



**Vixel:  
A catalogue for  
Re-designing Intervam Flats**

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Re-housing Graduation Studio

# Post-war Social Housing & non-traditional building system



ERA



Aiery

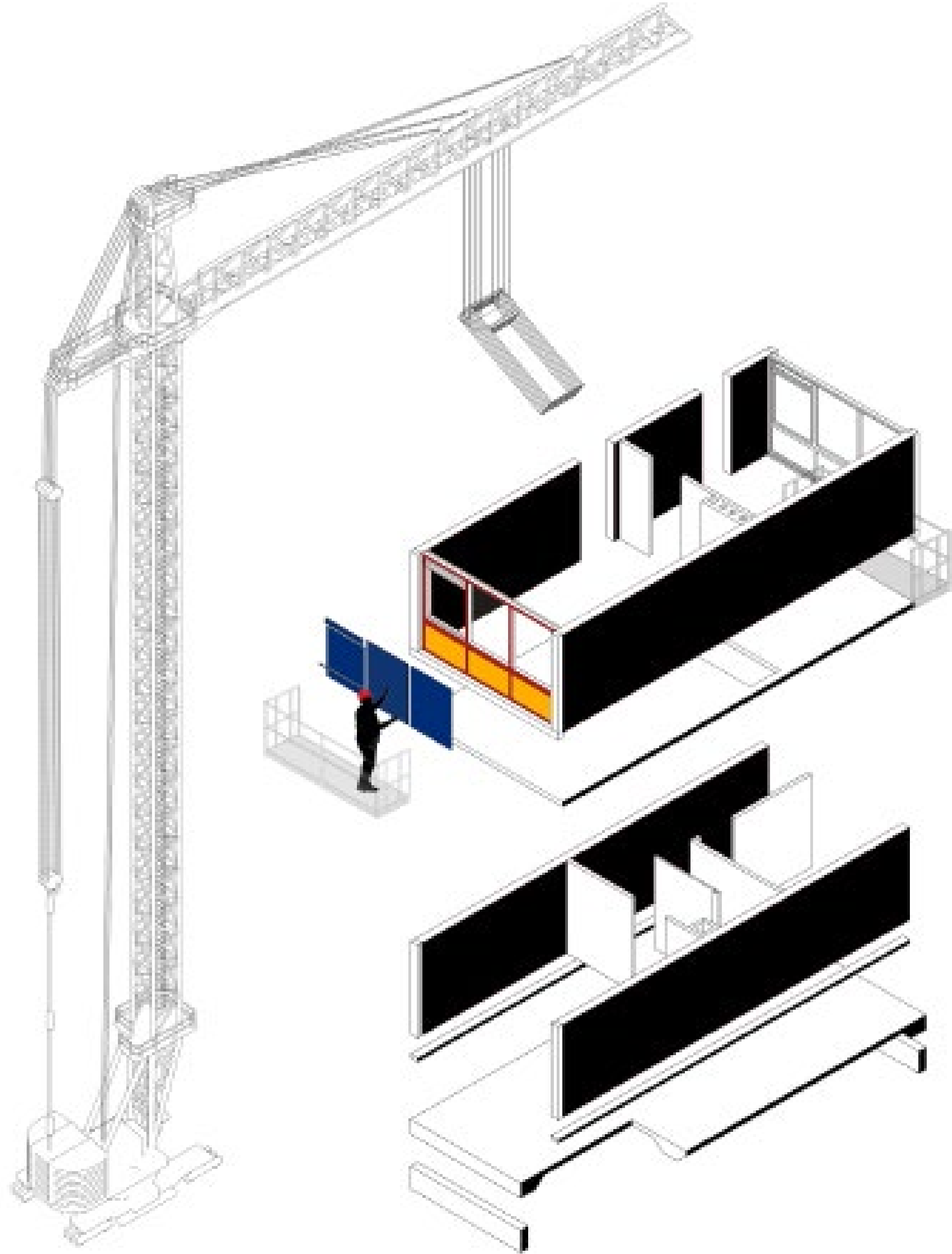


VAM



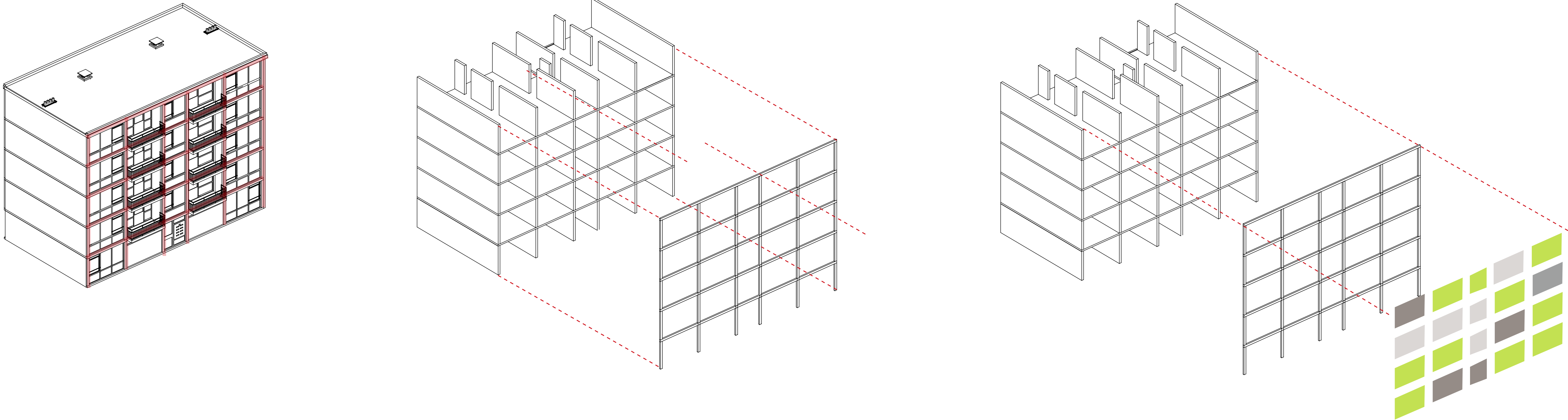
### VAM System

- Prefab heavy mounting elements
- Built **1962-'70s**
- Mostly built around **Utrecht**
- **Portiek** flat
- Main production in factory Utrecht
- Factories made 6 houses a day
- 1000 Man-hours for one property (factory and on-site)









**Large Families**



**Starters**



**Nuclear families**



**Large Families**



**Single Commuters**

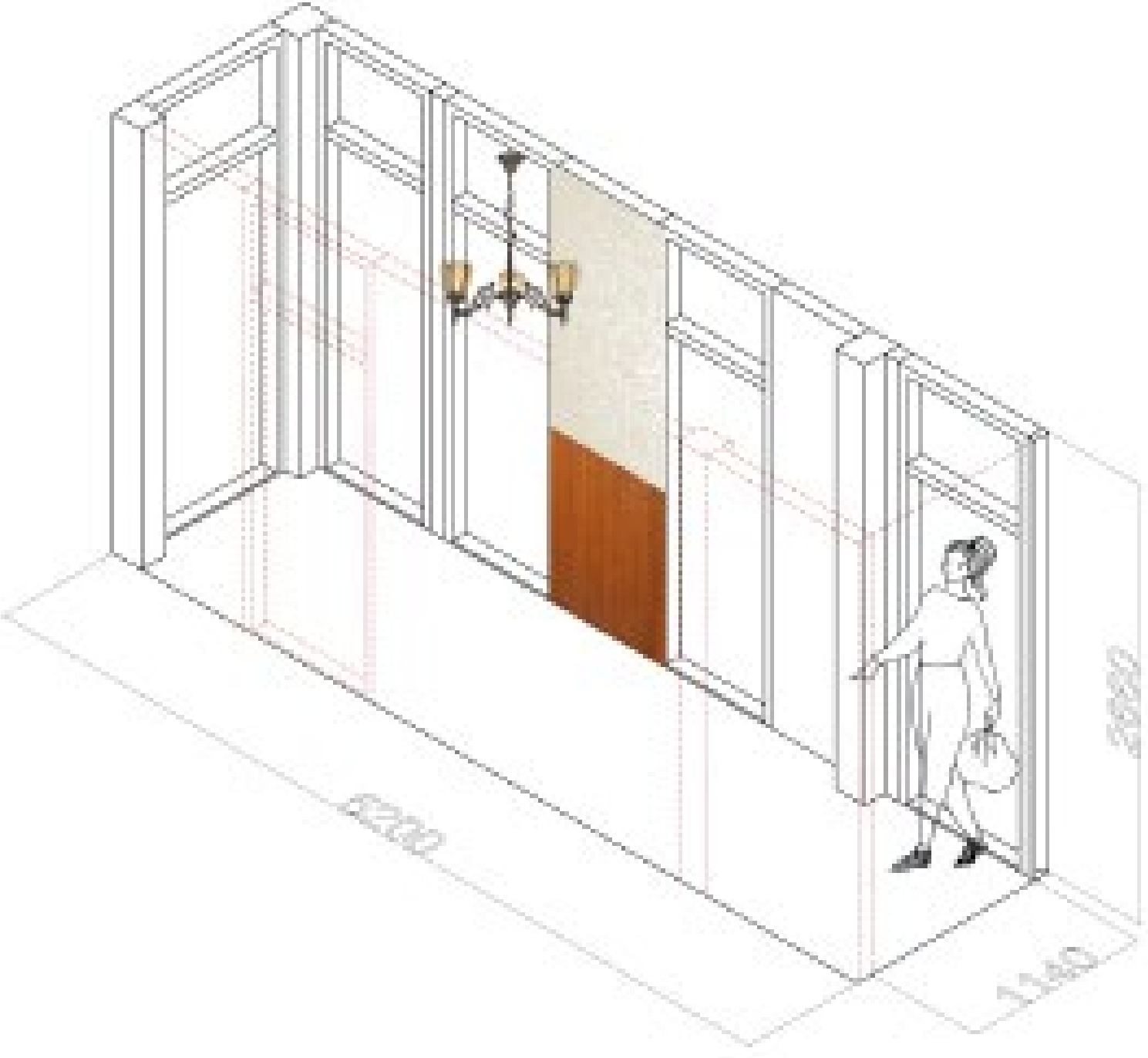
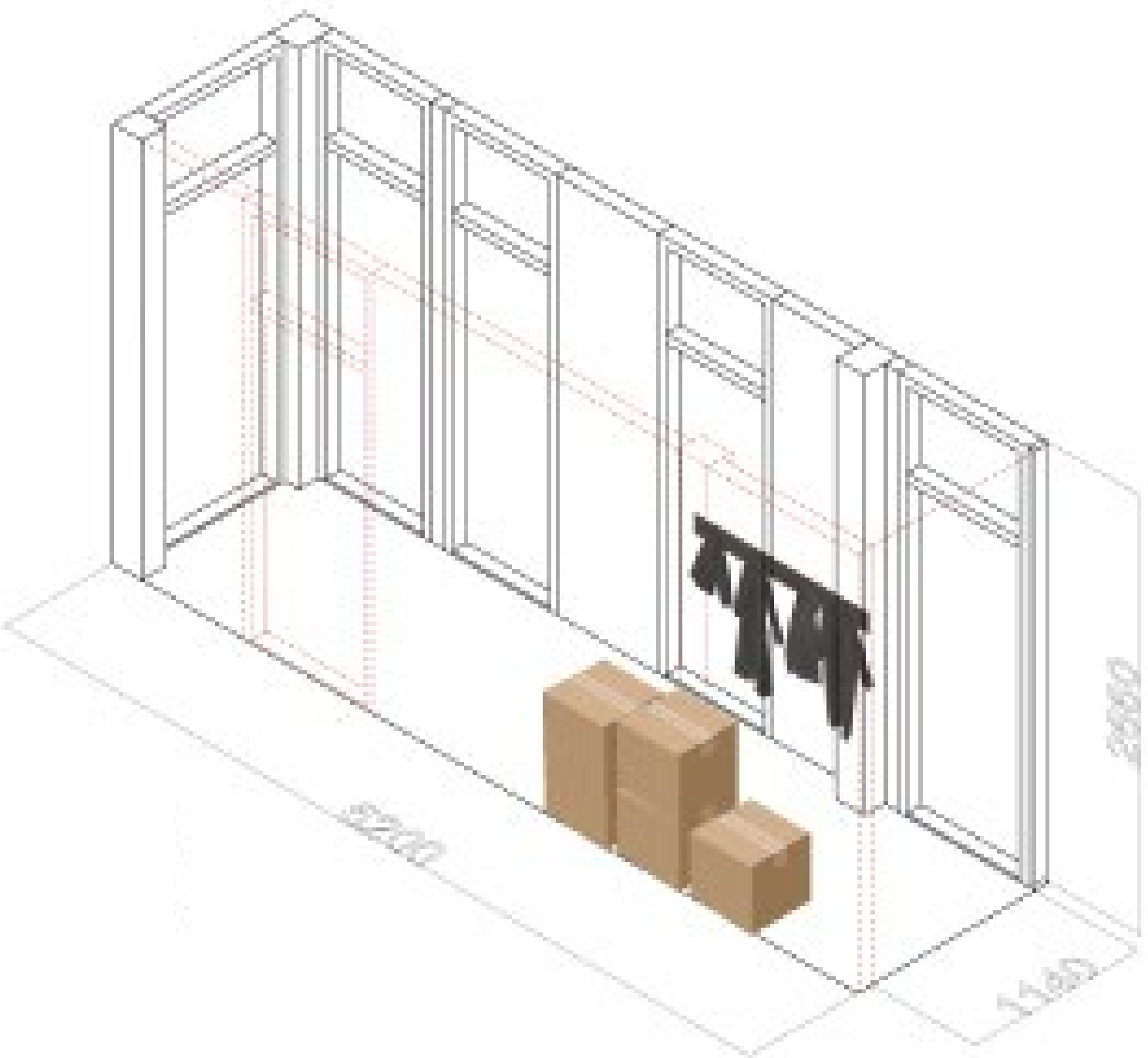
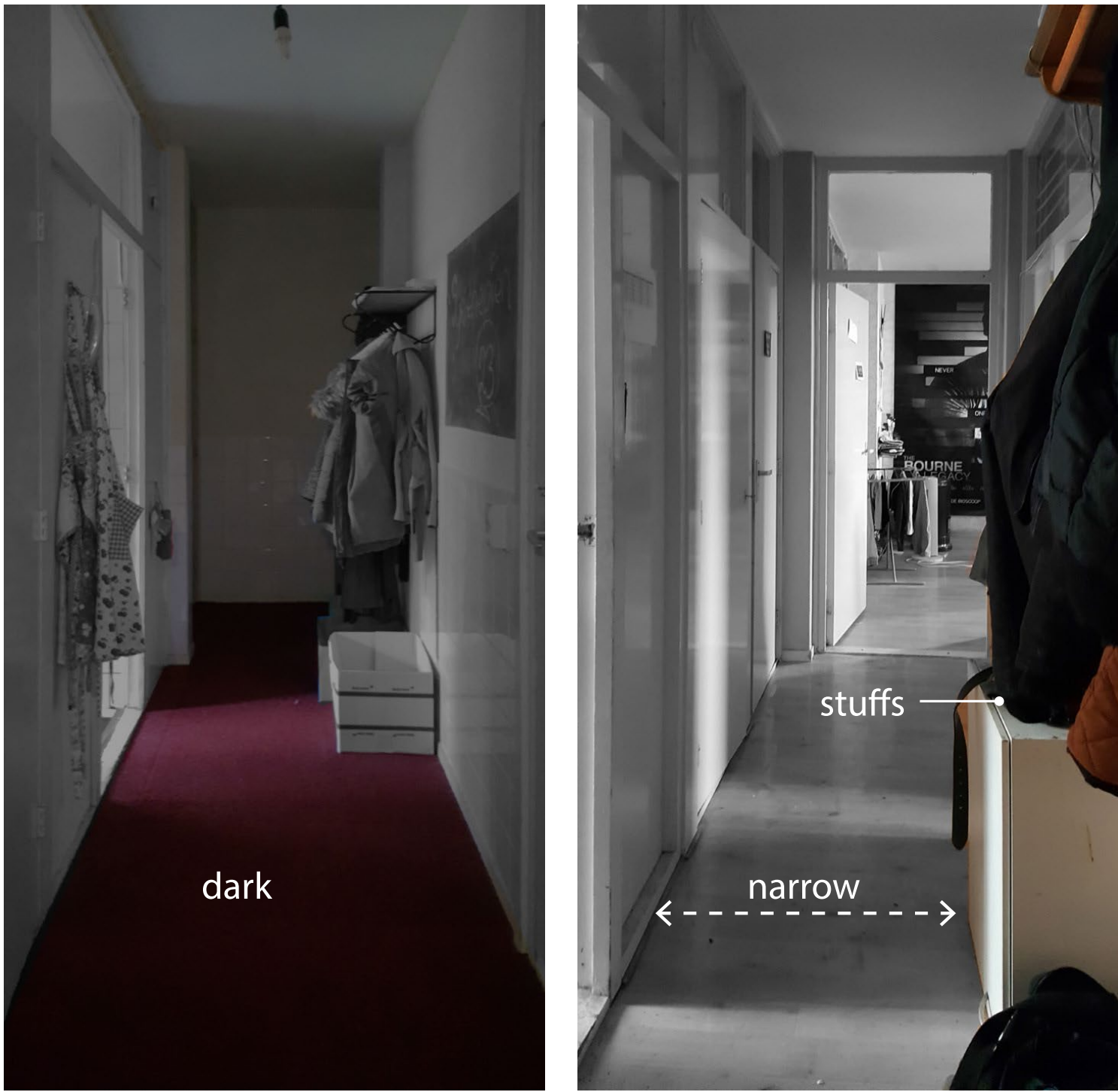


