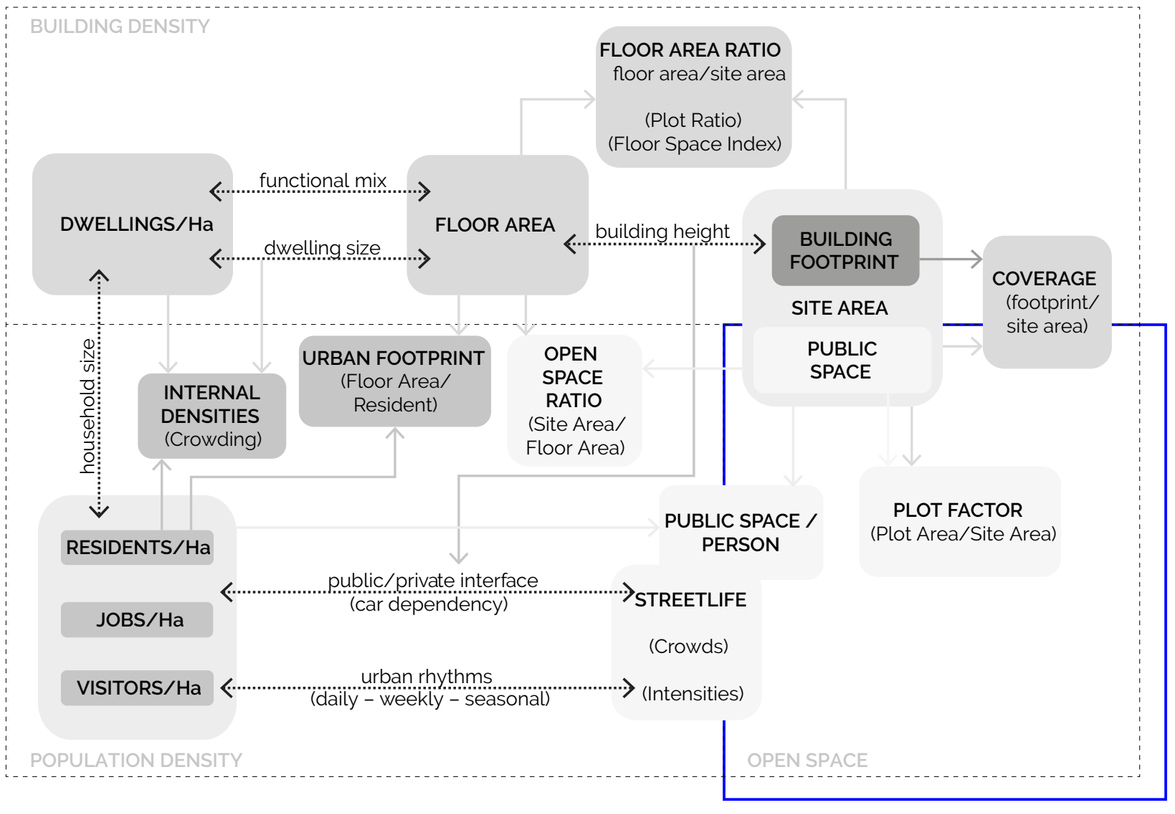
Public space in Moscow
Source: https://designyoutrust.com/2018/01/bublik-circular-apartment-building-moscow-pinnacle-brutalism/



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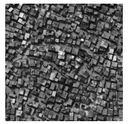
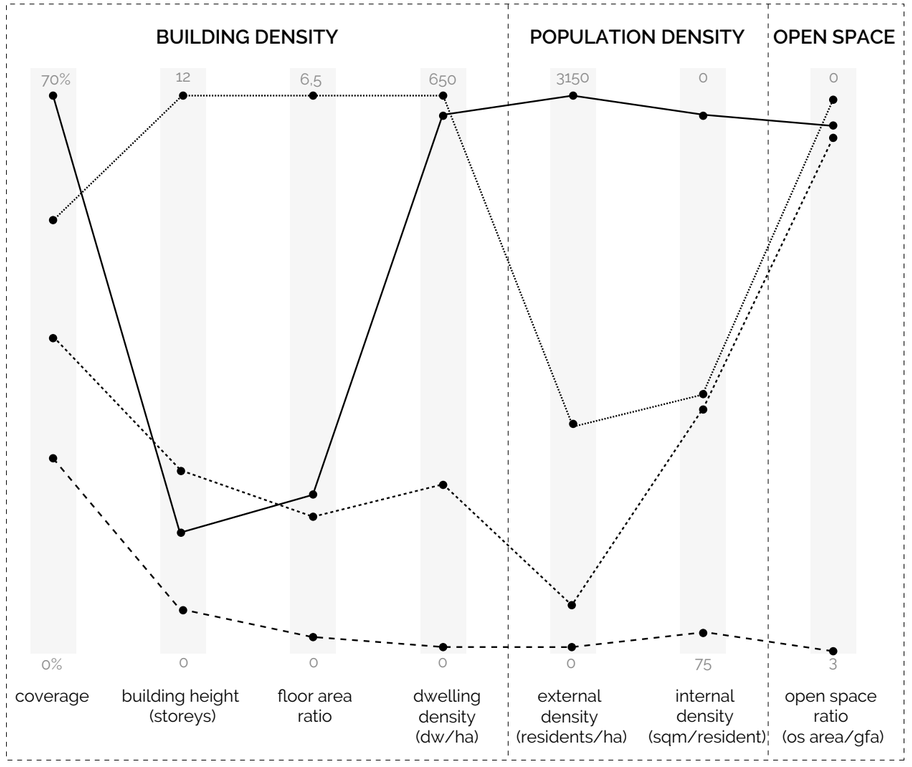


INFORMAL

HIGH-RISE

URBAN

SUBURBAN



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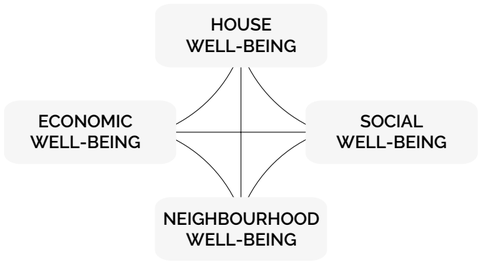
2.2 quality of life

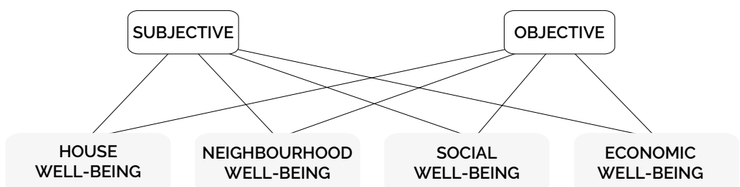
definition

The **level of satisfaction** a person obtains from the surrounding environmental conditions. The quality of life is not linear, but **complex and interwoven**.

Four **domains** of quality of life:
house well-being, neighborhood well-being, social well-being, economic well-being

Objective dimension: the way in which the physical environment can influence behaviour positively or negatively
Subjective: people's perception of how their environment influences their experiences of life and how it shapes their cogenitive interpretation of the quality of life.





3.1 density

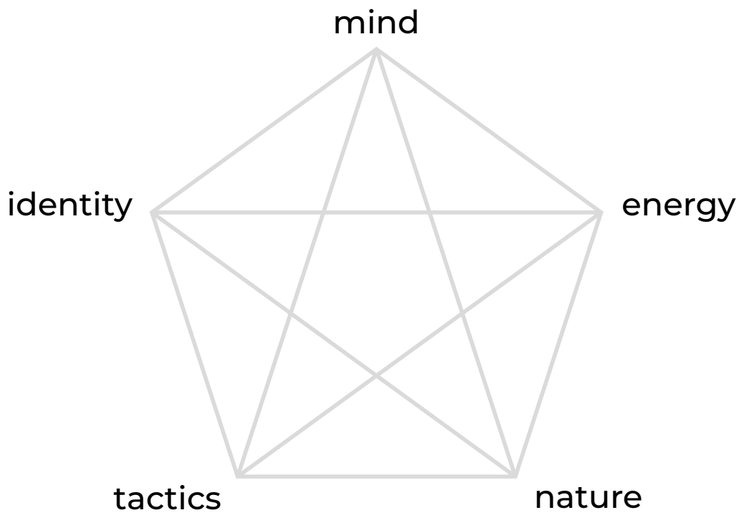
Analysis of what people do throughout the day showed that the **standard timeline** is valid. Most people sleep at night, around 08.00 people go to work and around 17.00 people return home.

Daily activities were projected onto a standard family home in the middle price range, allowing the surface-time to be calculated. The conclusion was that only **30%** of the total **surface-time** of a standard dwelling is utilized.

Parameters density:
- **volume**
- **efficiency**
- **effort**

3.2 quality of life

Subjective dimension:
Mind - how we interact with our surroundings
Energy - how we see the world and process information
Nature - how we make decisions and cope with emotions
Tactics - our approach to work, planning and decision-making
Identity - how confident we are in our abilities and decisions



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own image, data based on American TIme Use Survey, 2016

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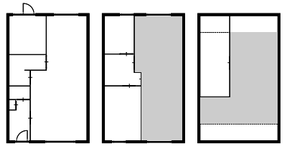
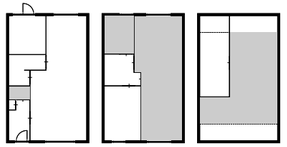
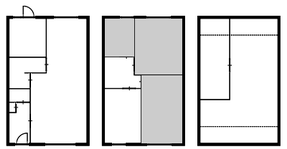


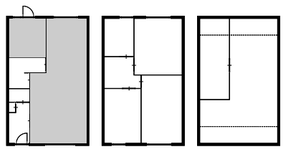
06.30 residents are asleep



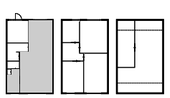
06.45 the morning routine starts



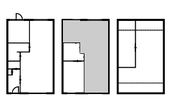
07.00 they take a shower



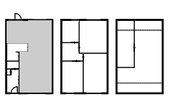
07.15 they have breakfast together



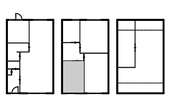
07.30 one goes to work



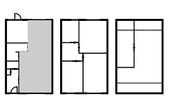
07.45 others get dressed



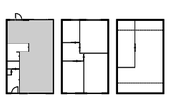
12.00 lunch break



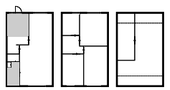
13.00 back to work



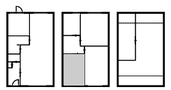
18.45 having dinner together



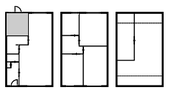
19.30 doing dishes, cleaning kitchen



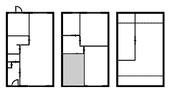
08.00 making coffee, kids go to school



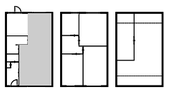
08.30 working from home



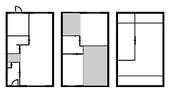
14.30 coffee break



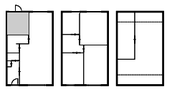
16.00 sending e-mails



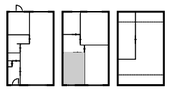
20.00 watching tv



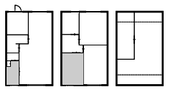
21.30 the evening routine



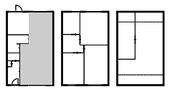
09.30 coffee break



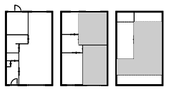
10.30 conference call



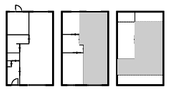
17.00 workday is over, kids back home



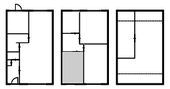
17.30 grocery shopping, kids watching tv



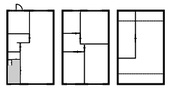
21.45 watching a series in bed



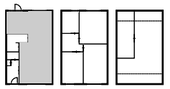
22.30 all residents asleep again



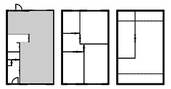
11.00 still working



11.30 going to the store to buy lunch



18.00 preparing dinner



18.30 partner comes home

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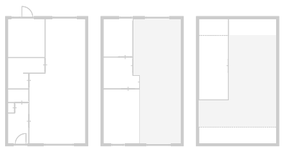
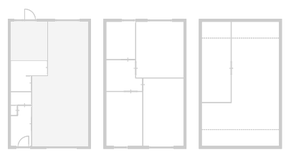


06.30 residents are asleep

06.45 the morning routine starts

07.00 they take a shower



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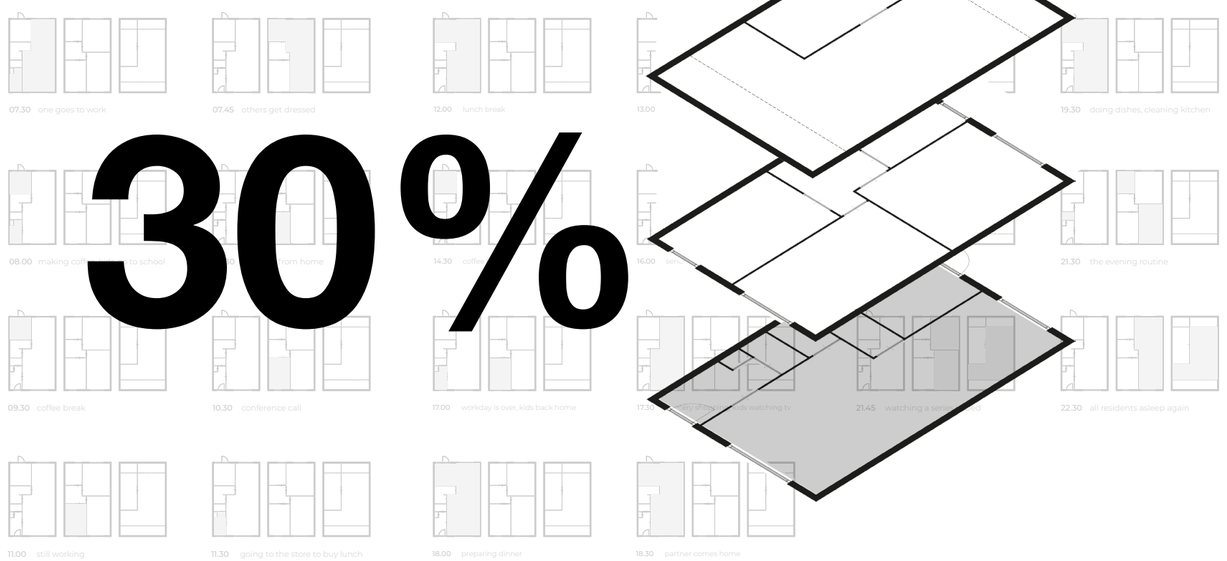
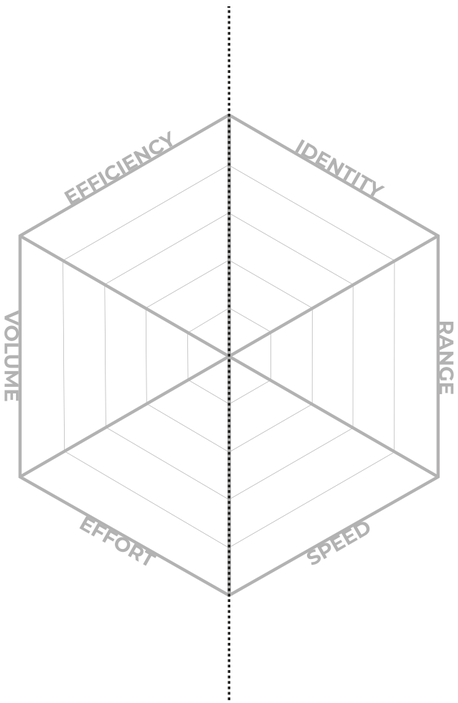


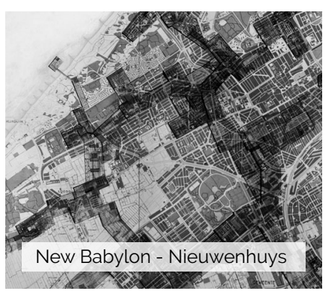
30%

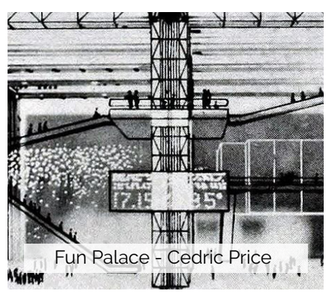


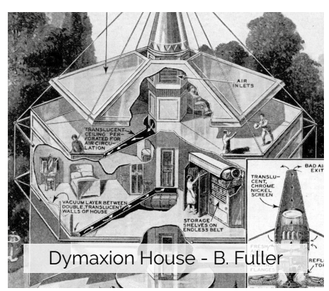
density

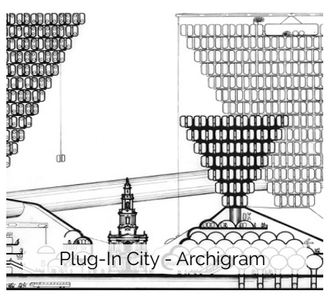
quality of life

Adaptable environments
Predecessors

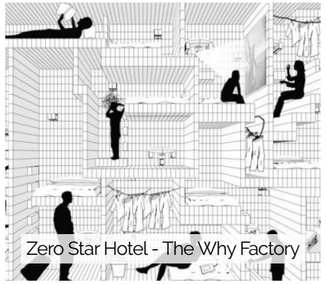

New Babylon - Nieuwenhuys

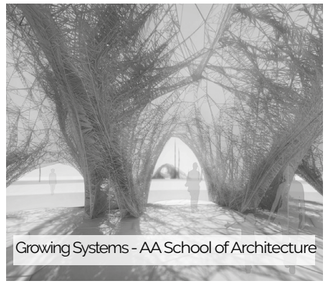

Fun Palace - Cedric Price

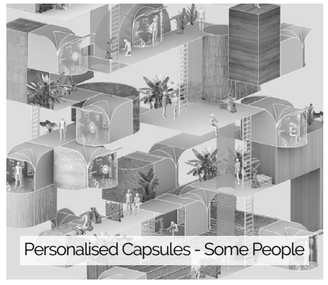

Dymaxion House - B. Fuller


Plug-In City - Archigram

Adaptable environments
Contemporary


Zero Star Hotel - The Why Factory


Growing Systems - AA School of Architecture

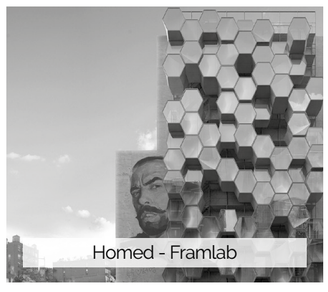

Personalised Capsules - Some People


Silk Pavilion - MIT Media Lab

Micro environments


Domestic Transformer - Gary Chang


Rotating House - George Clarke


Homed - Framlab


Diogene - Renzo Piano

identity

New Babylon - Nieuwenhuys
An immense volume consisting of a large number of 'sectors', within these sectors, everything can be adapted to the needs of the individual, following the speed of the user.

range

Personalised Capsules - Some People
A projected interface helps the user to design his own home effortlessly using machine learning. The speed and range of the adaptation is high because it is built by small robots.

speed

Zero Star Hotel - The Why Factory
A fully adaptable building that explores temporary lifestyles. Using artificial intelligence, the rooms adapt immediately when there is a change in activity.

effort

Growing Systems - AA School of Architecture
Artificial intelligence minimizes the effort for the user as it scans the environment and adjusts the design real-time, thus completely erasing the line between design and fabrication.

volume

Diogene - Renzo Piano
The exploration of the minimum space in which a person can possibly live. The small volume is achieved by integrating the interior and making it foldable.

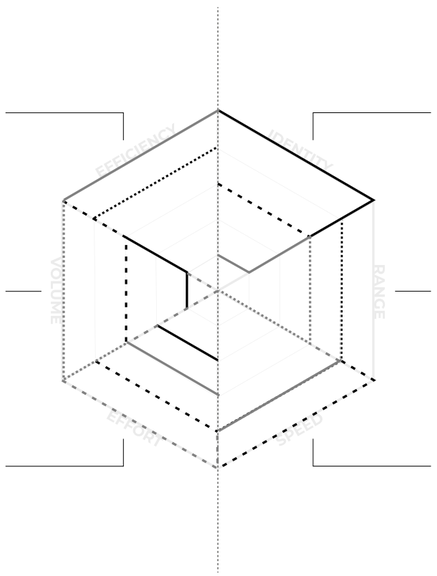
efficiency

Rotating House - George Clarke
Takes up as little space as possible by turning the dwelling around. It has a total floor area of 40 square meters, but only a footprint of 10 square meters.

Rotating House
George Clarke
Rotation motor
Living wall
Vacuum wardrobe

Diogene
Renzo Piano
Integrated furniture
Sulf-sufficient
Relocatable

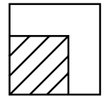
Growing Systems
AA School of Architecture
Robotic arm
Biodegradable plastic
Artificial intelligence



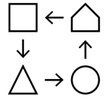
New Babylon
Nieuwenhuys
Sectors
Shared facilities
Movable components

Personalised Capsules
Some People
Design space
Fabrication space
Robots

Zero Star Hotel
The Why Factory
Cartridges
Structural frame
Artificial intelligence

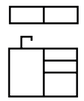


optimize floor area



offer adaptable dwellings

offer a range of typologies



promote facility sharing

enhance outdoor spaces

Optimize floor area
This results in an increase in the number of dwellings per hectare. It involves considering dwellings as a sequence of activities rather than a collection of spaces, giving spaces multiple functions and applying prefabricated and/or integrated furniture.

Offer adaptable dwellings
For density, this allows the space to be arranged efficiently and, in the case of quality of life, it means that people can adapt the home to their personal preferences. Ensure that the maximum possible frequency of adjustments is high and that the effort for the occupants is low.

Offer a range of typologies
This includes all price ranges and ethnic backgrounds. This ensures that each individual gets a well- located and comfortable home.

Promote facility sharing
The quality of life benefits from sharing facilities as it encourages good relationships and interaction between neighbours. In terms of density, this means that dwellings can be downsized, resulting in more dwellings in total.

Enhance outdoor spaces
To improve the quality of life it is important to maintain open public spaces, such as parks. And by making the urban environment more attractive, this can become the new 'living room' and dwellings can be made more compact, which increases the density.

manifesto

Challenges.

CO_2 emissions

Mental health

Loneliness

Extremely high rents

Opportunities.

New construction materials
and methods
-> Cross Laminated Timber
-> CNC milling

‘Zeitgeist’ new generations
-> wanderlust
-> experiences > possessions

a new way of living...

a new way of living...

... with the smallest carbon footprint possible.

a new way of living...

... with the smallest carbon footprint possible.

... that improves mental health and stimulates social interaction.

a new way of living...

... with the smallest carbon footprint possible.

... that improves mental health and stimulates social contacts.

... that is affordable for all.

a new way of living...

... with the smallest carbon footprint possible.

... that improves mental health and stimulates social contacts.

... that is affordable for all.

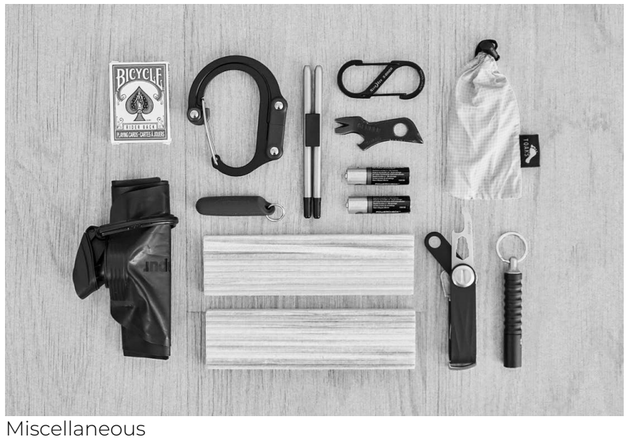
... that offers ultimate freedom to enjoy the beauty of our planet.

One backpack. One laptop. Unlimited potential.

Clothing & Accessories

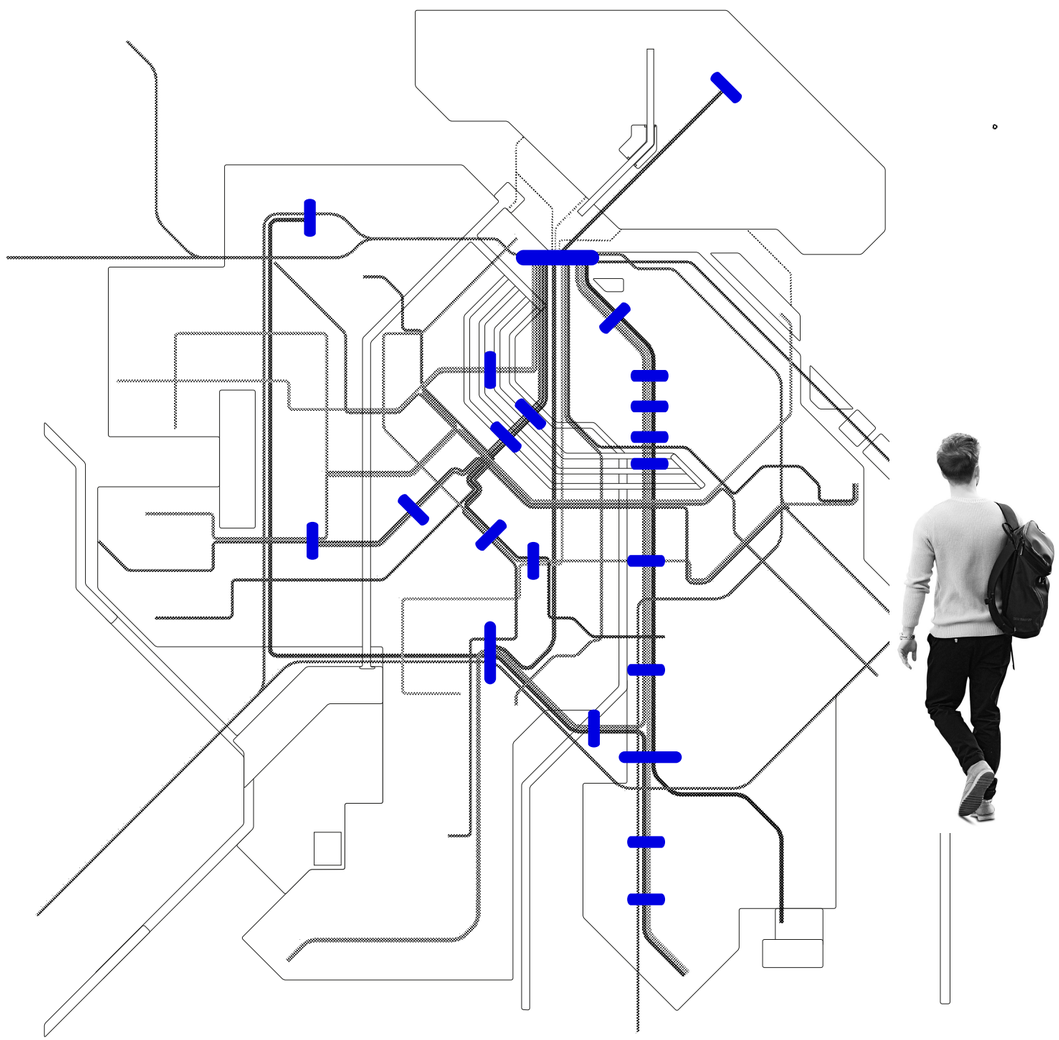
Productivity & Tech

Toiletries & Personal Care

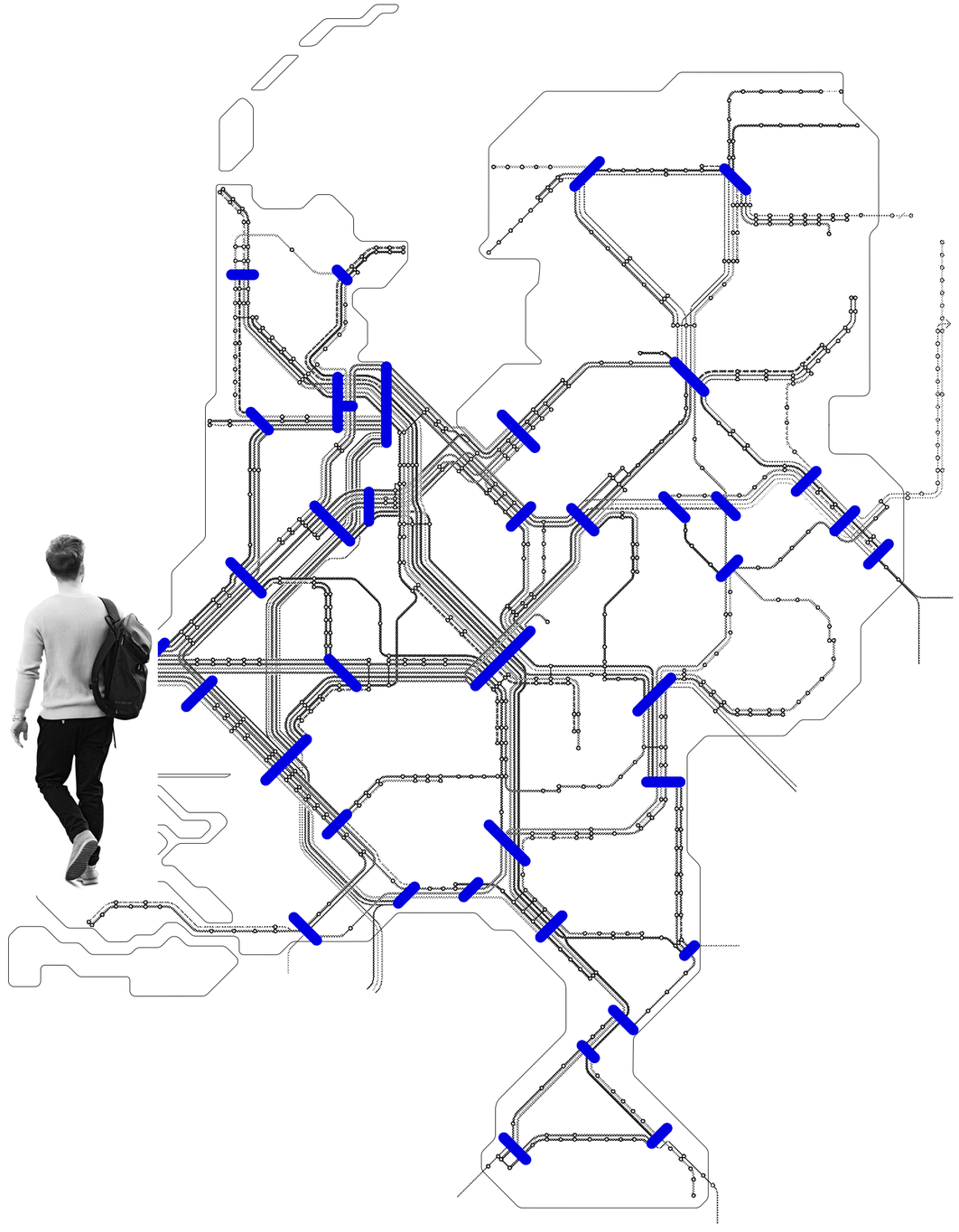


Miscellaneous

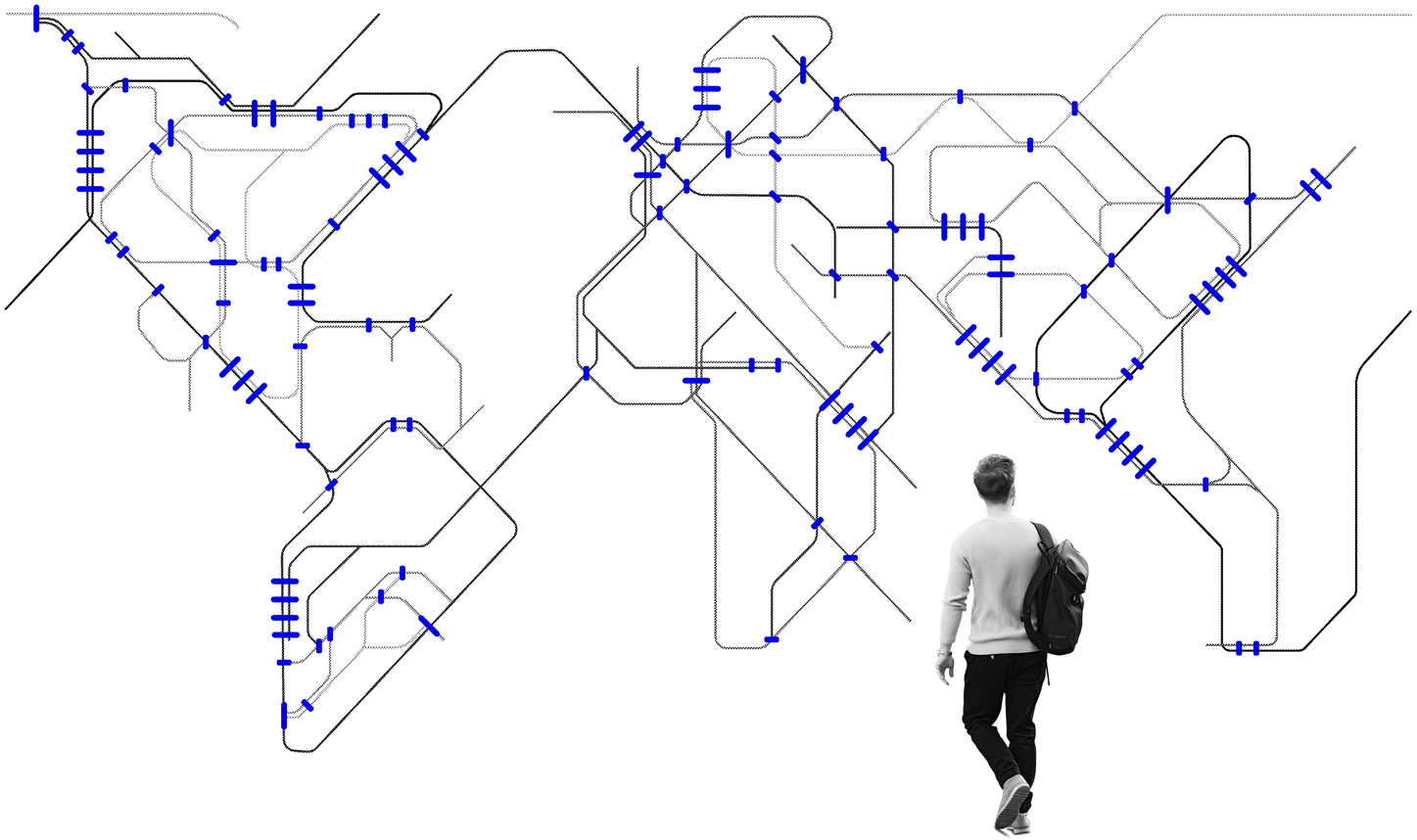
Connected communities.
scale: regional



Connected communities.
scale: national



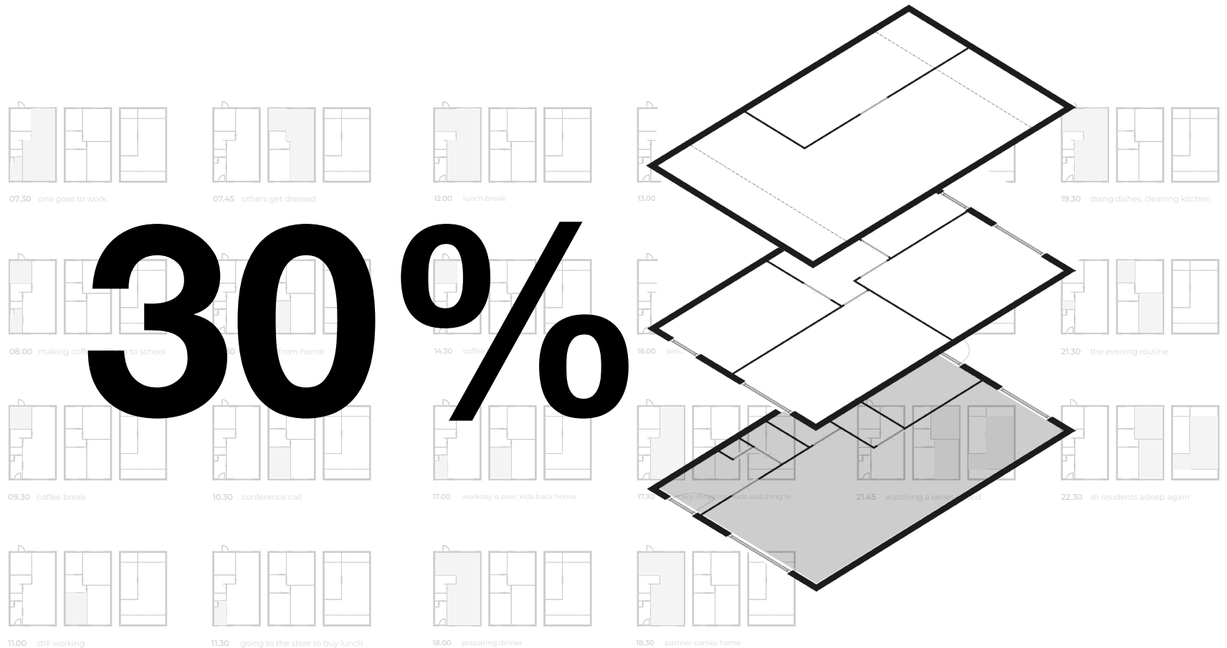
Connected communities.
scale: global



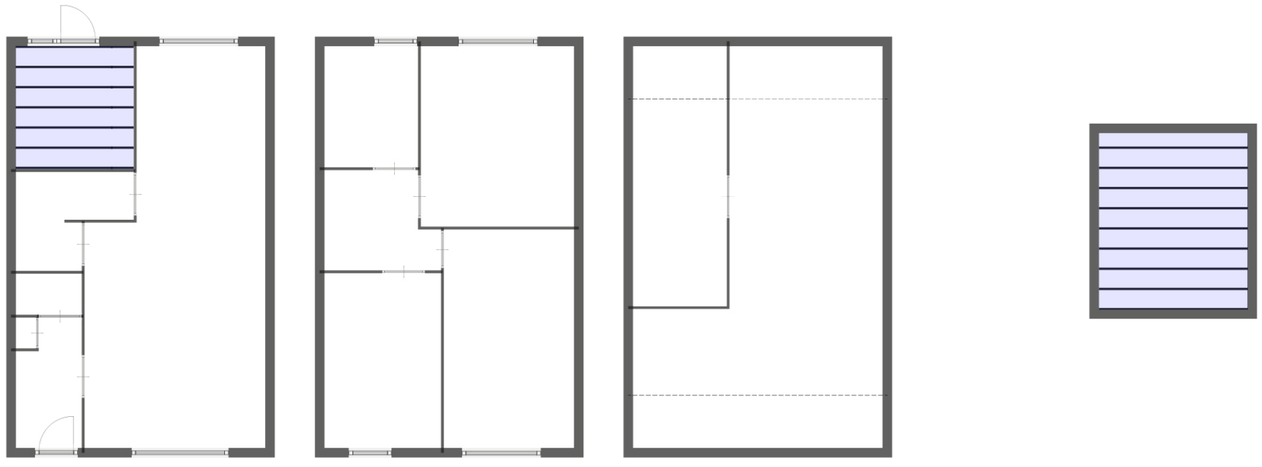
toolkit

Toolkit.