**Students**





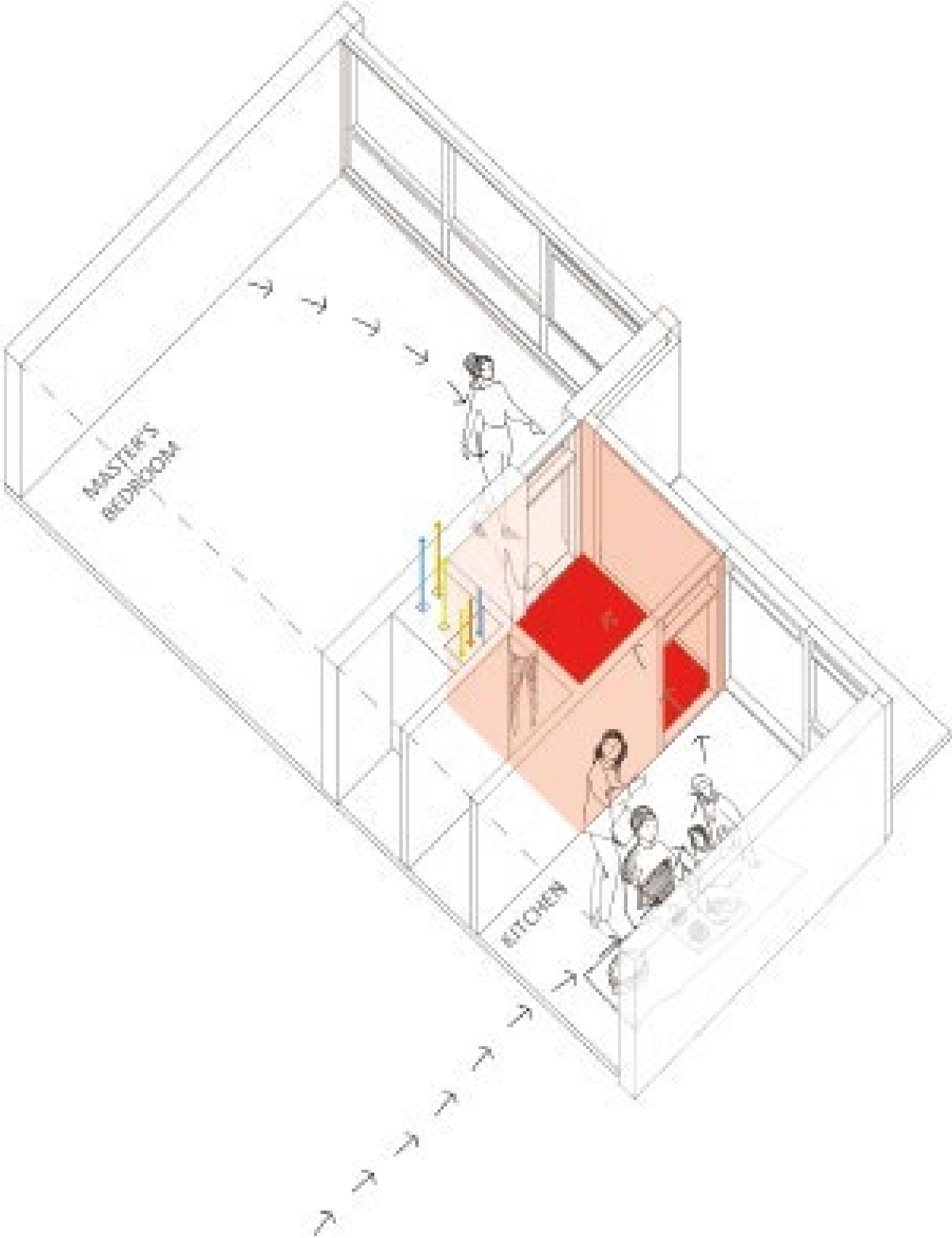
Lack of Storage & Narrow Corridore



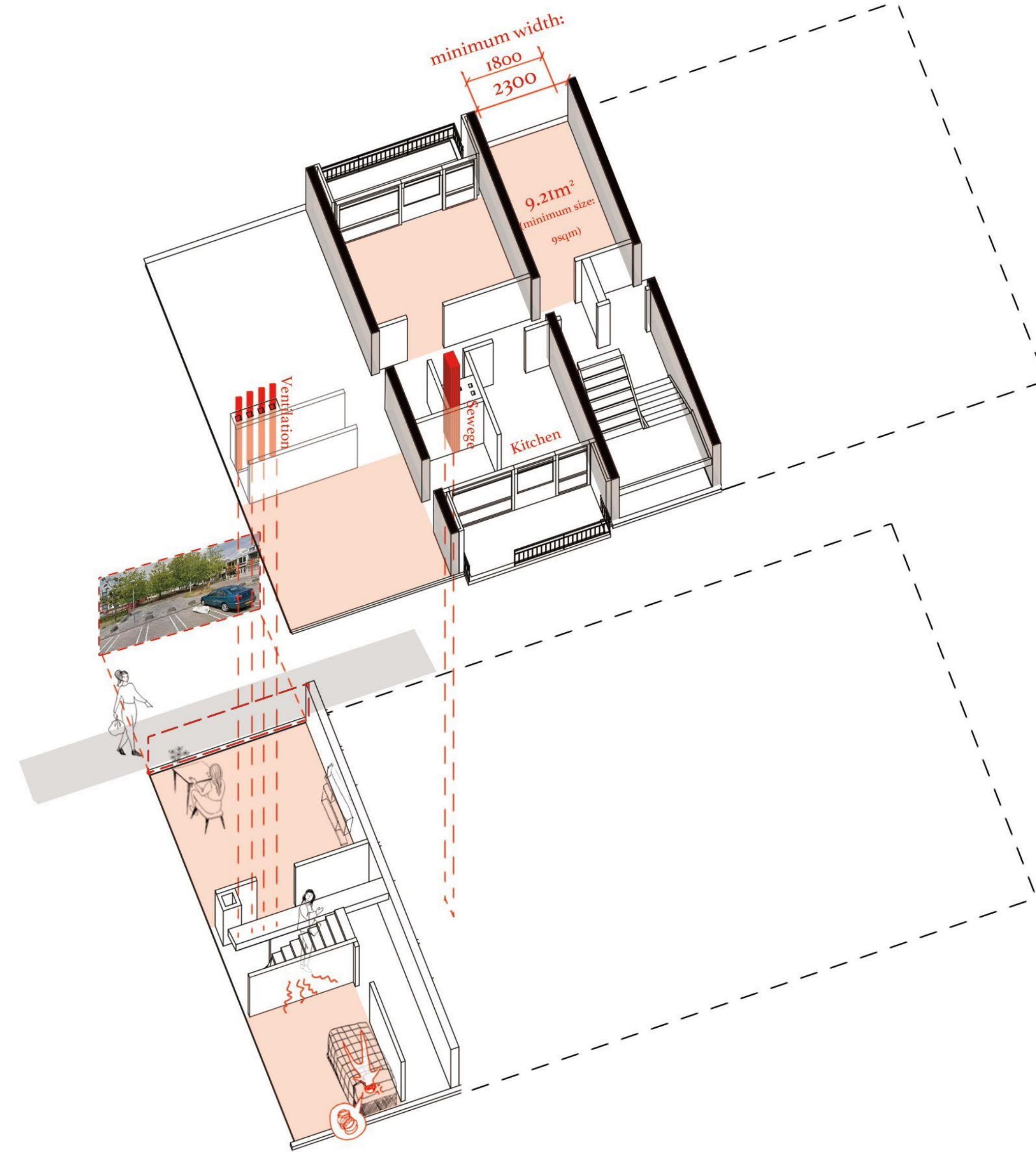
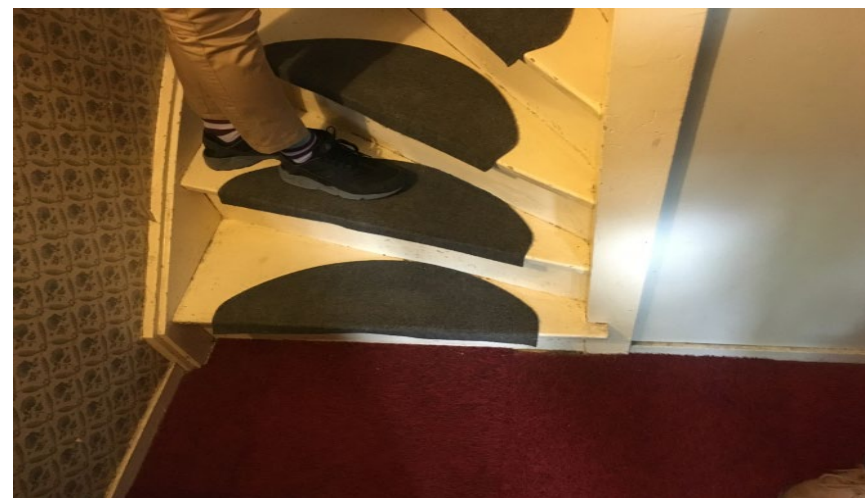
Unmatched dwelling and occupat

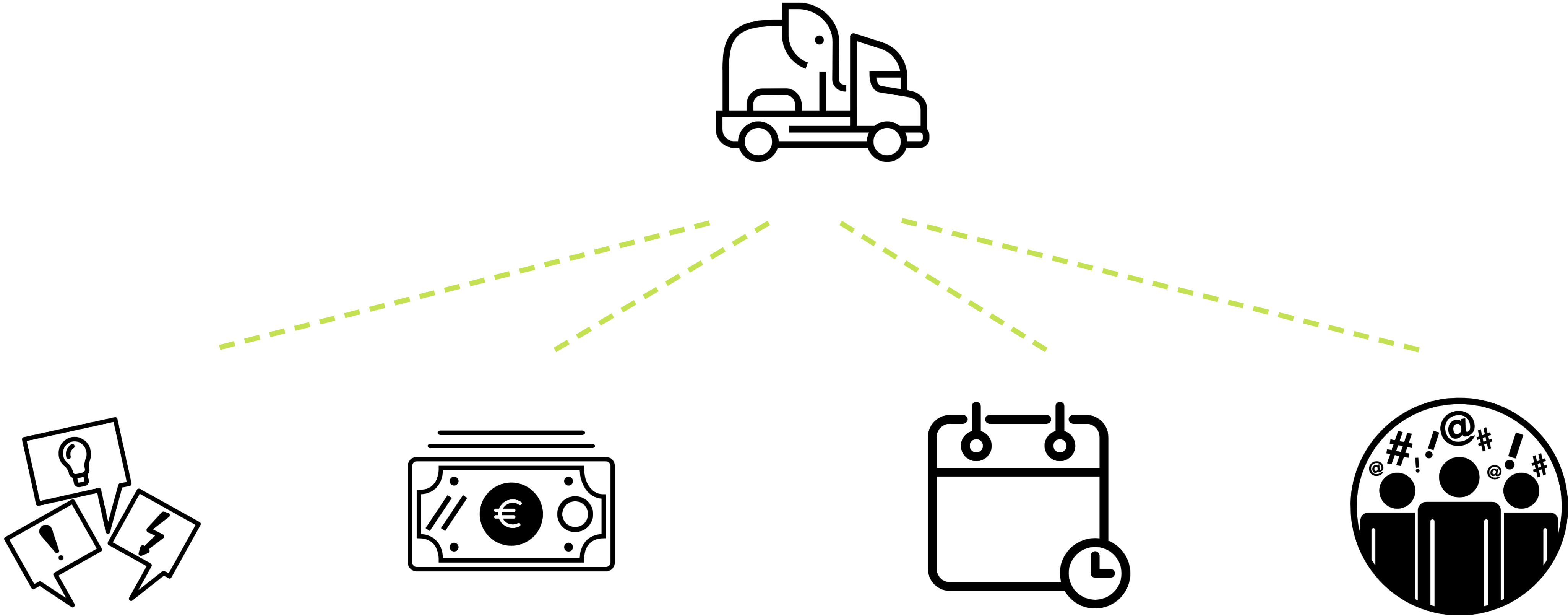


Difficult Circulation



### Difficult Circulation



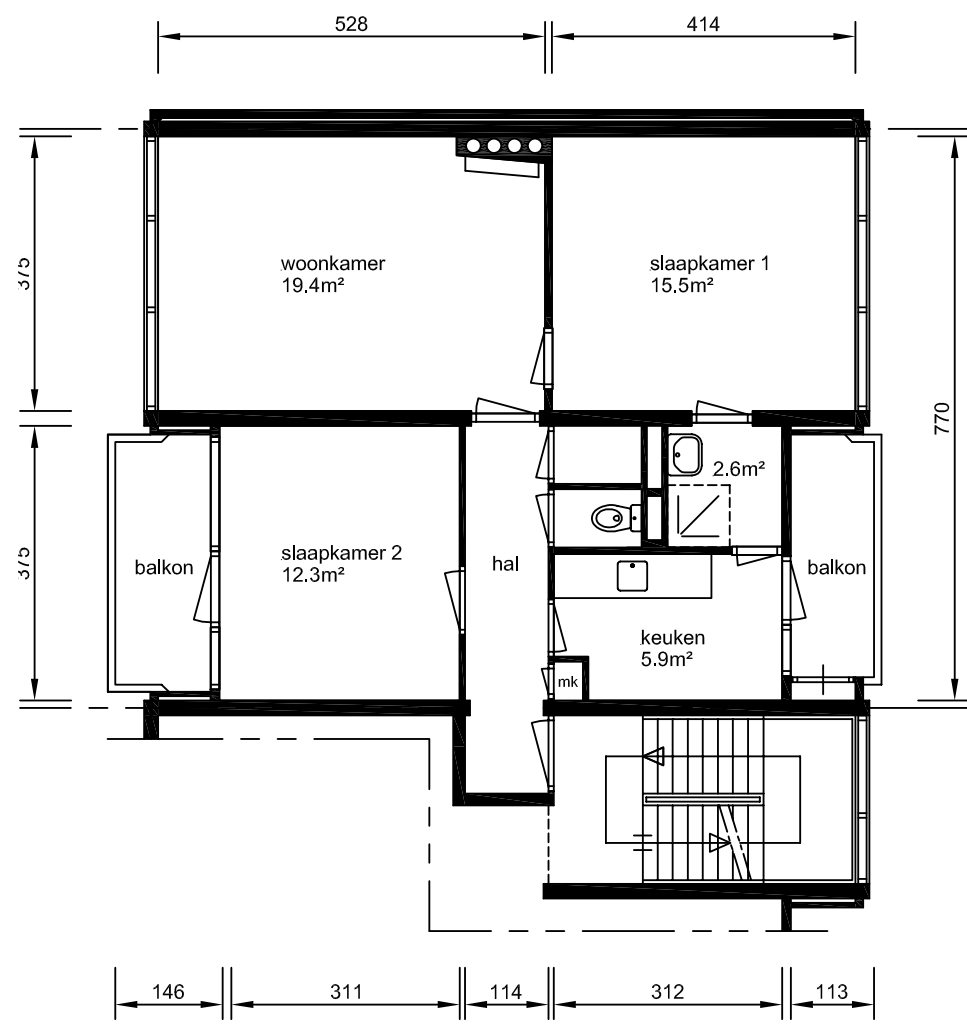


Two conflicts:

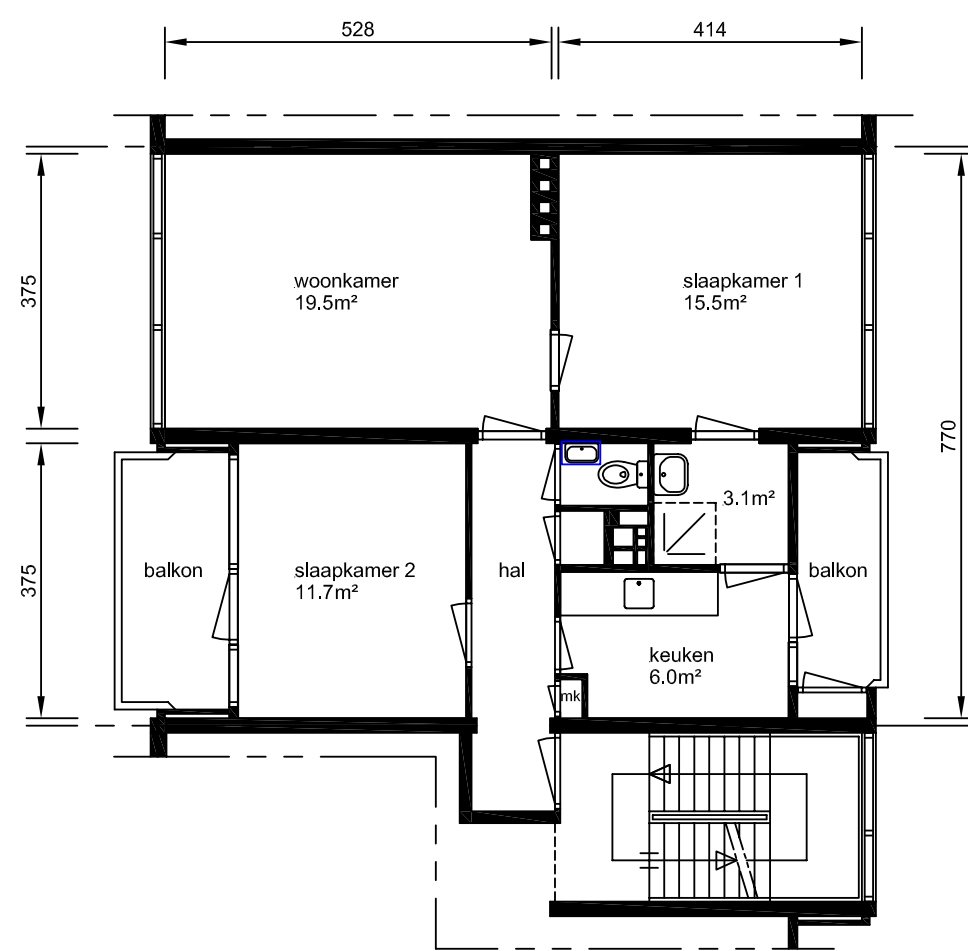
Rigid space plan designed for unitary tenant **VS** Requirement of serving tenant group with modern lifestyle and diverse requirement

Problems of space plan **VS** Difficulties of relocation

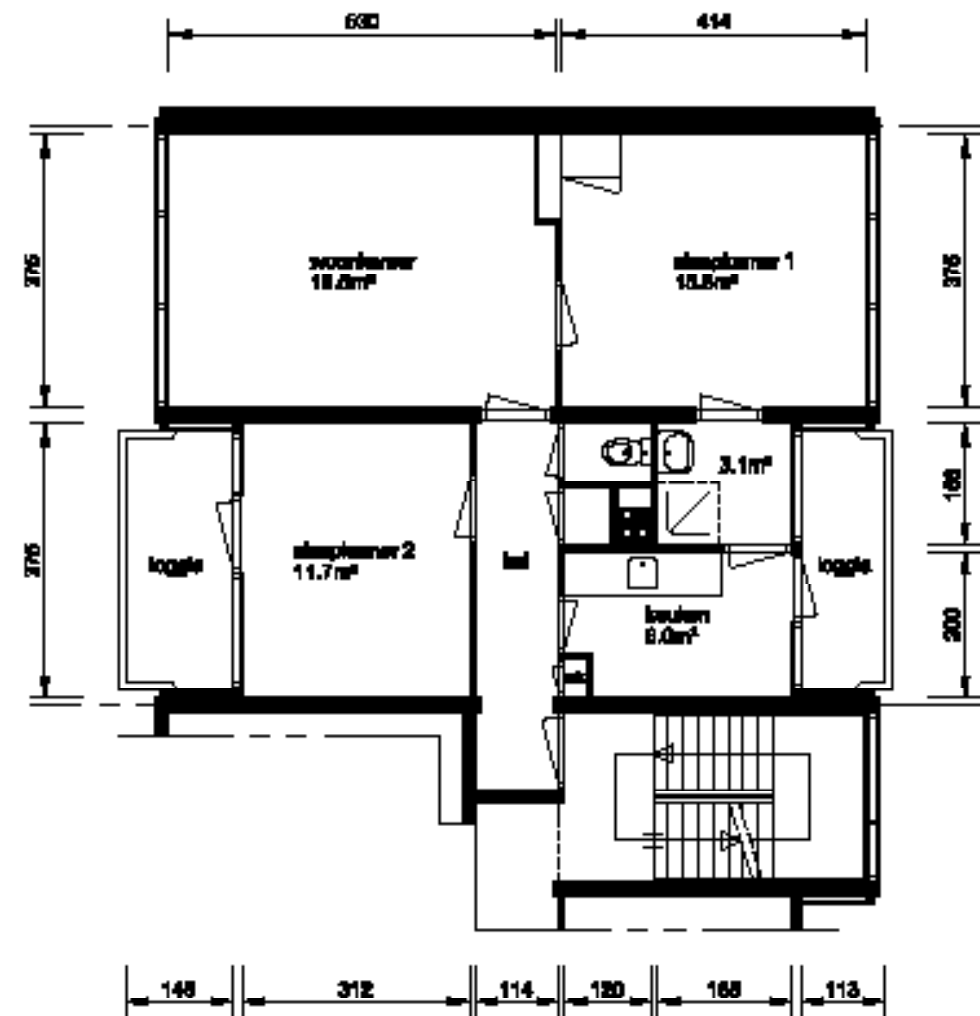
Problem of the whole system



Camera Obscuradreef



Marcopololaan



Stanleylaan

How to re-design Intervam flat to serve residents with diverse requirements in an efficient way?



A renovation method that:

- Provide better quality of living
- Quick
- Relatively cheap
- Flexible

A renovation method that:

- Provide better quality of living      -----      Redesigned space plan
- Quick      -----      Shorter design process; Shorter construction period
- Relatively cheap      -----      Less relocation cost; Less design cost; Less labour cost;
- Flexible      -----      Provide dwellings that accomodate different tenant groups;  
Can be applied to most of Intervam flats with similar typology  
Can be conducted in a small scale