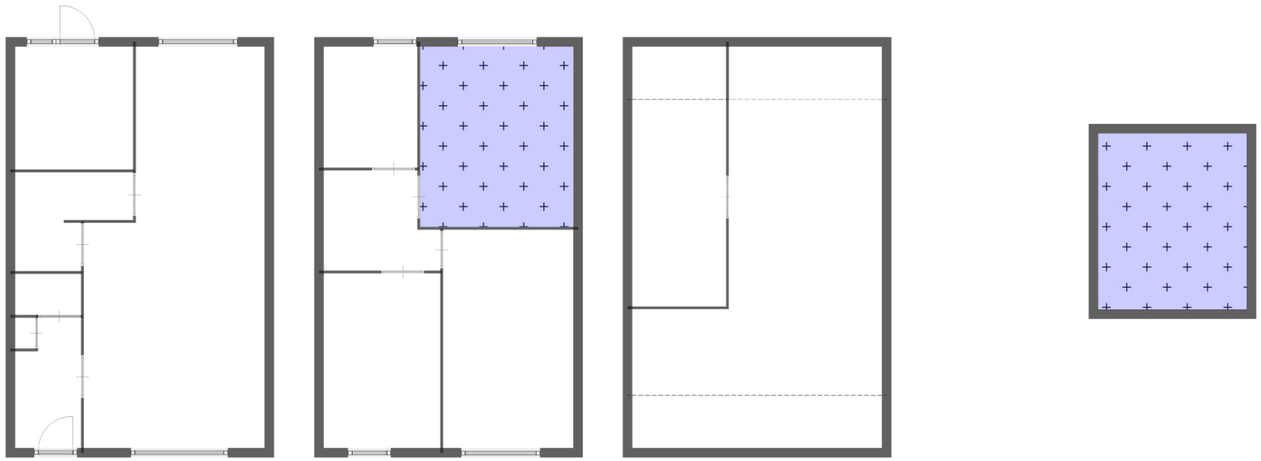
I. dwellings II. shared facilities III. self-sufficiency IV. building


30%
07.30 one goes to work
07.45 others get dressed
12.00 lunch break
13.00
19.30 doing dishes, cleaning kitchen
08.00 making coffe
to school
rom home
14.30 coffe
16.00
21.30 the evening routine
09.30 coffee break
10.30 conference call
17.00 workday is over, kids back home
watching tv
21.45 watching a
22.30 all residents asleep again
11.00 still working
11.30 going to the store to buy lunch
18.00 preparing dinner
18.30 partner comes home

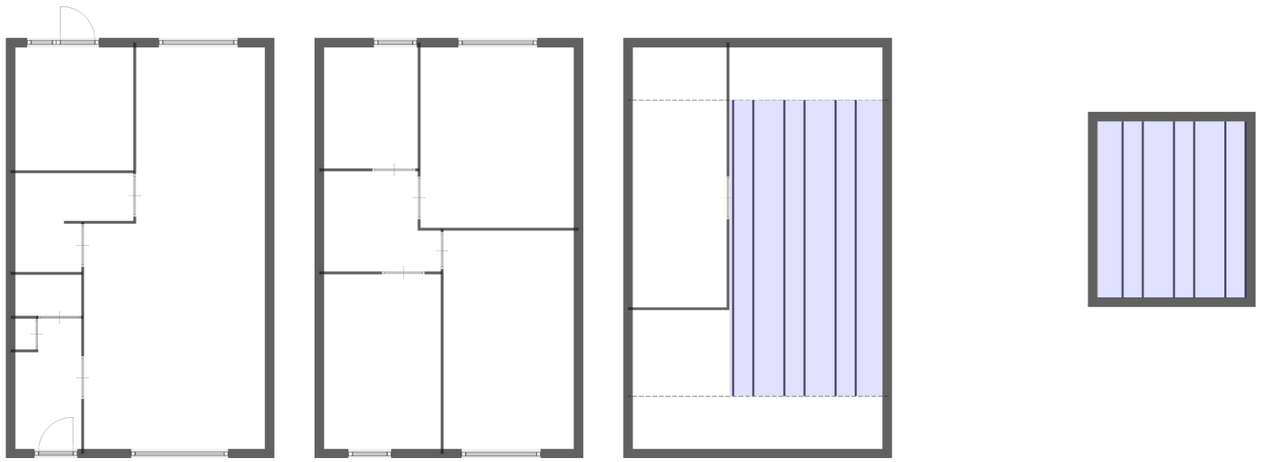
100% use of surface-time.



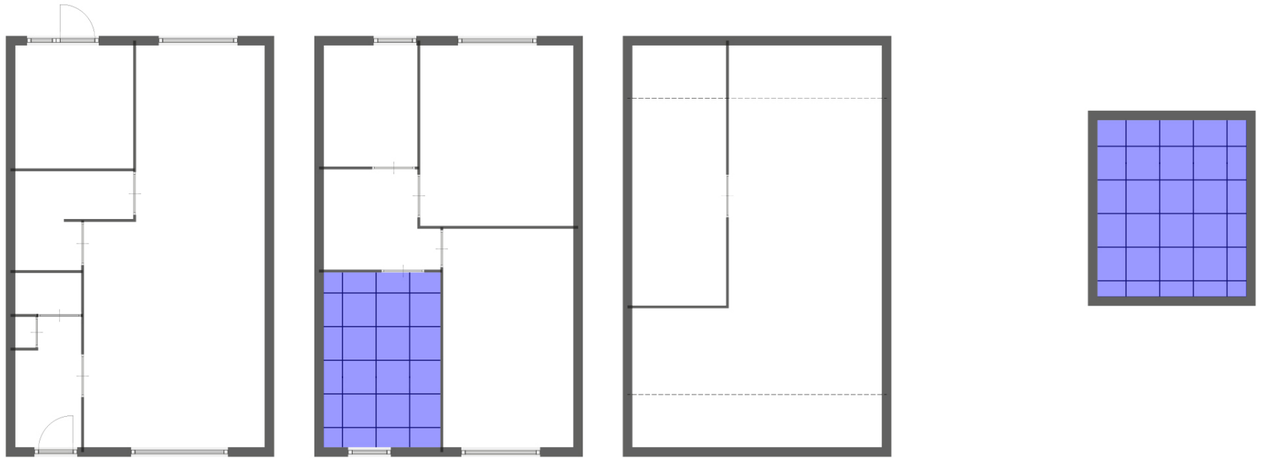
100% use of surface-time.



100% use of surface-time.

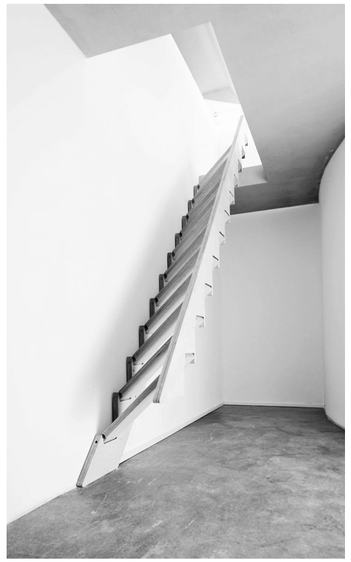


100% use of surface-time.



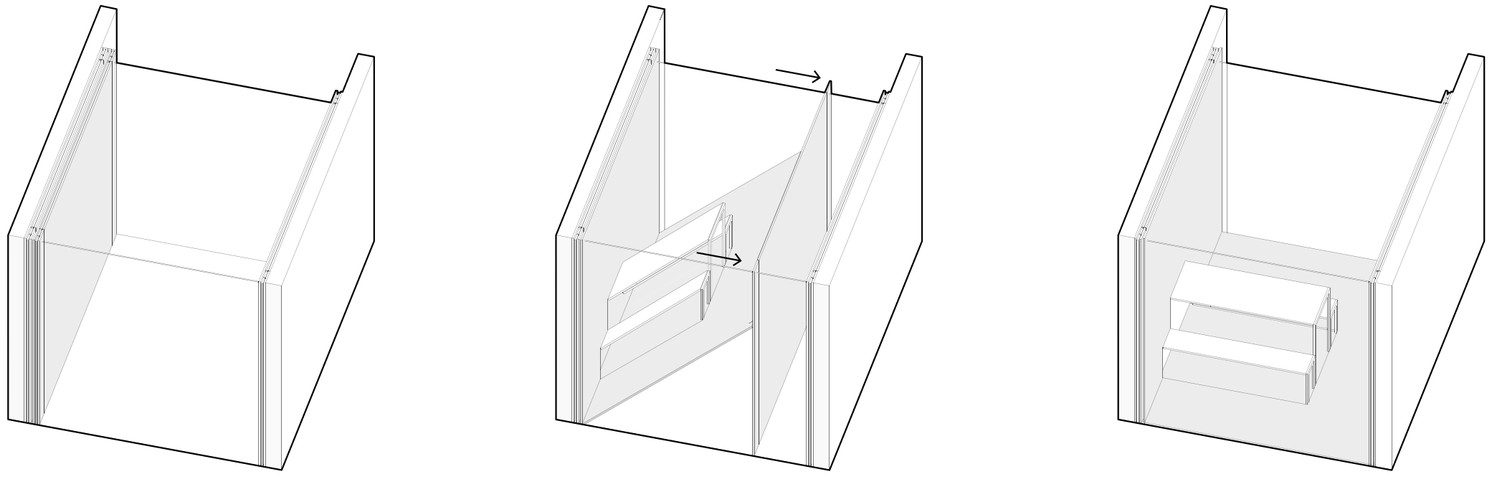
References.

http://www.popupology.co.uk/galleries/7/items/41

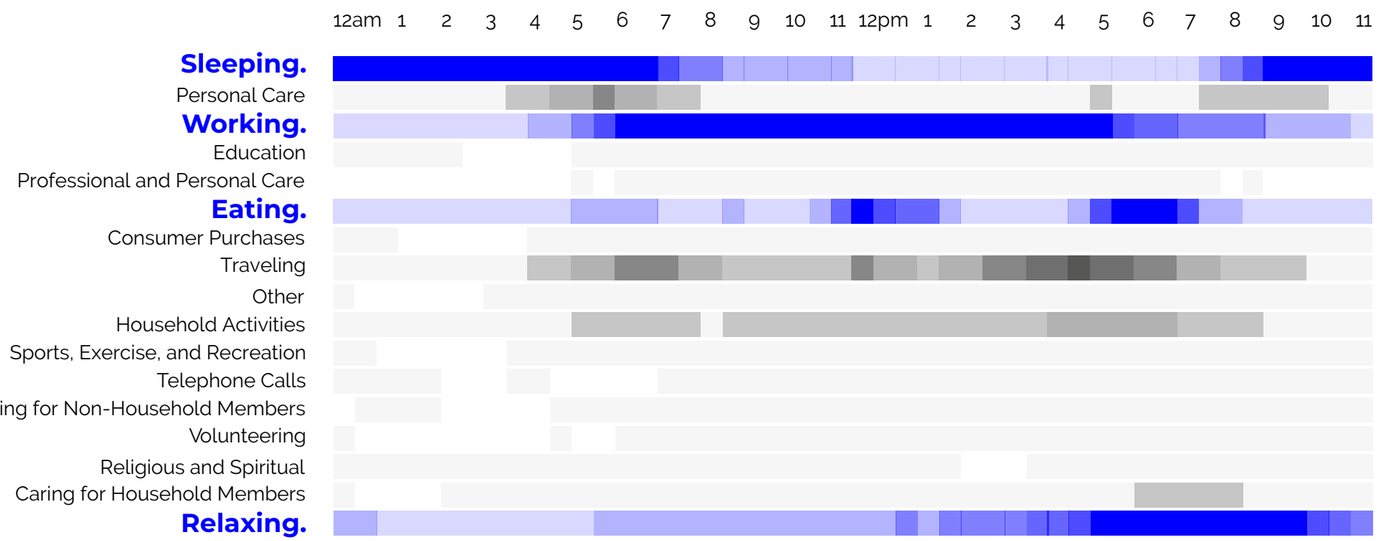


https://www.baudokumentation.ch/innovationen-in-den-bereichen-treppen-und-dachausstiege-168767/news.html

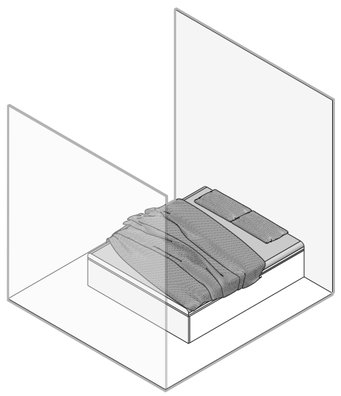
Concept.



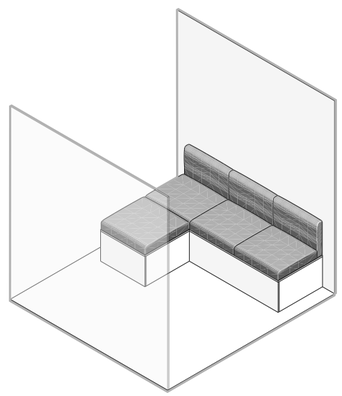
Activities.


12am 1 2 3 4 5 6 7 8 9 10 11 12pm 1 2 3 4 5 6 7 8 9 10 11
Sleeping.
Personal Care
Working.
Education
Professional and Personal Care
Eating.
Consumer Purchases
Traveling
Other
Household Activities
Sports, Exercise, and Recreation
Telephone Calls
Caring for Non-Household Members
Volunteering
Religious and Spiritual
Caring for Household Members
Relaxing.

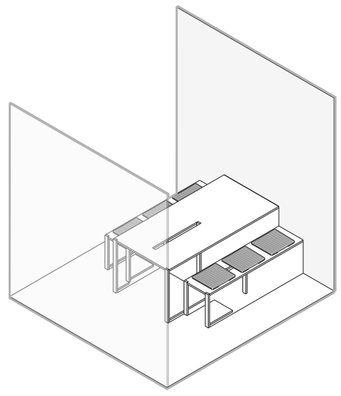
Activities.



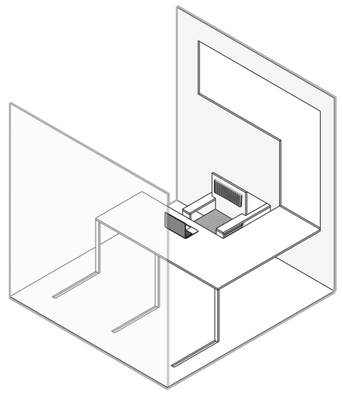
Sleeping.



Relaxing.

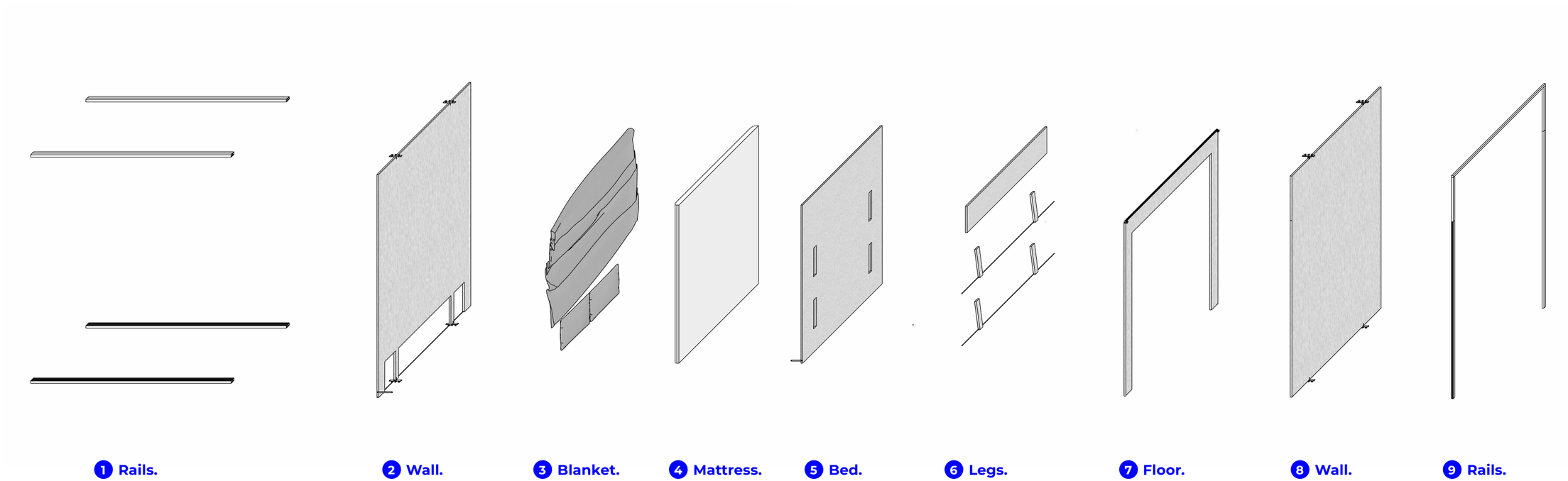


Eating.

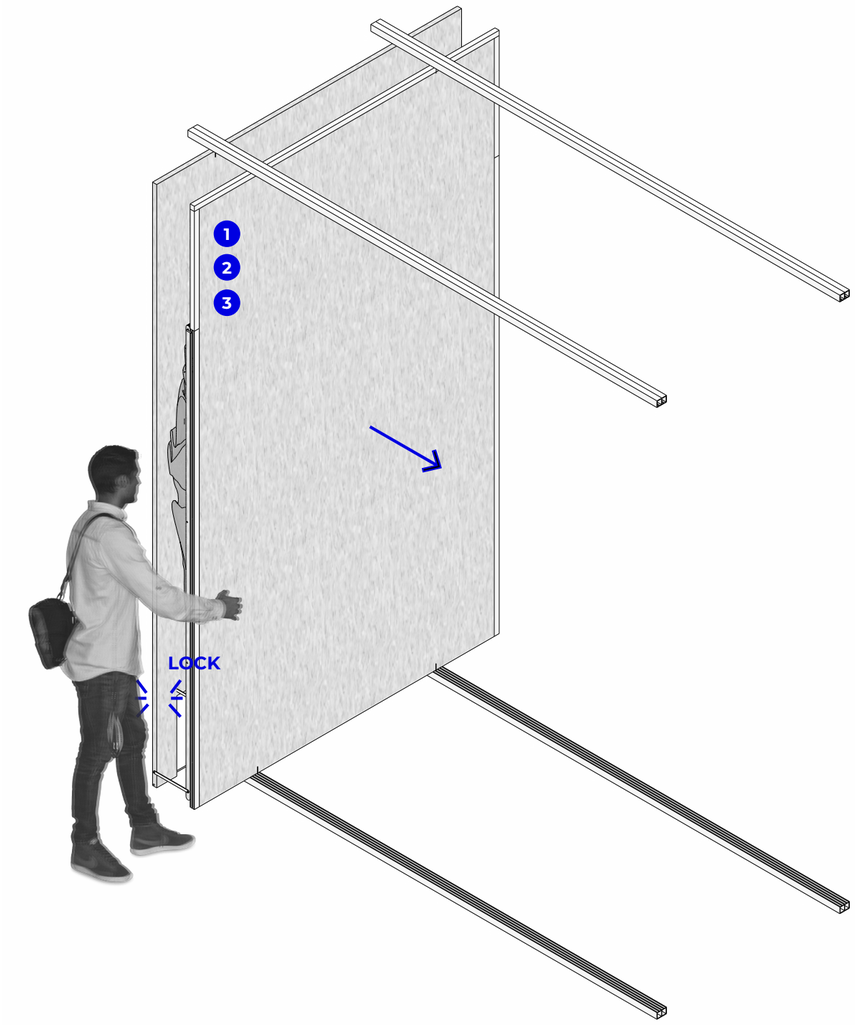


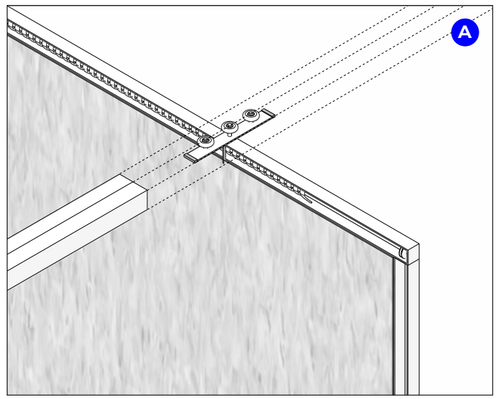
Working.

Exploded view.



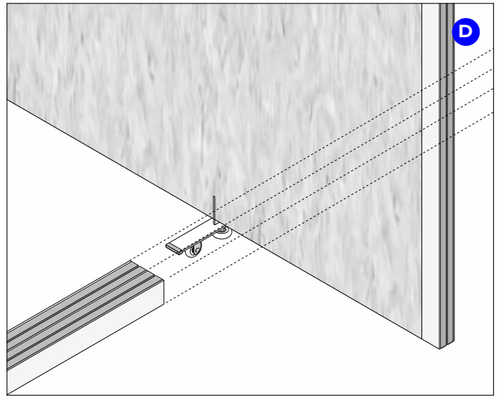
1 Rails. 2 Wall. 3 Blanket. 4 Mattress. 5 Bed. 6 Legs. 7 Floor. 8 Wall. 9 Rails.

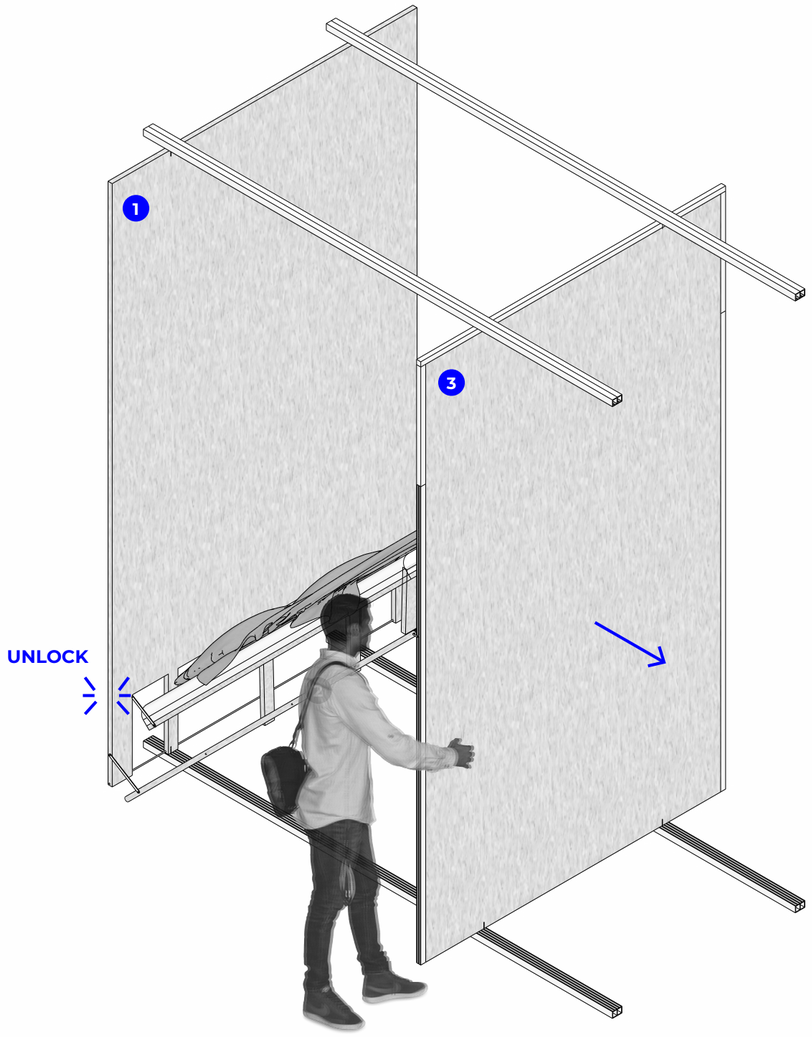

1
2
3
LOCK

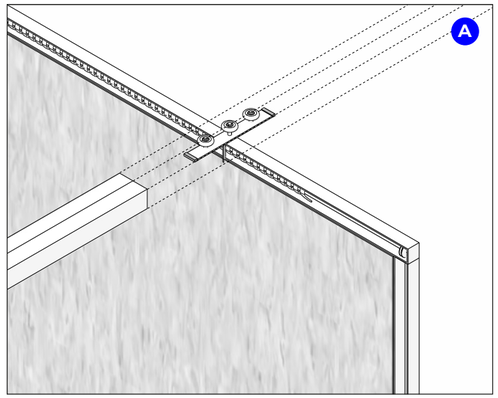

A

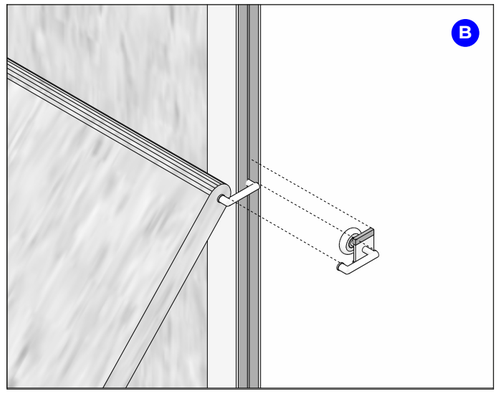
B

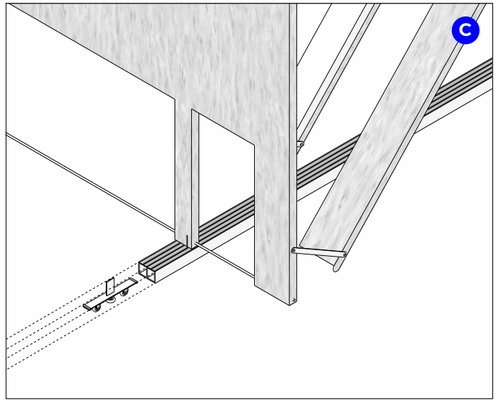
C


D

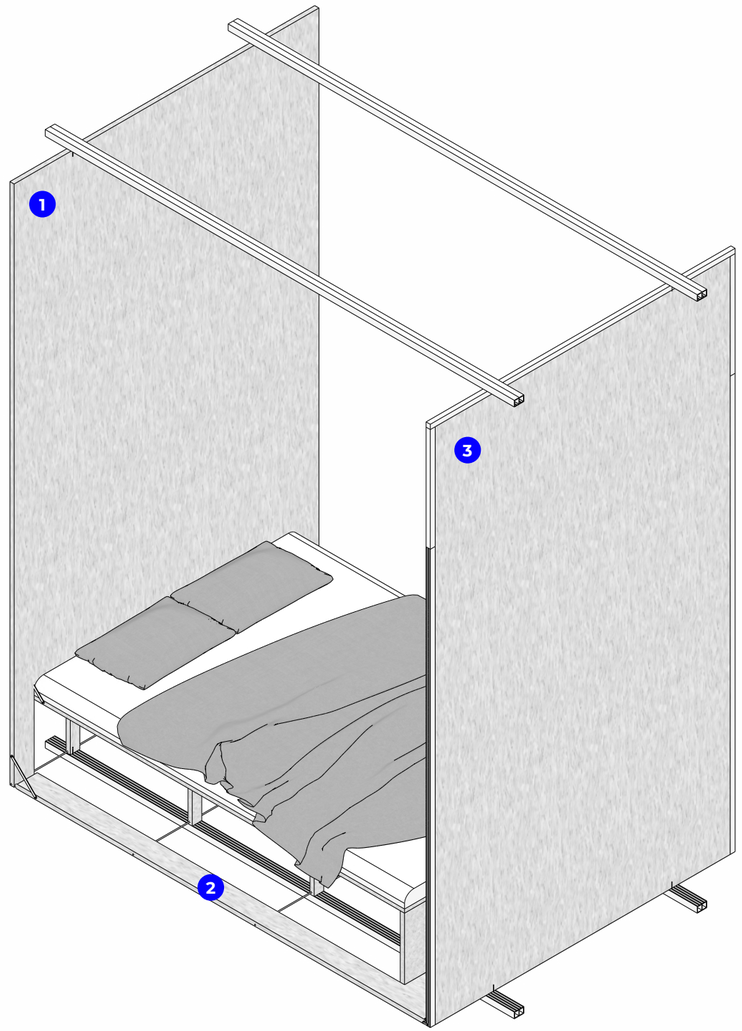

1
3
UNLOCK

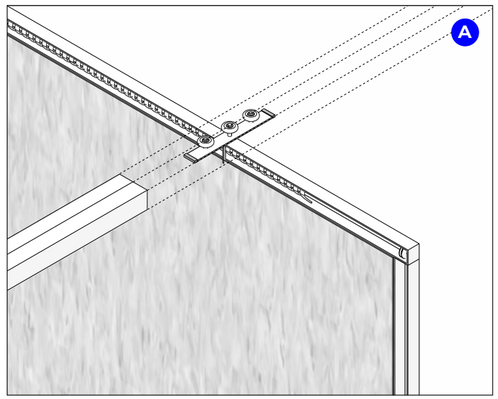

A

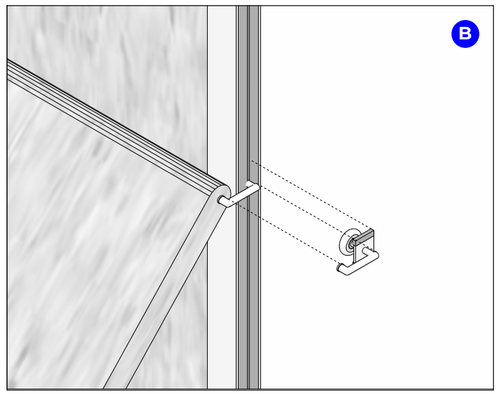

B


C

D


1
2
3

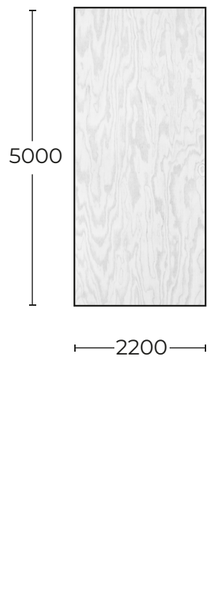

A

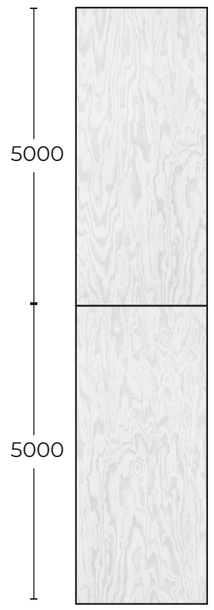

B

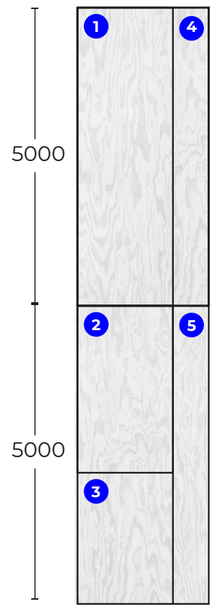
C

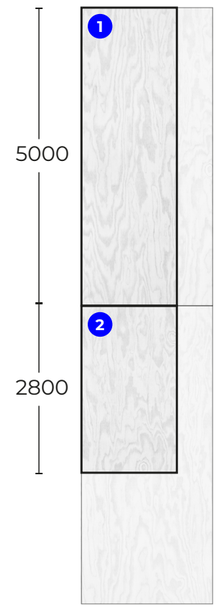
D

Material use.

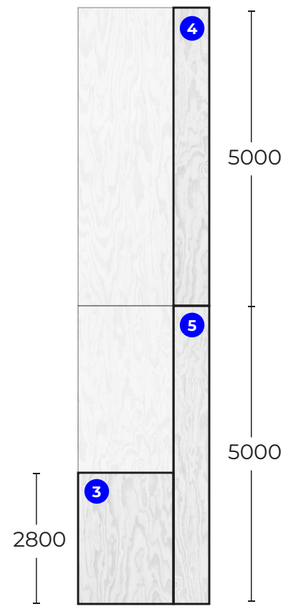








packages.



closet doors.

CNC templates.

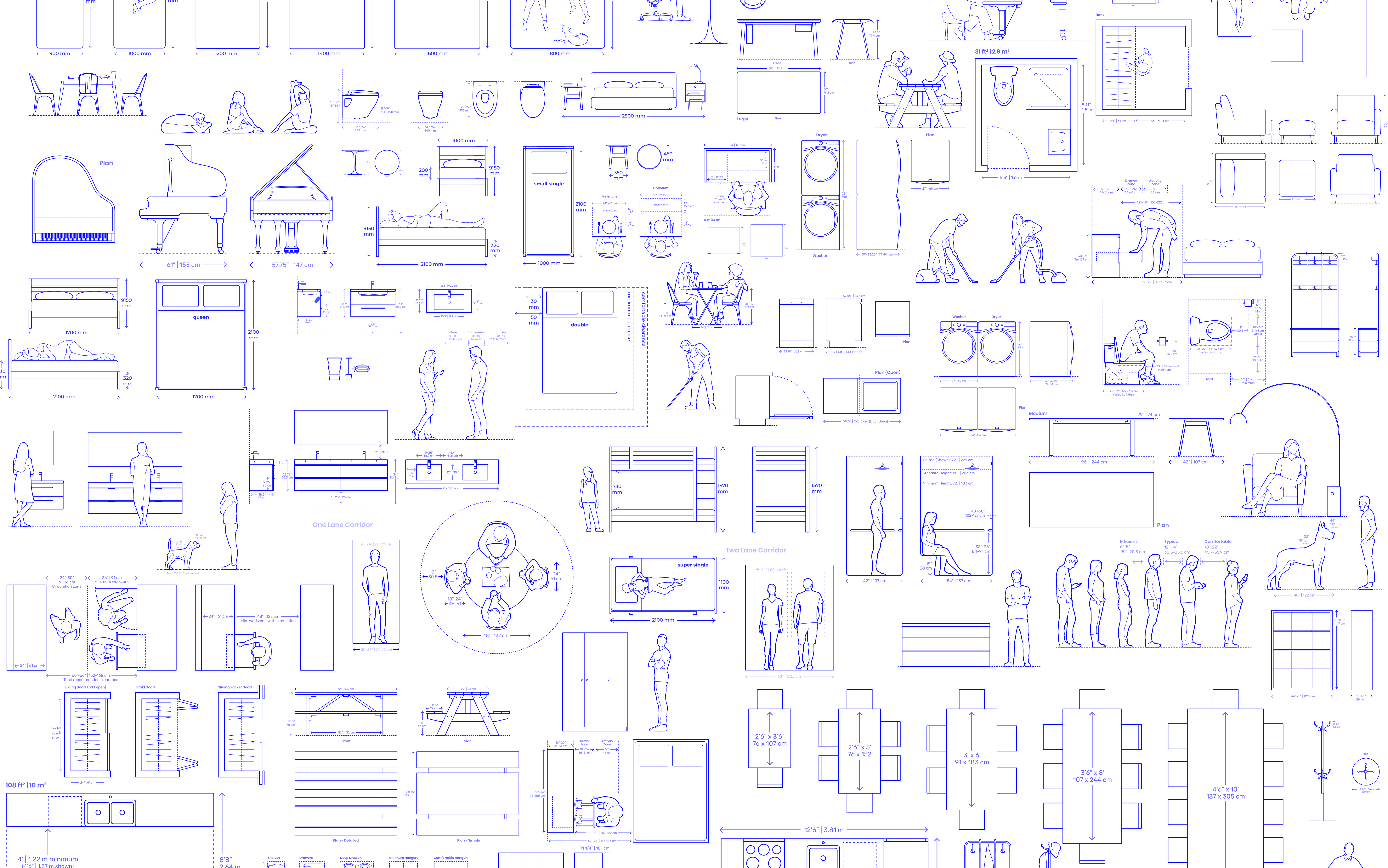
Thickness.

wall.
floor.
legs.
bed.
blanket.
mattress.
wall.
220
22
22
22
22
80
30
22

wall.
floor.
table legs.
bench + legs.
cushions.
table.
wall.
140
22
22
22
22
30
22

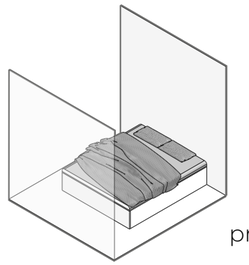
wall.
floor.
chair seating.
cushions.
chair back.
desk legs.
wall.
desk.
140
22
22
22
30
22
22

wall.
floor.
legs.
sofa.
cushions.
cushions.
wall.
140
22
22
22
22
30
22

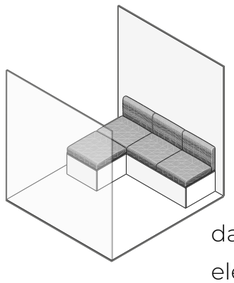


900 mm
1000 mm
1200 mm
1400 mm
1600 mm
1800 mm
2500 mm
Plan
61" | 155 cm
57.75" | 147 cm
1000 mm
9150 mm
200 mm
2100 mm
320 mm
small single
2100 mm
1000 mm
350 mm
450 mm
Minimum
Optimum
Dryer
Washer
Plan
31 ft² | 2.9 m²
5'11" 1.8 m
5'3" | 1.6 m
Front
Side
Large
Back
9150 mm
1700 mm
queen
2100 mm
1700 mm
2100 mm
320 mm
30 mm
50 mm
double
minimum clearance
comfortable clearance
Washer
Dryer
Plan (Open)
Medium
29" | 74 cm
96" | 244 cm
42" | 107 cm
Plan
One Lane Corridor
730 mm
1570 mm
1570 mm
Two Lane Corridor
super single
1100 mm
2100 mm
48" | 122 cm
Efficient
Typical
Comfortable
Sliding Doors (50% open)
Bifold Doors
Sliding Pocket Doors
Front
Side
Plan + Detailed
Plan + Simple
2'6" x 3'6"
76 x 107 cm
2'6" x 5'
76 x 152
3' x 6'
91 x 183 cm
3'6" x 8'
107 x 244 cm
4'6" x 10'
137 x 305 cm
12'6" | 3.81 m
108 ft² | 10 m²
4' | 1.22 m minimum
(4'6" | 1.37 m shown)
8'8"
2.64 m
71 1/4" | 181 cm
Shelves
Drawers
Deep Drawers
Minimum Hangers
Comfortable Hangers

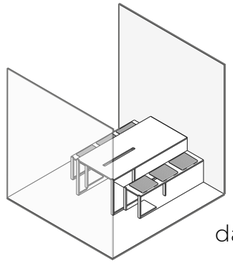
Performances.



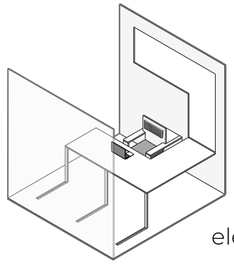
privacy
noise reduction



daylight
electricity

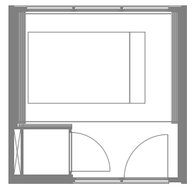


daylight

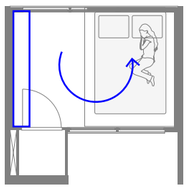


electricity
daylight

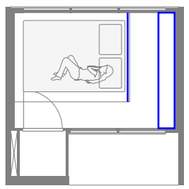
Layout.



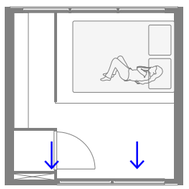
starting point



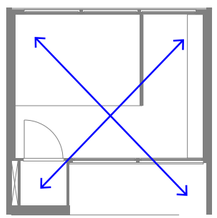
- less daylight
+ storage space



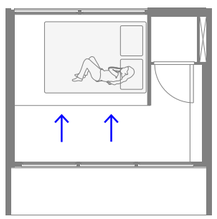
+ partition wall with
storage space
- accessibility door



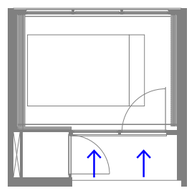
- no balcony
+ more interior space



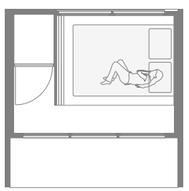
4 x4 instead of 3,5 x 3,5
+ more space
- bigger floor area



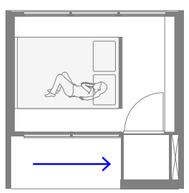
+ too much space?