# Vixel

A catalogue for renovating Intervam flats in apartment scale



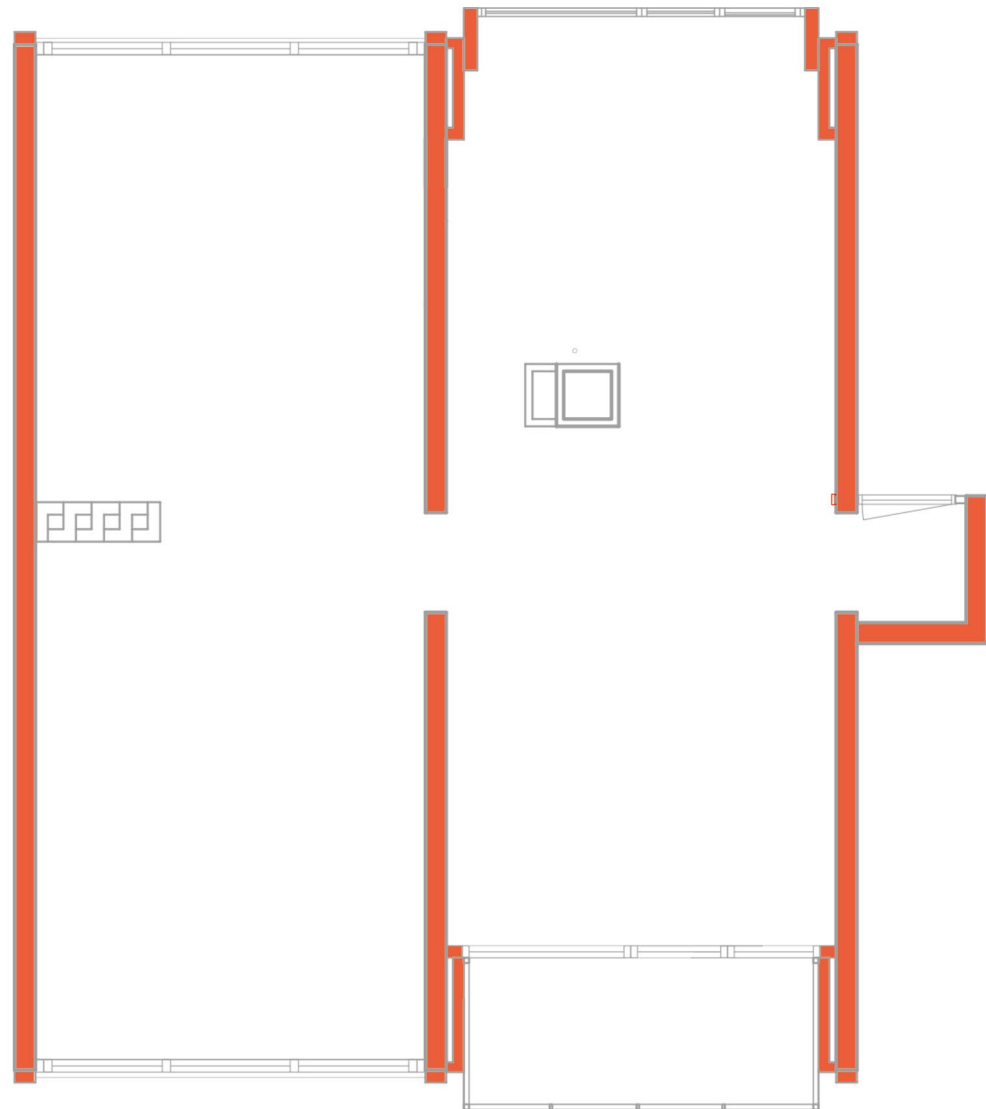
Client: **Housing Cooperation**

Commercial mode: **Rented social housing**

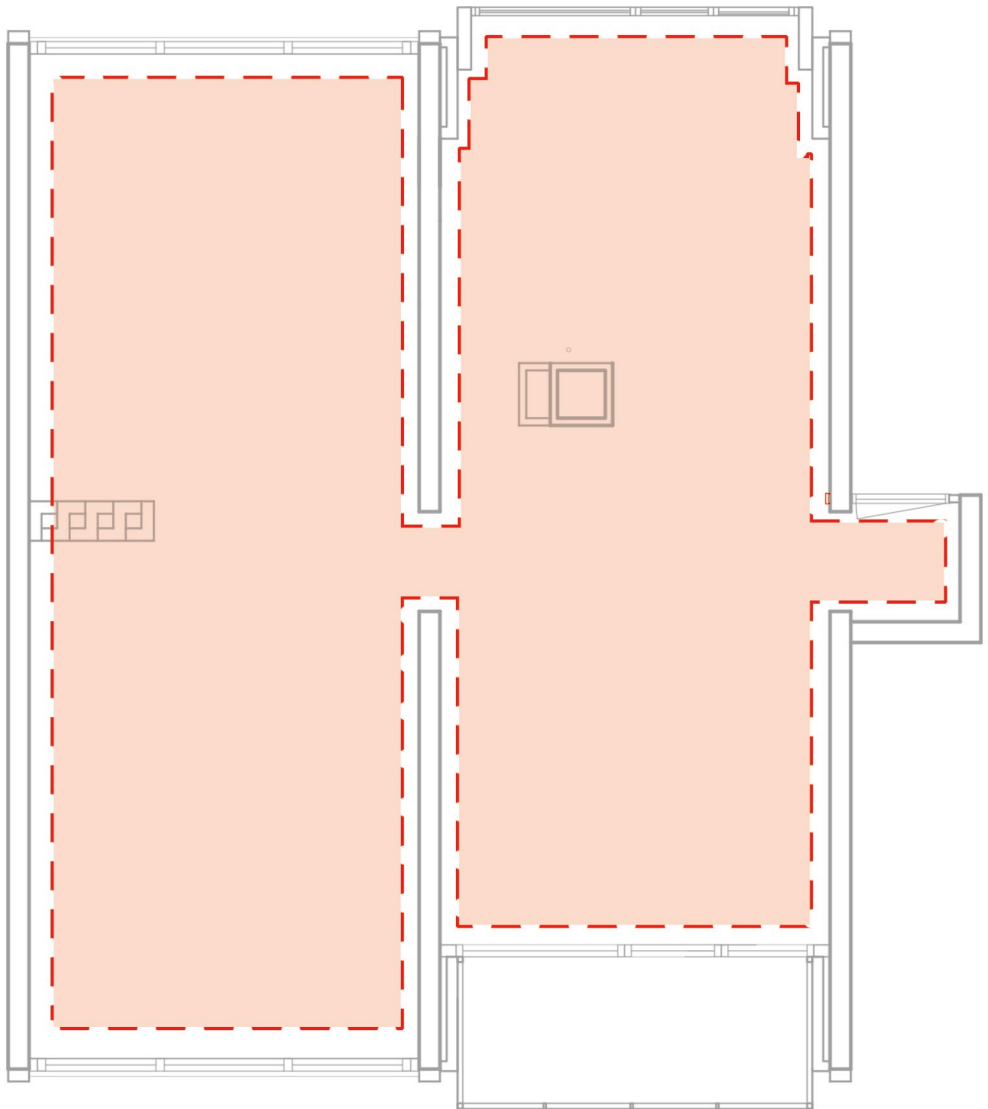
Design starts!

Housing cooperation and architects set an overall plan to the final outcome

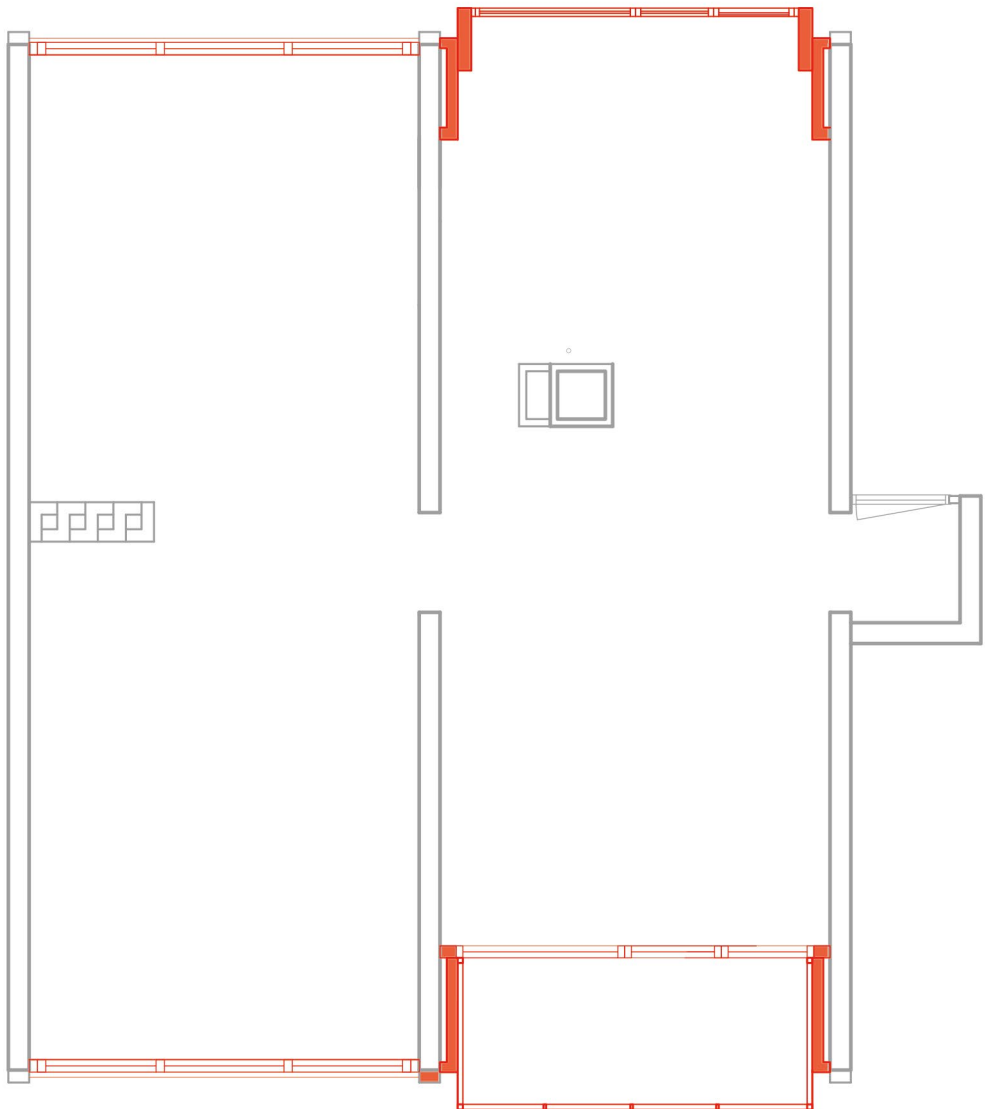
Section 1 Dwelling typology



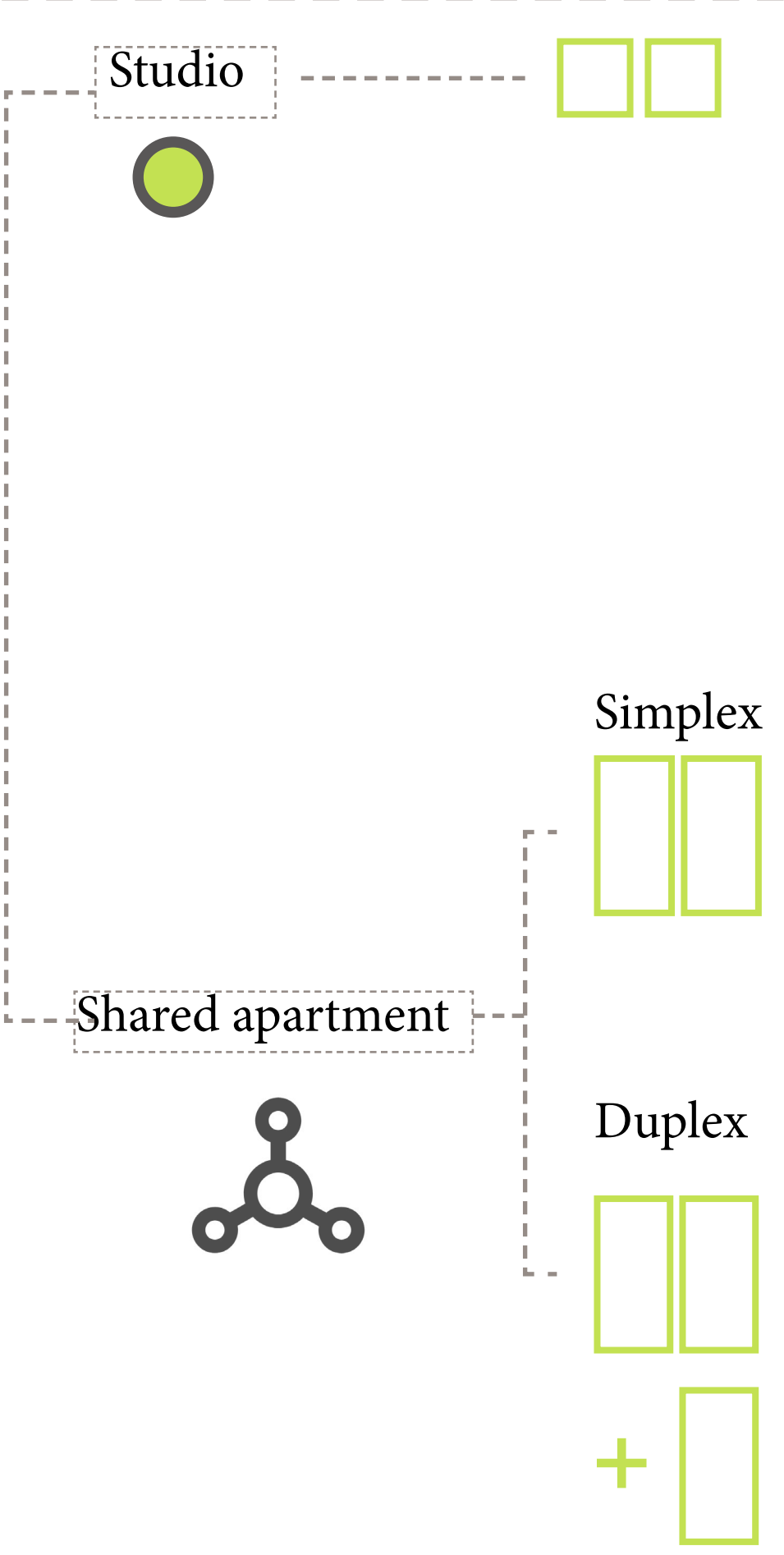
Section 2 Interior fragments



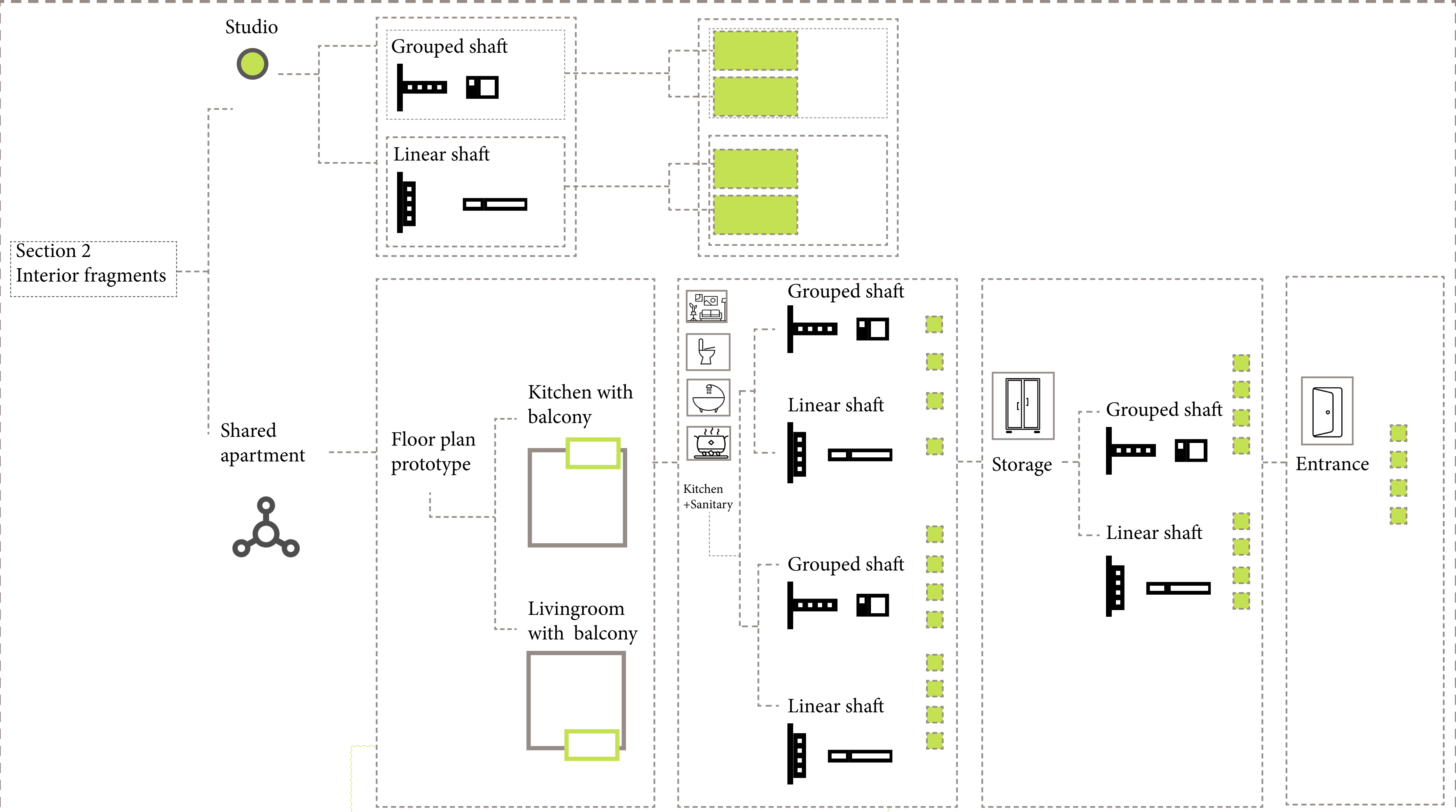
Section 3 Exterior fragments



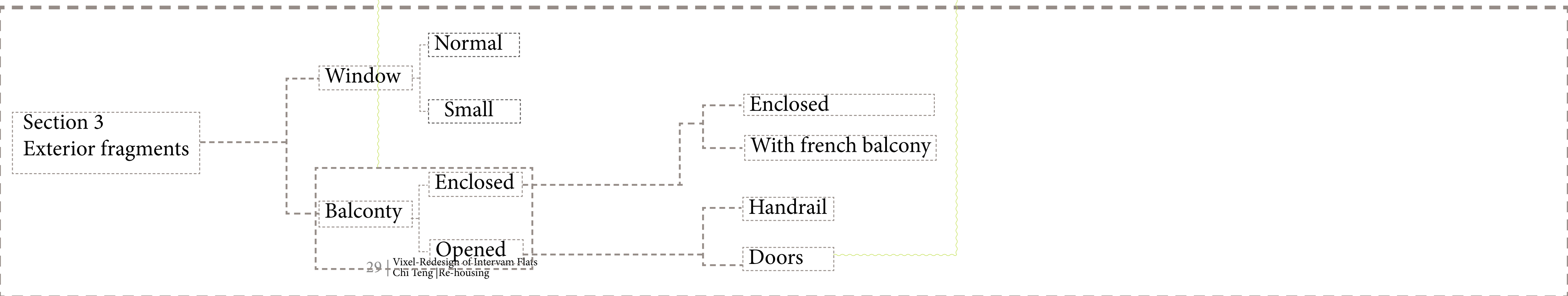
Section 1  
Floor plan typology



Section 2  
Interior fragments



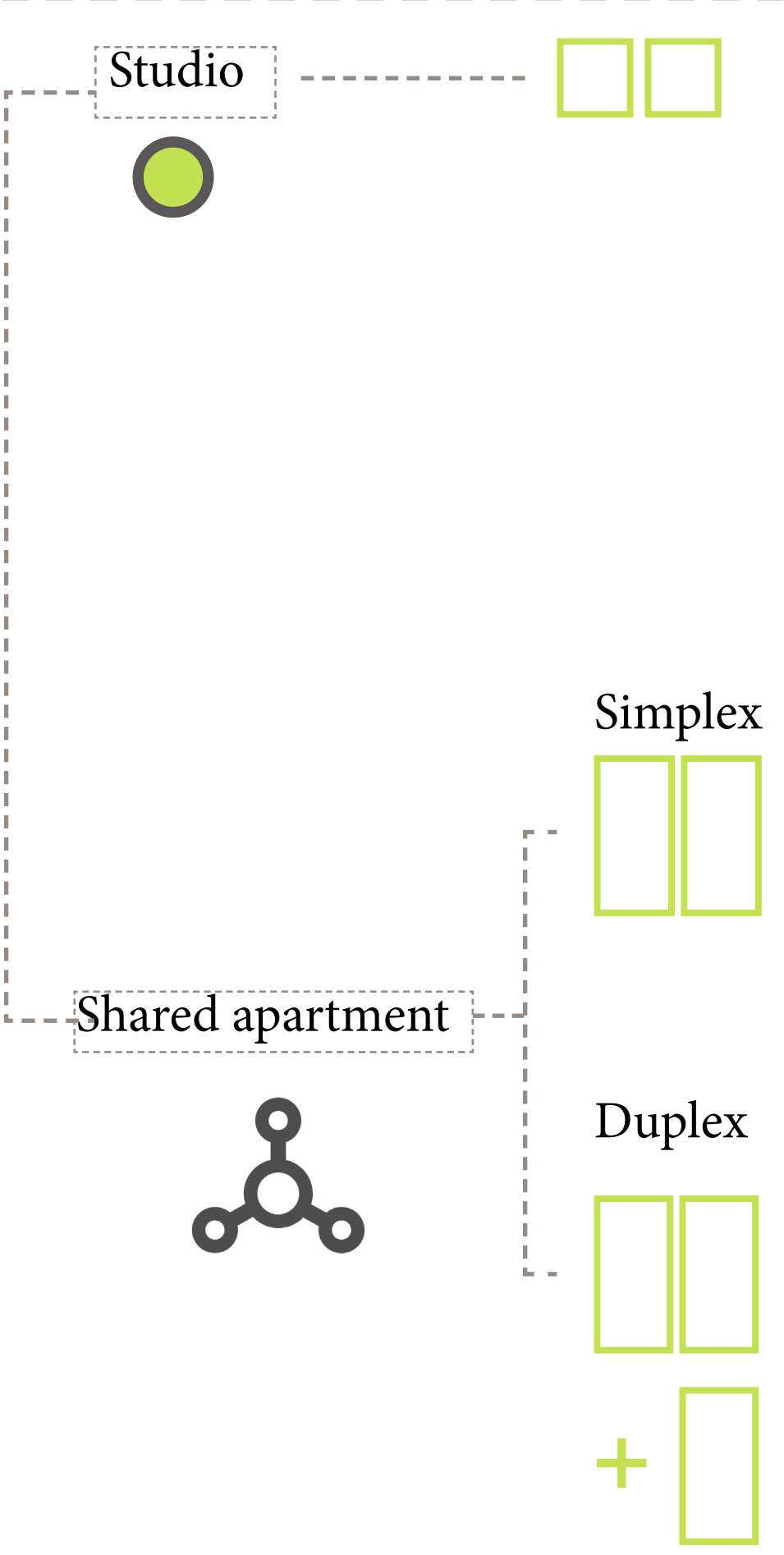
Section 3  
Exterior fragments



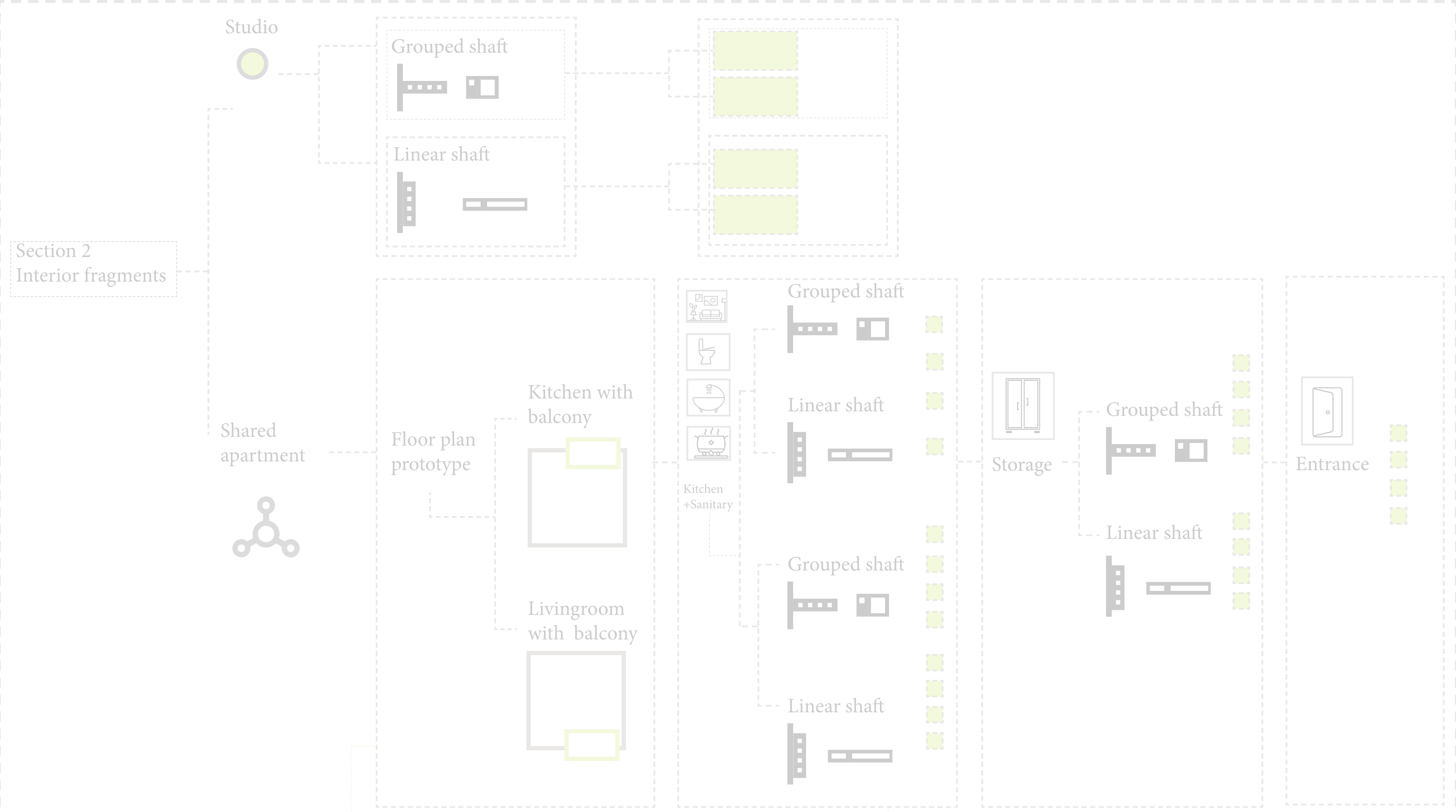


Ambition | X