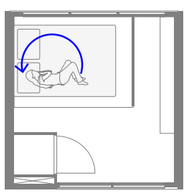
- shower only
accessible from outside



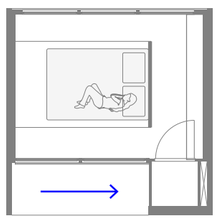
+ larger balcony
- no storage space



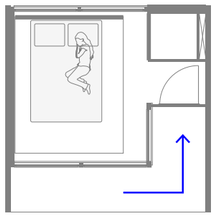
+ toilet accessible
+ space for
personalisation



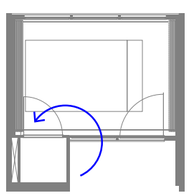
mirror bed



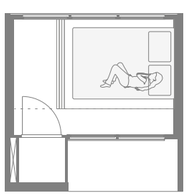
+ interesting space



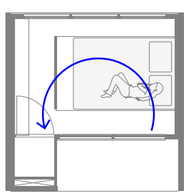
+ big balcony
- less daylight



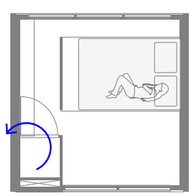
- accessibility hindered
by furniture



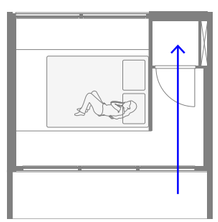
multiple zones/
functions



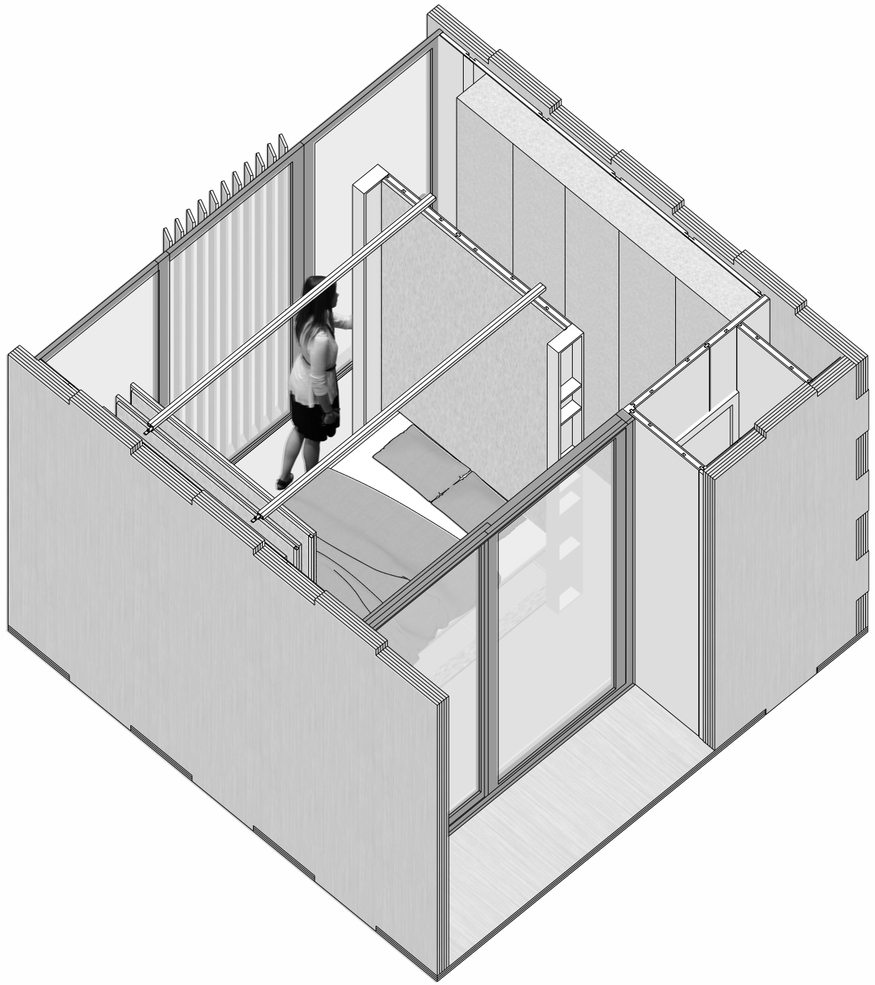
mirror



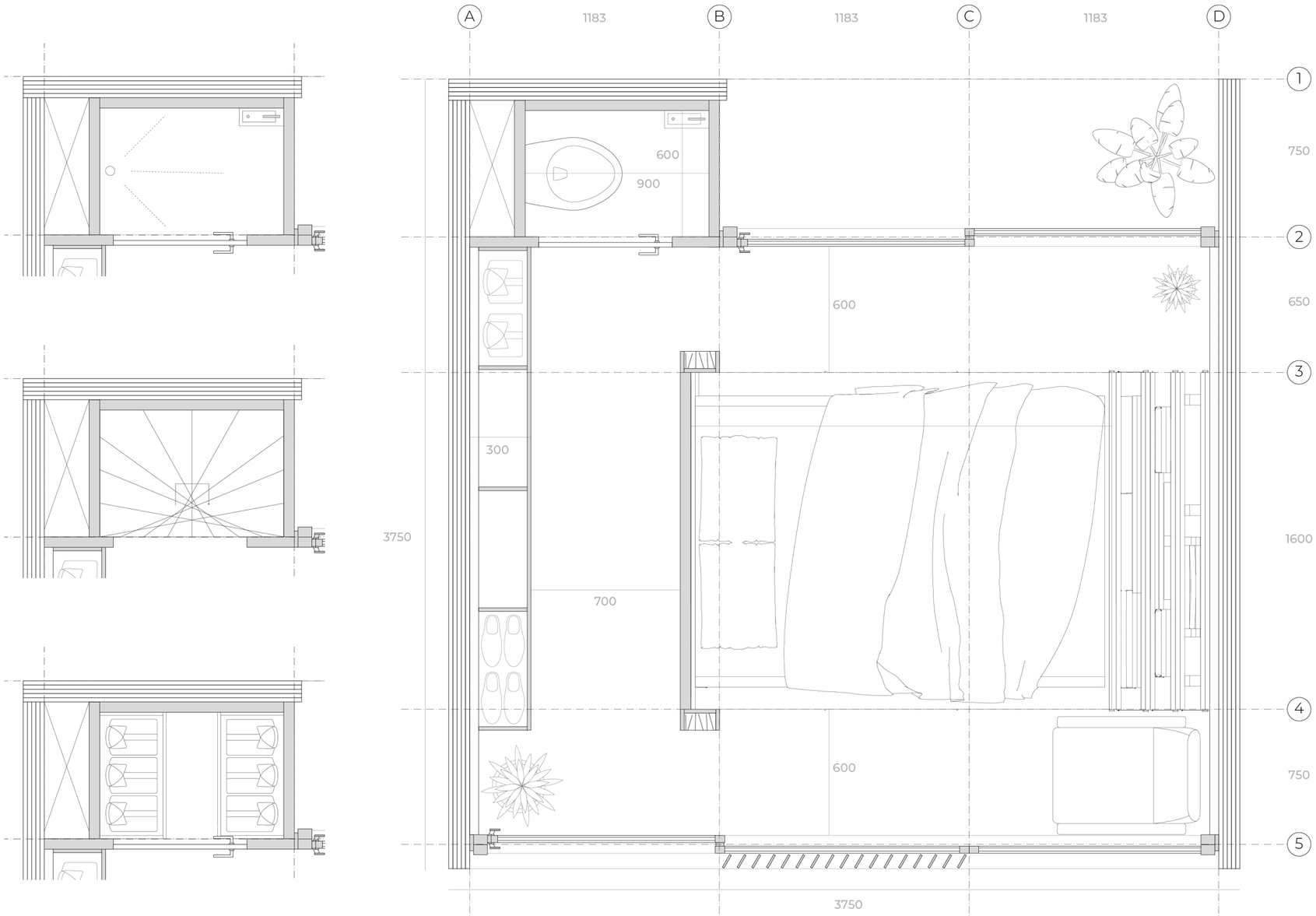
rotate toilet



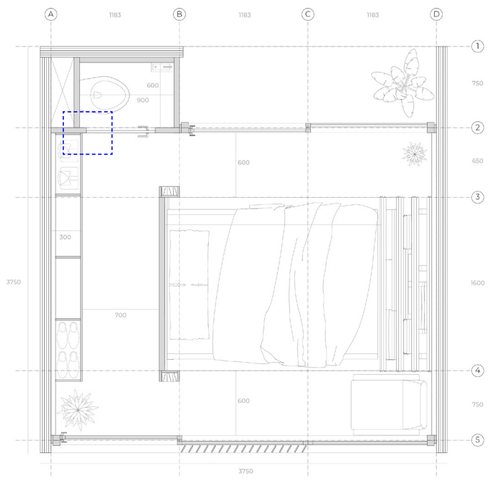
+ bigger balcony
- less storage space
- less daylight

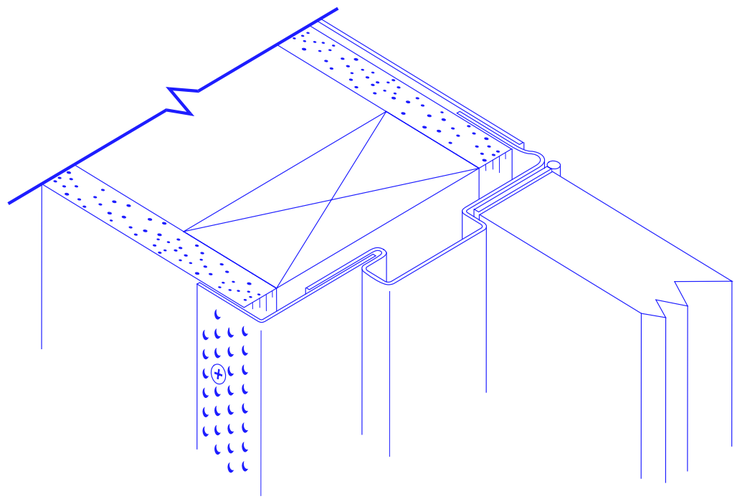


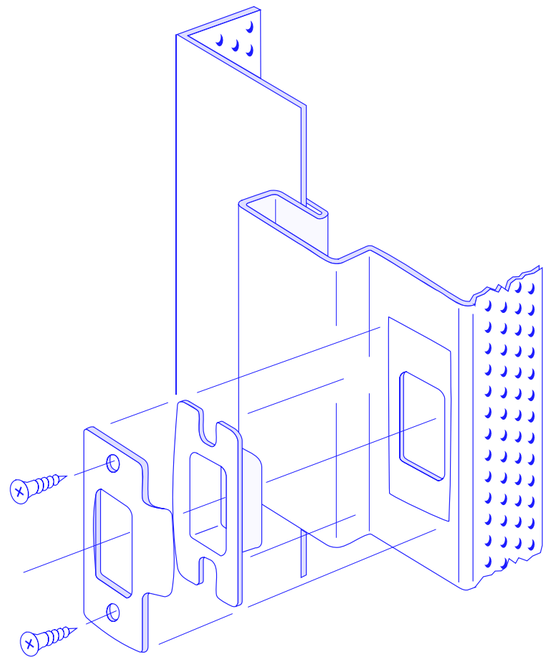
Floor plan.
S1.20



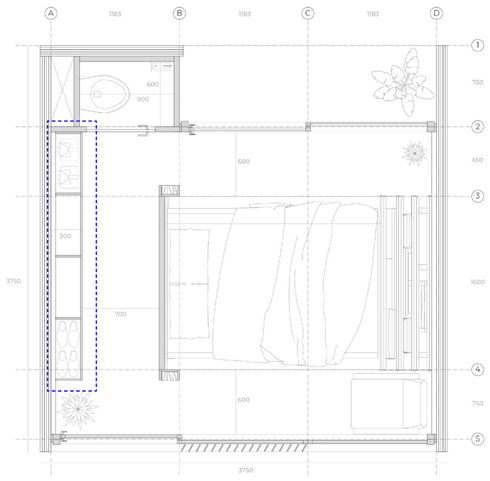
Conceiled door frame.

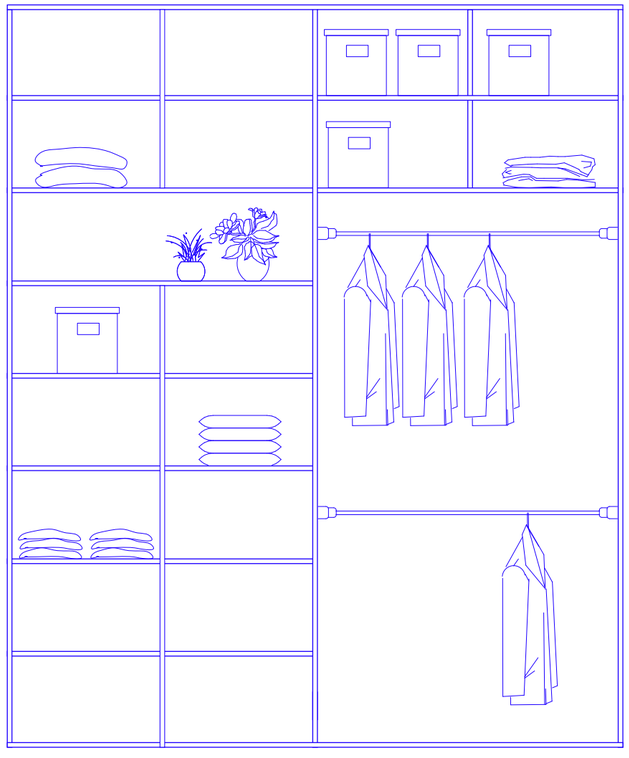


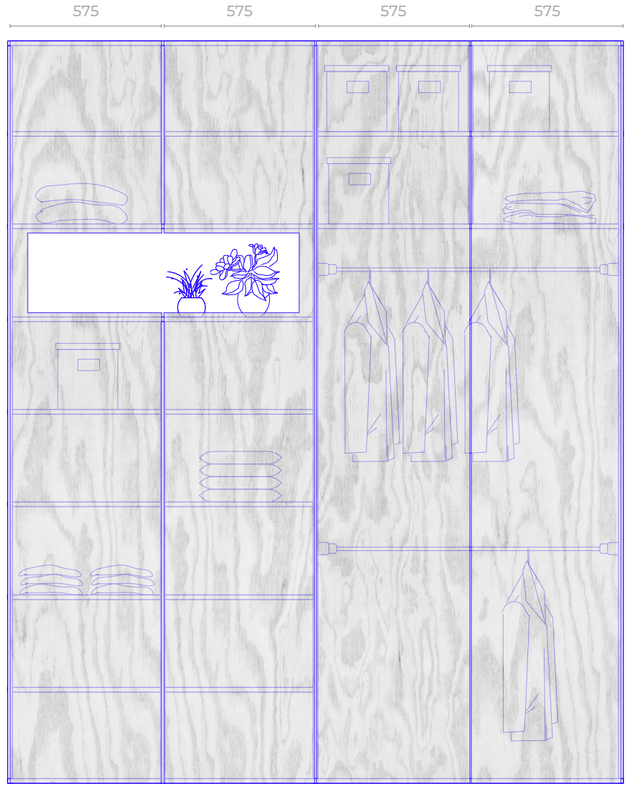




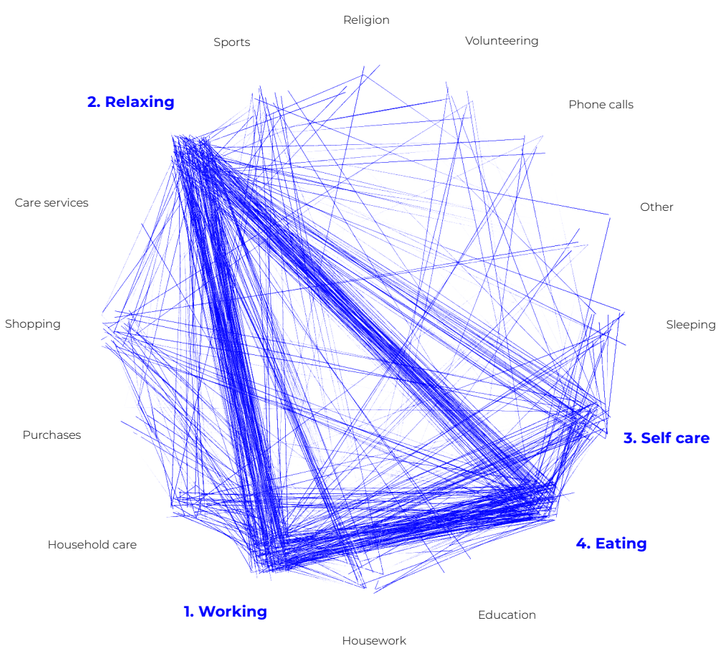
Use of waste material.

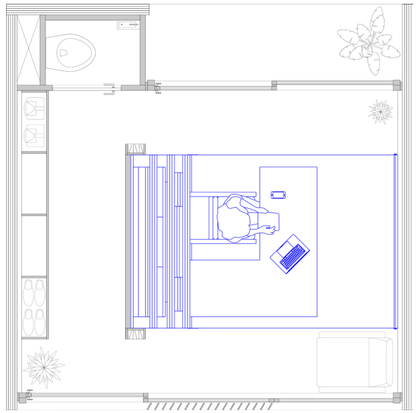






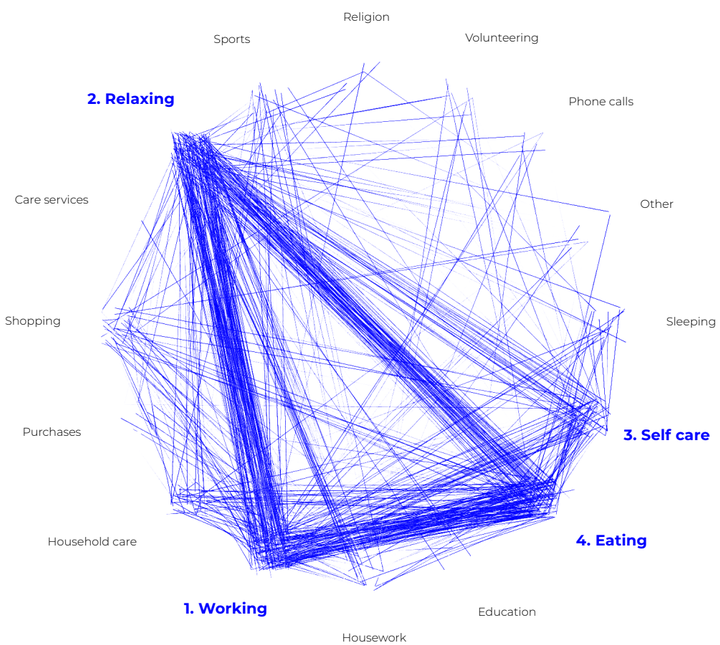
Activity 6-8pm.

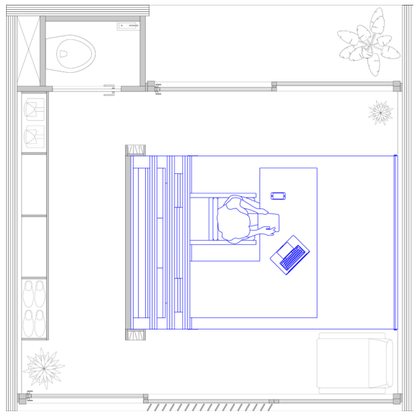




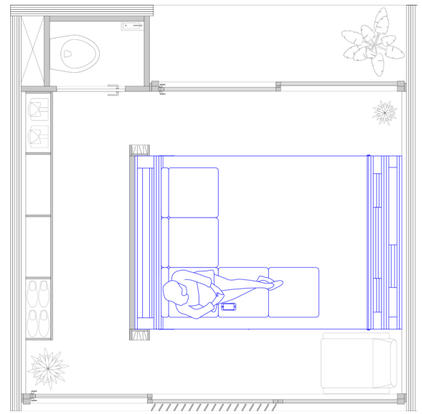
1. Working

Activity 6-8pm.



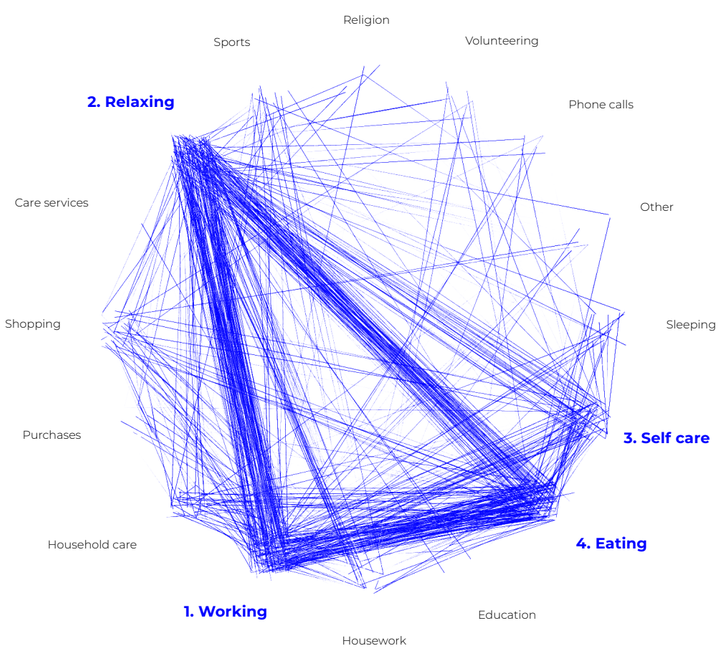


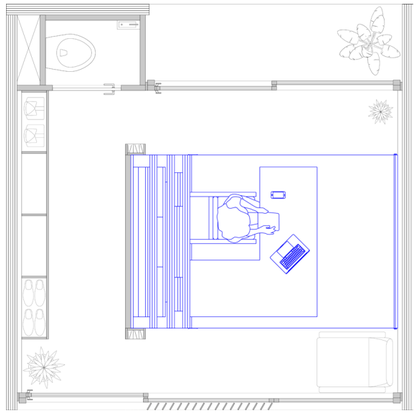
1. Working



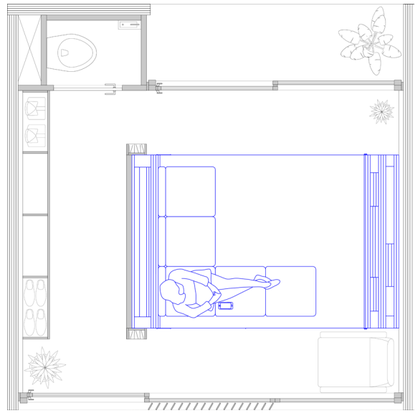
2. Relaxing

Activity 6-8pm.

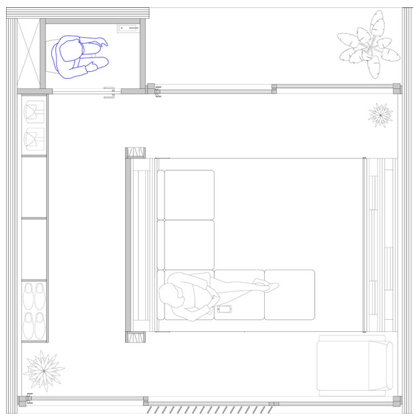




1. Working

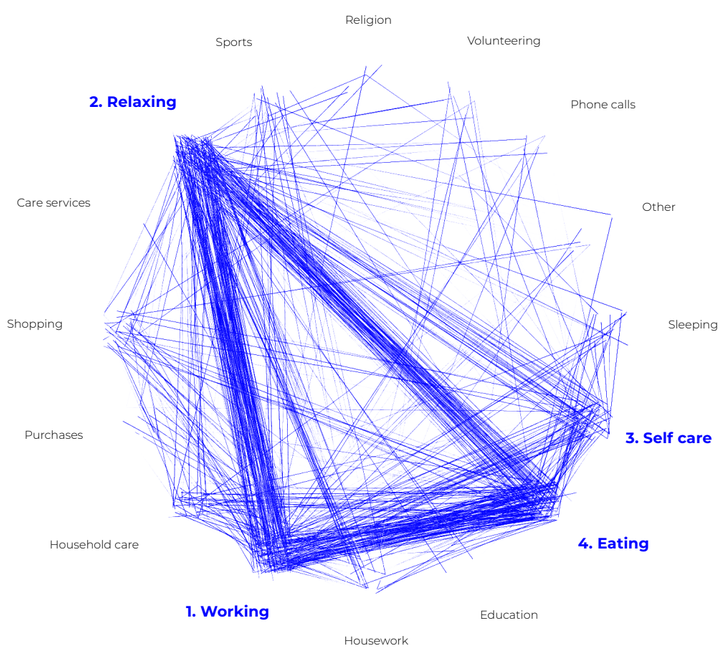


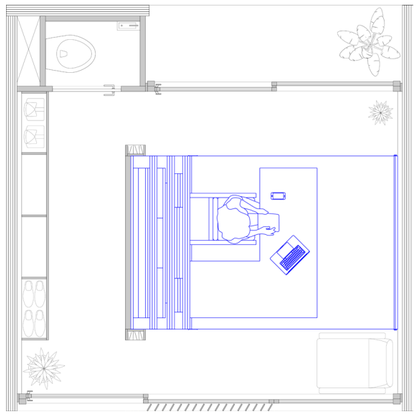
2. Relaxing



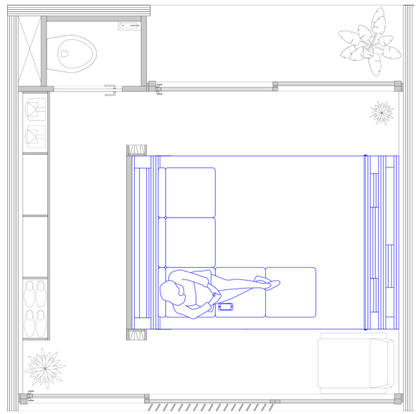
3. Self care

Activity 6-8pm.

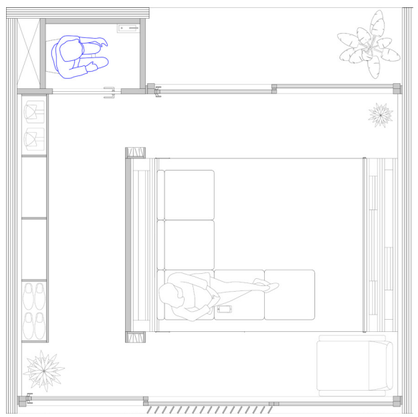




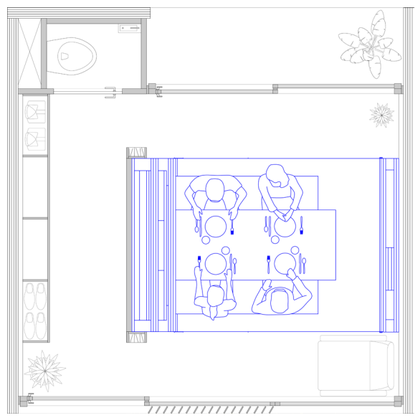
1. Working



2. Relaxing



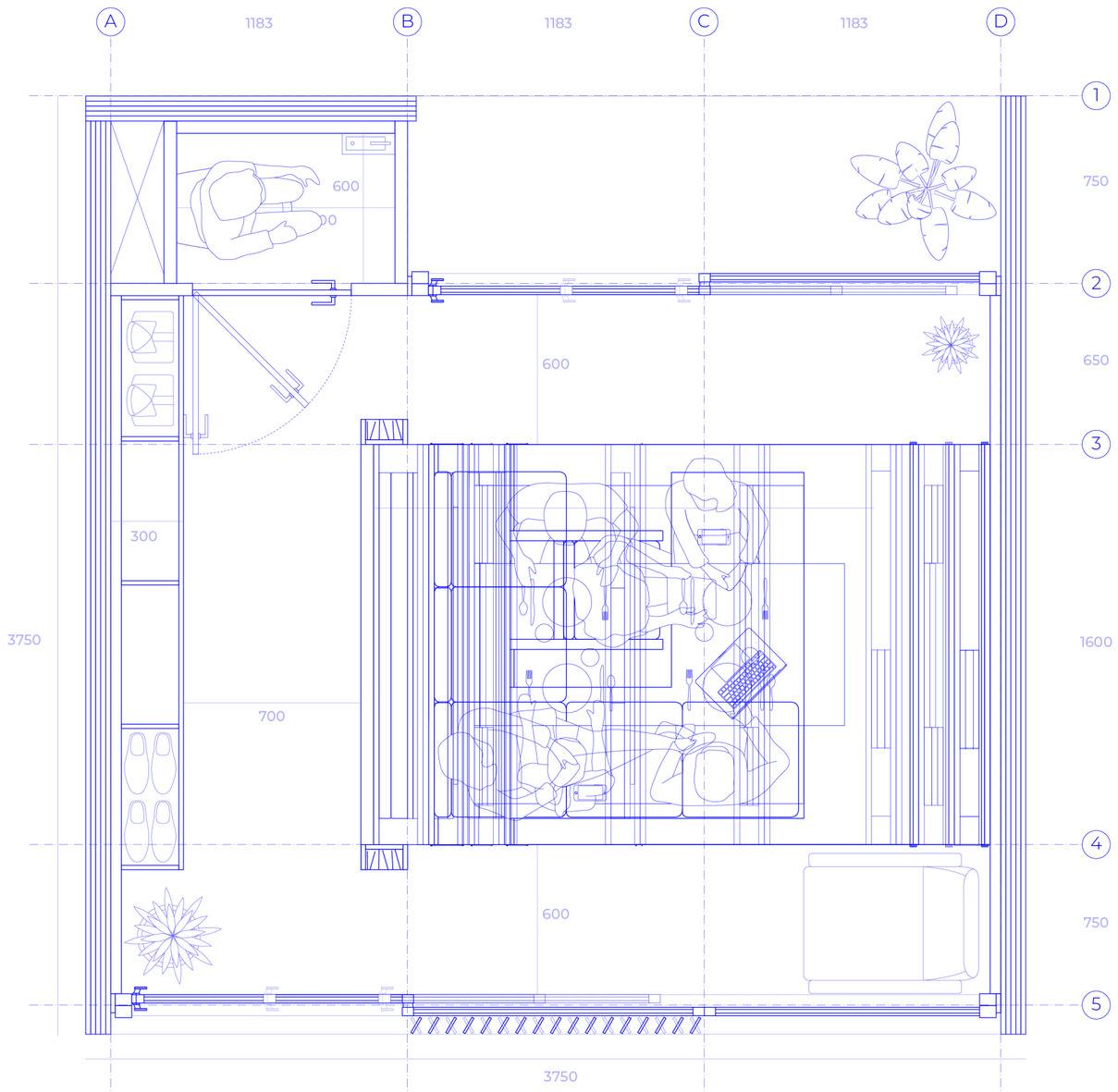
3. Self care



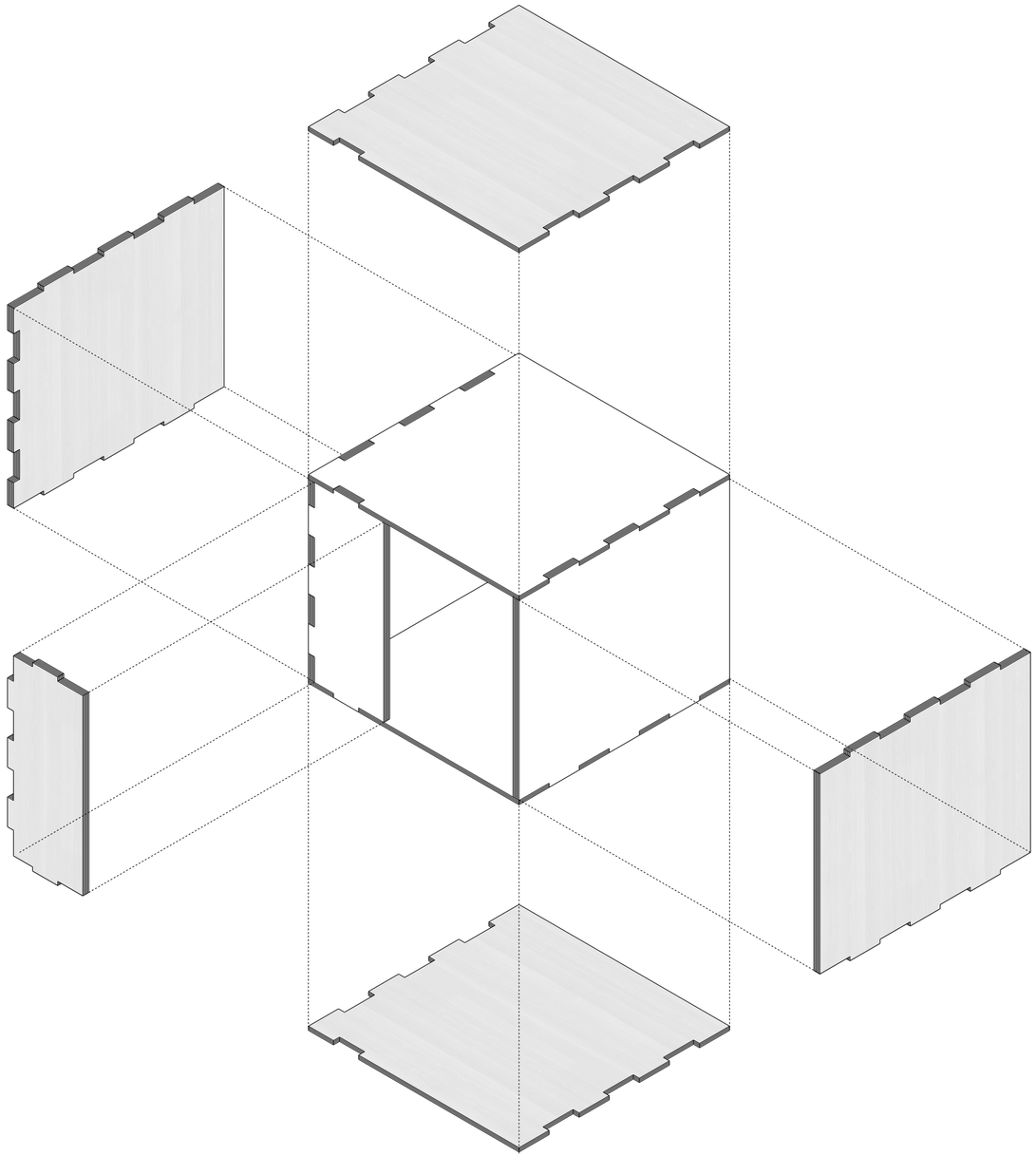
4. Eating

Floor plan 6-8pm.

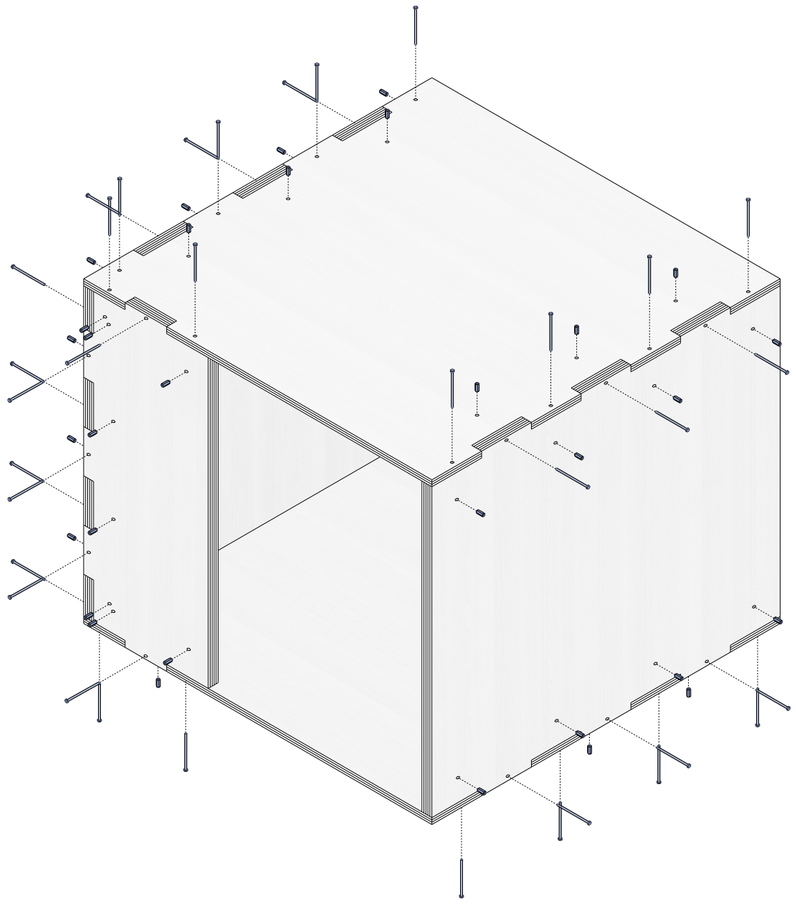
S1.20



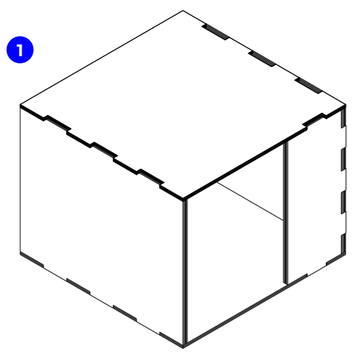
CLT.

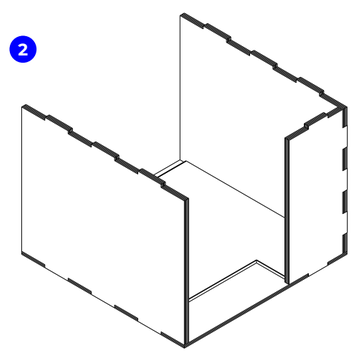


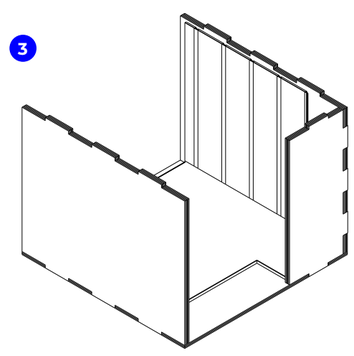
Bolts & cross nuts.

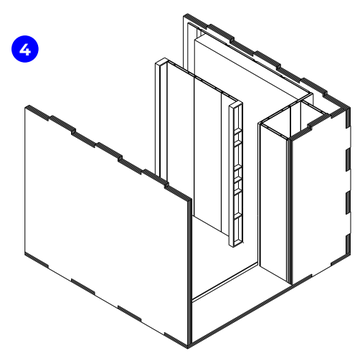


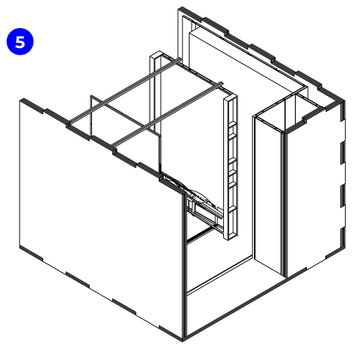
Assembly.

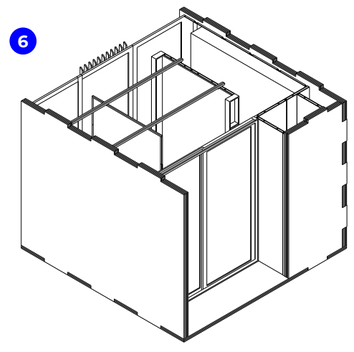


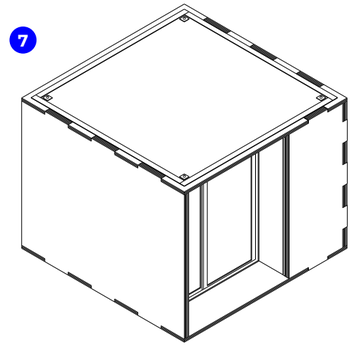


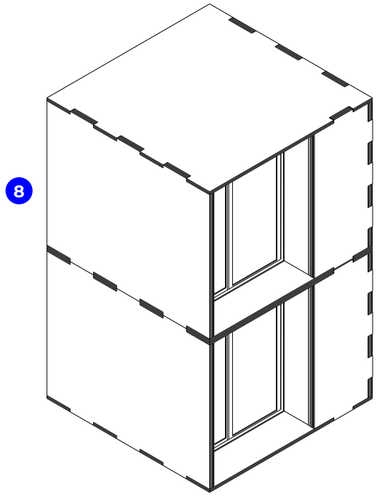




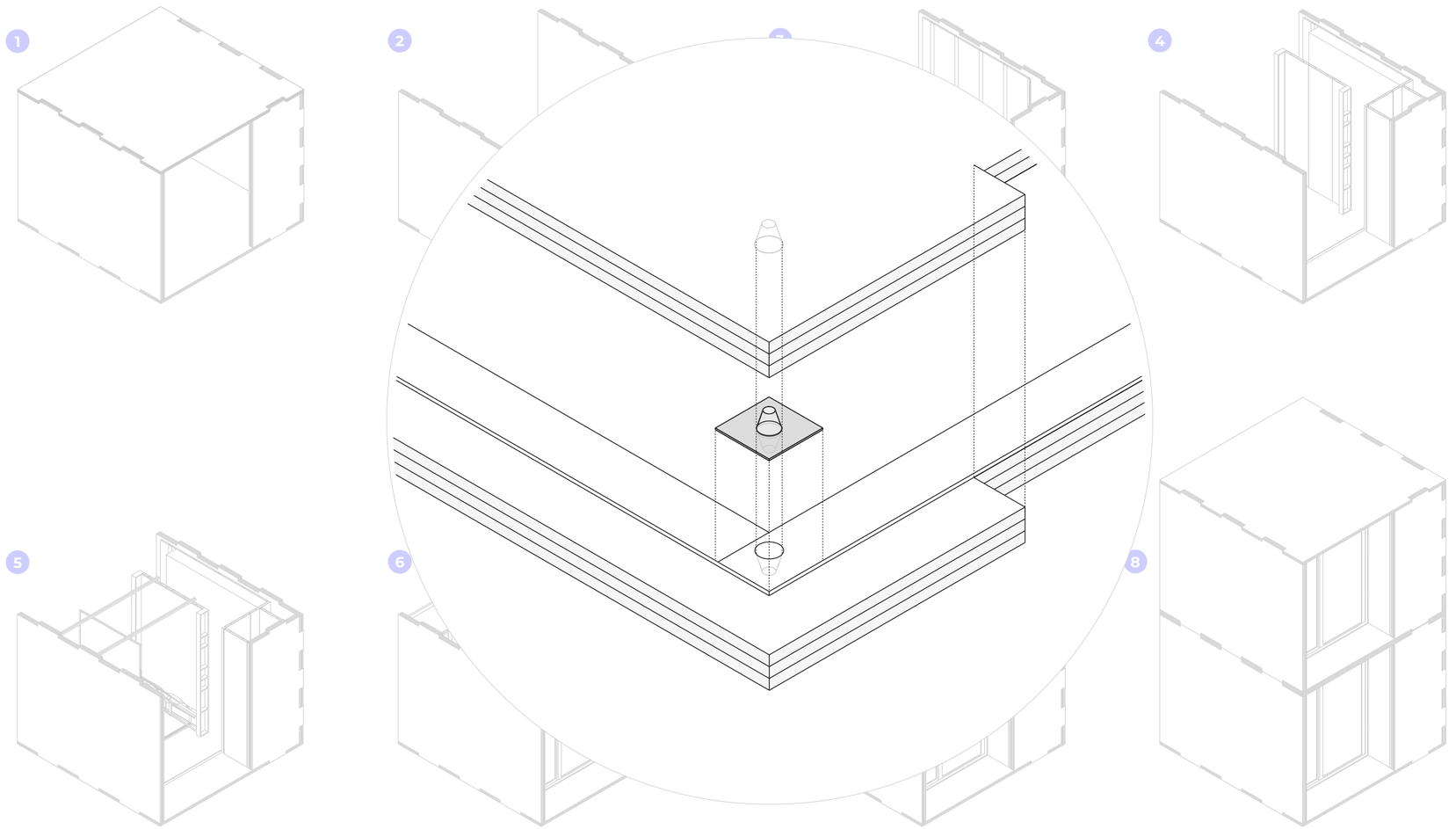




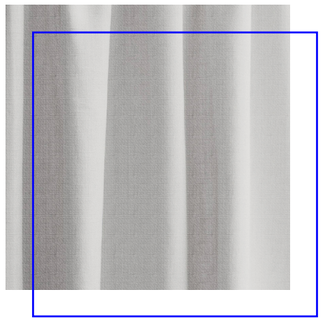


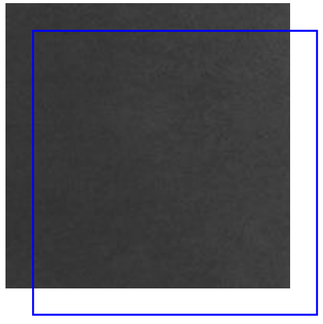


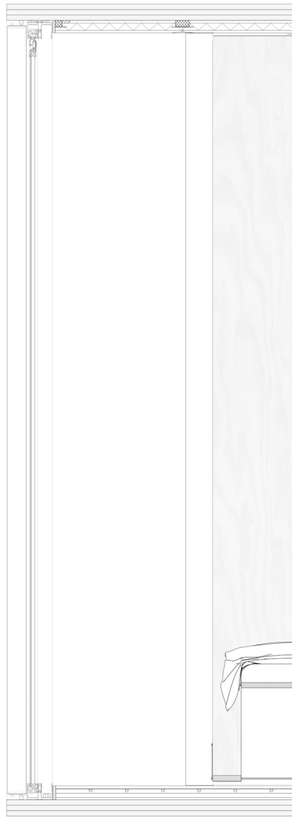
Tapered connector.