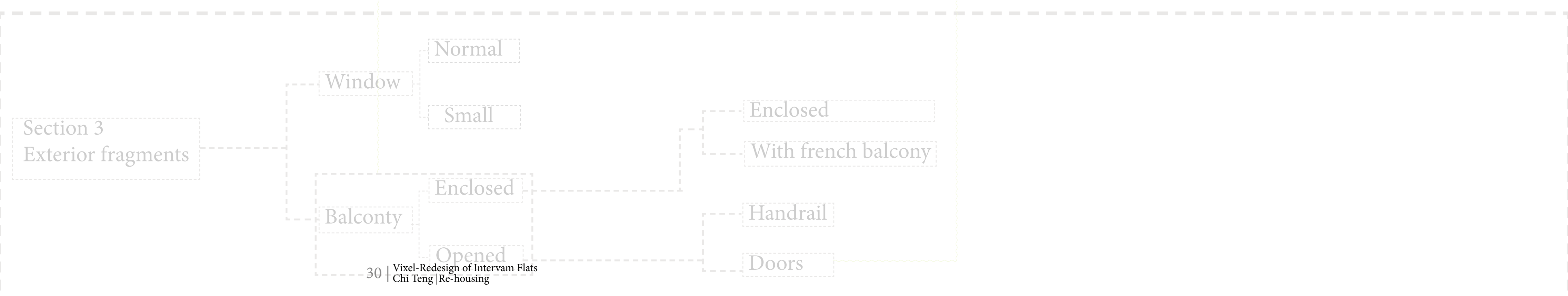
Section 1  
Floor plan typology



Section 2  
Interior fragments



Section 3  
Exterior fragments





2nd - 4th floor plan

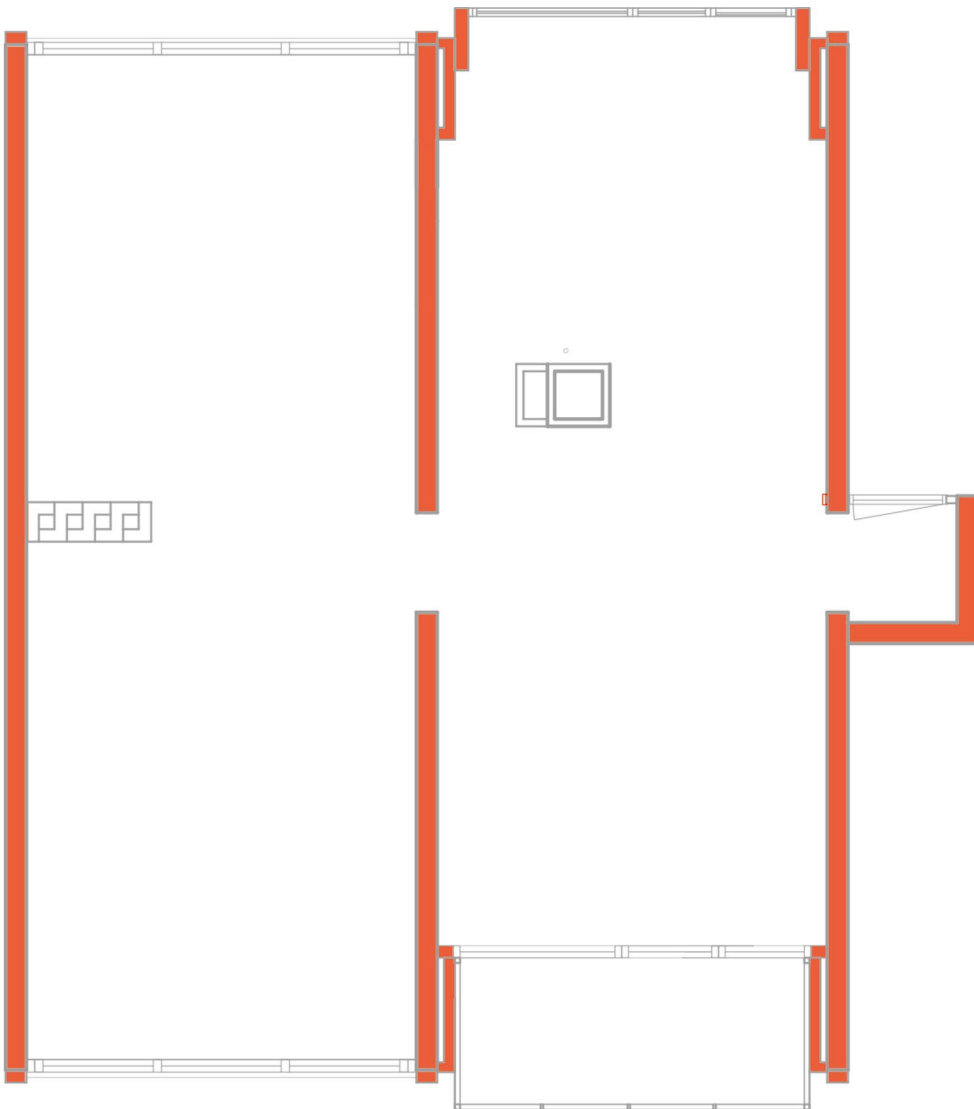


1st floor plan

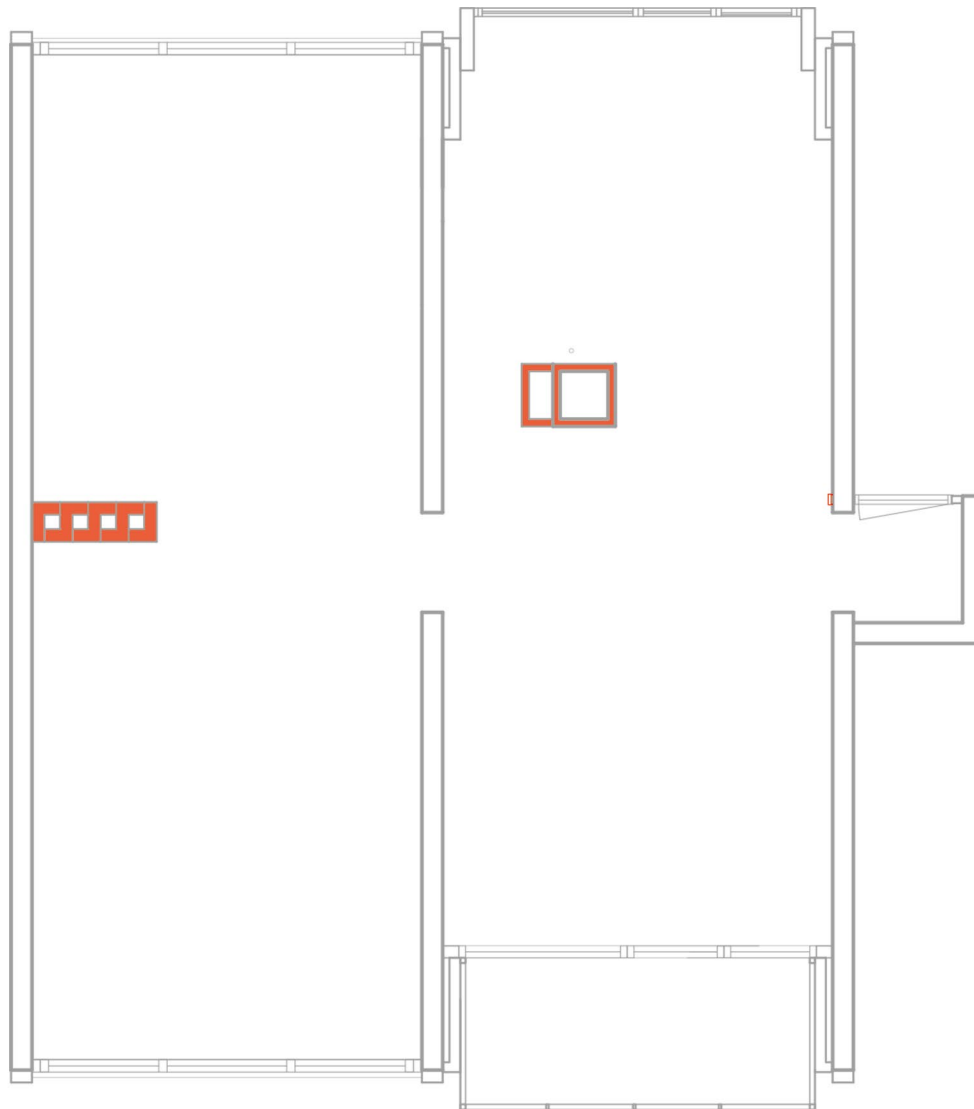


Ground floor plan

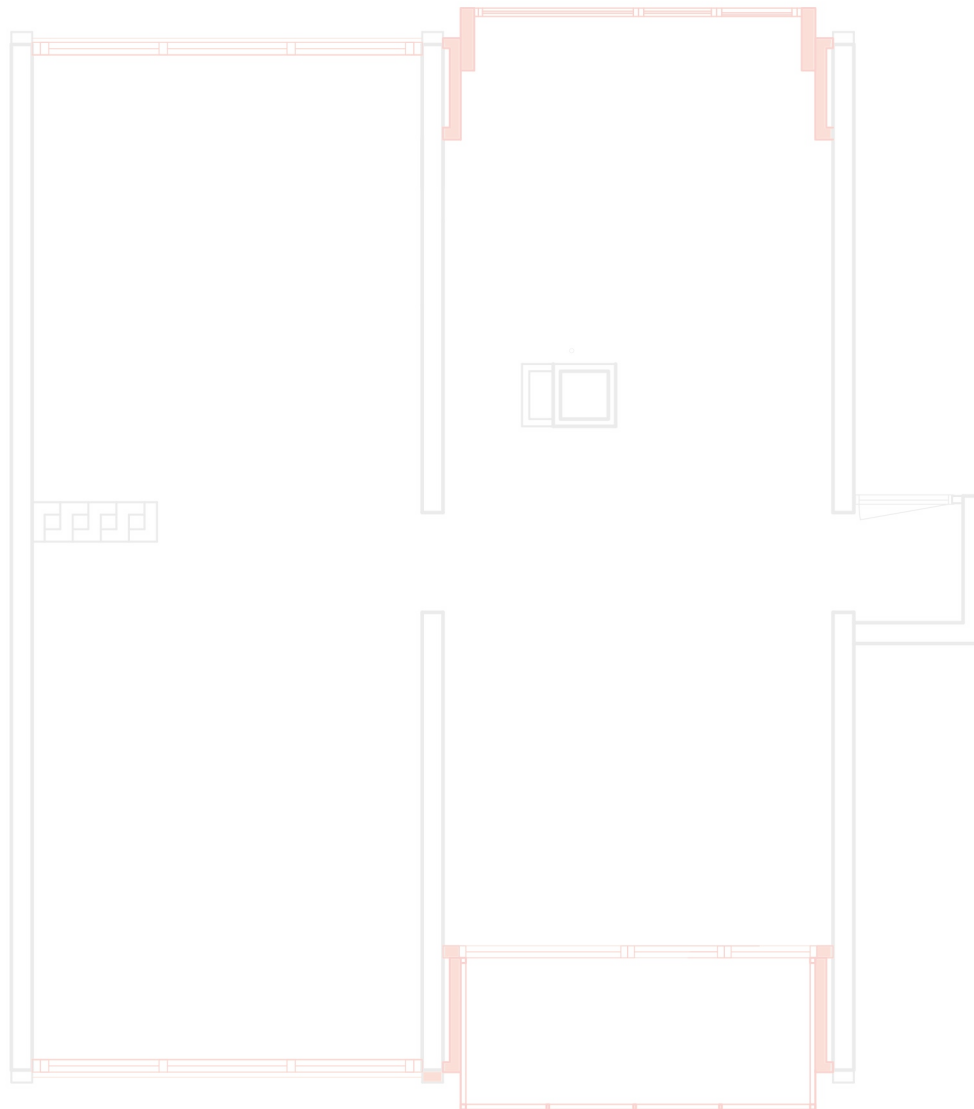
Providing a standardized fixed frame that enables different use of space



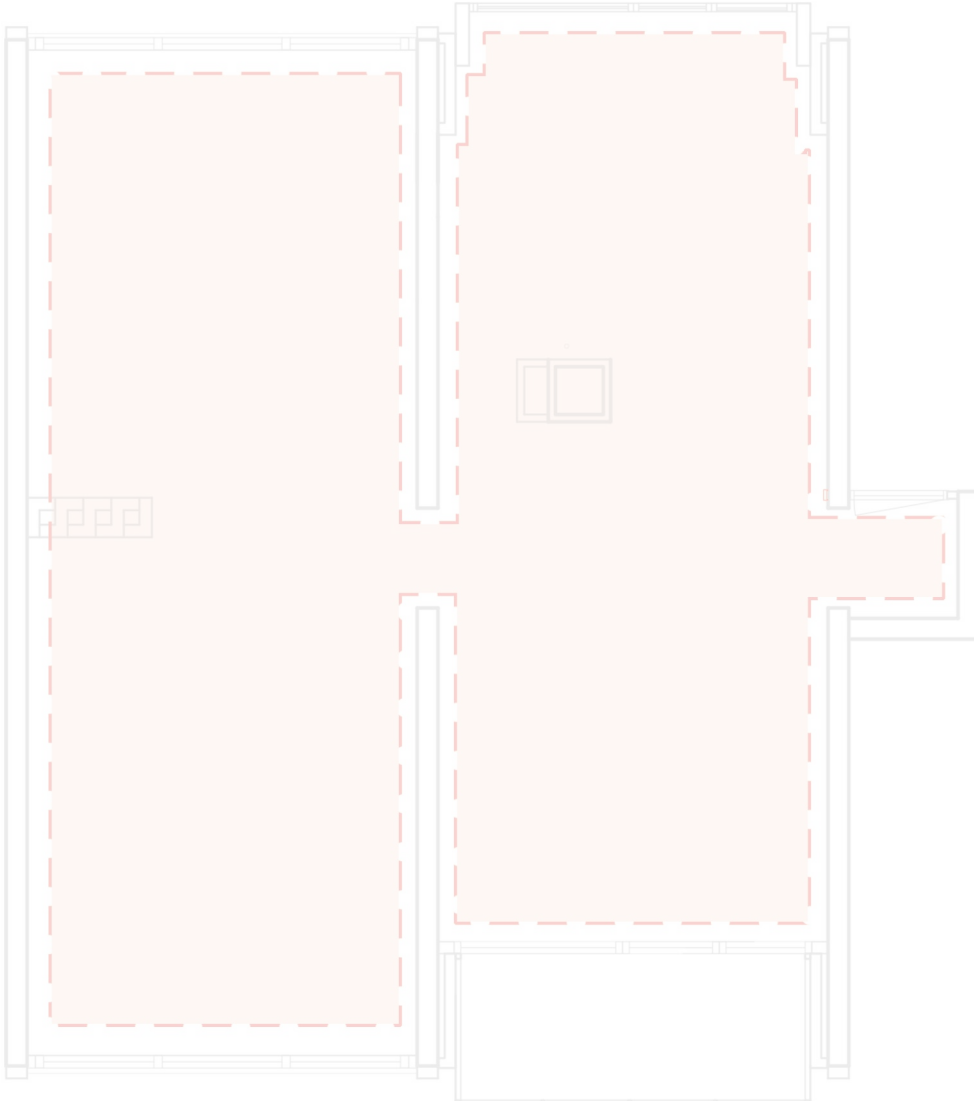
Fixed: Load-bearing structure (Kept)



Fixed: Service facilities (Kept)



Semi-fixed: Skin (replaced)