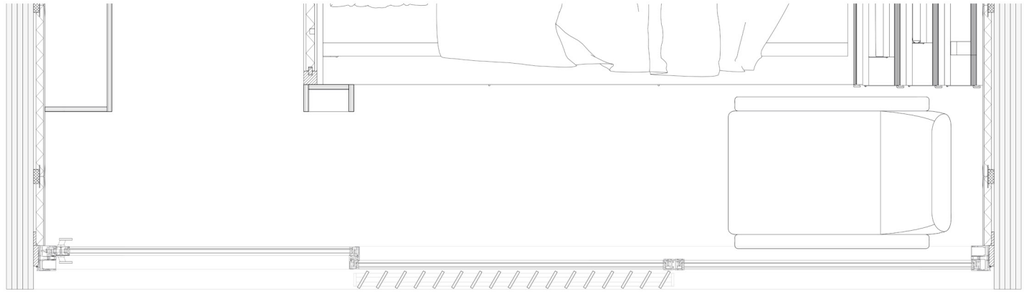


Materials.

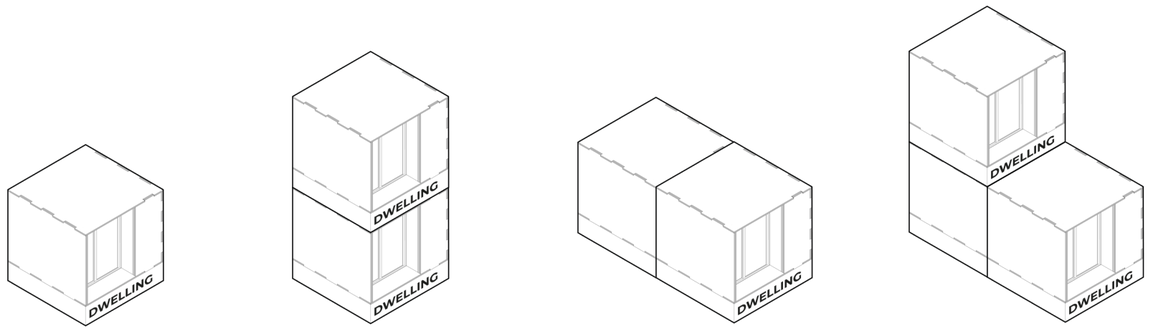






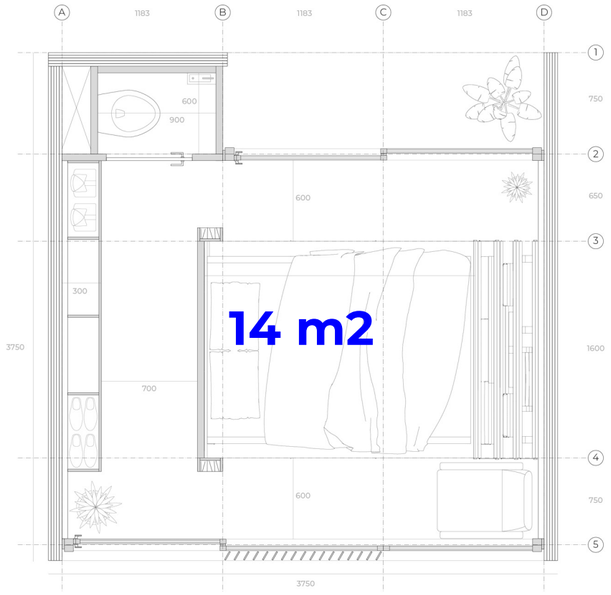


Conclusion dwelling.



(1-2p) 14 m2

-> 100 x 1 element



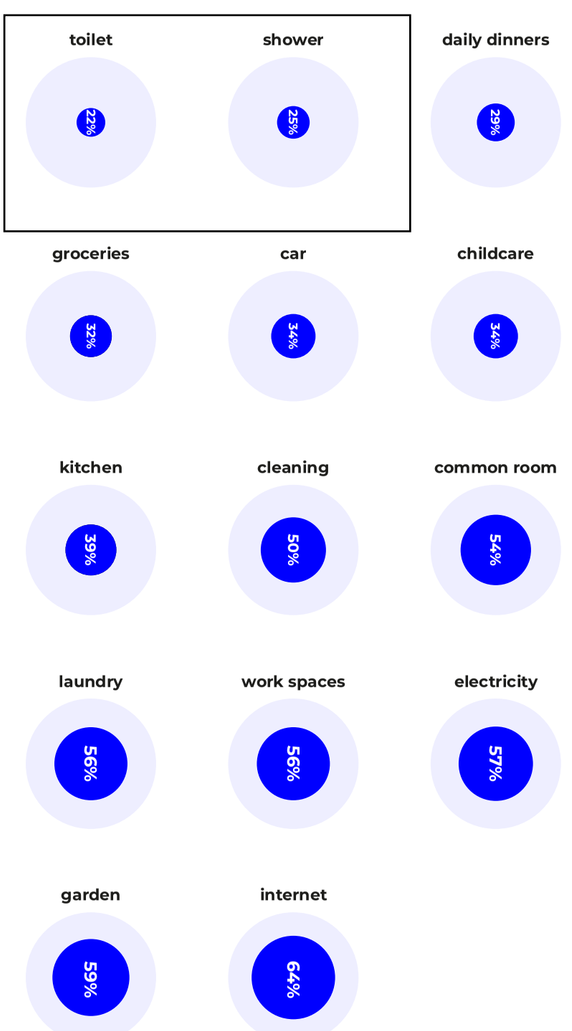
Toolkit.

I. dwellings **II. shared facilities** III. self-sufficiency IV. building

What to share.

own image, data based on One Shared House

own image, data based on One Shared House

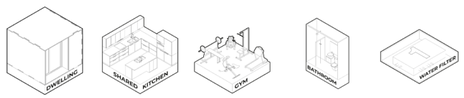


own image, data based on One Shared House

Timeline.

08.00 10.00 11.00 14.00 15.00 18.00 20.00 21.00 00.00

At 7 he gets up, goes to the toilet and brushes his teeth, makes coffee in the shared kitchen and then changes the house to an empty room so he can meditate. At 9 he takes a sports class in the shared gym, then he takes a shower and gets changed.

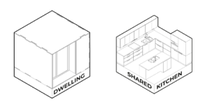


08.00 **10.00** 11.00 14.00 15.00 18.00 20.00 21.00 00.00

At 10 he makes breakfast in the shared kitchen, and because he doesn't feel like having social contact in the morning he transforms his house into the eating mode. After breakfast he reads an e-book and decides to vacuum his house.

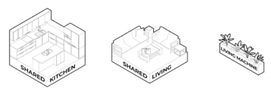
08.00 10.00 **11.00** 14.00 15.00 18.00 20.00 21.00 00.00

The working day starts at 11. In the morning he wants to be fully focused, so he transforms his house into an office. During the break, he makes coffee in the shared kitchen and sits down in the shared living room for some social interaction.



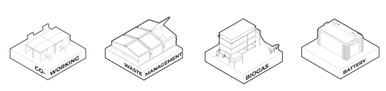
08.00 10.00 11.00 **14.00** 15.00 18.00 20.00 21.00 00.00

At 2 it is time for a break. He cooks lunch in the kitchen and eats in the shared livingroom to clear his head and to take a break from his screen.



08.00 10.00 11.00 14.00 **15.00** 18.00 20.00 21.00 00.00

After lunch he has trouble focusing on work, he decides to move to the co-working spaces. Working close to others motivates him. He charges his laptop with bio energy.



08.00 10.00 11.00 14.00 15.00 **18.00** 20.00 21.00 00.00

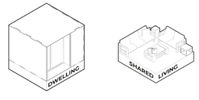
The working day ends at 6. He uses an e-bike to explore the neighbourhood as he just moved to Amsterdam. Afterwards he does some essential tasks, like going to the store and doing laundry. Later he relaxes on his couch at home.

08.00 10.00 11.00 14.00 15.00 18.00 **20.00** 21.00 00.00

At 8 it is time for dinner. He loves to cook and decides to cook for his neighbours. Most of the ingredients are grown in the aquaponics or are locally produced.

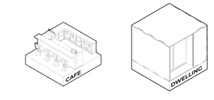
08.00 10.00 11.00 14.00 15.00 18.00 20.00 **21.00** 00.00

At 9 it is time to relax. He plays a game in the shared living room and decides to watch a movie in his house.

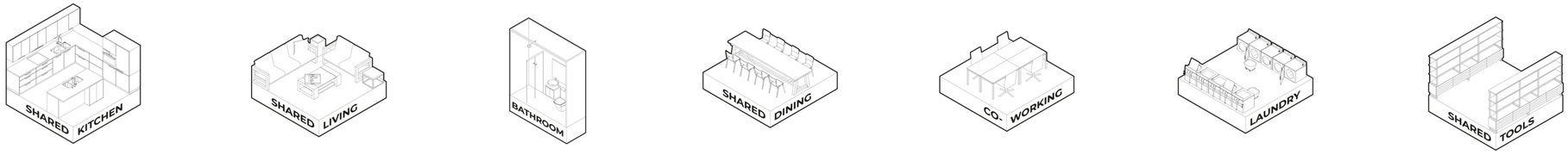


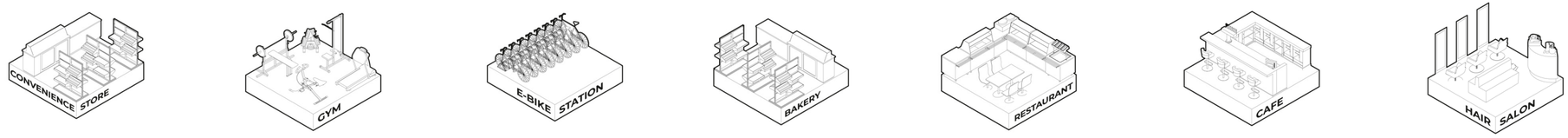
08.00 10.00 11.00 14.00 15.00 18.00 20.00 21.00 **00.00**

He drinks a locally brewed beer in the cafe and at 12 transforms his house into a bedroom and goes to bed.

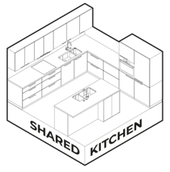


Conclusion shared facilities.

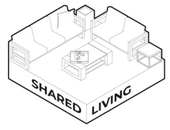




Conclusion shared facilities.

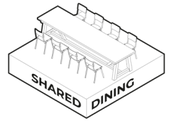


(25p) 4 x 12 m2

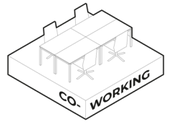


(25p) 4 x 56 m2

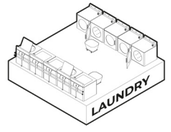
(5p) 20 x 3 m2



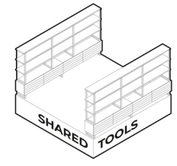
(25p) 4 x 28 m2



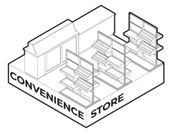
(25p) 4 x 25 m2



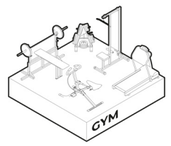
12 m2



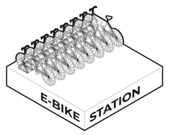
10 m2



25 m2

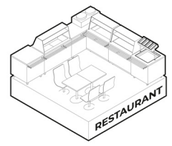


25 m2

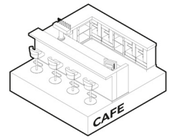


22 m2

14 m2



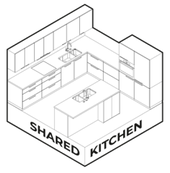
26 m2



16 m2

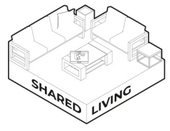
12 m2

Conclusion shared facilities.



(25p) 4 x 12 m2

-> 4 x 1 element

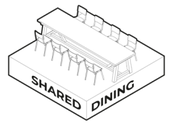


(25p) 4 x 56 m2

-> 4 x 4 elements

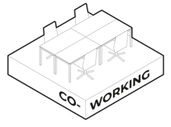
(5p) 20 x 3 m2

-> 4 x 5 element



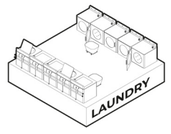
(25p) 4 x 28 m2

-> 4 x 2 elements



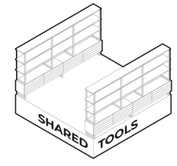
(25p) 4 x 25 m2

-> 4 x 2 elements



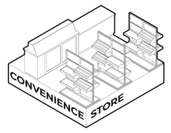
12 m2

-> 1 element



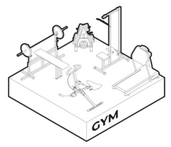
10 m2

-> 1 element



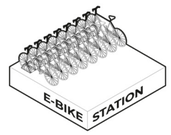
25 m2

-> 2 elements



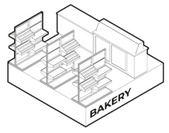
25 m2

-> 2 elements



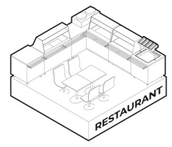
22 m2

-> 2 elements



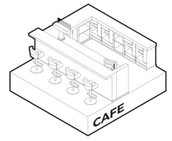
14 m2

-> 1 element



26 m2

-> 2 elements



16 m2

-> 1 element

12 m2

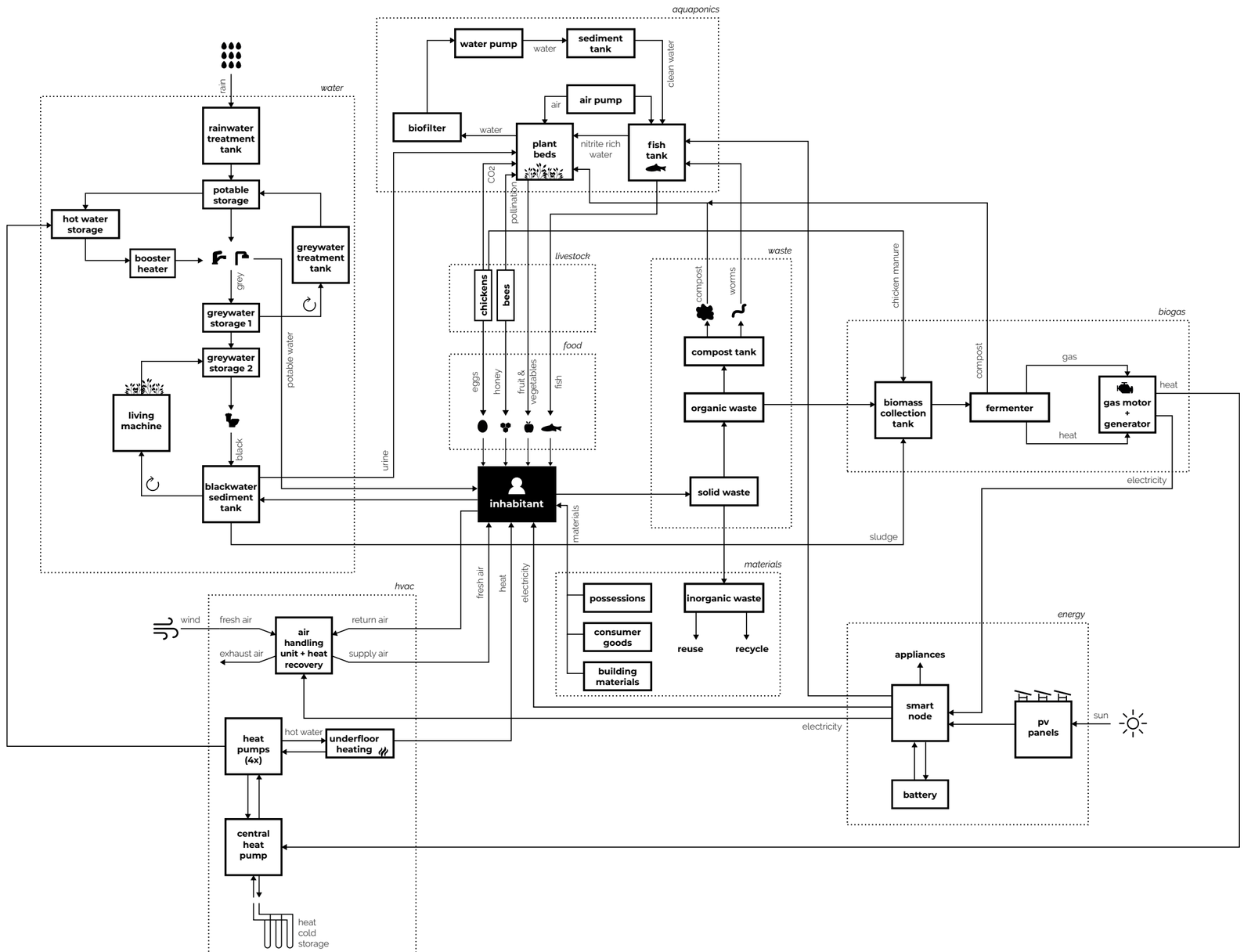
-> 1 element

-> 20 x element 3m2 & 47 x element 14m2

Toolkit.

I. dwellings II. shared facilities **III. self-sufficiency** IV. building

Closed loop.


aquaponics
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air pump
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biofilter
water
plant beds
nitrite rich water
fish tank
CO2
pollination
water
rain
rainwater treatment tank
potable storage
hot water storage
booster heater
greywater treatment tank
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greywater storage 1
greywater storage 2
potable water
living machine
black
blackwater sediment tank
urine
livestock
chickens
bees
food
eggs
honey
fruit & vegetables
fish
inhabitant
waste
compost
worms
compost tank
organic waste
solid waste
chicken manure
biogas
biomass collection tank
compost
fermenter
gas
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gas motor + generator
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electricity
sludge
materials
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possessions
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building materials
inorganic waste
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recycle
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air handling unit + heat recovery
return air
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underfloor heating
central heat pump
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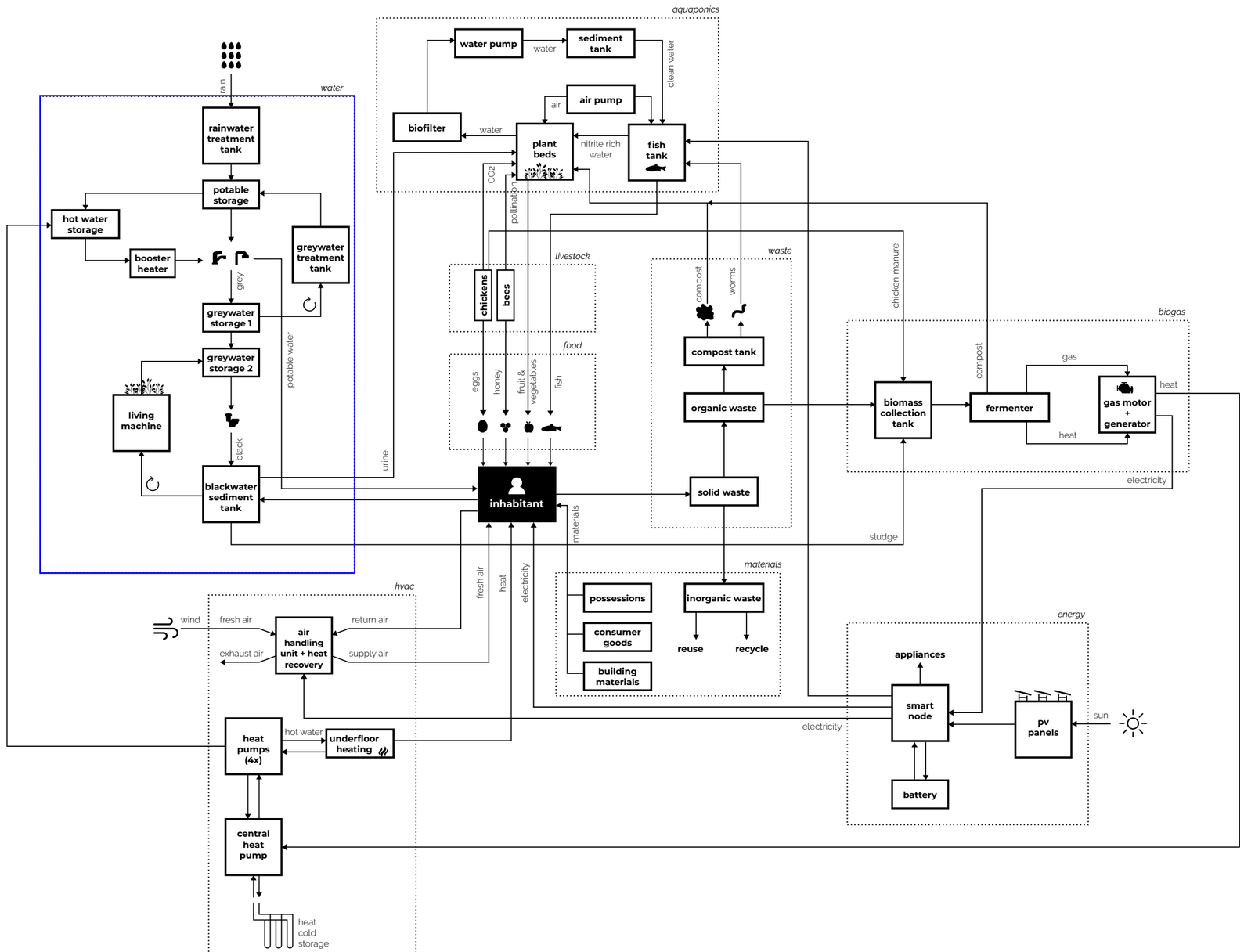
sun
battery

Closed loop.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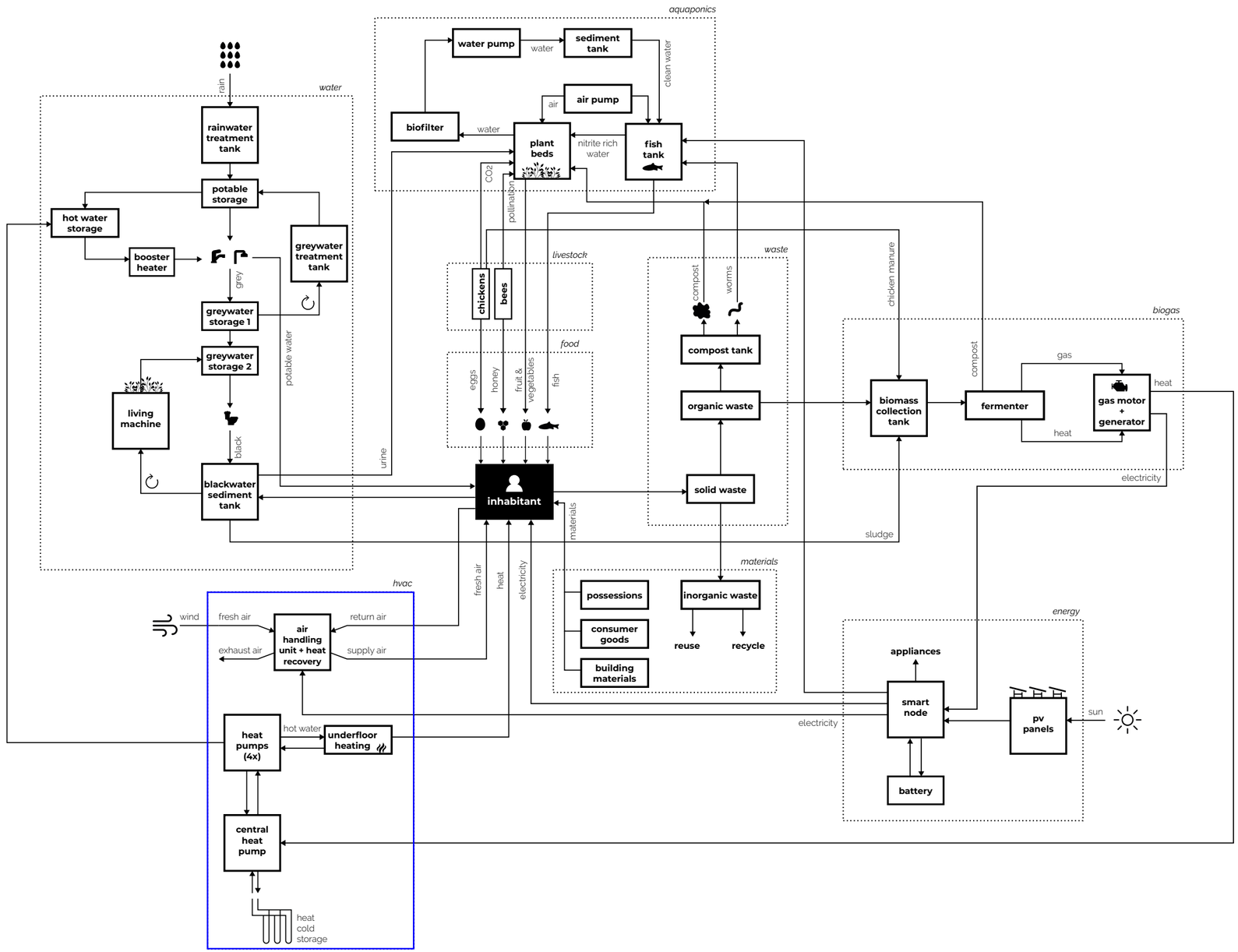
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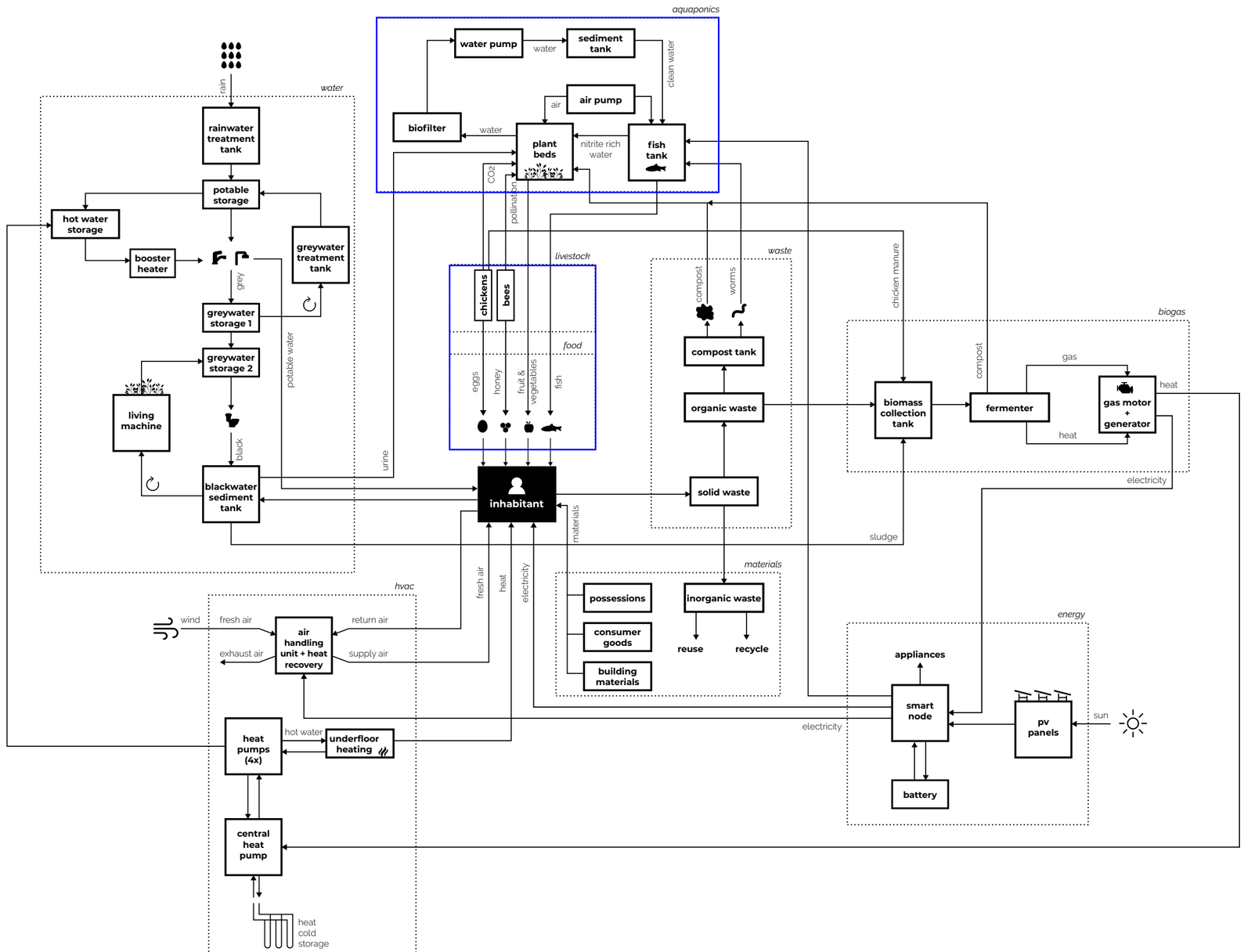
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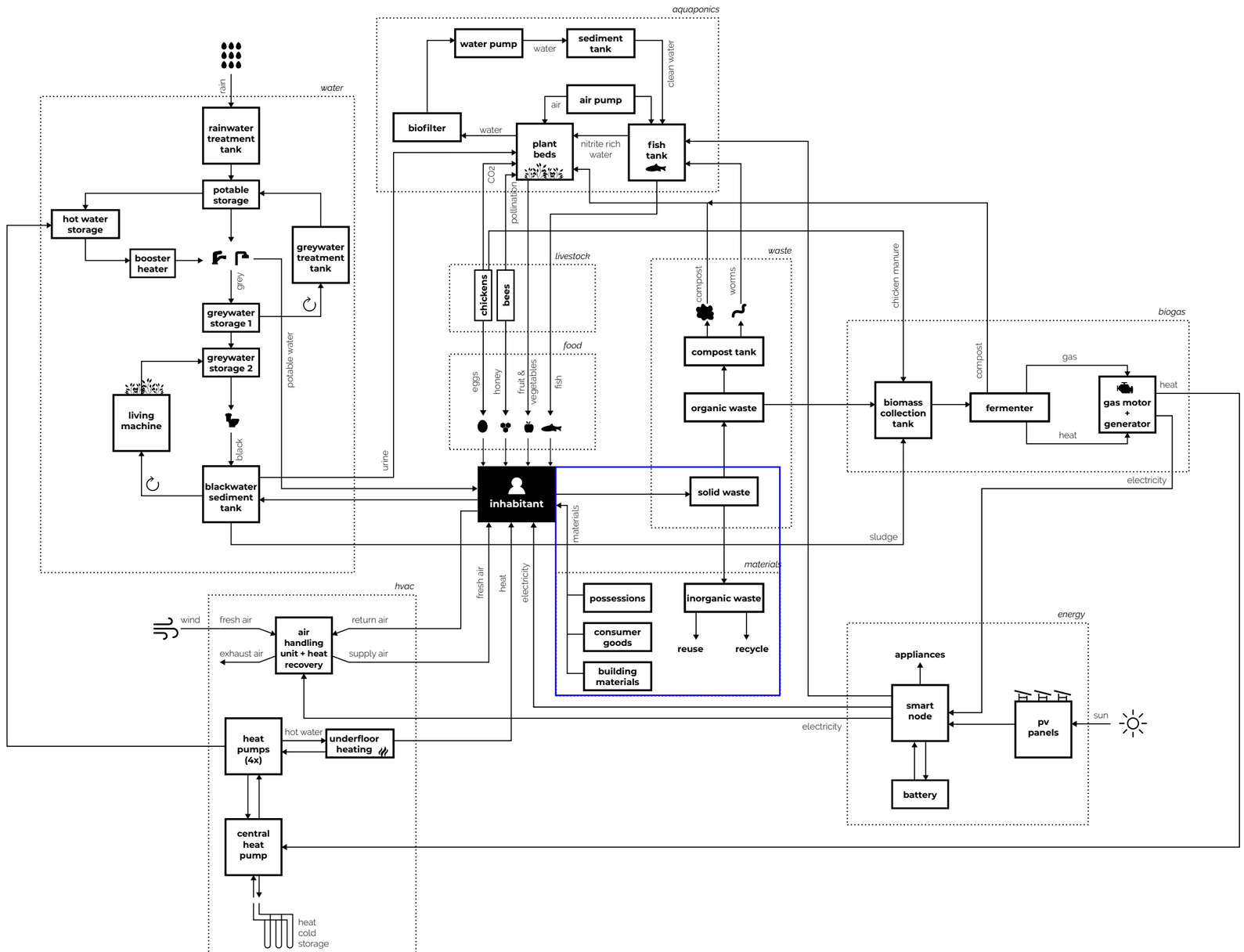
Closed loop.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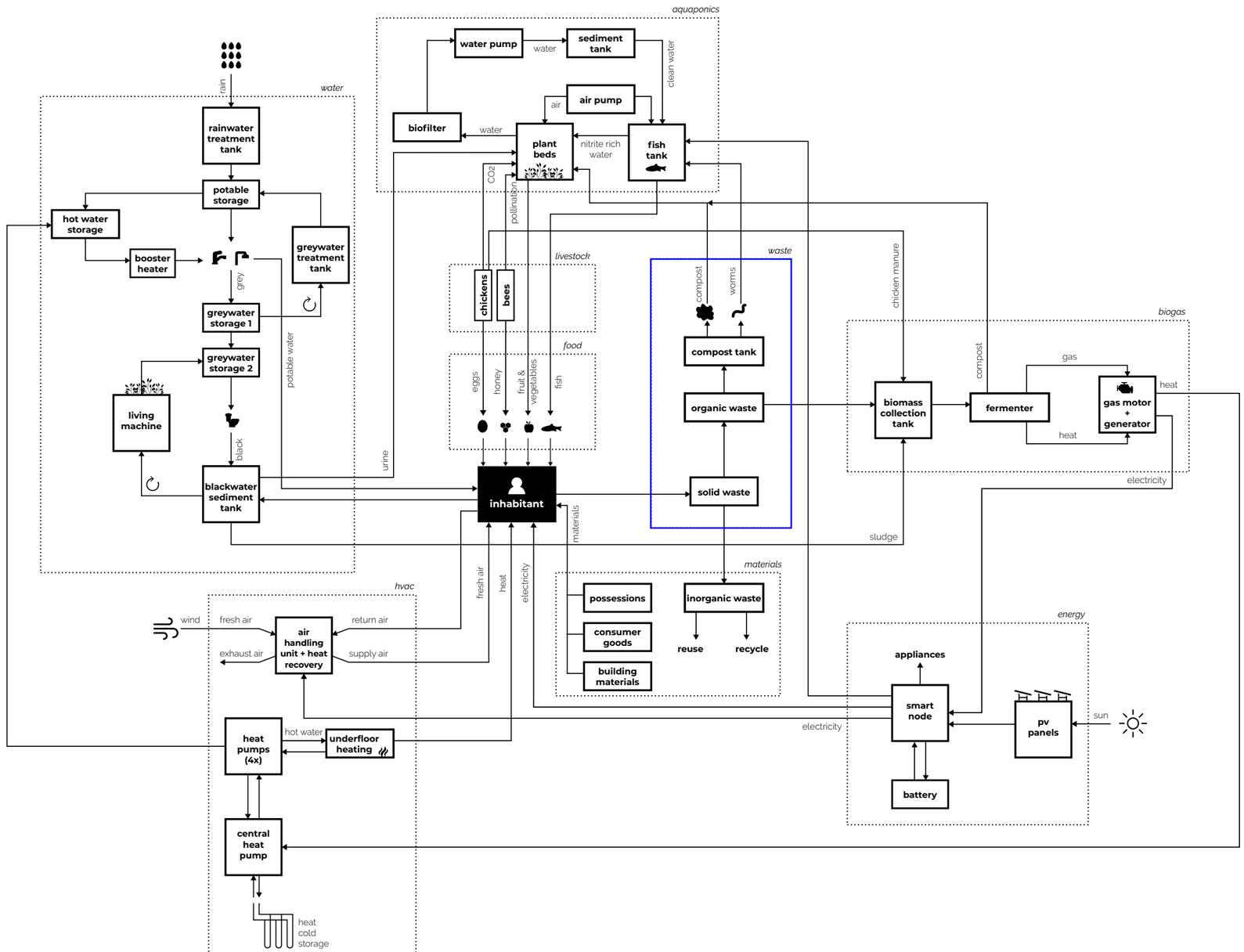
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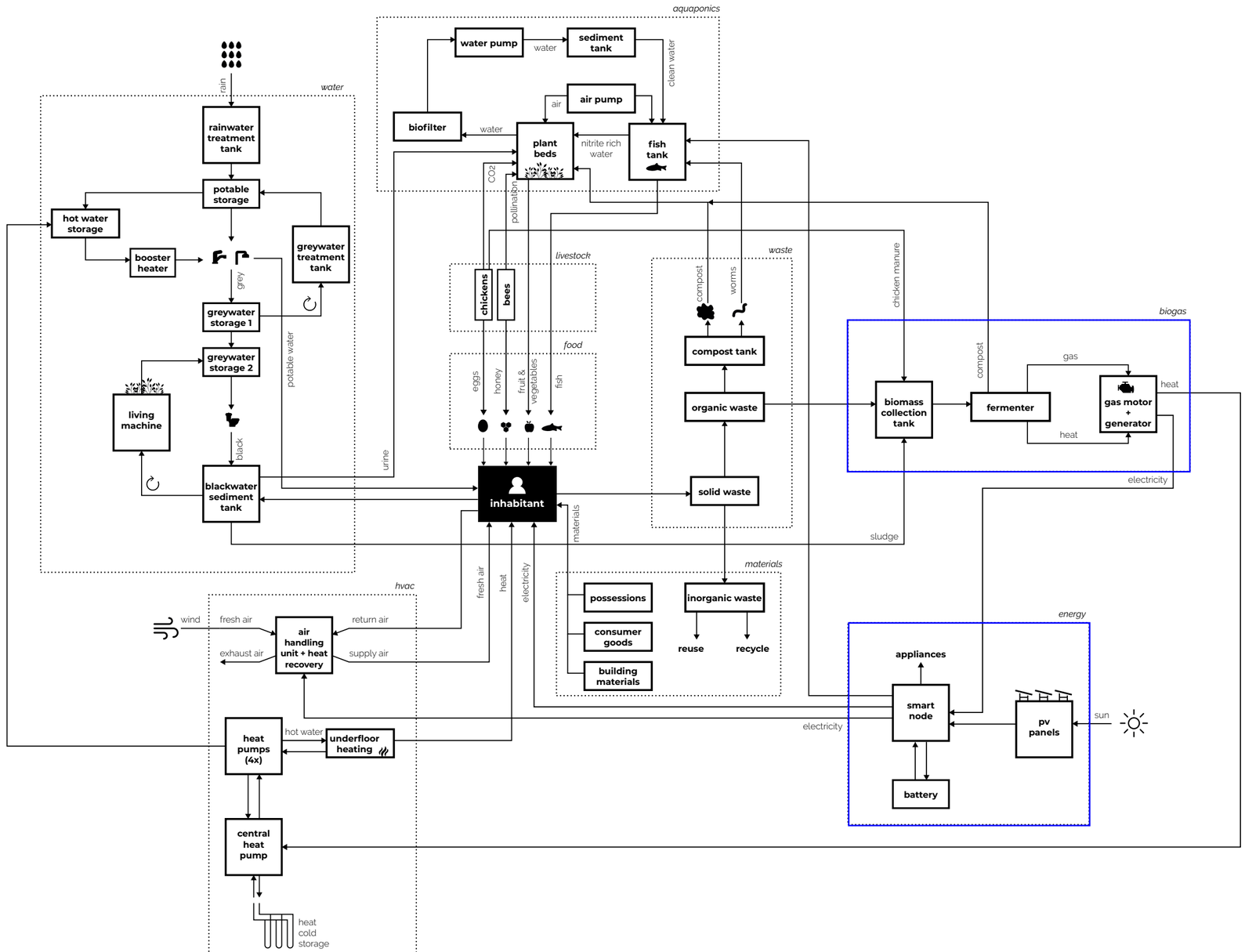
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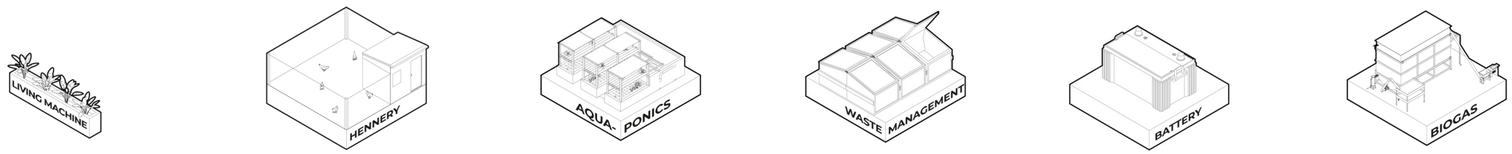
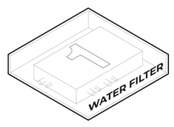
sun

Conclusion self-sufficiency.