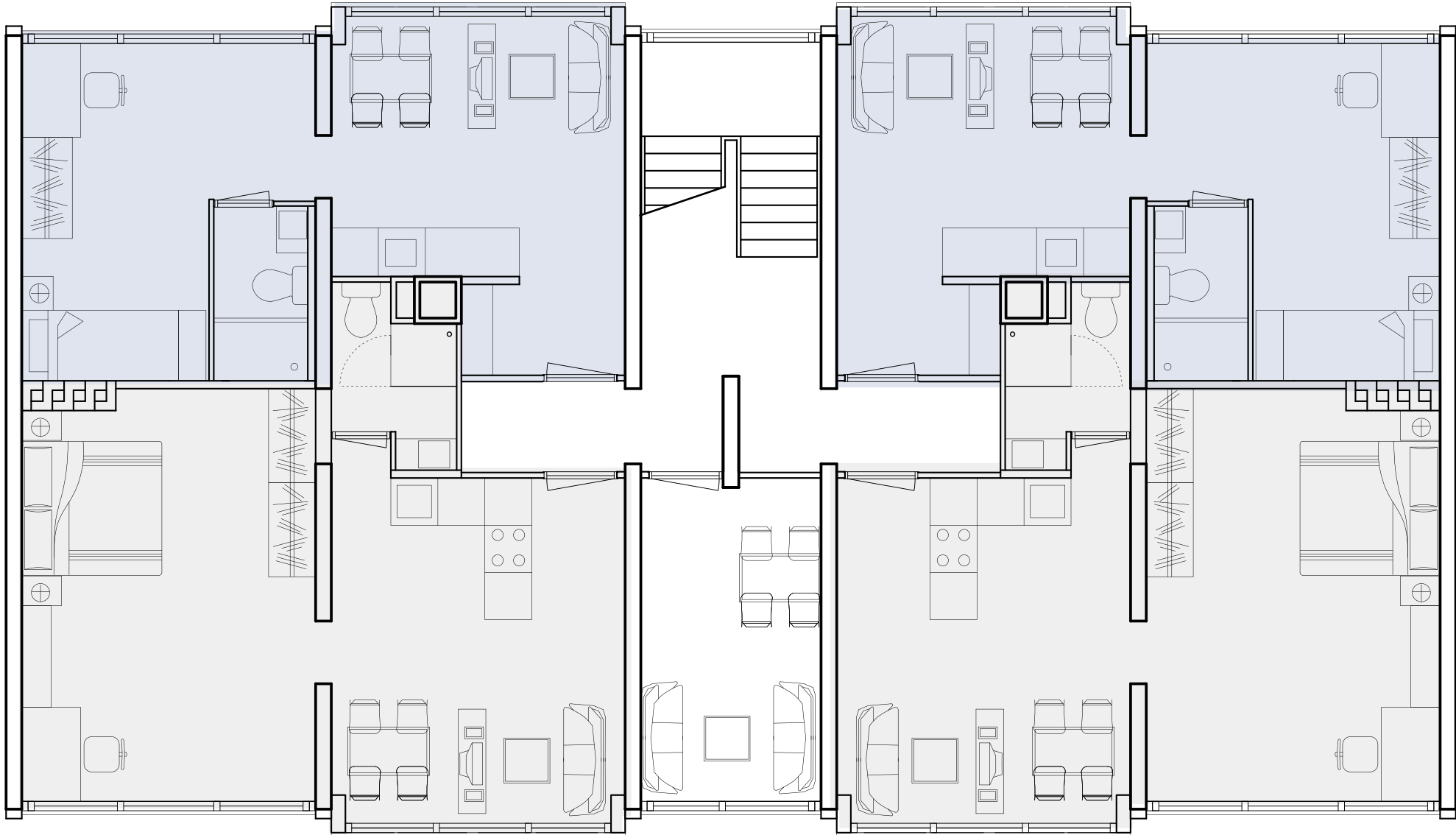


Flexible: Infilled fragments

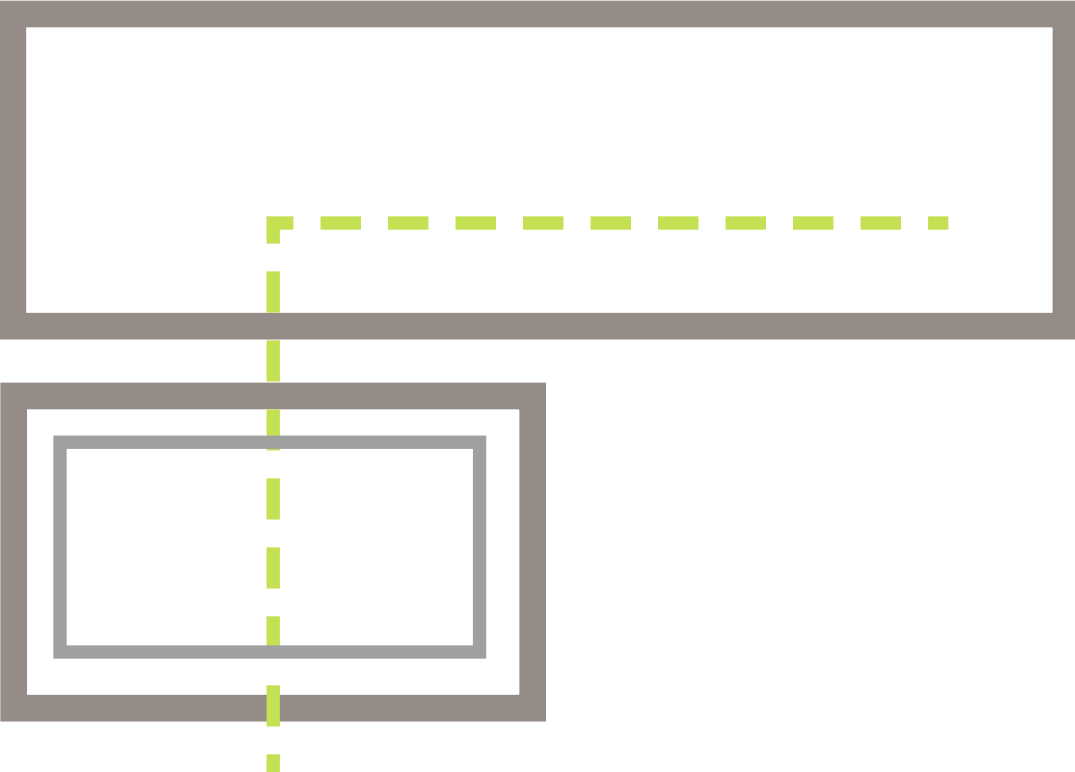
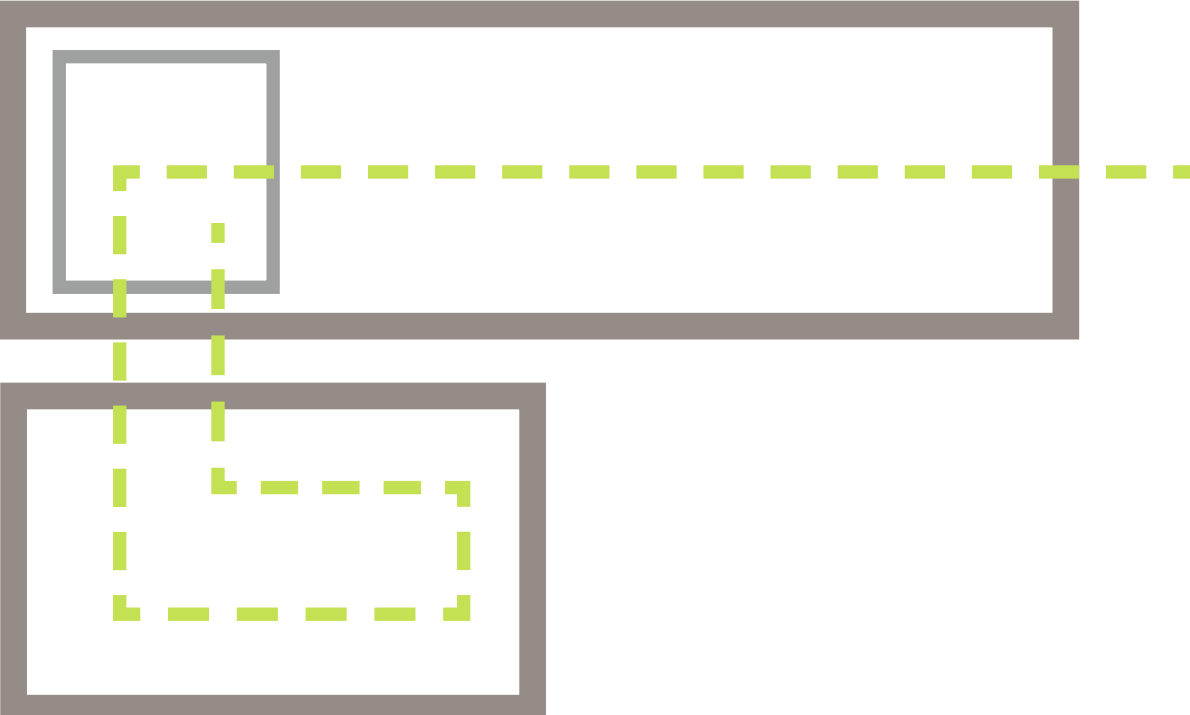
The simplex:  
The subdivided apartment for smaller dwellings for smaller size households