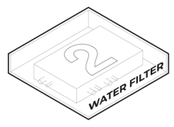


Conclusion self-sufficiency.



12 m2

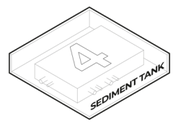
(25p) 4 x 18,75 m3



12 m2

(25p) 4 x 18,75 m3

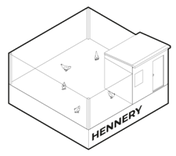
(25p) 4 x 18,75 m3



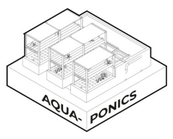
12 m2

(25p) 4 x 18,75 m3

(3p) 57,7 m2

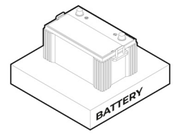


10 m2

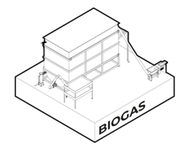


365 m2

14 m2

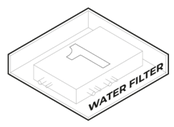


10 m2



14 m2

Conclusion self-sufficiency.

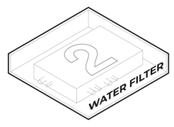


12 m2

-> 4 x 1 element

(25p) 4 x 18,75 m3

-> 4 x 5 elements



12 m2

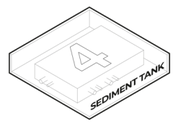
-> 4 x 1 element

(25p) 4 x 18,75 m3

-> 4 x 5 elements

(25p) 4 x 18,75 m3

-> 4 x 5 elements



12 m2

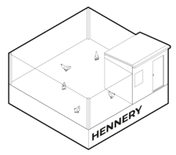
-> 4 x 1 element

(25p) 4 x 18,75 m3

-> 4 x 5 elements

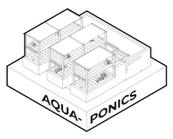
(3p) 57,7 m2

-> 33 x 1/7 element



10 m2

-> 2 elements

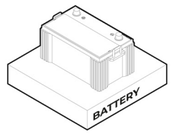


365 m2

-> 26 elements

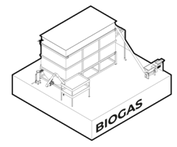
14 m2

-> 1 element



10 m2

-> 1 elements



14 m2

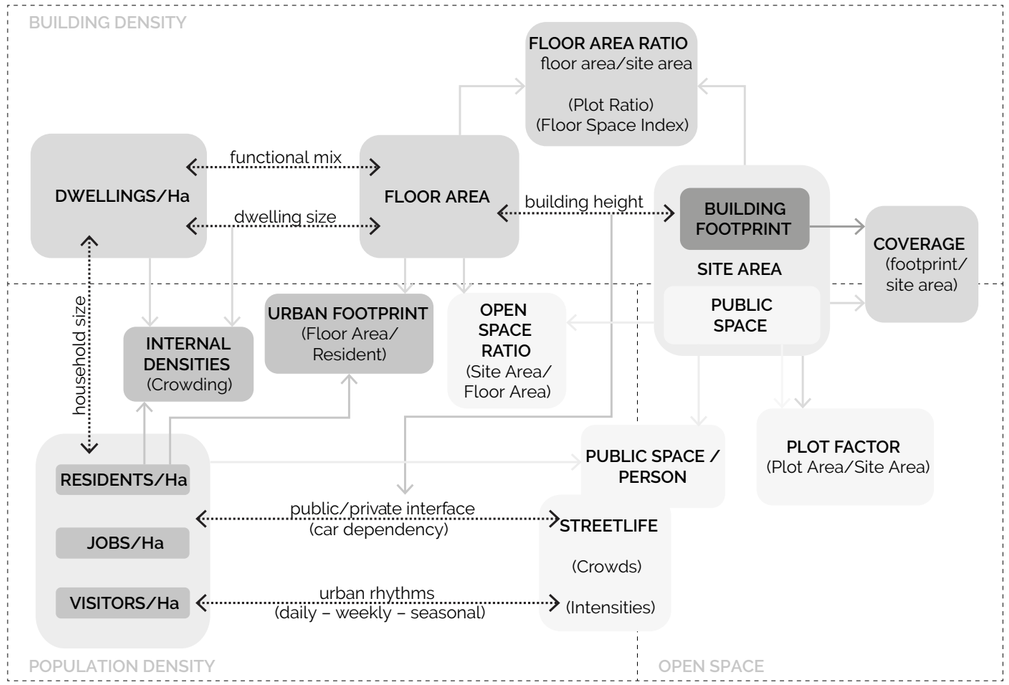
-> 1 element

-> 33 x element 2m2 + 127 x element 14m2

Toolkit.

I. dwellings II. shared facilities III. self-sufficiency **IV. building**

Vacant building.



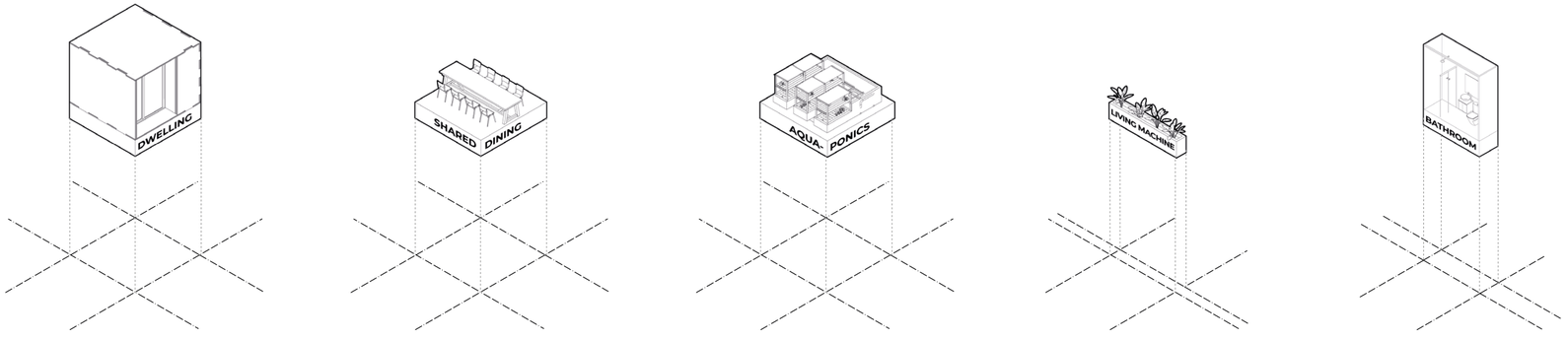
maximize density
of a city

↓

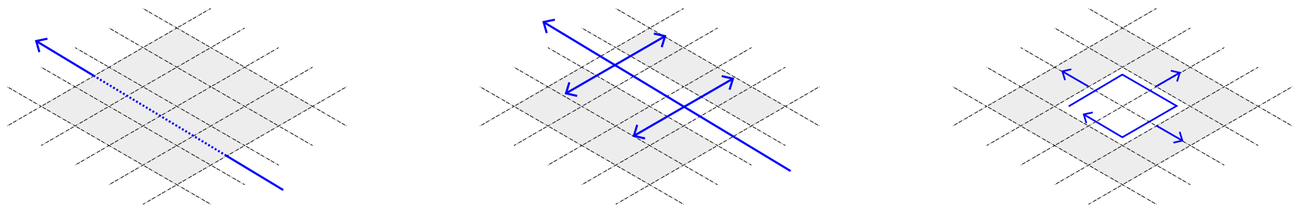
implementation in
existing floor area

327 ELEMENTS

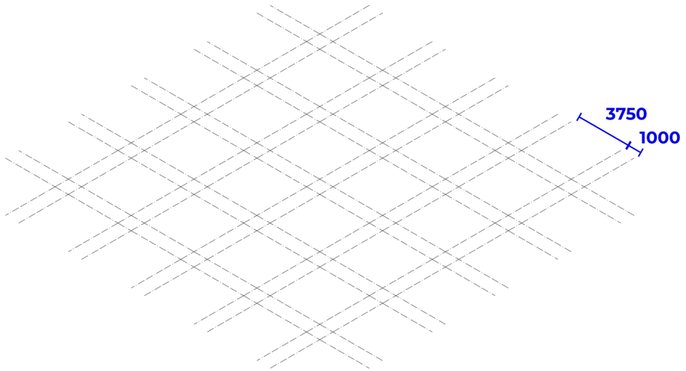
Grid.

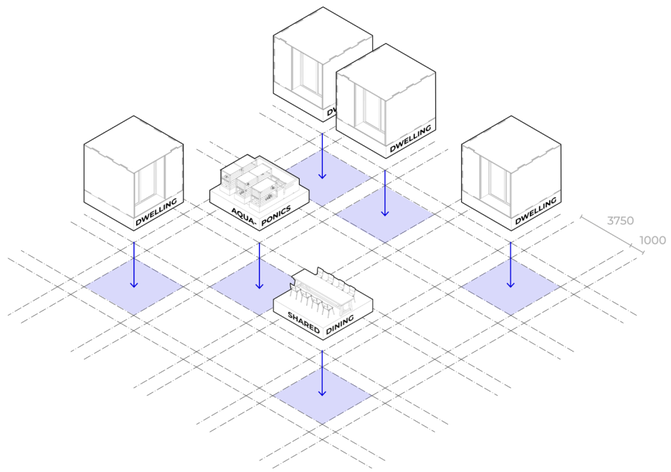


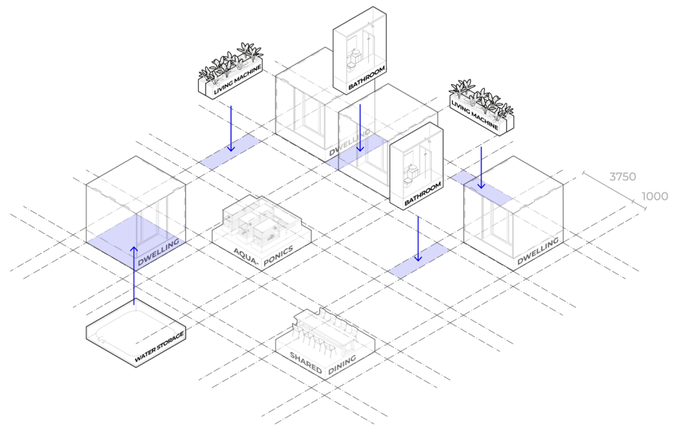
Accessibility.



Most efficient grid.







Conclusion building.

Dwellings: **100** elements + Shared facilities: **30** elements + Self-sufficiency: **47** elements **= 177** elements

100 users -> 177 units

177 x 18 = min **3186 m2***

*if #floors = 1

V

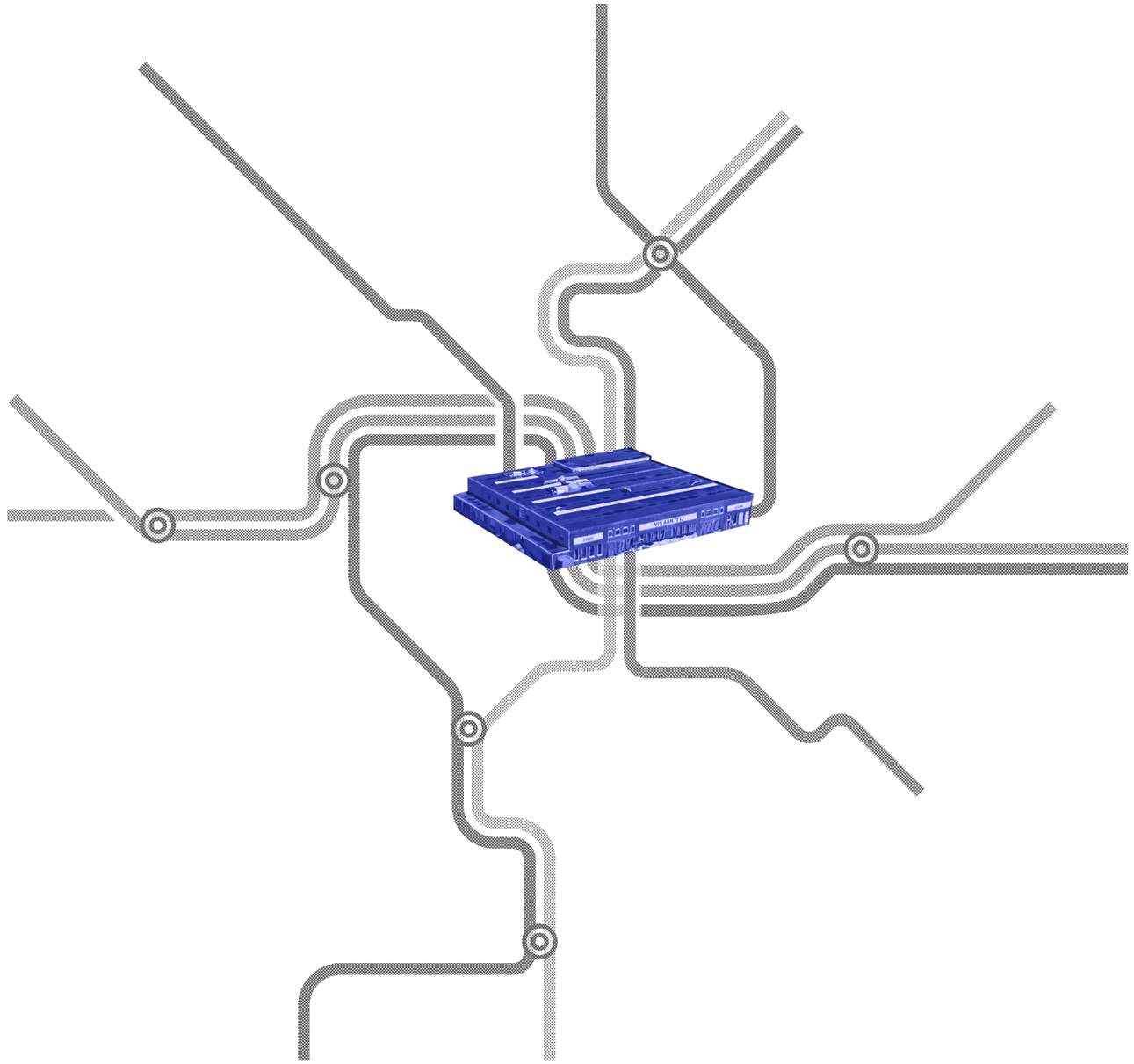
design

toolkit

Timeline.

I. initiative II. development III. pilot IV. reflection & expansion

Selection site.



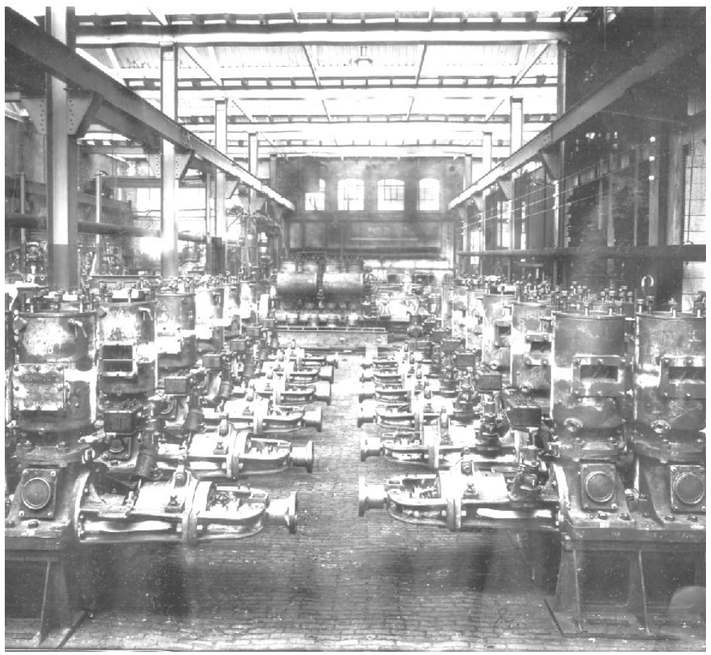
Site.

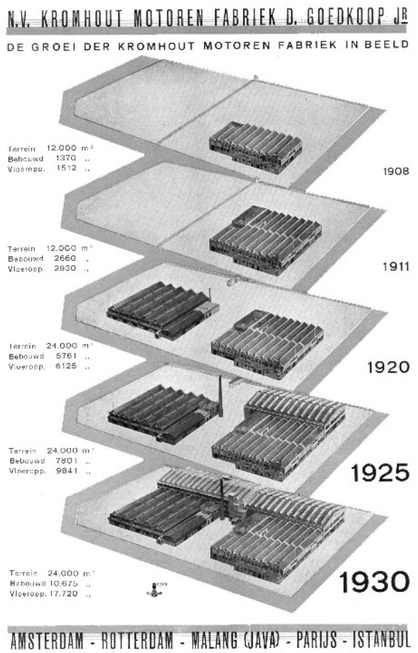
Kromhouthal Cluster 1, Gedempt Hamerkanaal 231, 1021 KP Amsterdam

https://www.loopnet.com/Listing/Cook-Street-Properties/17165250/

Source: Google Earth

Historical value.



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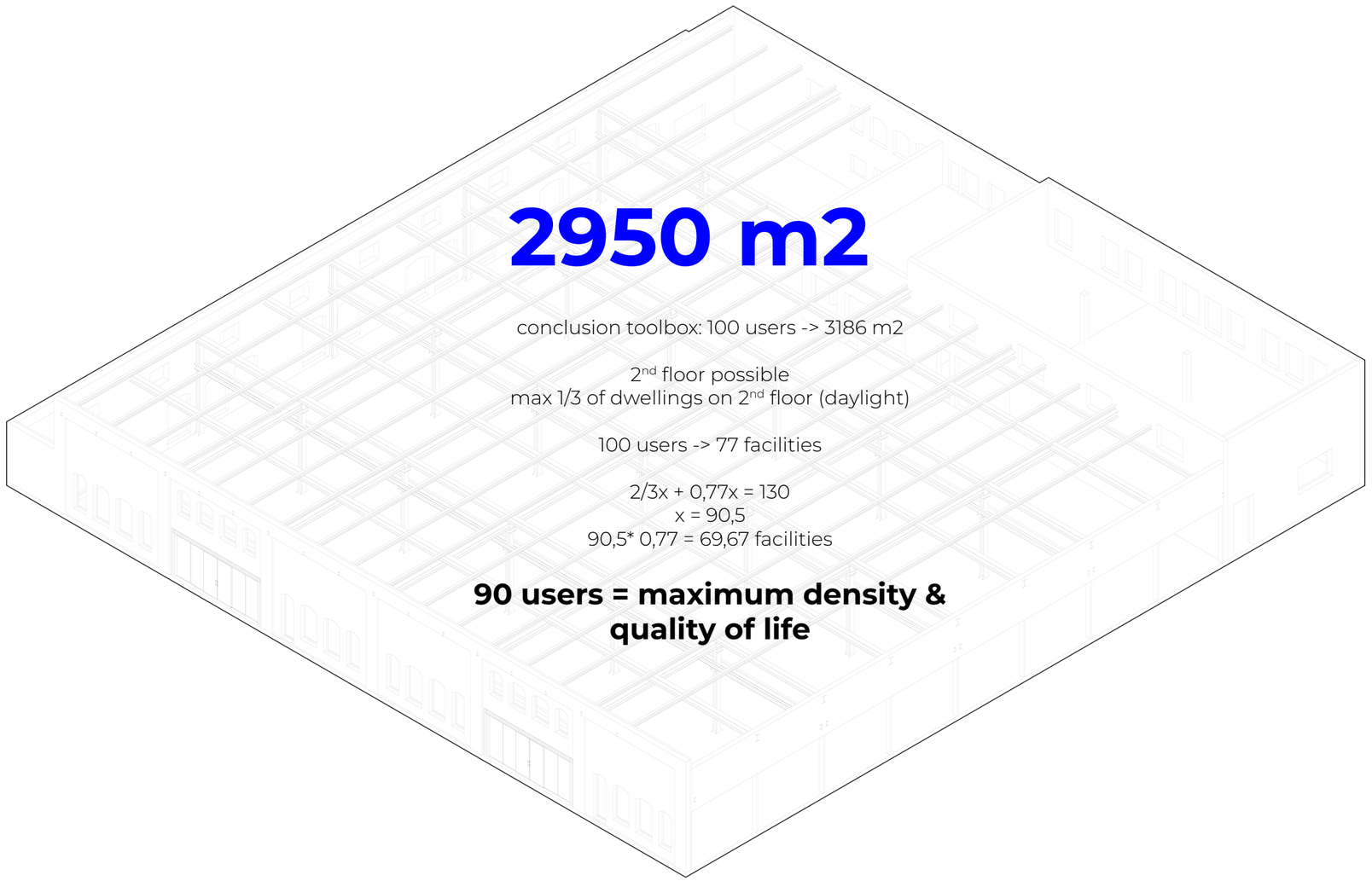
Timeline.

I. initiative **II. development** III. pilot IV. reflection & expansion

Maximum density.



2950 m2

conclusion toolbox: 100 users -> 3186 m2

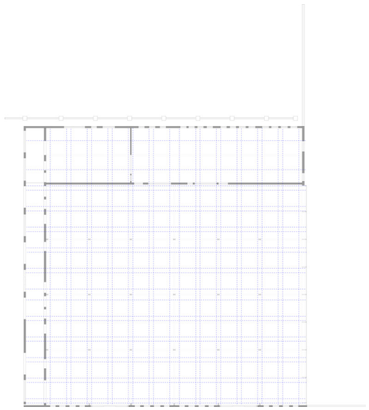
2nd floor possible
max 1/3 of dwellings on 2nd floor (daylight)

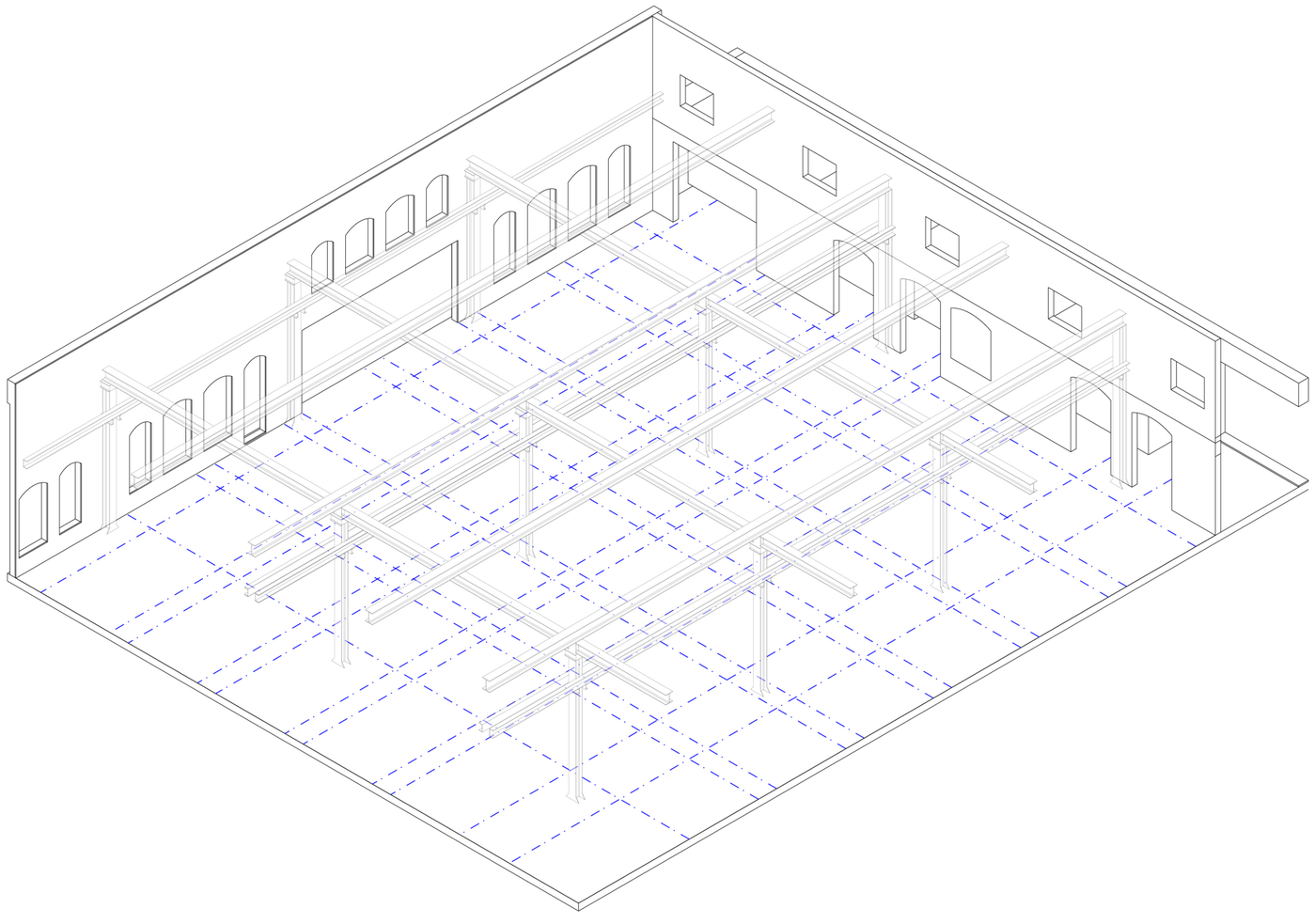
100 users -> 77 facilities

2/3x + 0,77x = 130
x = 90,5
90,5* 0,77 = 69,67 facilities

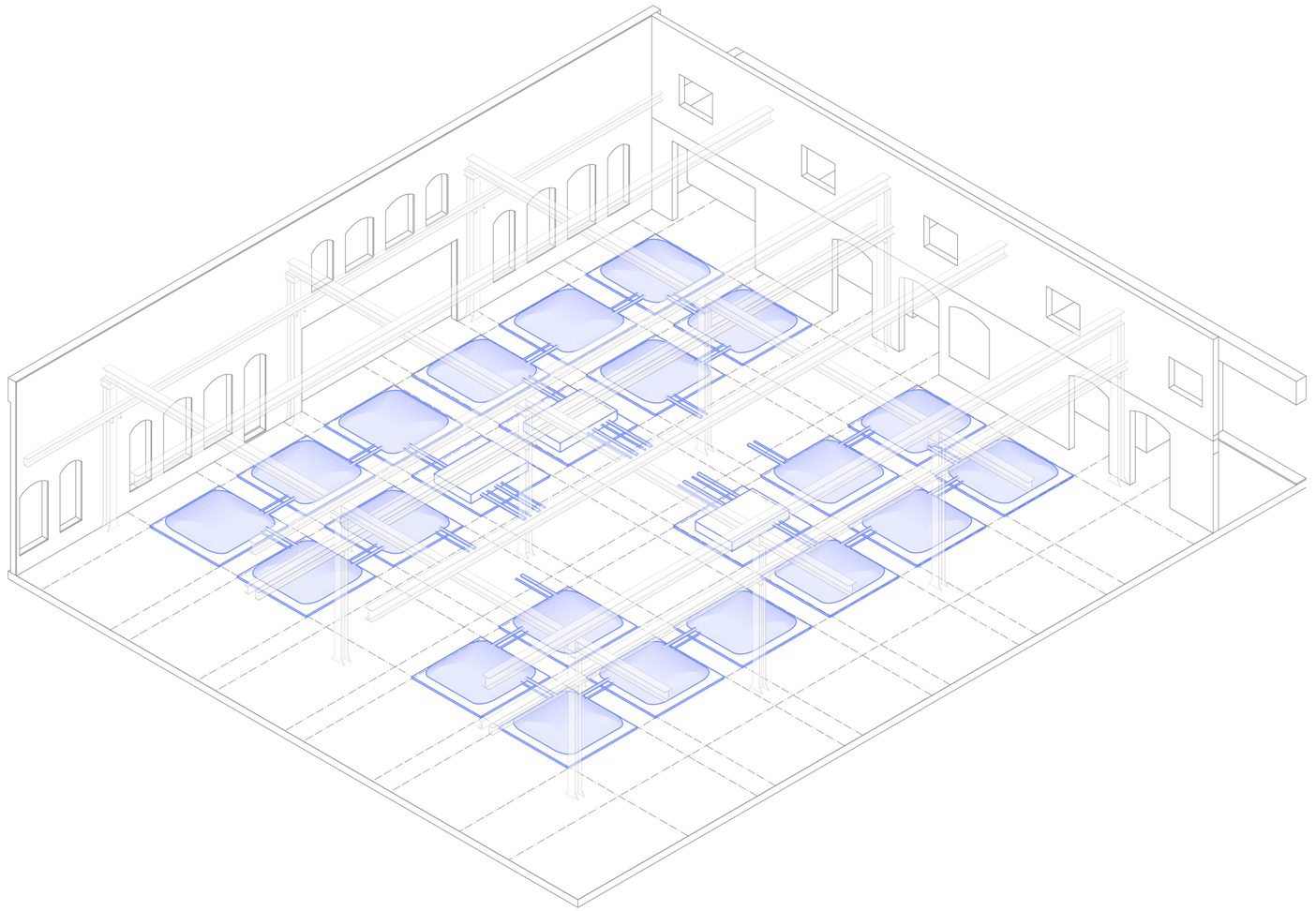
90 users = maximum density & quality of life

Implementation toolkit.
Grid

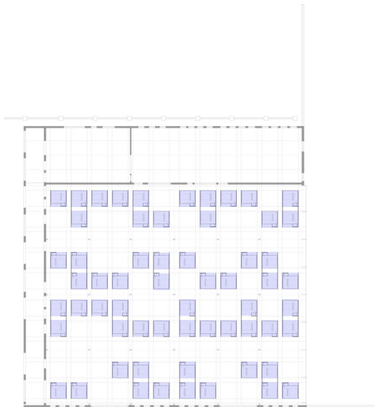


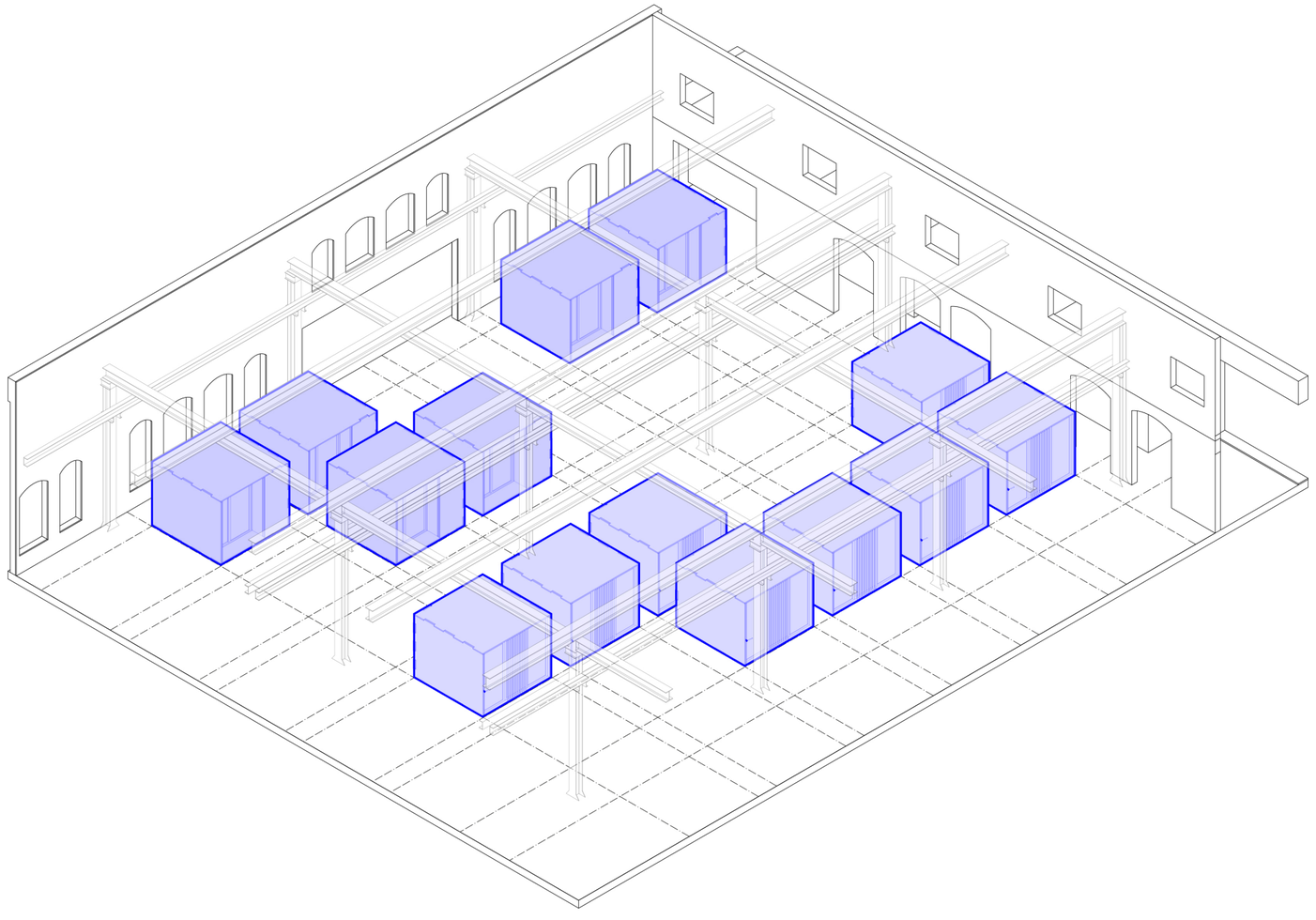


Implementation toolkit.
Water storage

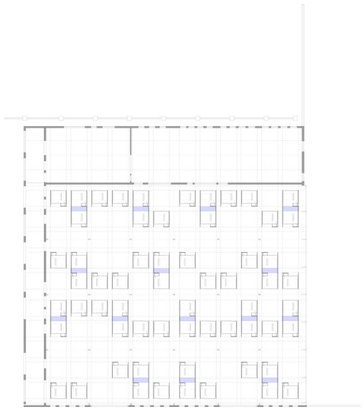


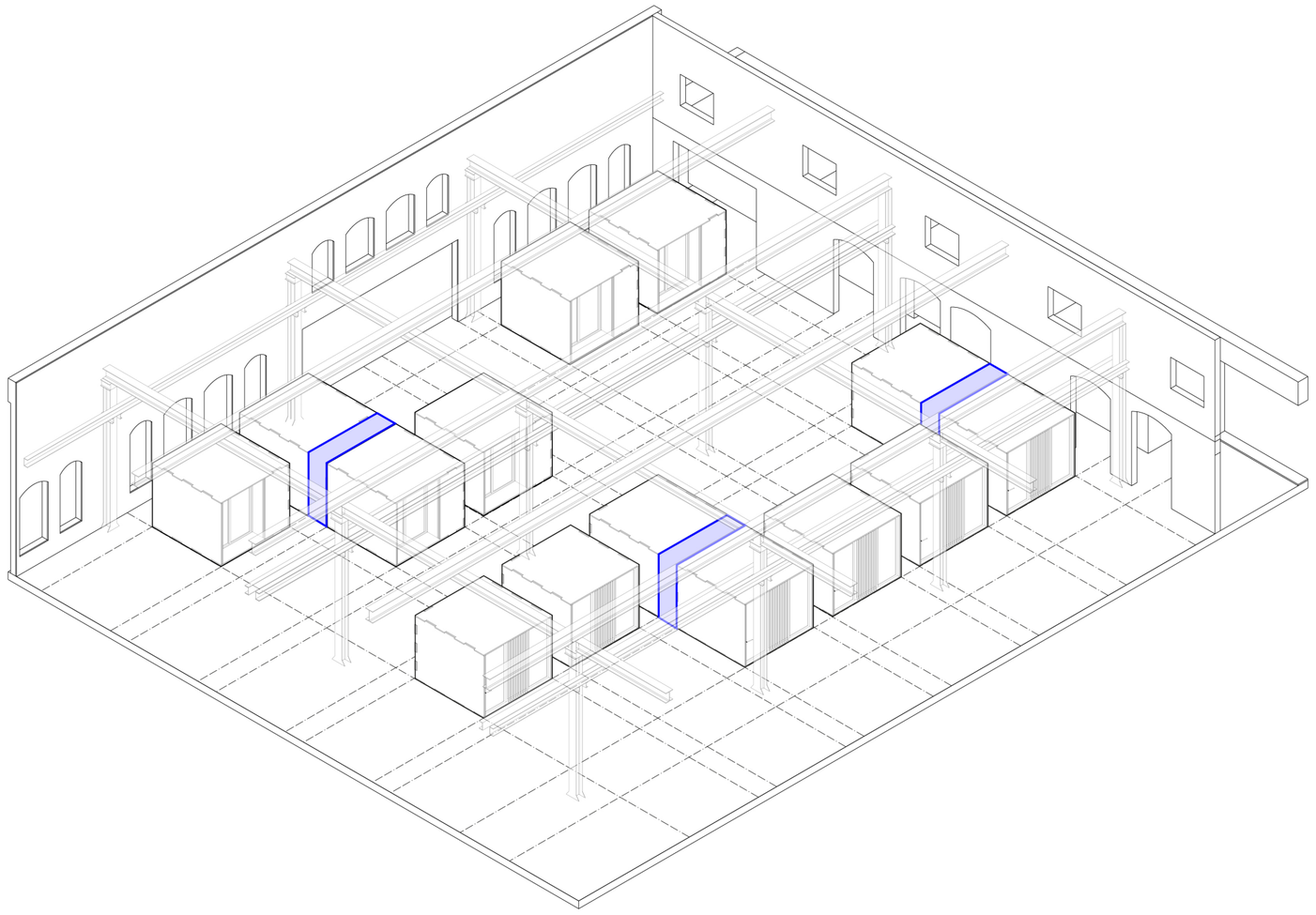
Implementation toolkit.
Dwellings



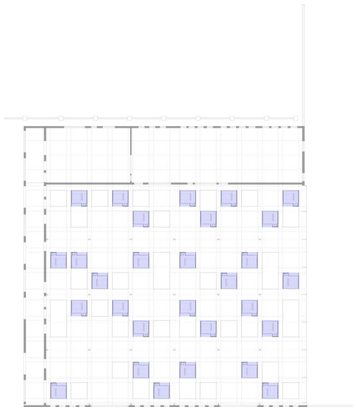


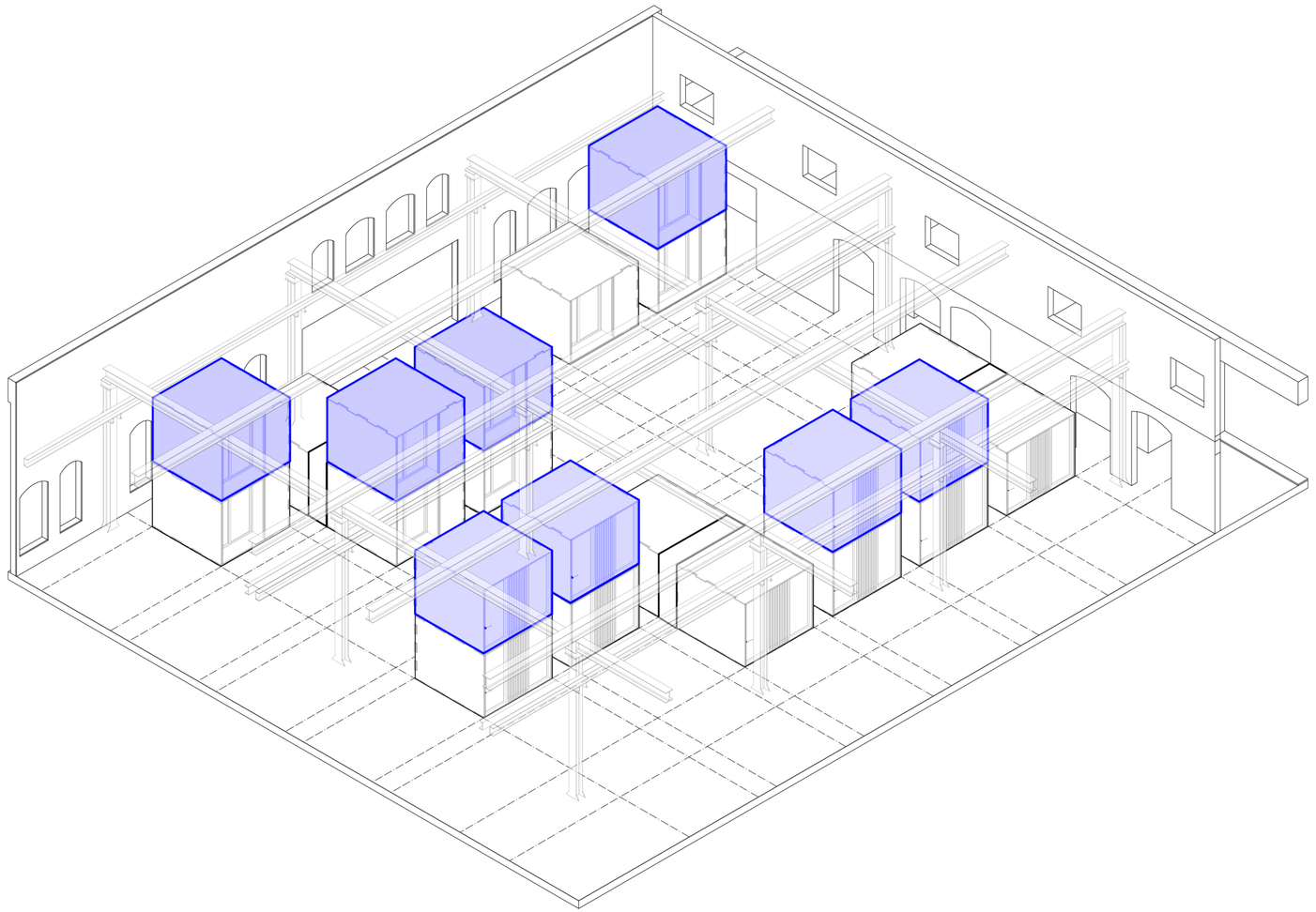
Implementation toolkit.
Connecting elements



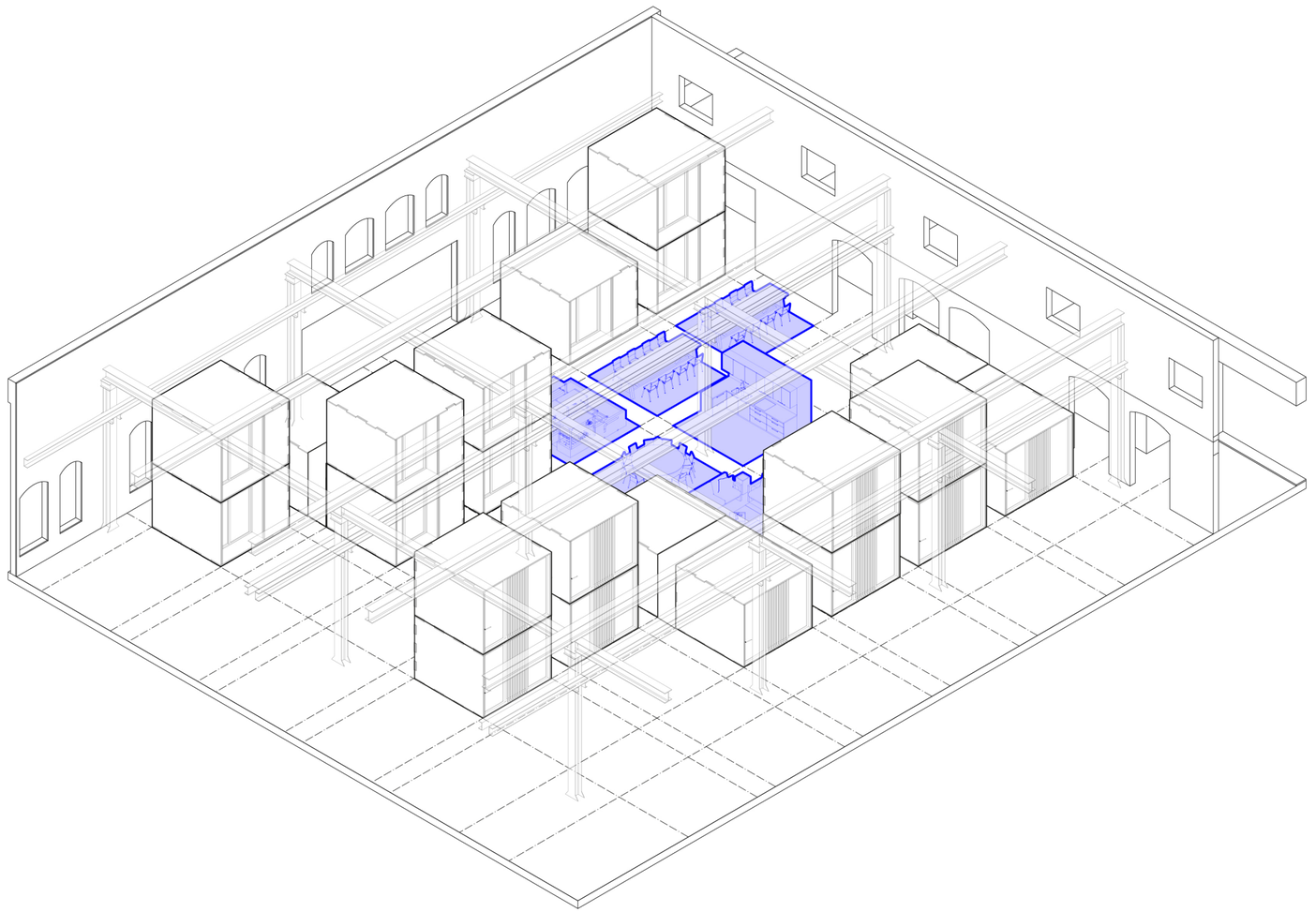


Implementation toolkit.
Stacked dwellings

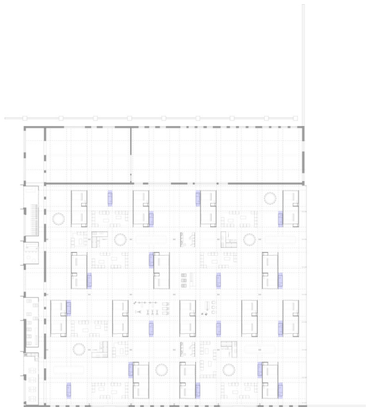


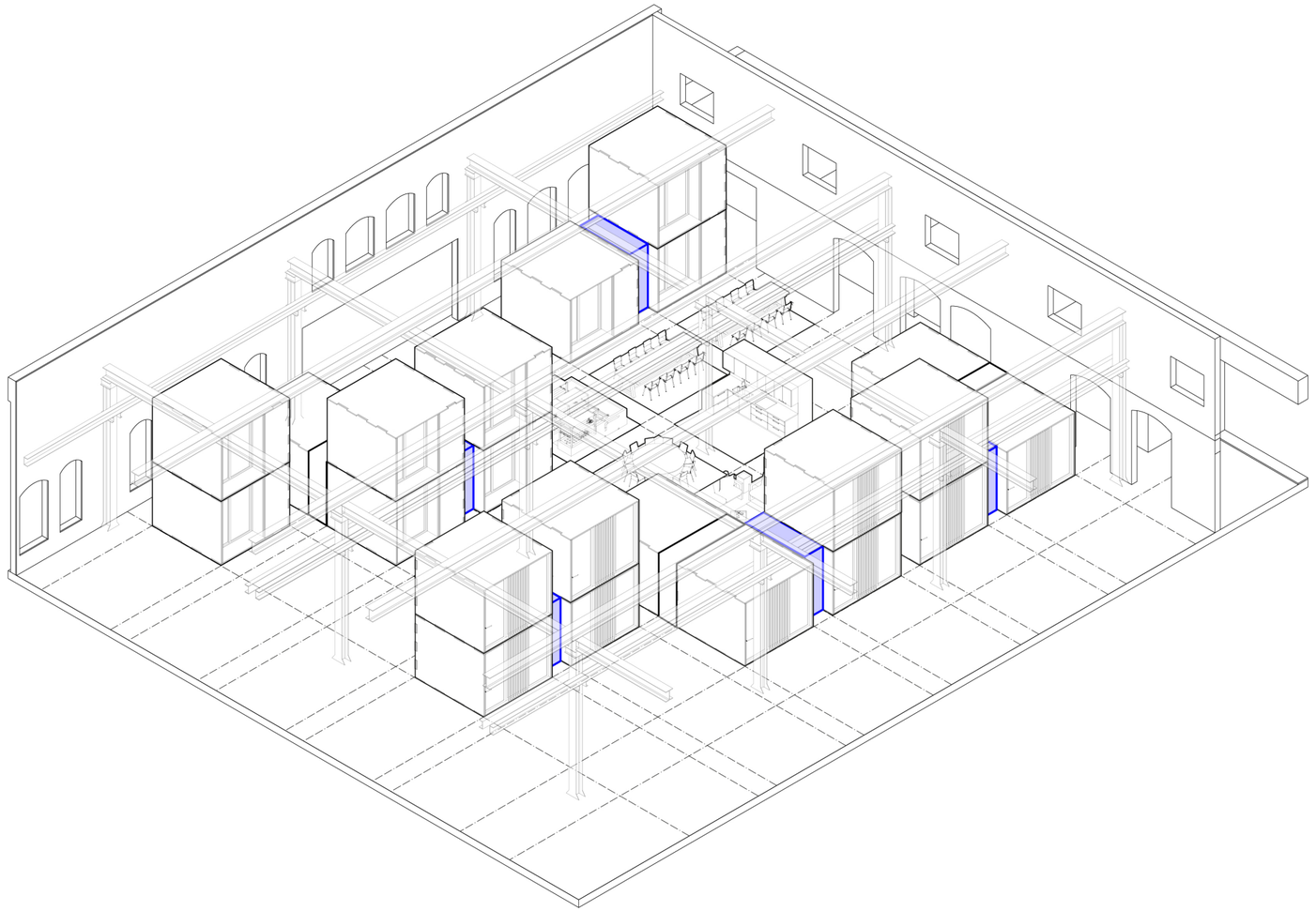


Implementation toolkit.
Shared facilities

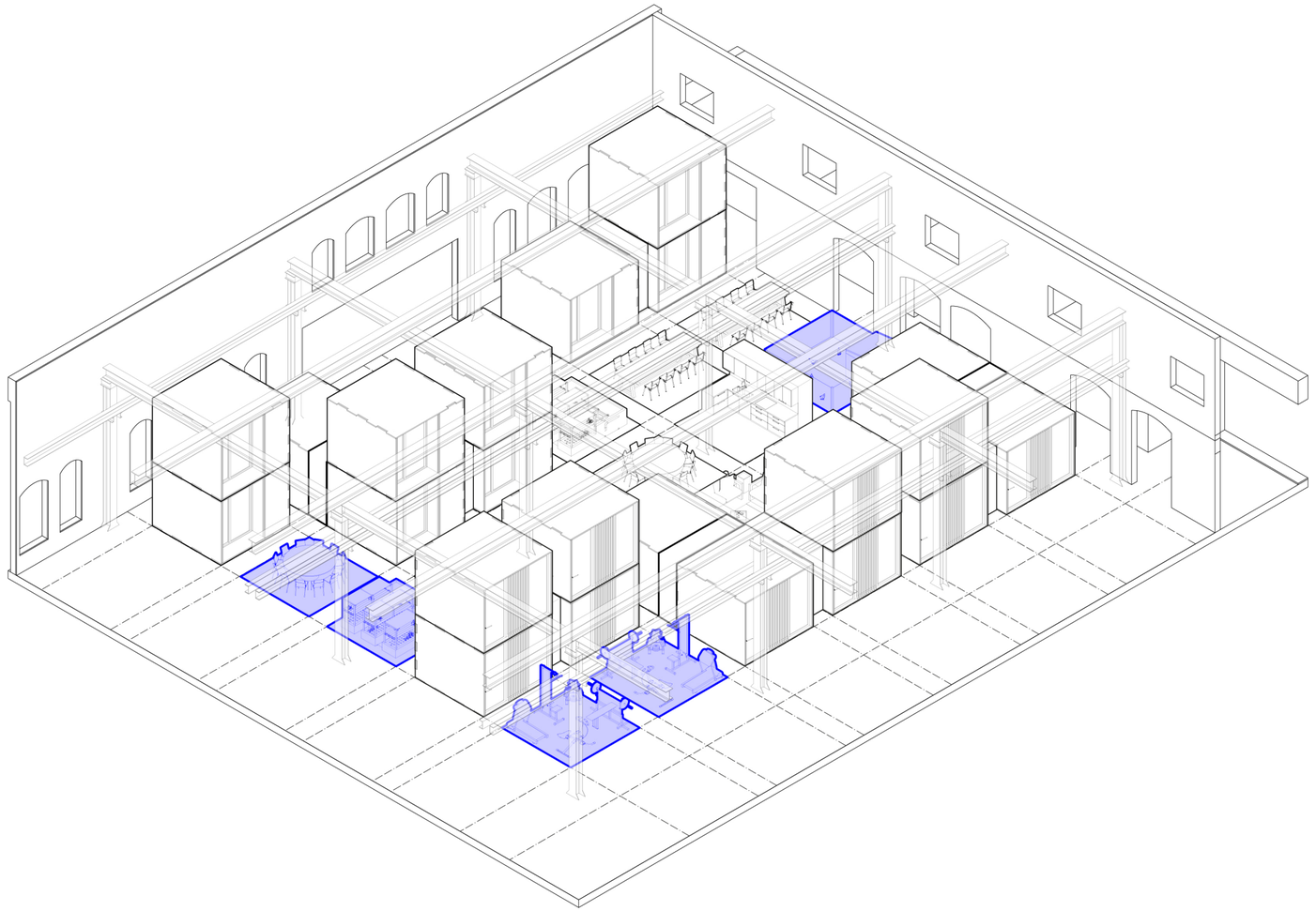


Implementation toolkit.
Bathrooms

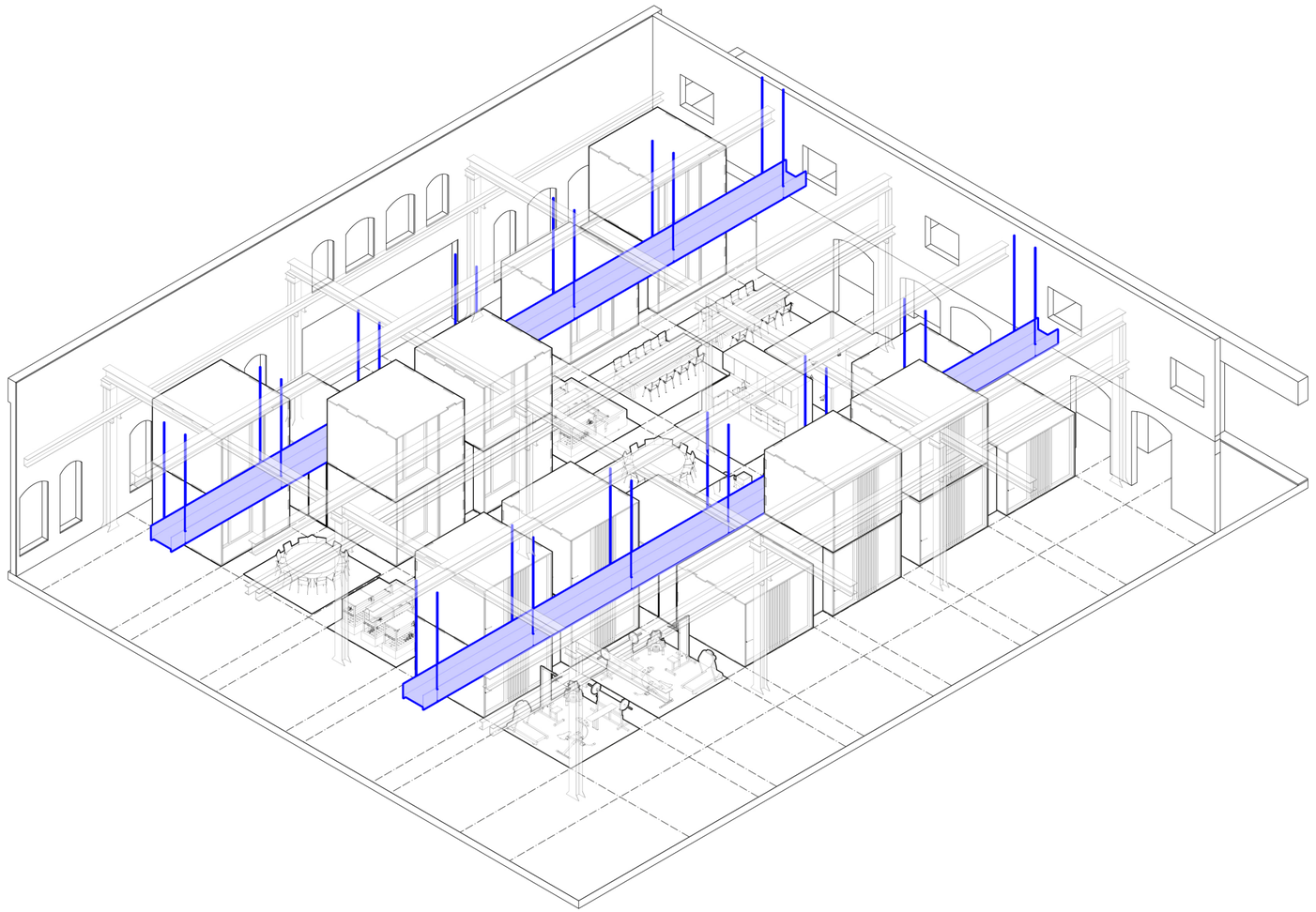




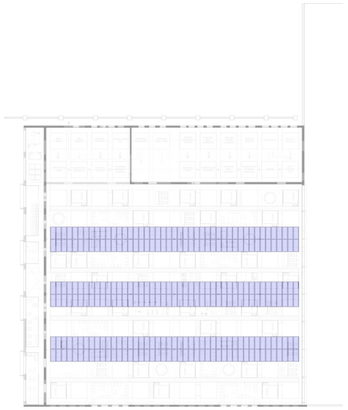
Implementation toolkit.
Elements self-sufficiency

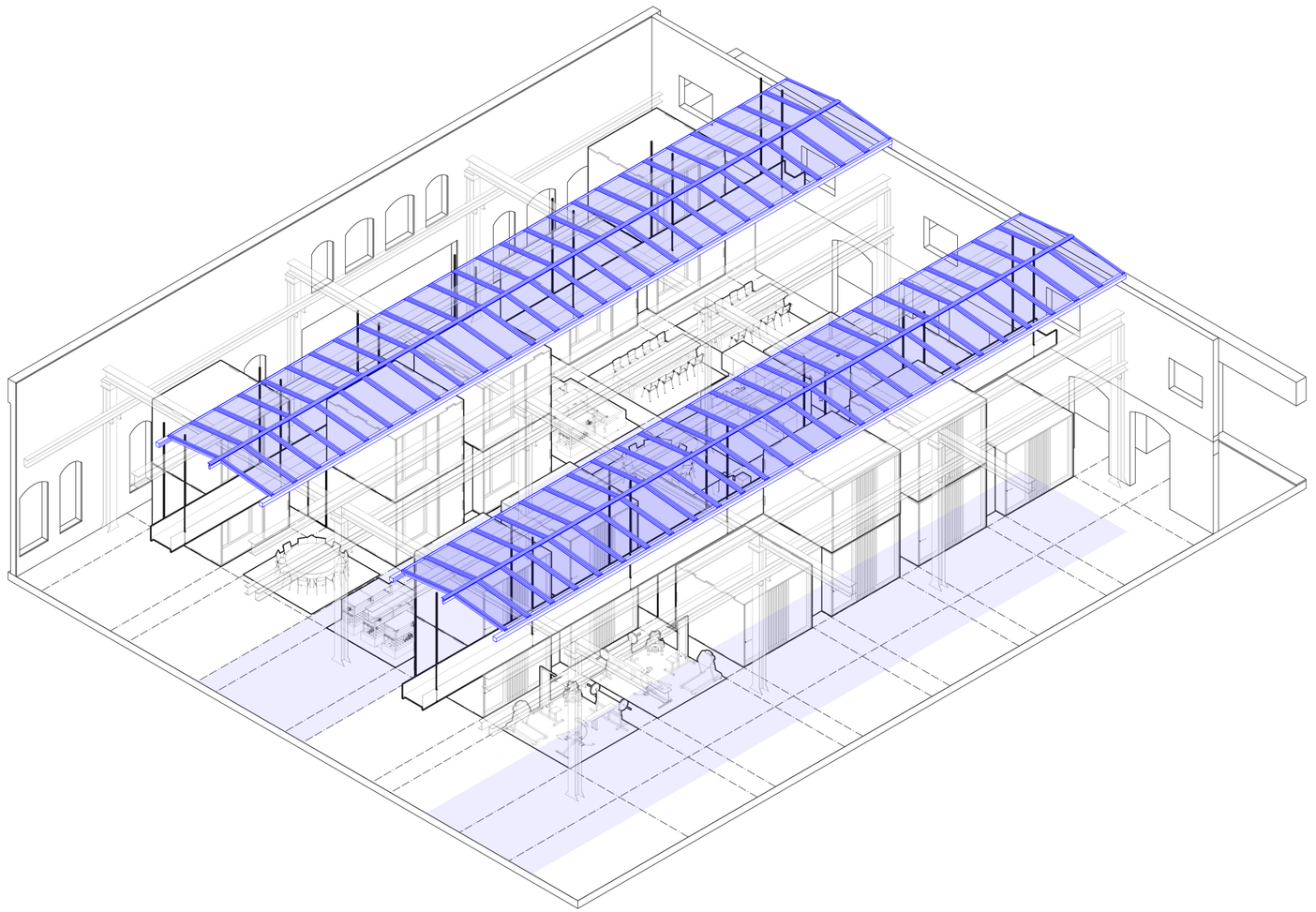


Implementation toolkit.
Bridges

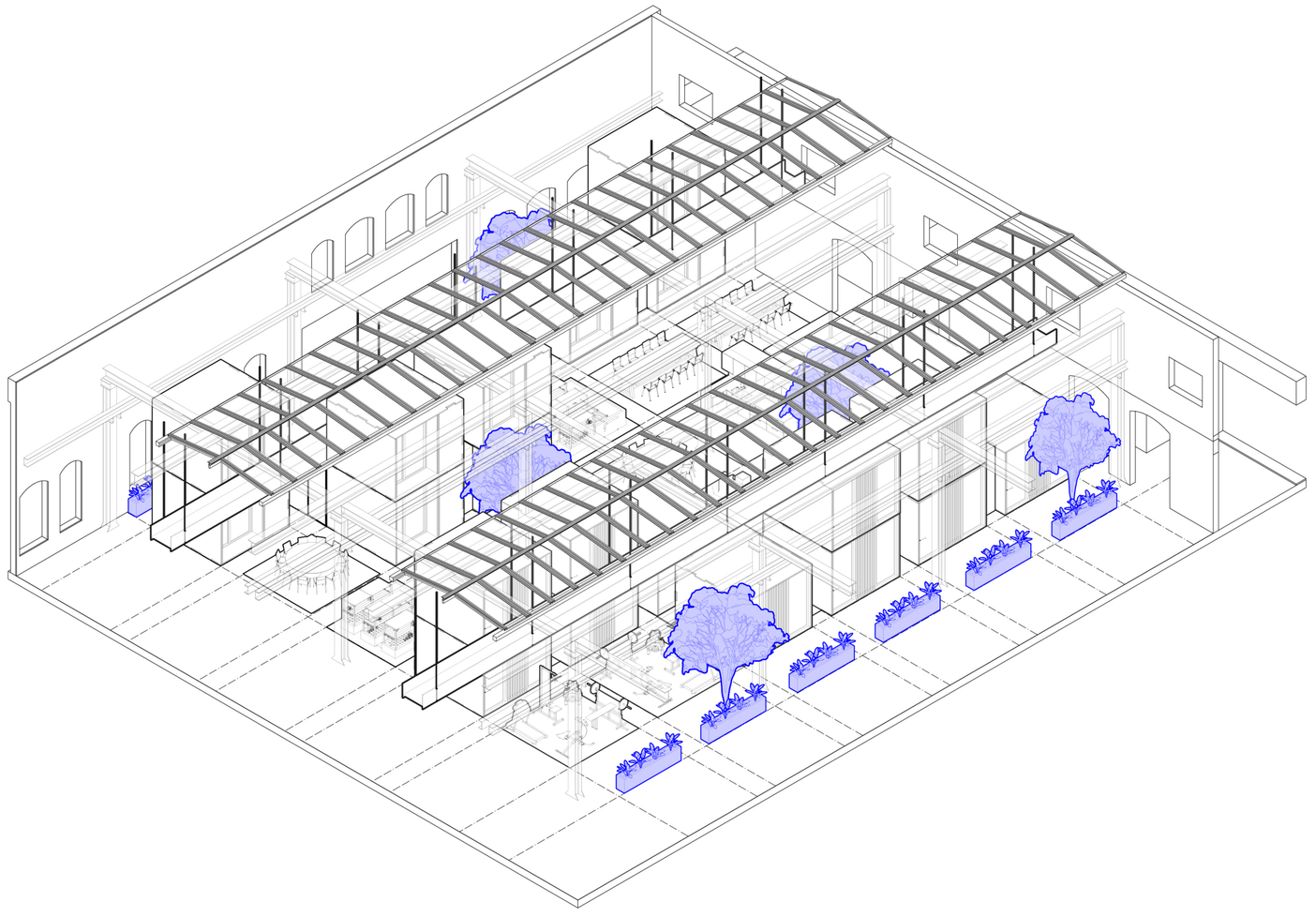


Implementation toolkit.
Atriums

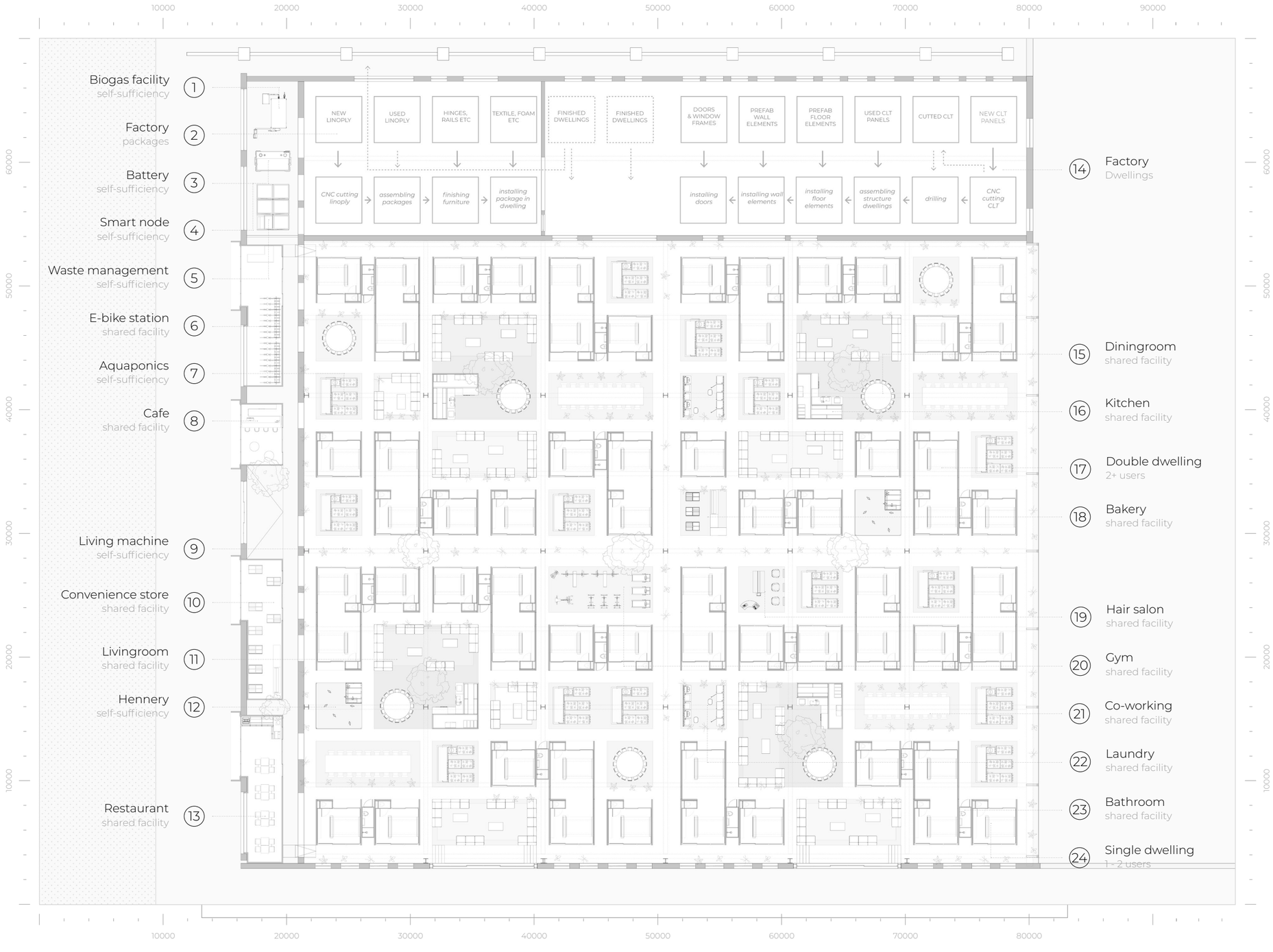




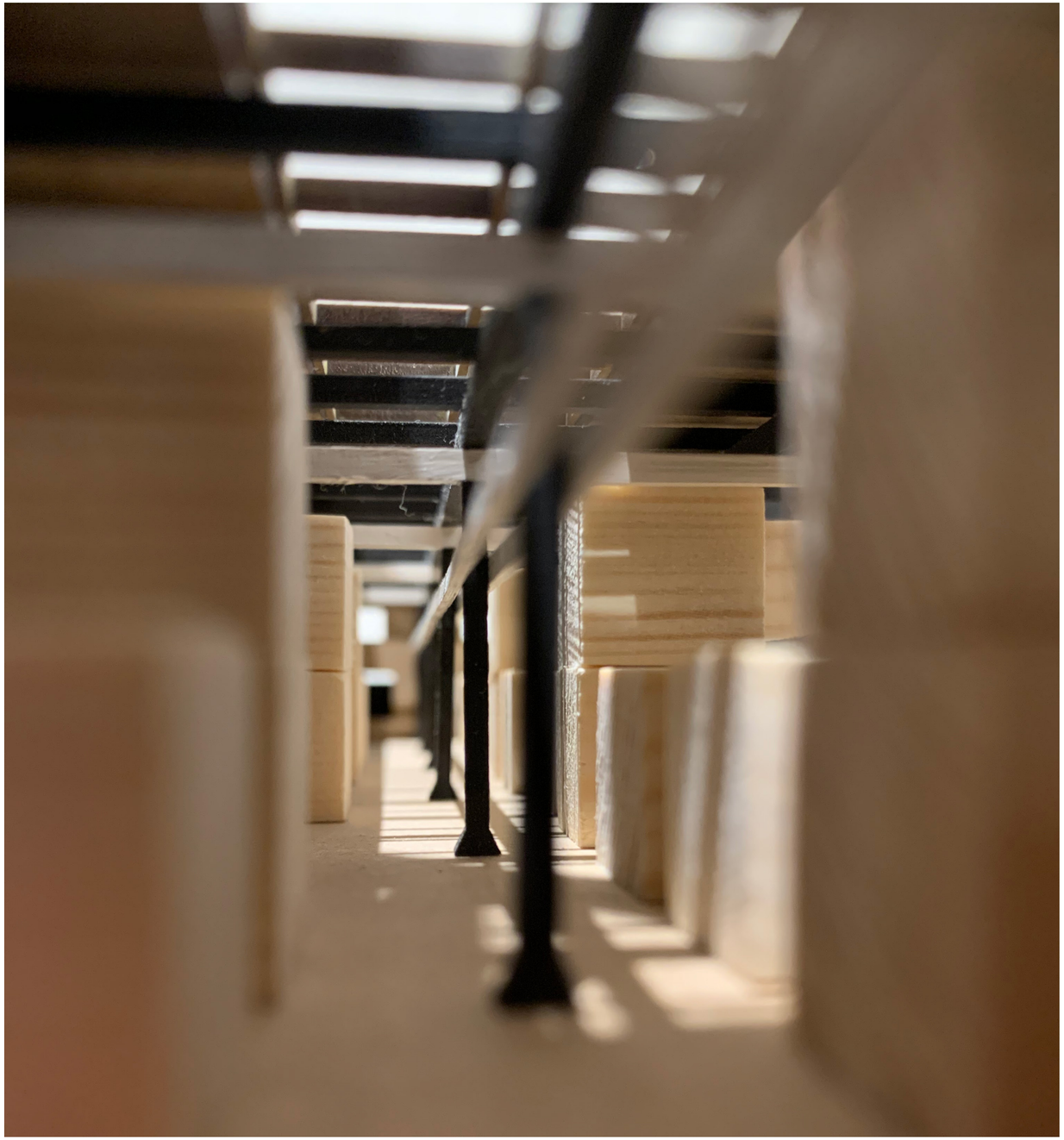
Implementation toolkit.
Living machine



Floor plan.

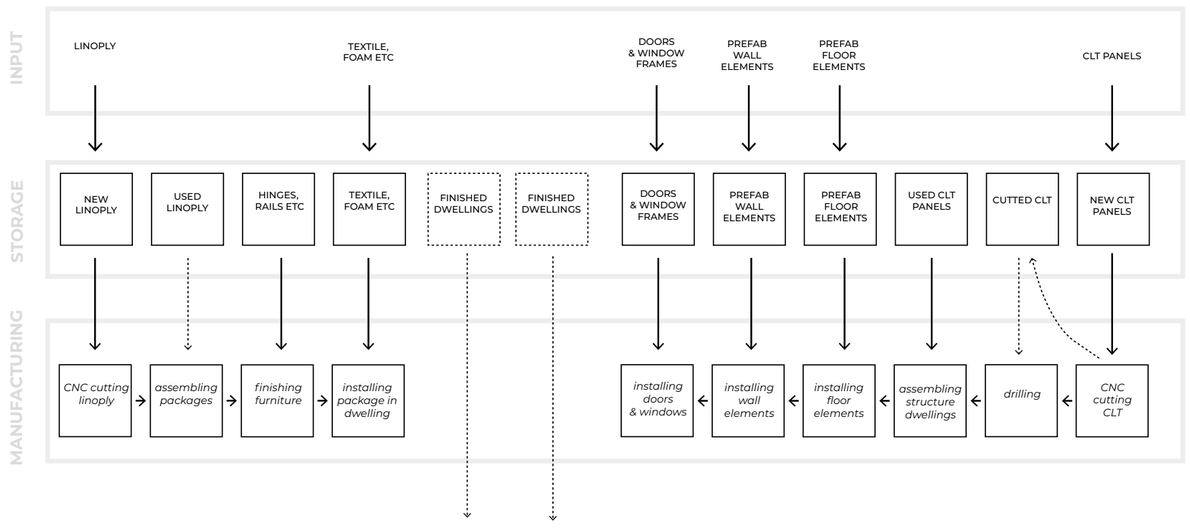

10000
20000
30000
40000
50000
60000
70000
80000
90000
60000
50000
40000
30000
20000
10000
NEW LINOPLY
USED LINOPLY
HINGES, RAILS ETC
TEXTILE, FOAM ETC
FINISHED DWELLINGS
FINISHED DWELLINGS
DOORS & WINDOW FRAMES
PREFAB WALL ELEMENTS
PREFAB FLOOR ELEMENTS
USED CLT PANELS
CUTTED CLT
NEW CLT PANELS
CNC cutting linoply
assembling packages
finishing furniture
installing package in dwelling
installing doors
installing wall elements
installing floor elements
assembling structure dwellings
drilling
CNC cutting CLT
1 Biogas facility self-sufficiency
2 Factory packages
3 Battery self-sufficiency
4 Smart node self-sufficiency
5 Waste management self-sufficiency
6 E-bike station shared facility
7 Aquaponics self-sufficiency
8 Cafe shared facility
9 Living machine self-sufficiency
10 Convenience store shared facility
11 Livingroom shared facility
12 Hennery self-sufficiency
13 Restaurant shared facility
14 Factory Dwellings
15 Diningroom shared facility
16 Kitchen shared facility
17 Double dwelling 2+ users
18 Bakery shared facility
19 Hair salon shared facility
20 Gym shared facility
21 Co-working shared facility
22 Laundry shared facility
23 Bathroom shared facility
24 Single dwelling 1 - 2 users

Main road.

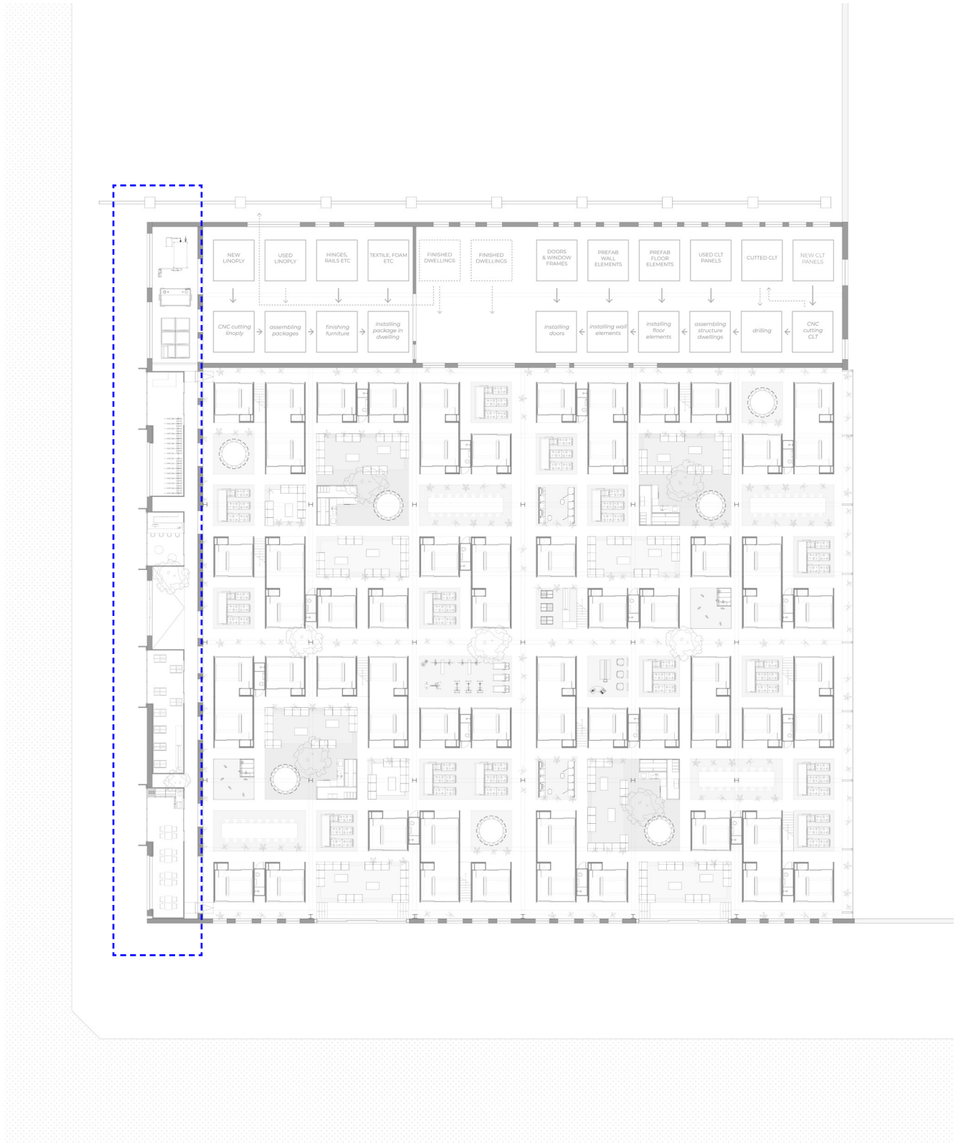


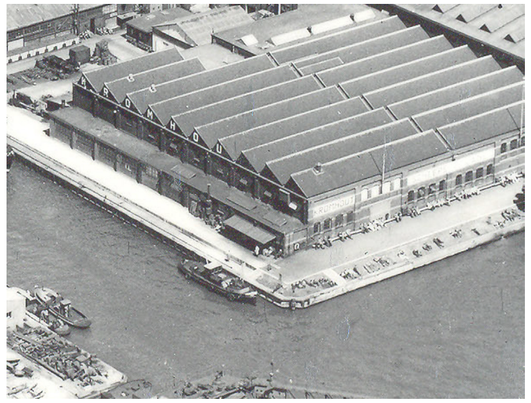
Factory.

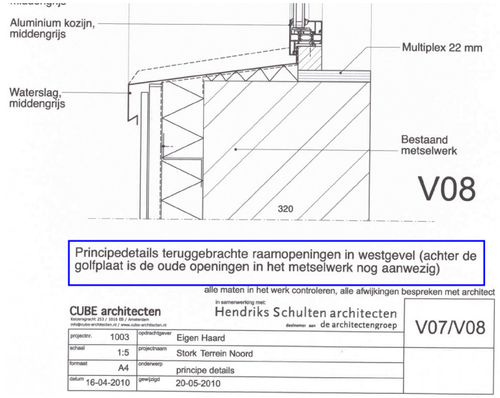

NEW LINOPLY
USED LINOPLY
HINGES, RAILS ETC
TEXTILE, FOAM ETC
FINISHED DWELLINGS
FINISHED DWELLINGS
DOORS & WINDOW FRAMES
PREFAB WALL ELEMENTS
PREFAB FLOOR ELEMENTS
USED CLT PANELS
CUTTED CLT
NEW CLT PANELS
CNC cutting linoply
assembling packages
finishing furniture
installing package in dwelling
installing doors
installing wall elements
installing floor elements
assembling structure dwellings
drilling
CNC cutting CLT


INPUT
STORAGE
MANUFACTURING
LINOPLY
TEXTILE, FOAM ETC
DOORS & WINDOW FRAMES
PREFAB WALL ELEMENTS
PREFAB FLOOR ELEMENTS
CLT PANELS
NEW LINOPLY
USED LINOPLY
HINGES, RAILS ETC
TEXTILE, FOAM ETC
FINISHED DWELLINGS
FINISHED DWELLINGS
DOORS & WINDOW FRAMES
PREFAB WALL ELEMENTS
PREFAB FLOOR ELEMENTS
USED CLT PANELS
CUTTED CLT
NEW CLT PANELS
CNC cutting linoply
assembling packages
finishing furniture
installing package in dwelling
installing doors & windows
installing wall elements
installing floor elements
assembling structure dwellings
drilling
CNC cutting CLT

West facade.







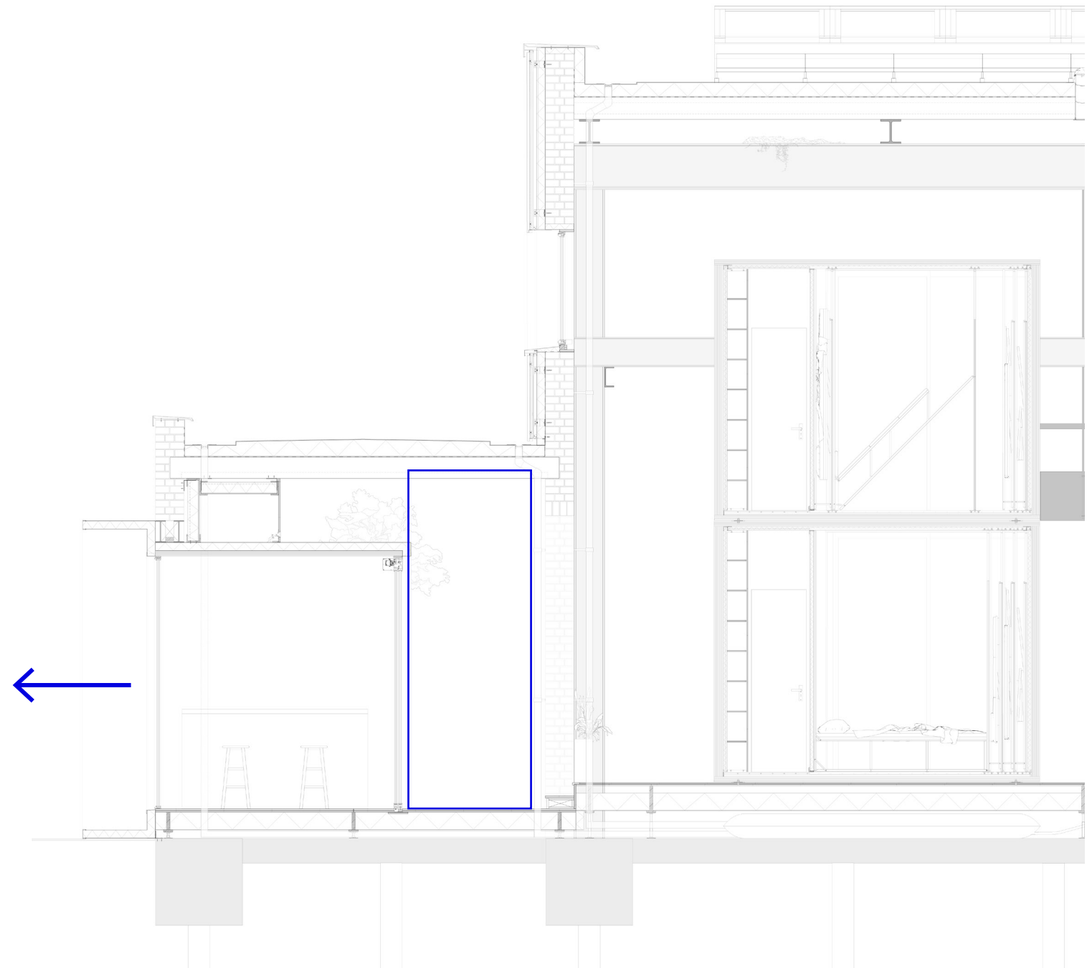
Principedetails teruggebrachte raamopeningen in westgevel (achter de golfplaat is de oude openingen in het metselwerk nog aanwezig)

alle maten in het werk controleren, alle afwijkingen bespreken met architect

CUBE architecten (Keizersgracht 253 / 1016 DB / Amsterdam, info@cube-architecten.nl / www.cube-architecten.nl)	in samenwerking met Hendriks Schulten architecten, deelnemer aan de architectengroep	V07/V08
projectnr. 1003	opdrachtgever Eigen Haard	
schaal 1:5	projectnaam Stork Terrein Noord	
formaat A4	onderwerp principe details	
datum 16-04-2010	gewijzigd 20-05-2010	

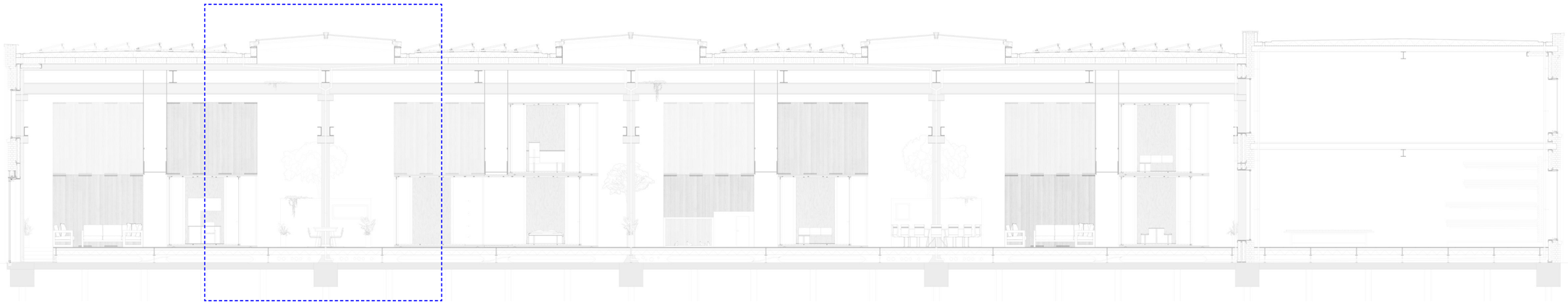
West facade.


NEW LINOPLY
USED LINOPLY
HINGES, RAILS ETC
TEXTILE, FOAM ETC
FINISHED DWELLINGS
FINISHED DWELLINGS
DOORS & WINDOW FRAMES
PREFAB WALL ELEMENTS
PREFAB FLOOR ELEMENTS
USED CLT PANELS
CUTTED CLT
NEW CLT PANELS
CNC cutting linoply
assembling packages
finishing furniture
installing package in dwelling
installing doors
installing wall elements
installing floor elements
assembling structure dwellings
drilling
CNC cutting CLT

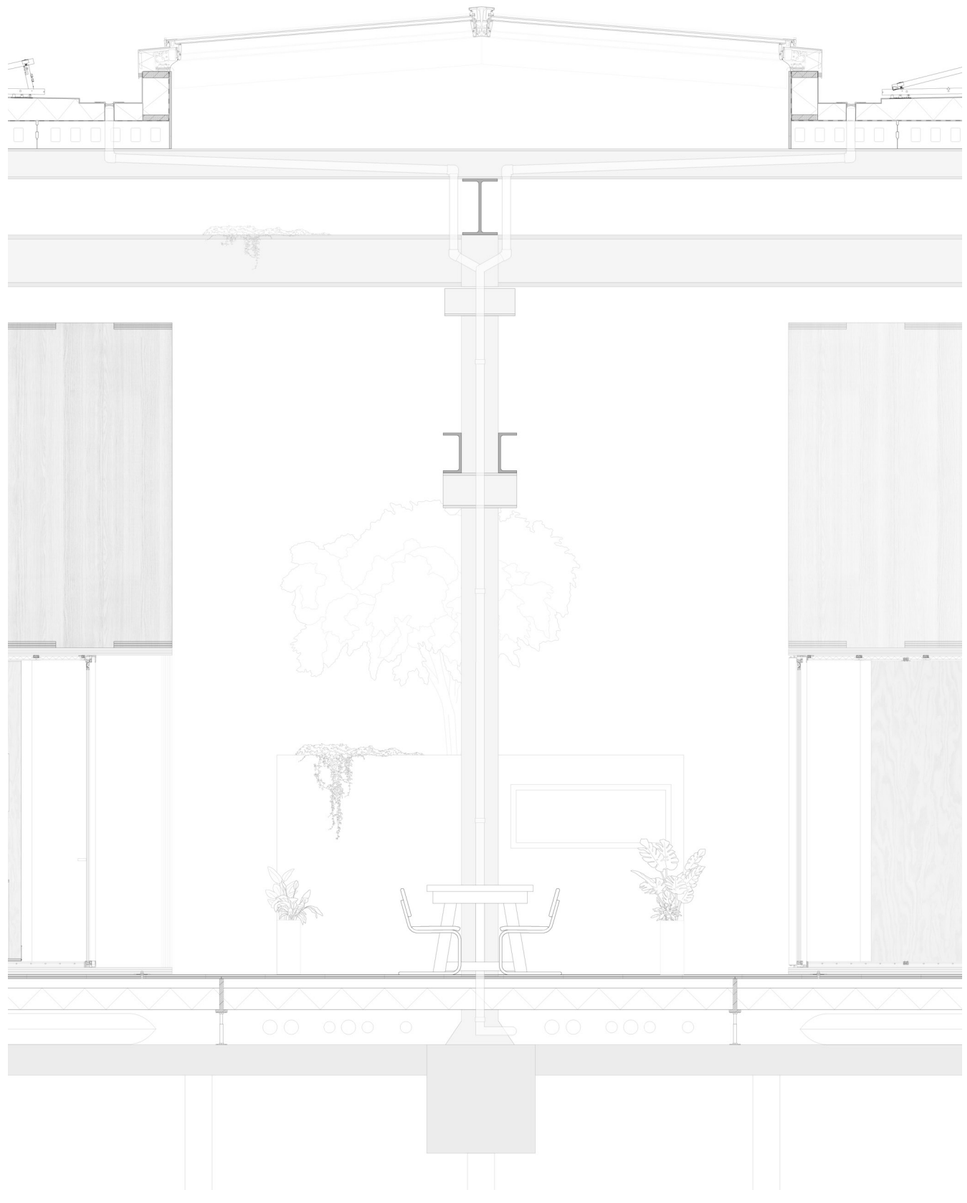


West facade.

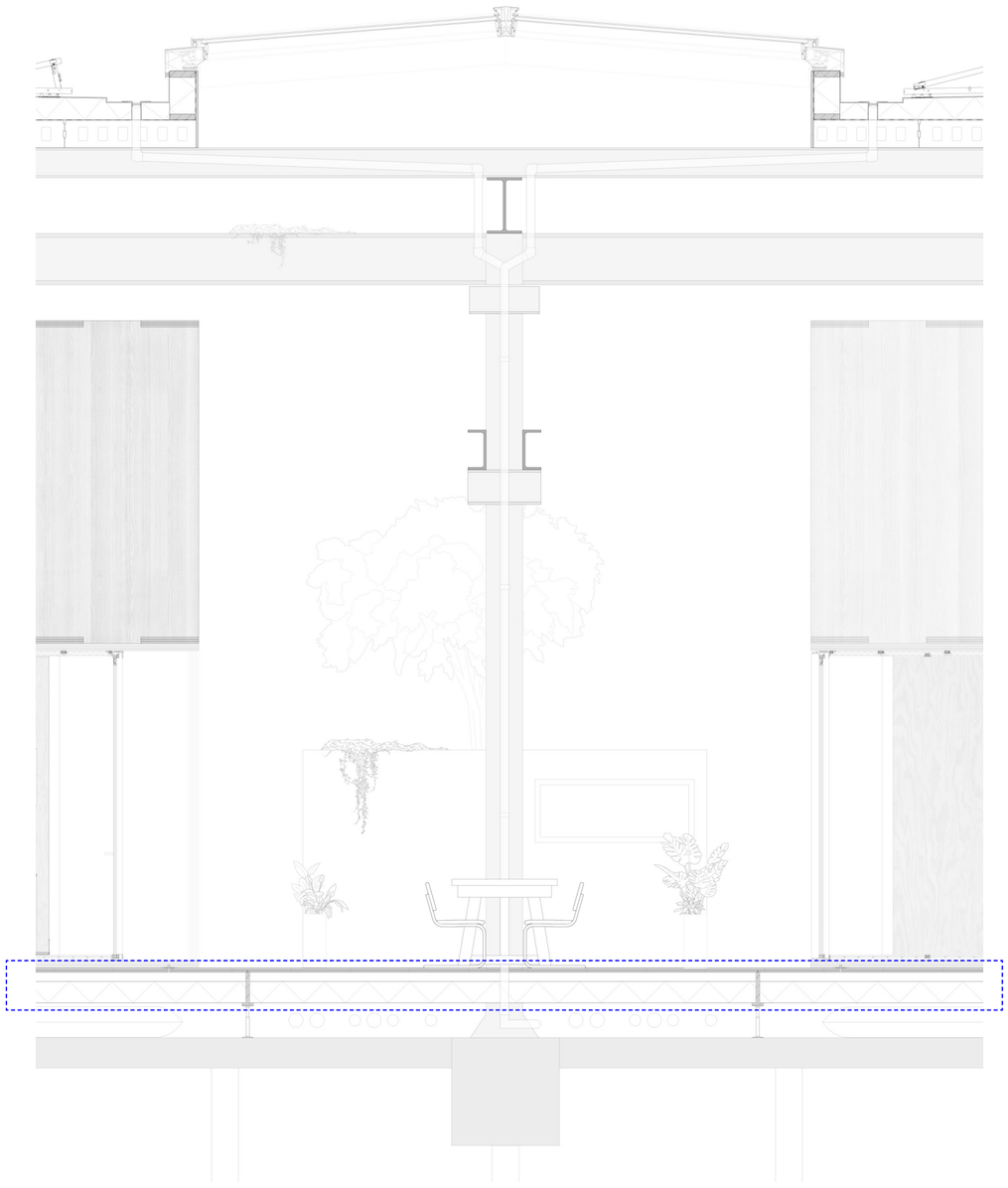
Section 1.200



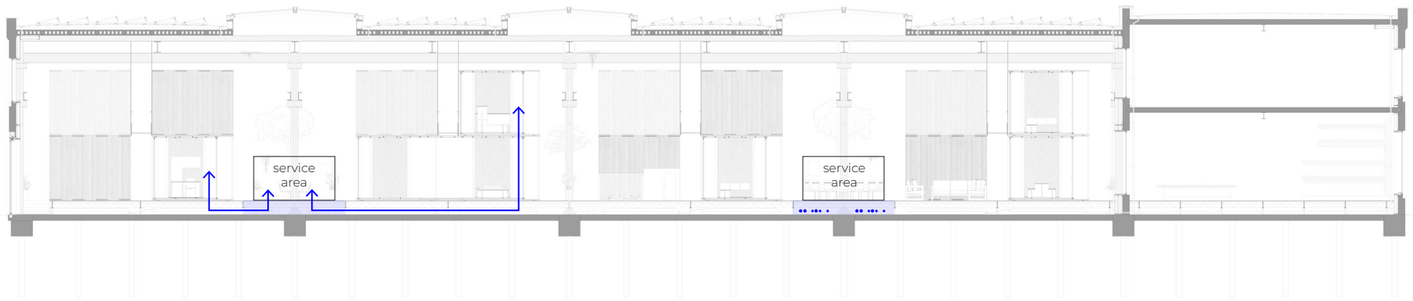
Section 1.50



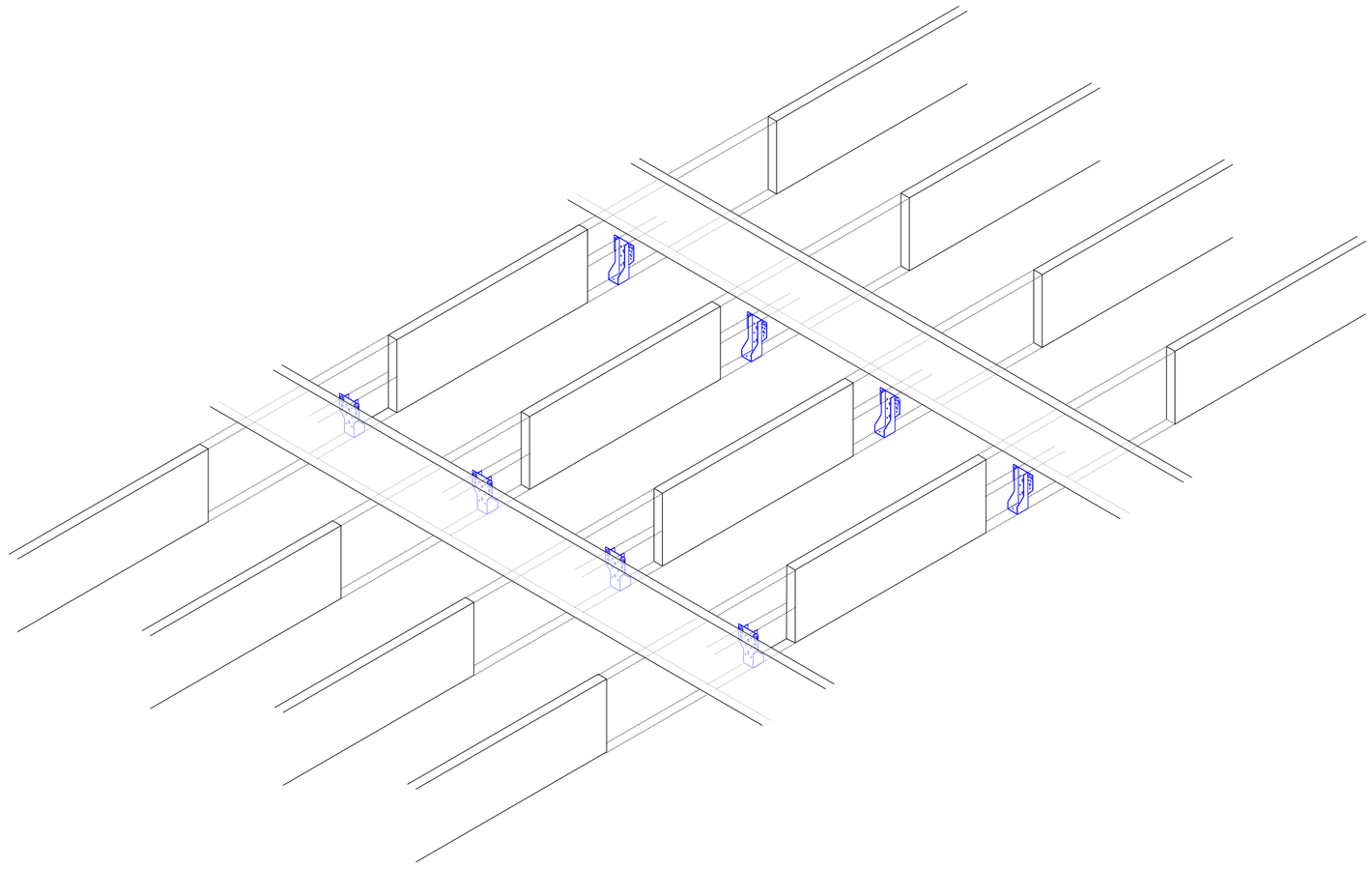
Raised floor.



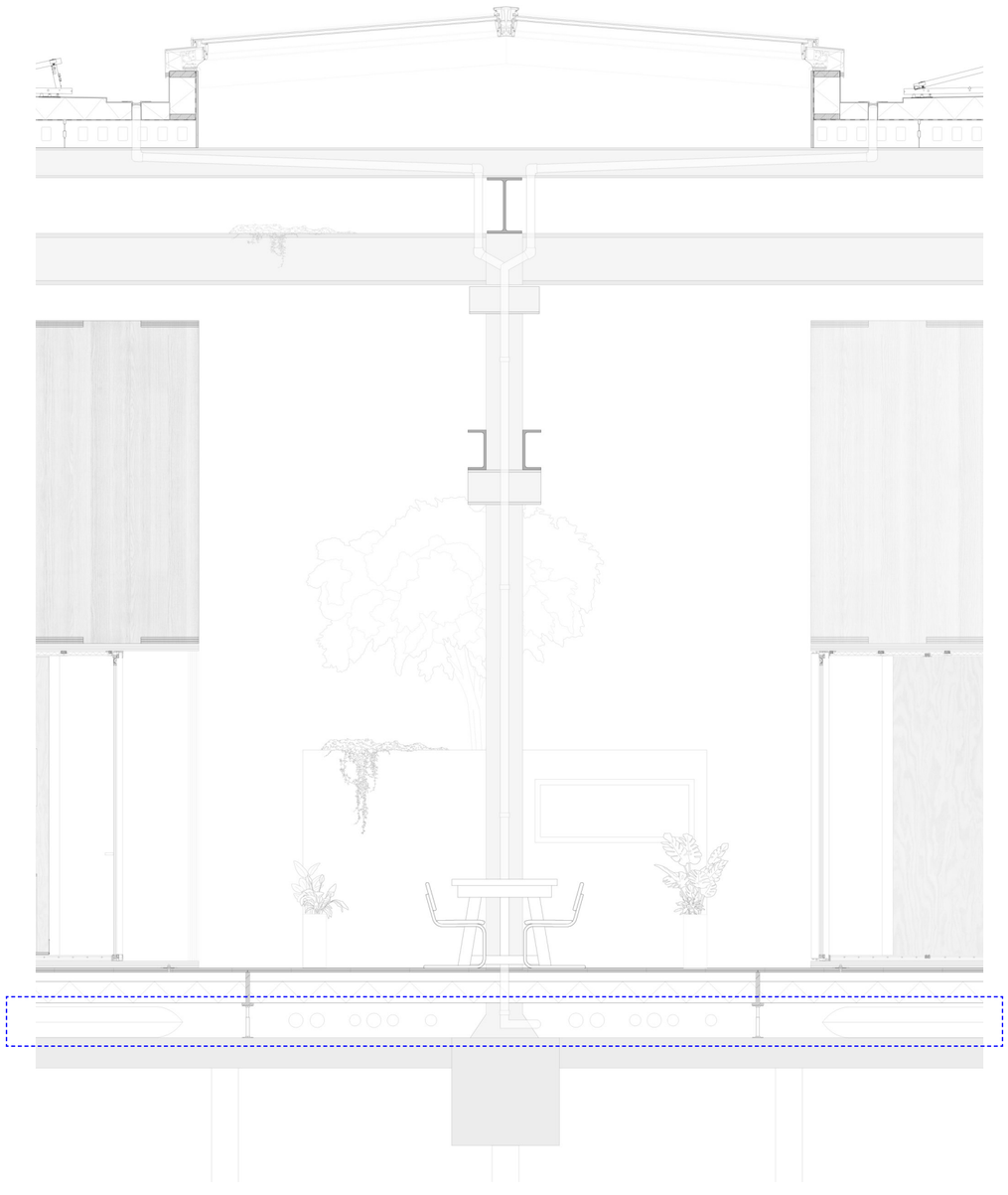
Raised floor.



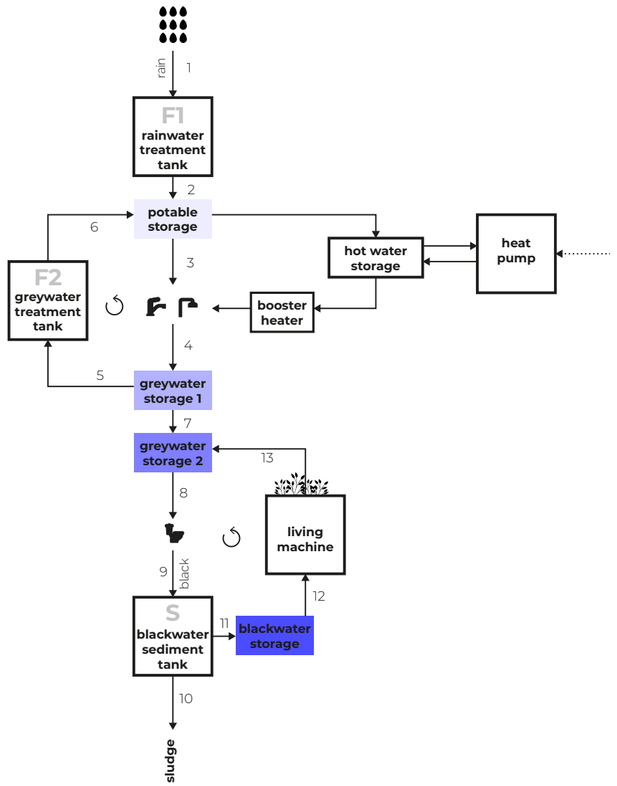
Raised floor.

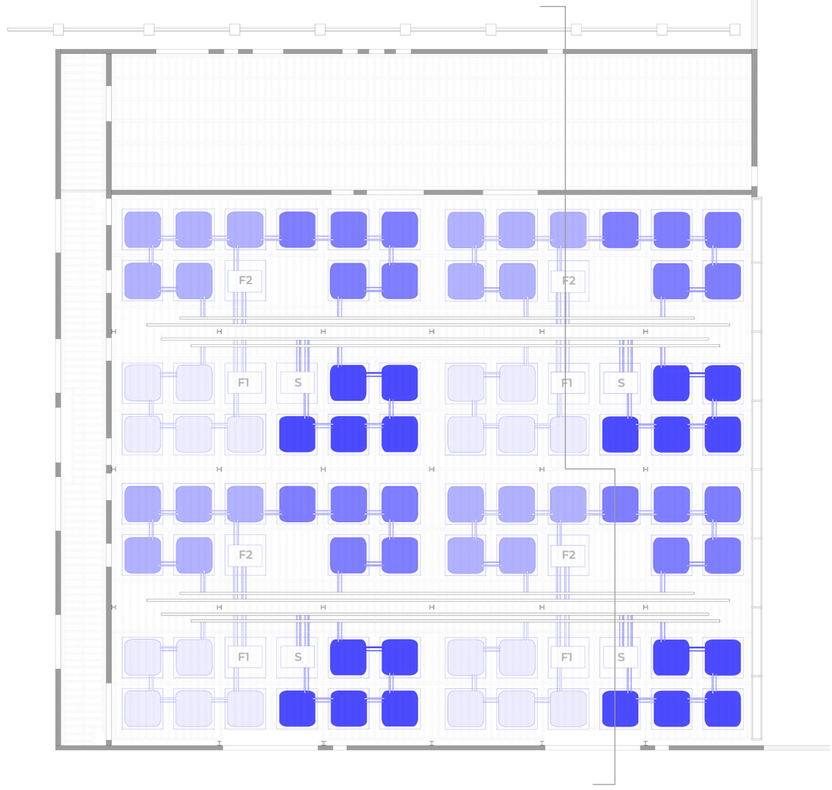


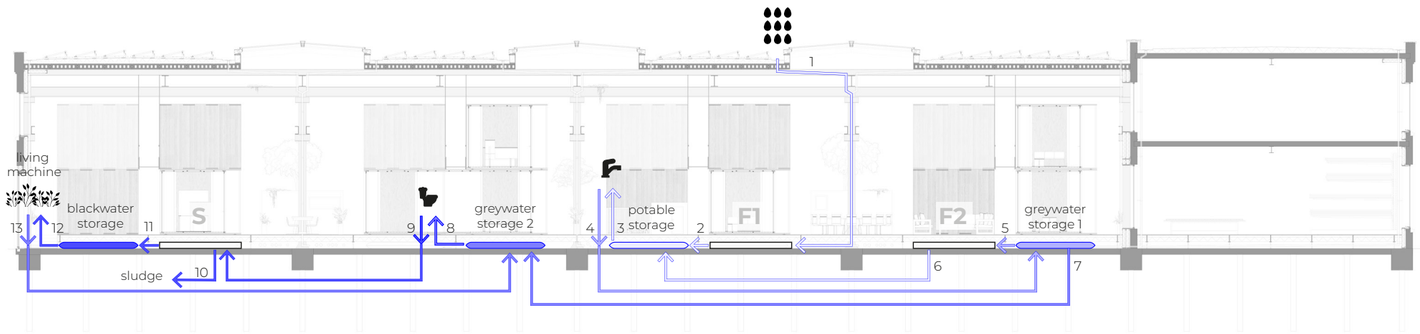
Water storage.

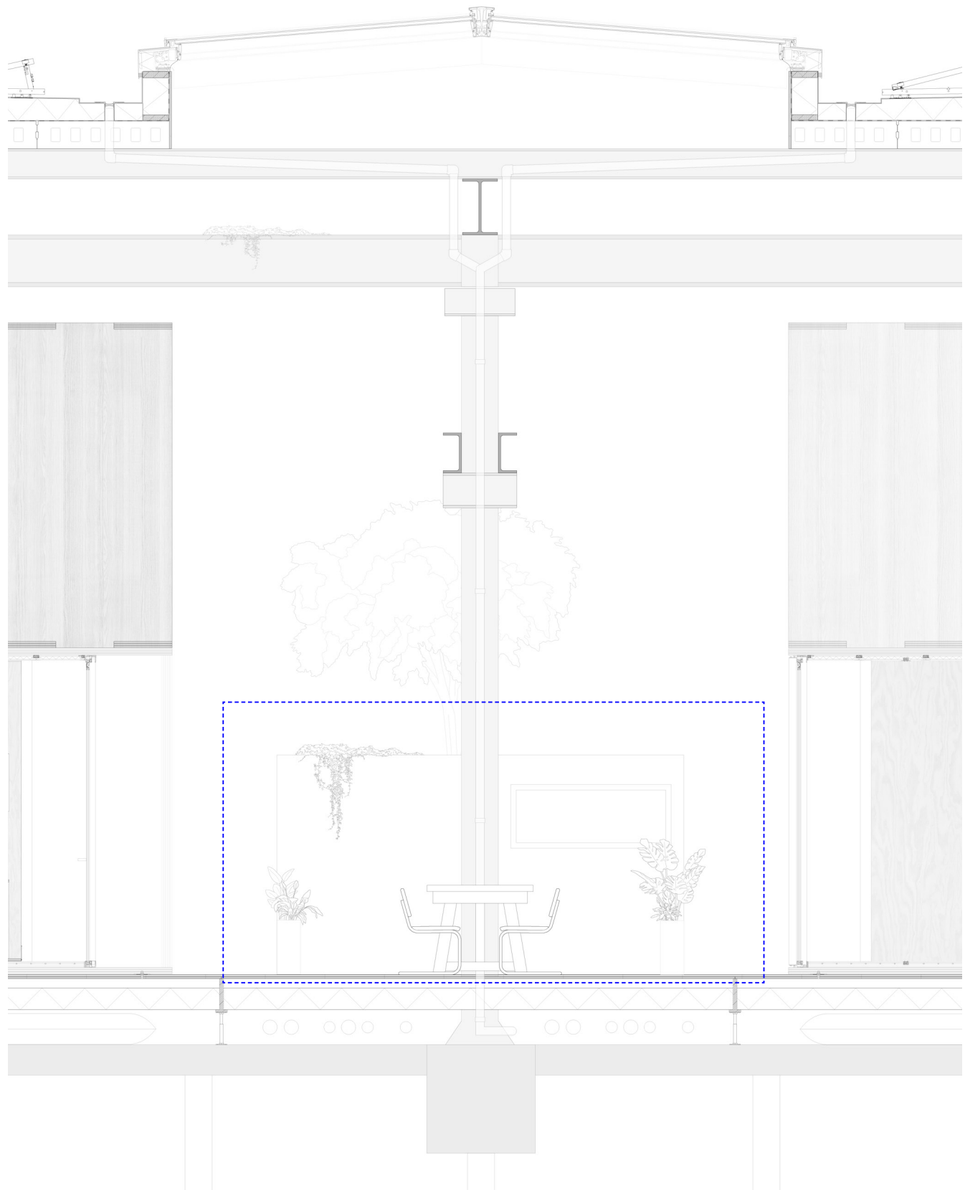


Water storage.



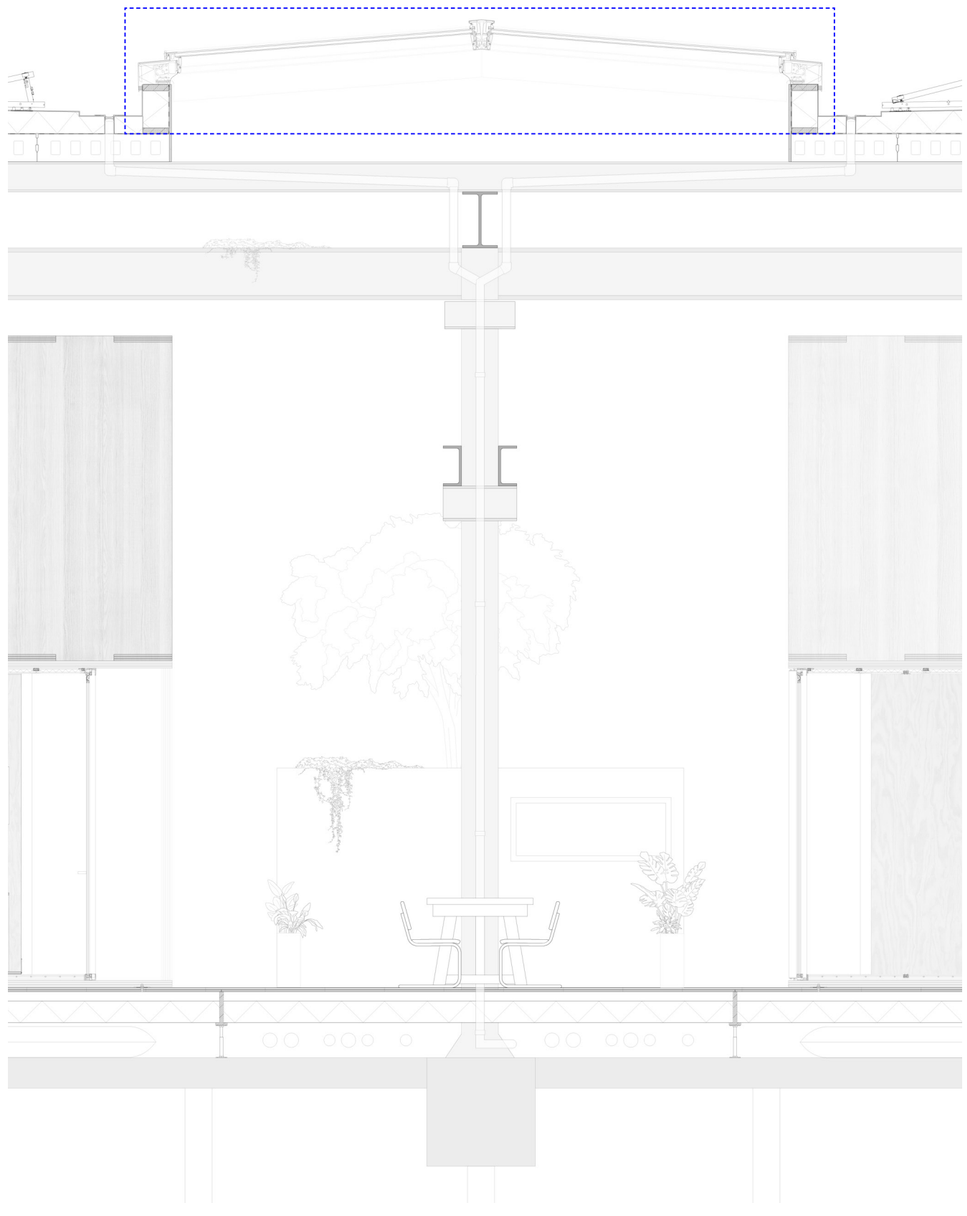




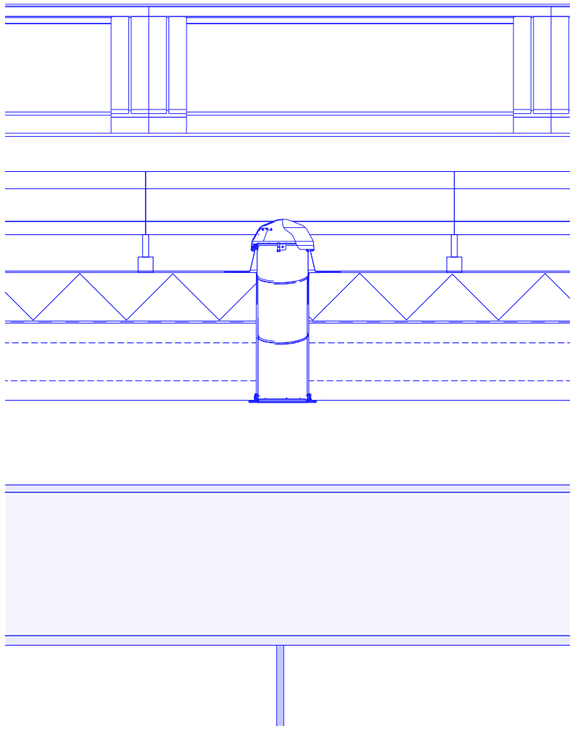


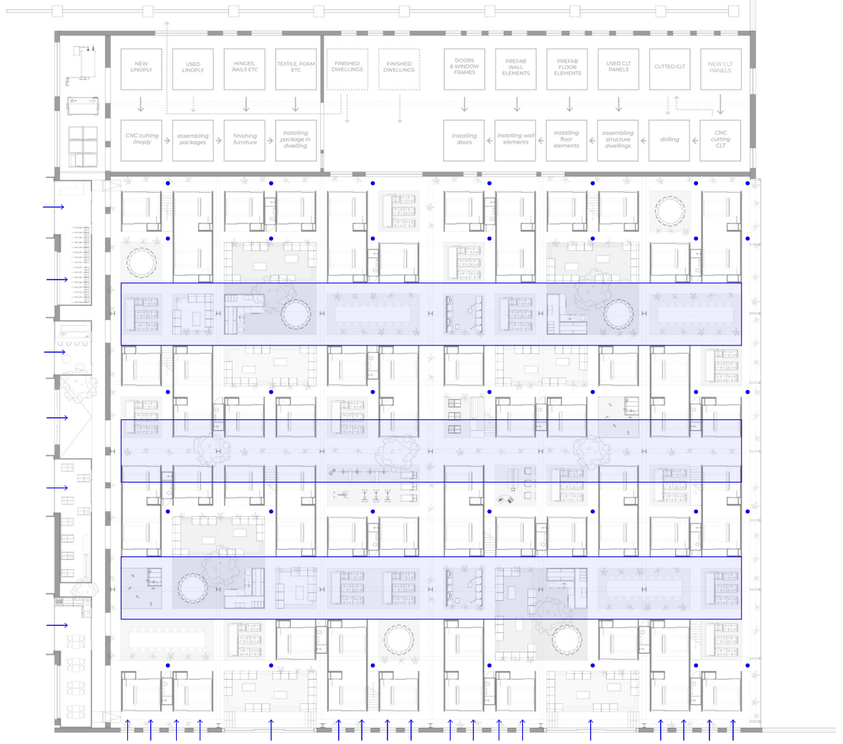
Living machine.

Daylight.



Daylight.




NEW LINOPLY
USED LINOPLY
HINGES, RAILS ETC
TEXTILE, FOAM ETC
FINISHED DWELLINGS
FINISHED DWELLINGS
DOORS & WINDOW FRAMES
PREFAB WALL ELEMENTS
PREFAB FLOOR ELEMENTS
USED CLT PANELS
CUTTED CLT
NEW CLT PANELS
CNC cutting linoply
assembling packages
finishing furniture
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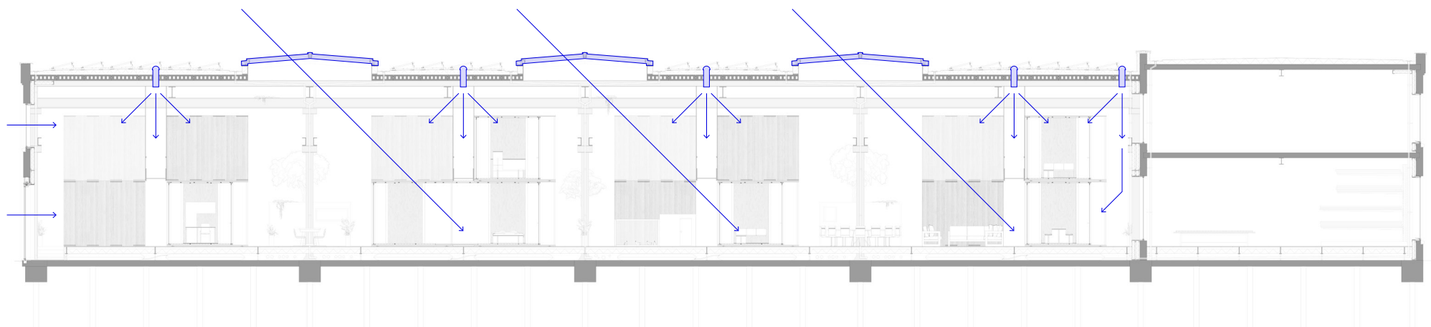
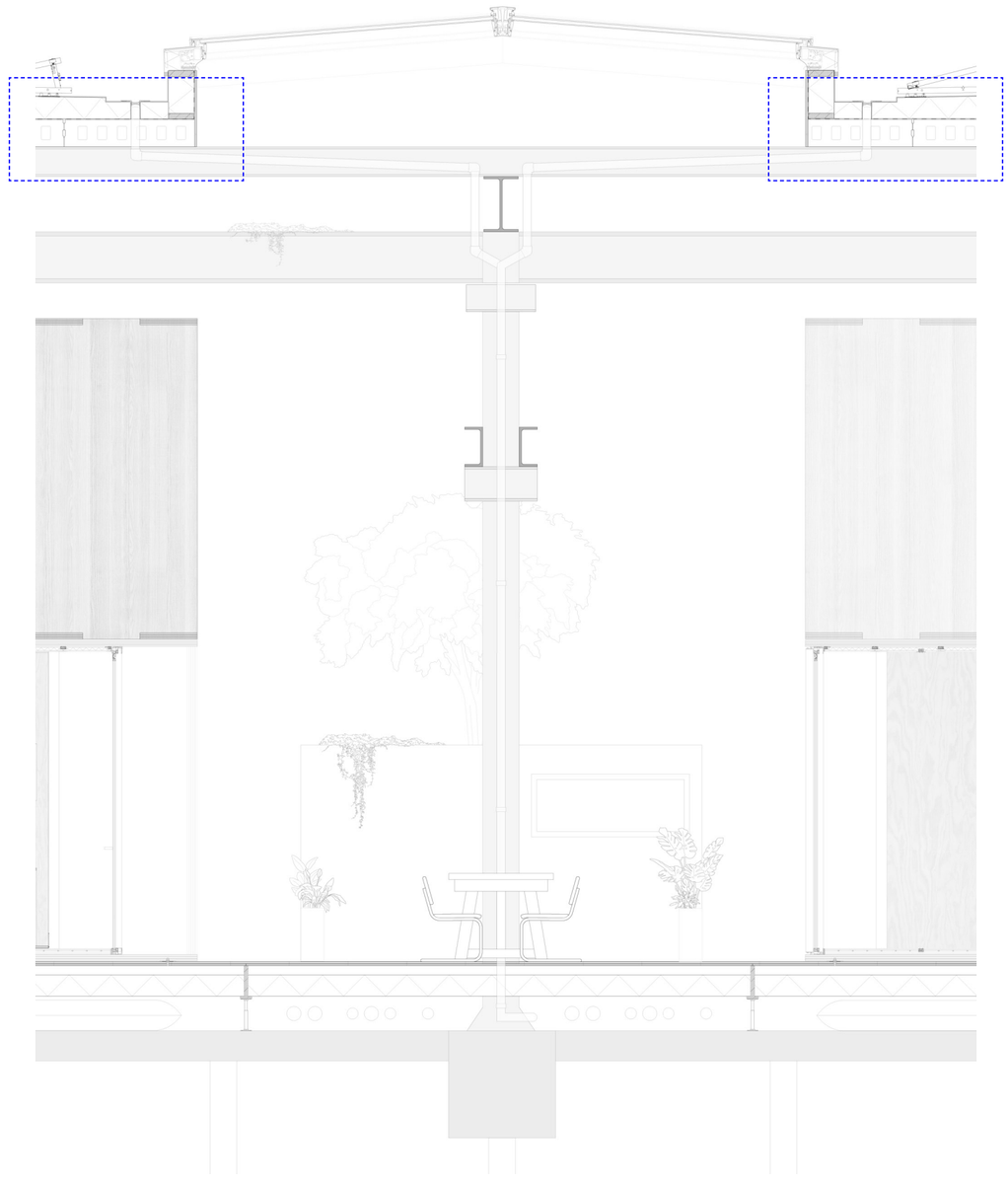
installing doors
installing wall elements
installing floor elements
assembling structure dwellings
drilling
CNC cutting CLT

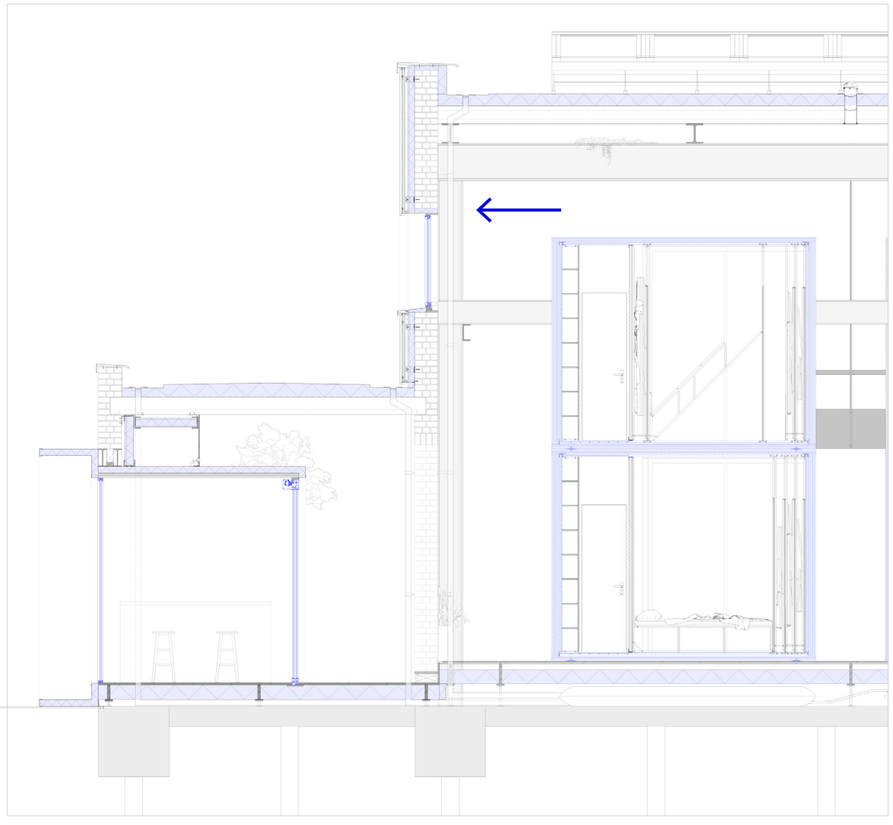


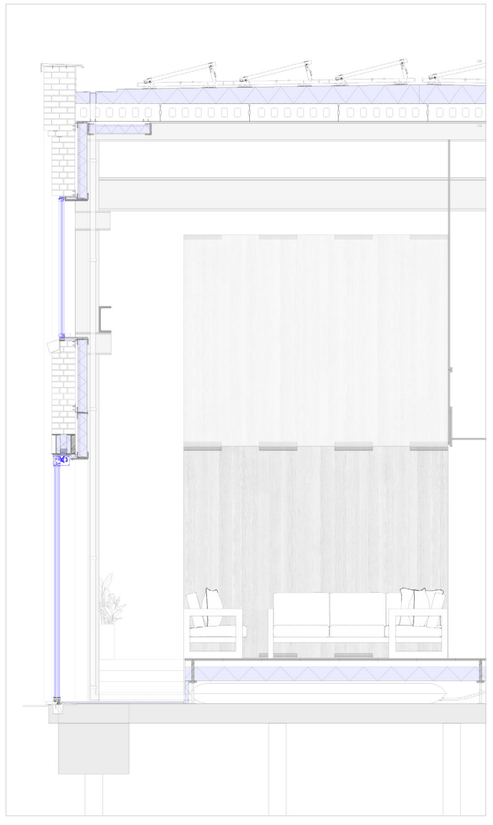
Daylight.

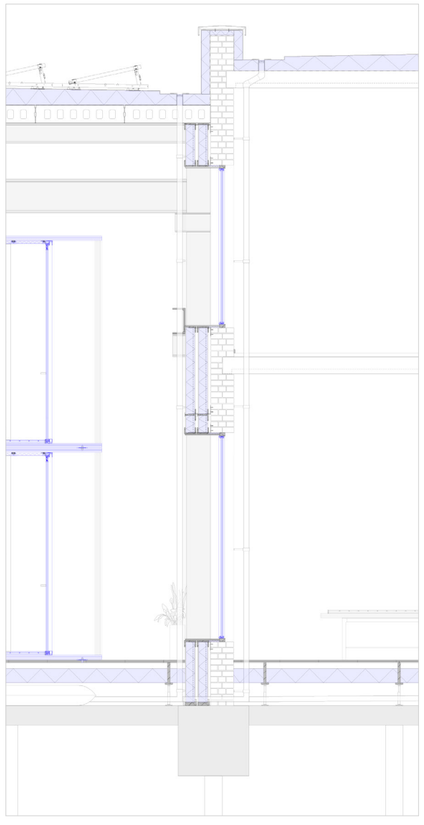
Insulation.



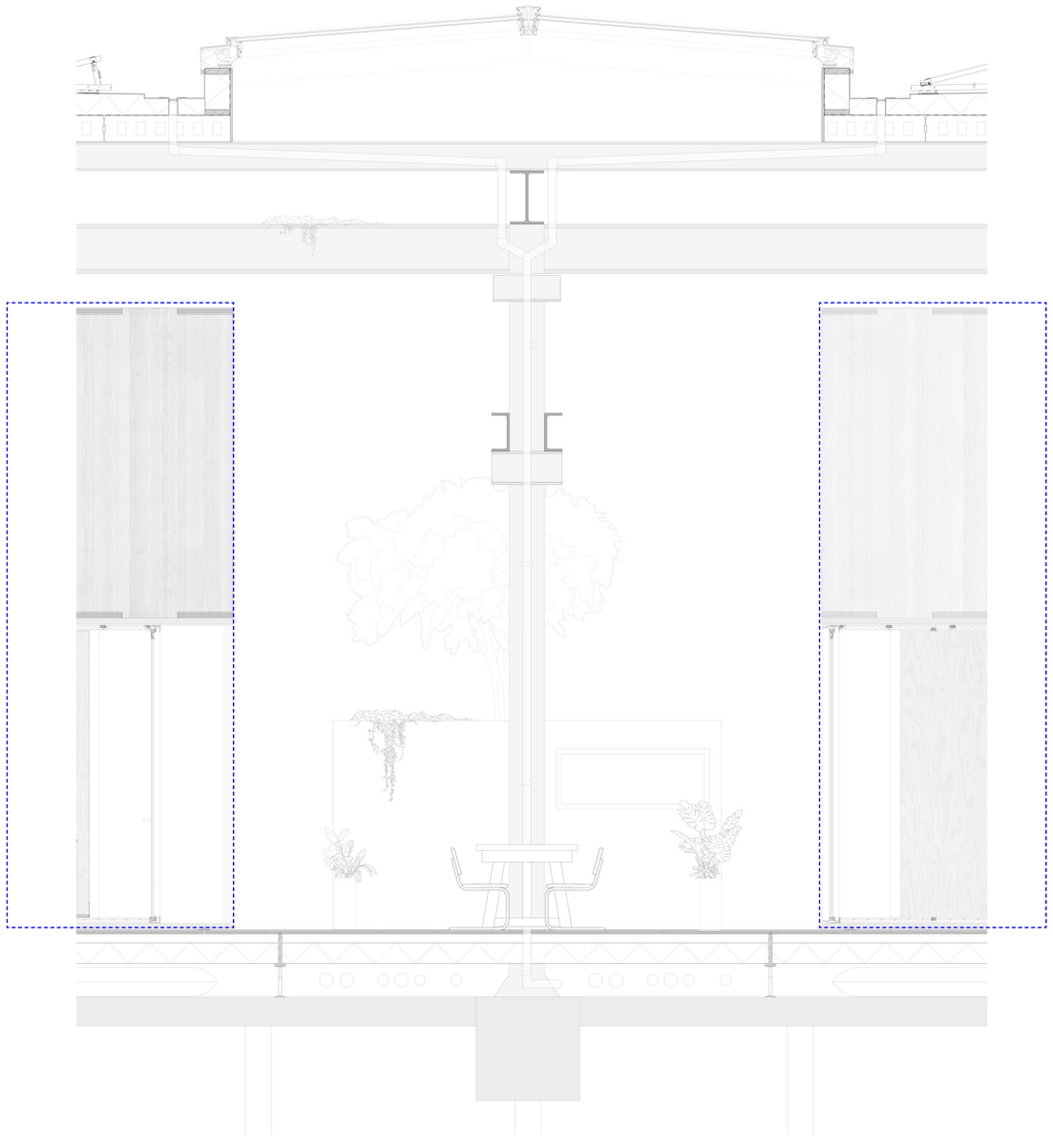
Insulation.



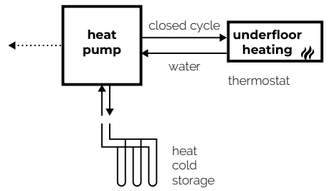


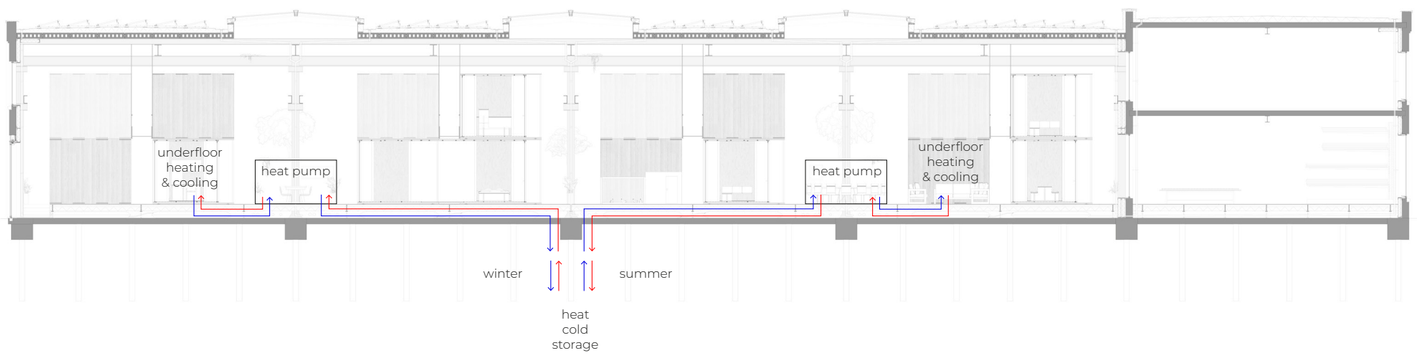


Comfortable climate.

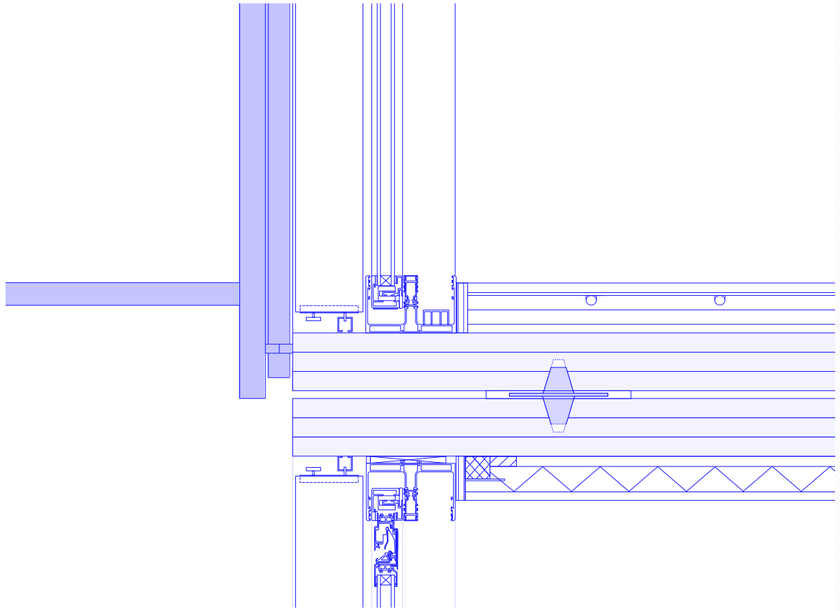


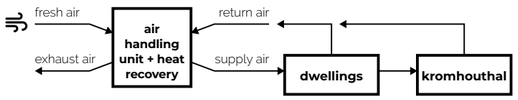
Underfloor heating & cooling.

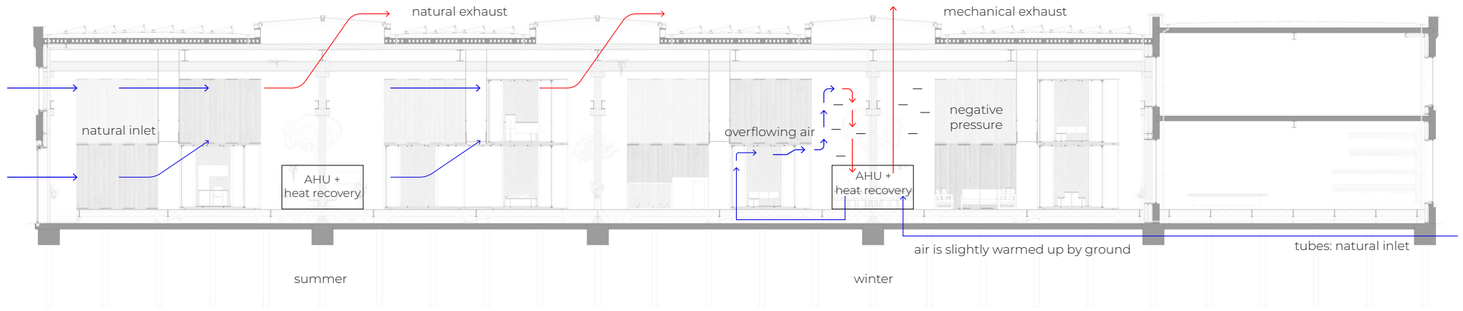




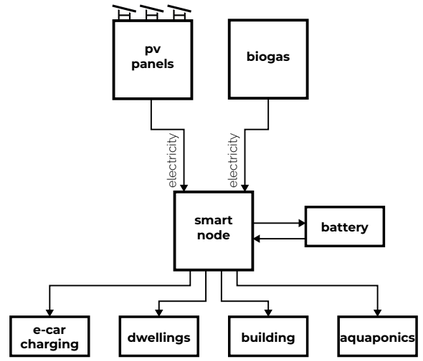
Ventilation.

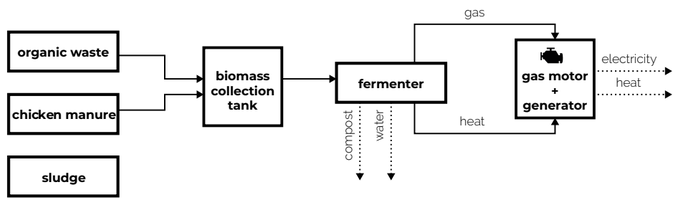


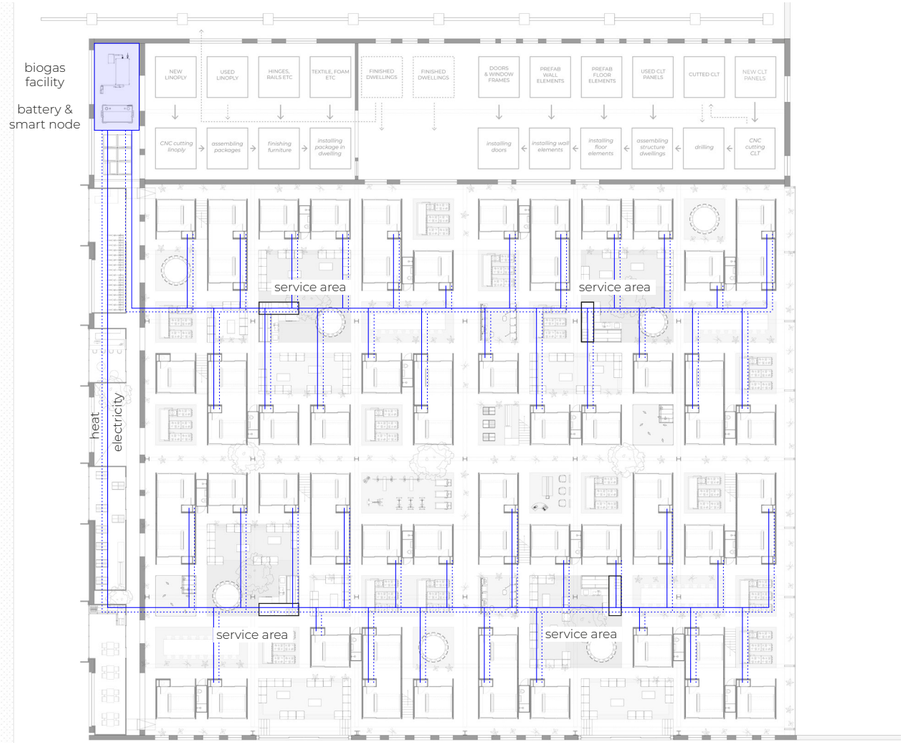


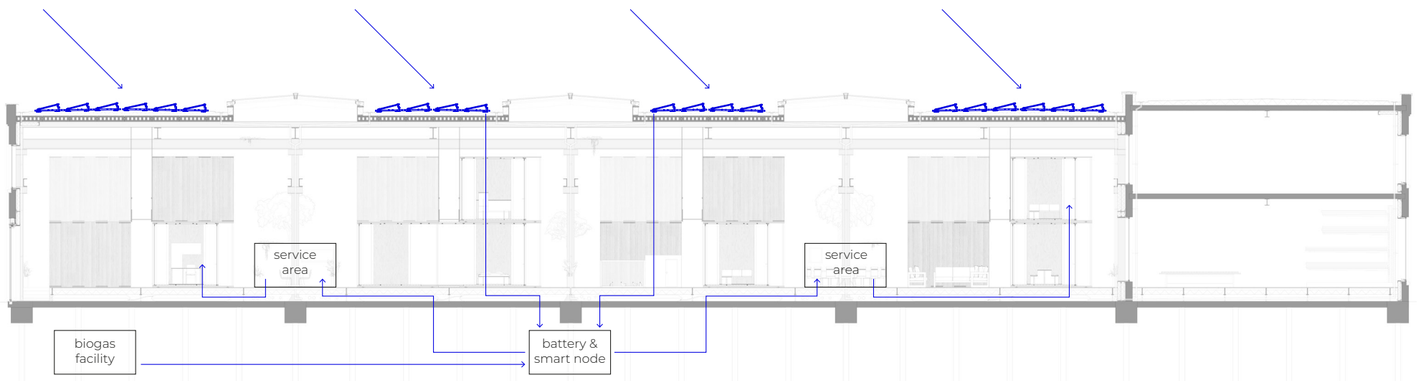


Electricity.





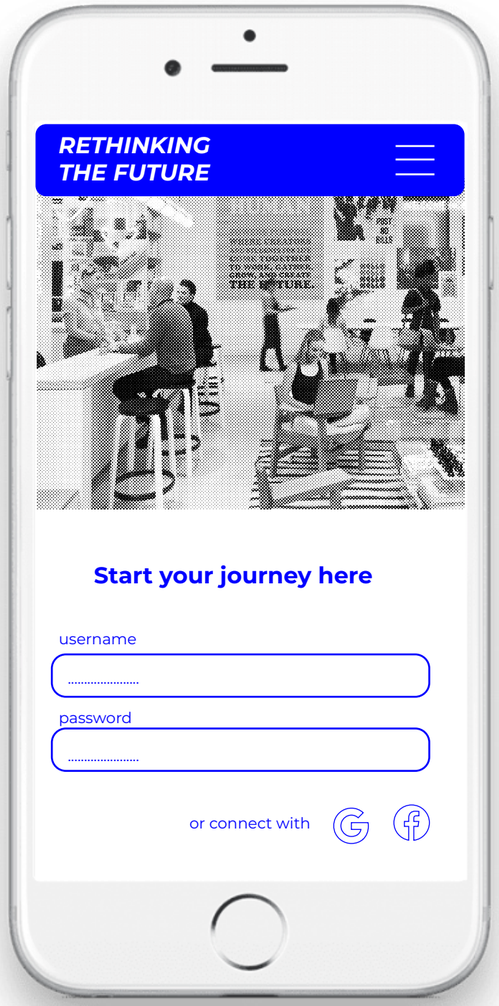




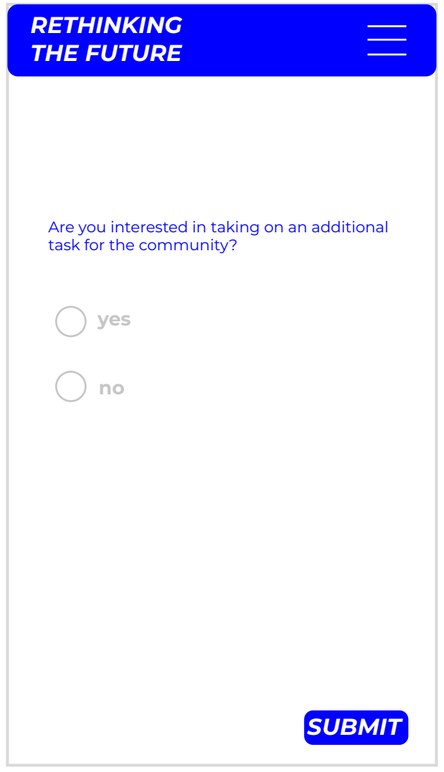
Timeline.

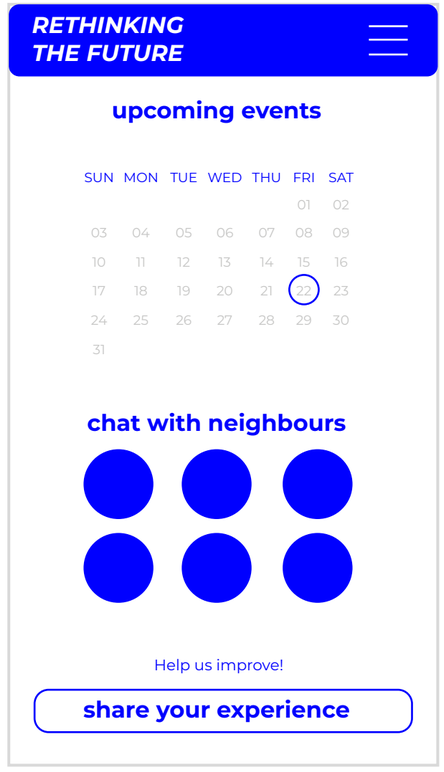
I. initiative II. development **III. pilot** IV. reflection & expansion

Subscription.

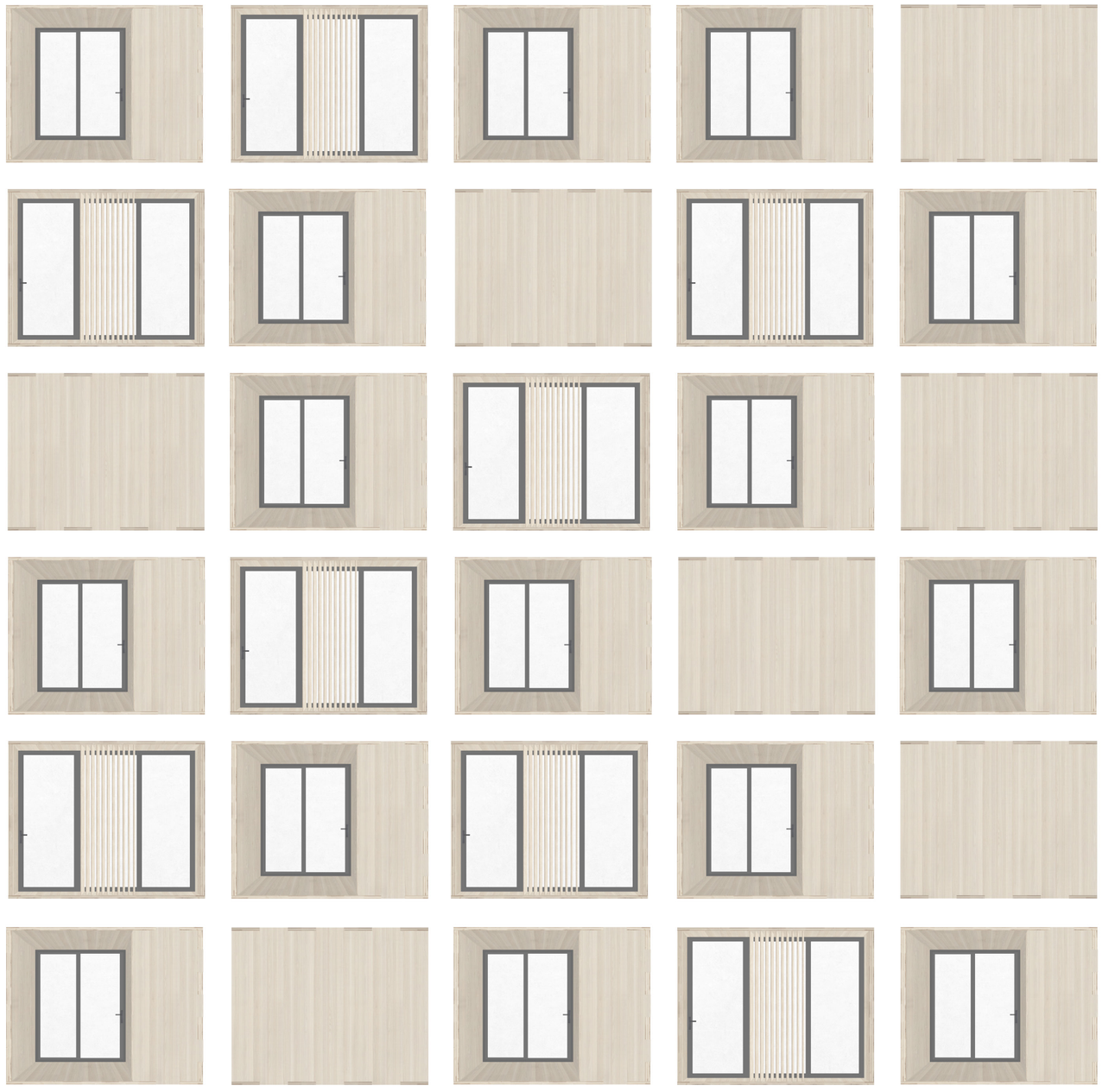


Subscription.





Personalisation.

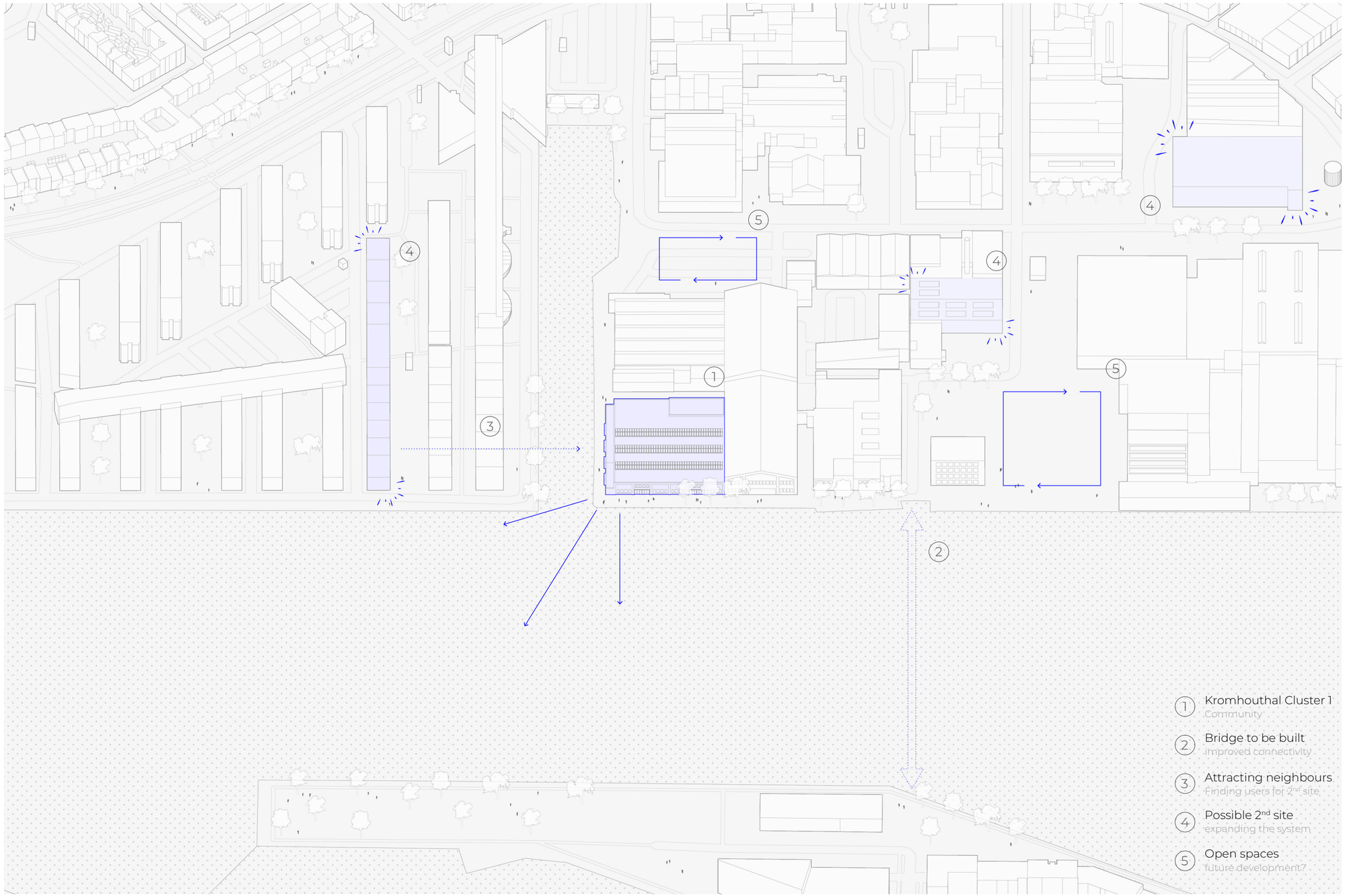


Personalisation.

Timeline.

I. initiative II. development III. pilot **IV. reflection & expansion**

Context.


1 Kromhouthal Cluster 1
Community
2 Bridge to be built
improved connectivity
3 Attracting neighbours
Finding users for 2nd site
4 Possible 2nd site
expanding the system
5 Open spaces
future development?

Today, our world is in crisis..

Today, our world is in crisis..

... let’s act before it’s too late!

Maximum density.

Current situation:	NL average =	**65 m2/ person**
	AM average =	49 m2
New way of living:	dwelling =	14 m 2
	circulation area =	4 m2
	elements toolkit =	10,78 m2
		28,78 m2/ person

44,27%

Maximum quality of life.

- affordable housing

- social interaction

- utlimate freedom

Maximum quality of life.

Current carbon footprint= **8,96 tonnes Co²**

New carbon footprint= **2,37 tonnes CO²**

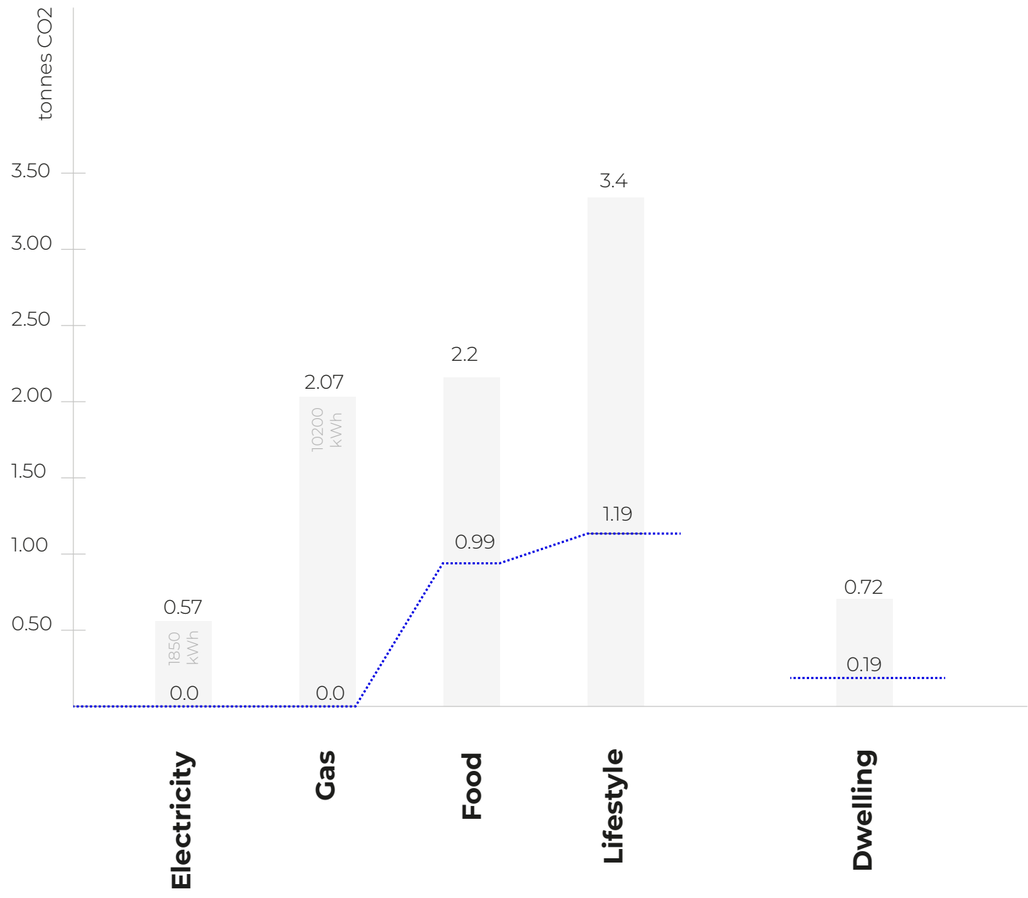
- affordable housing

- social contacts

- utlimate freedom

- a healthy planet to live on

26,45%




thank you!