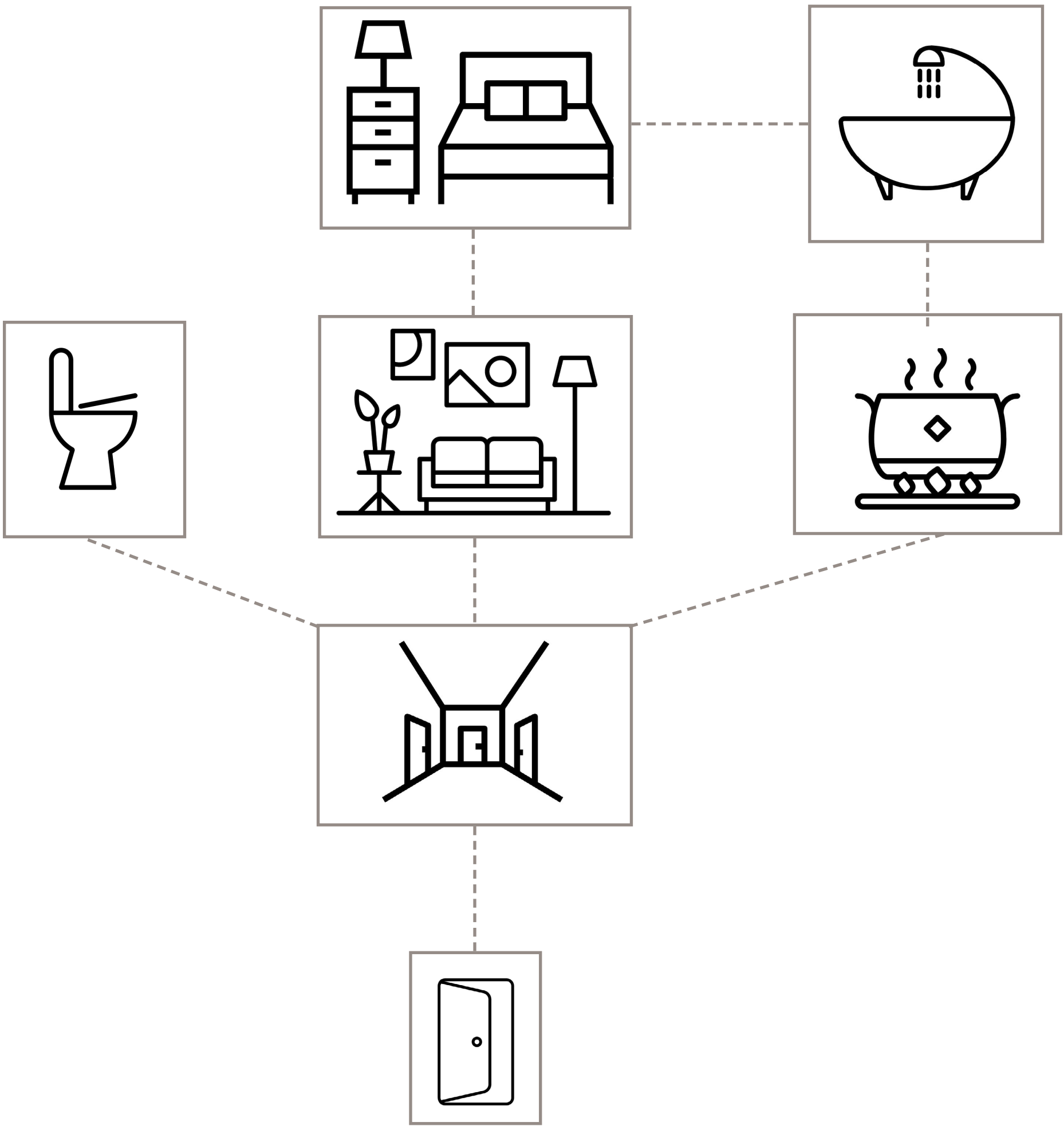
### New typology: studio



The duplex: new entrance and new circulation



The Simplex:  
New routes and possibility for flexible use

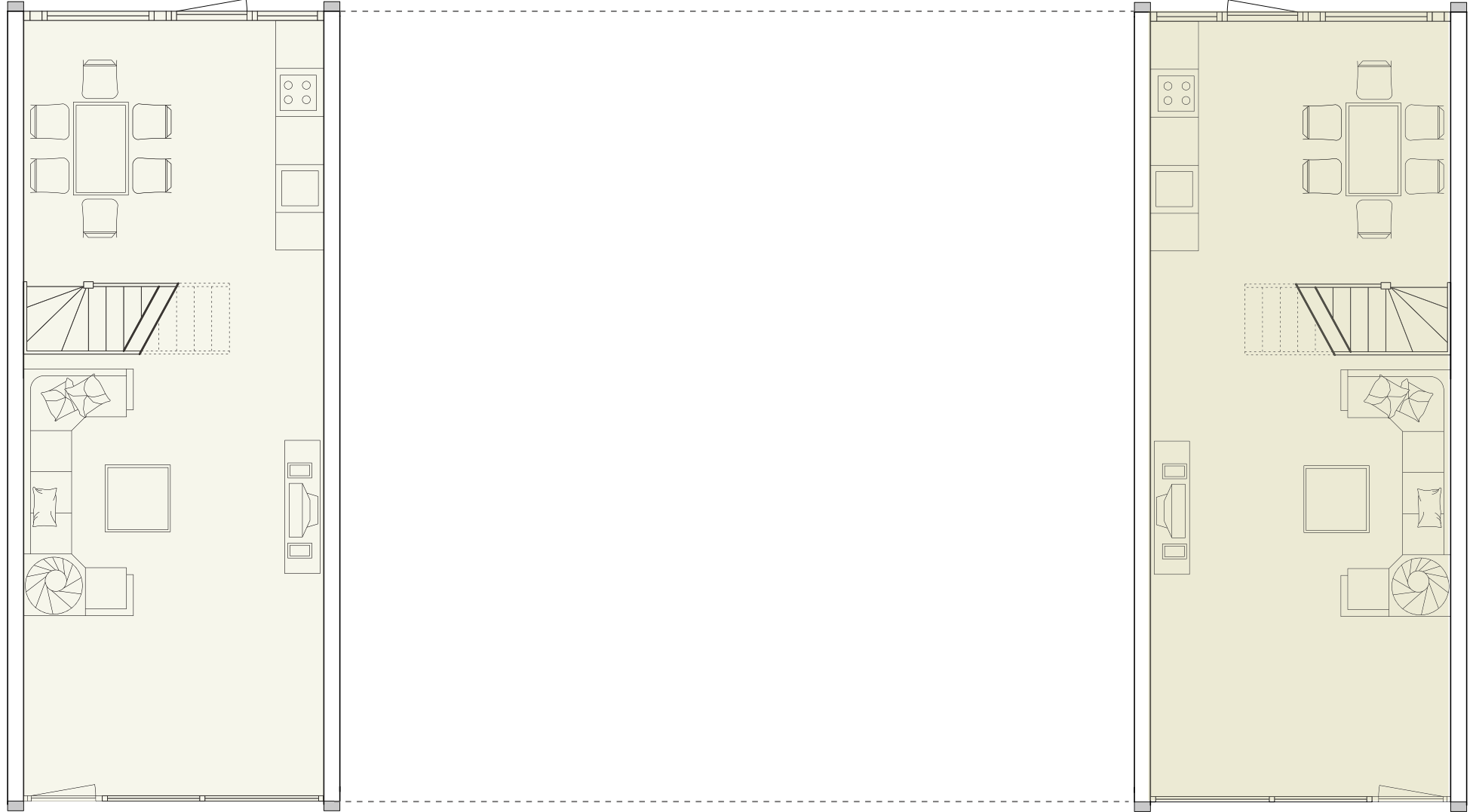


### The Simplex: New routes and possibility for flexible use





# Kept original typology: Duplex



# Kept original typology: Simplex



Design

Section 1  
Floor plan typology

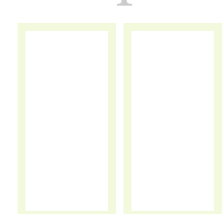
Studio



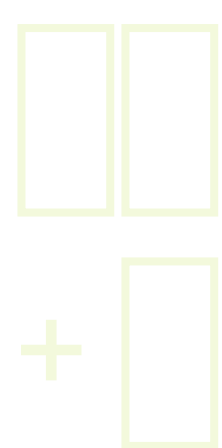
Shared apartment



Simplex



Duplex

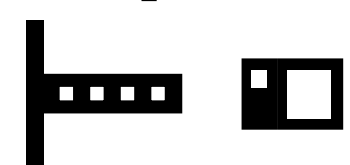


Section 2  
Interior fragments

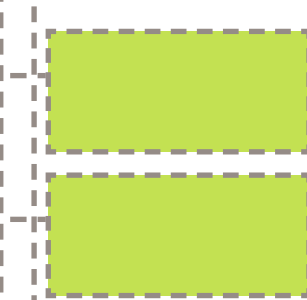
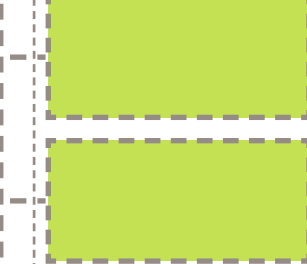
Studio



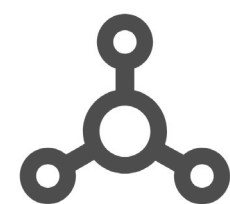
Grouped shaft



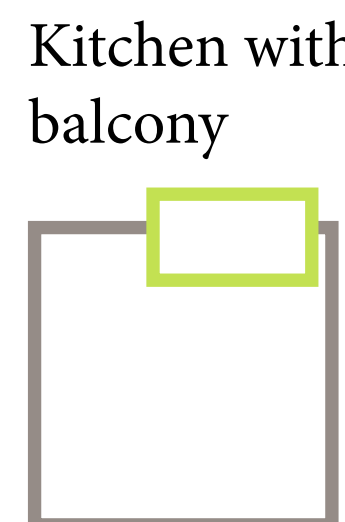
Linear shaft



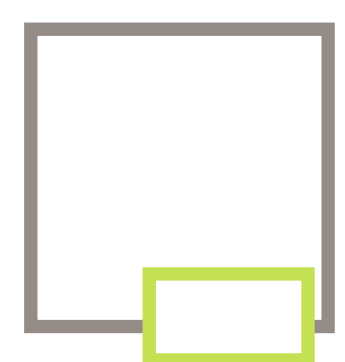
Shared apartment



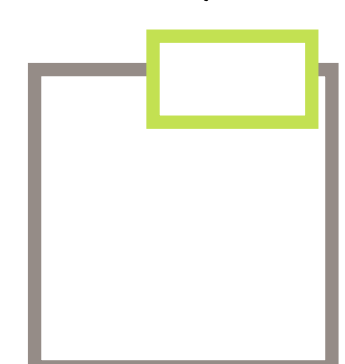
Floor plan prototype



Livingroom with balcony

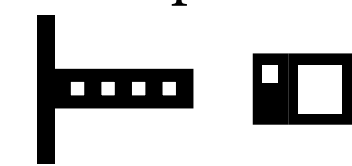


Kitchen with balcony

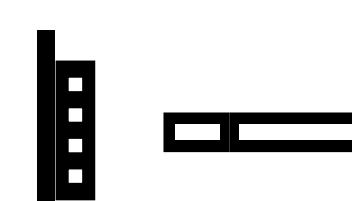


Kitchen + Sanitary

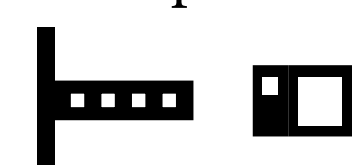
Grouped shaft



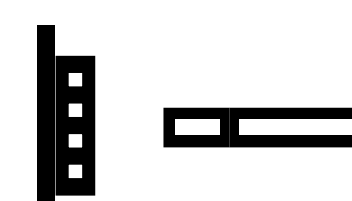
Linear shaft



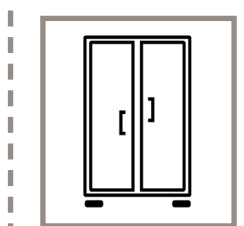
Grouped shaft



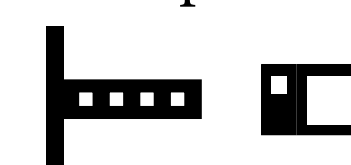
Linear shaft



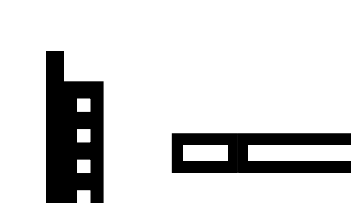
Storage



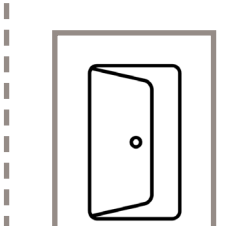
Grouped shaft



Linear shaft



Entrance



Section 3  
Exterior fragments

Window

Normal

Small

Balconty

Enclosed

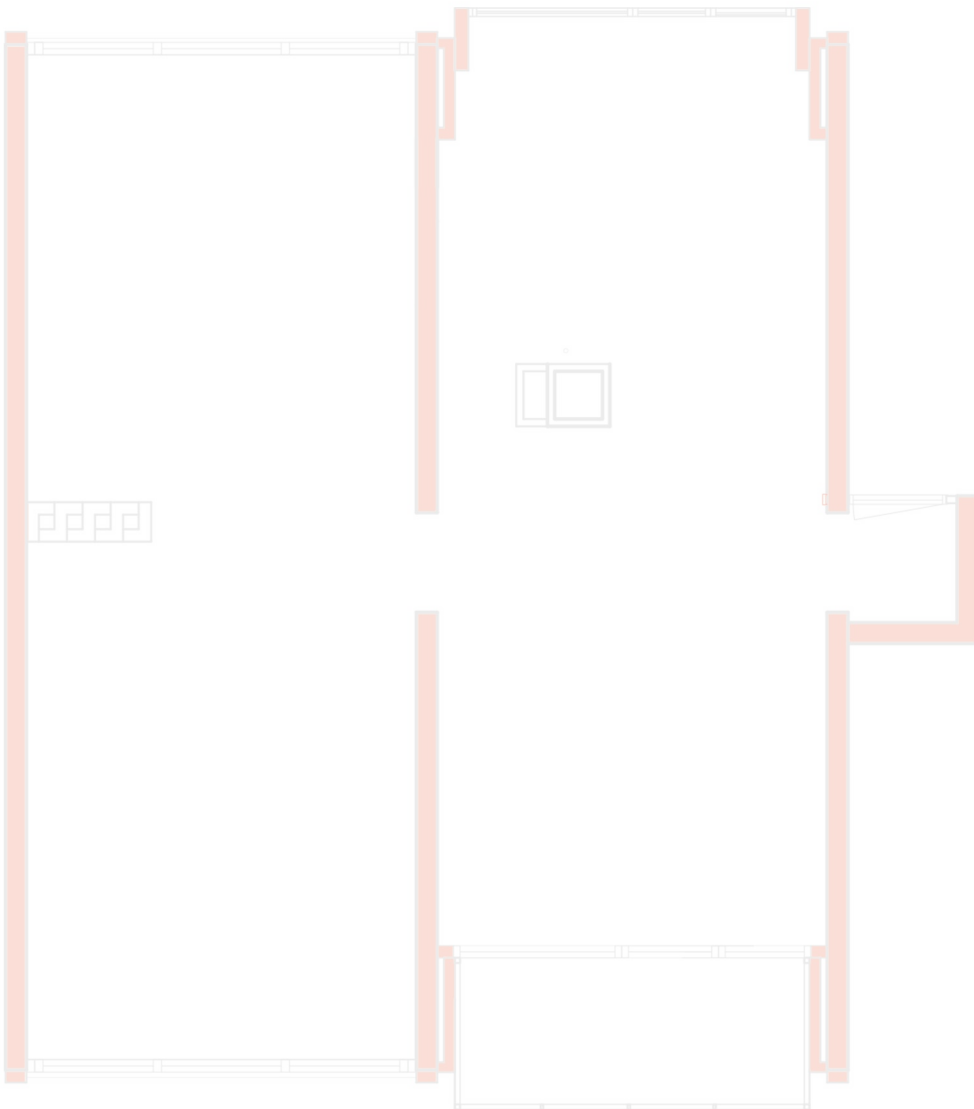
Opened

Enclosed

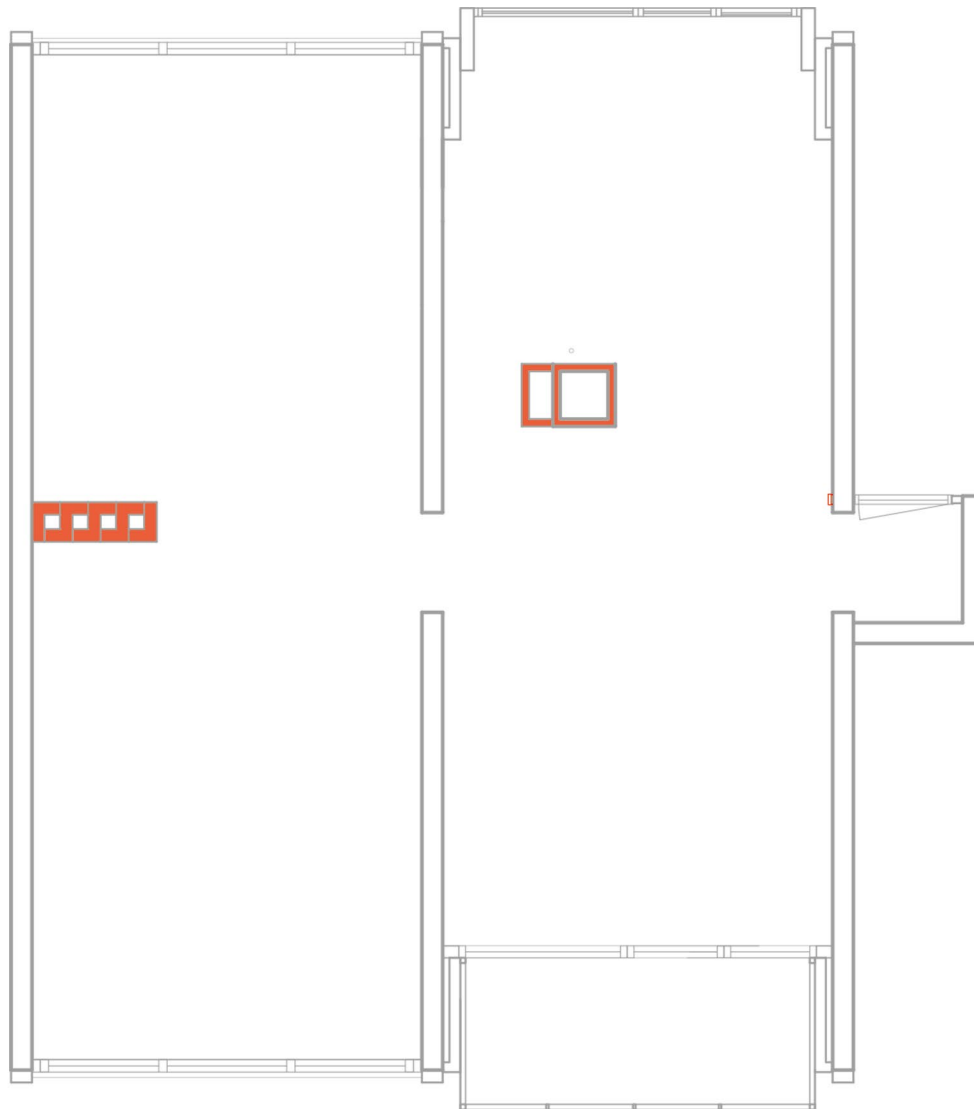
With french balcony

Handrail

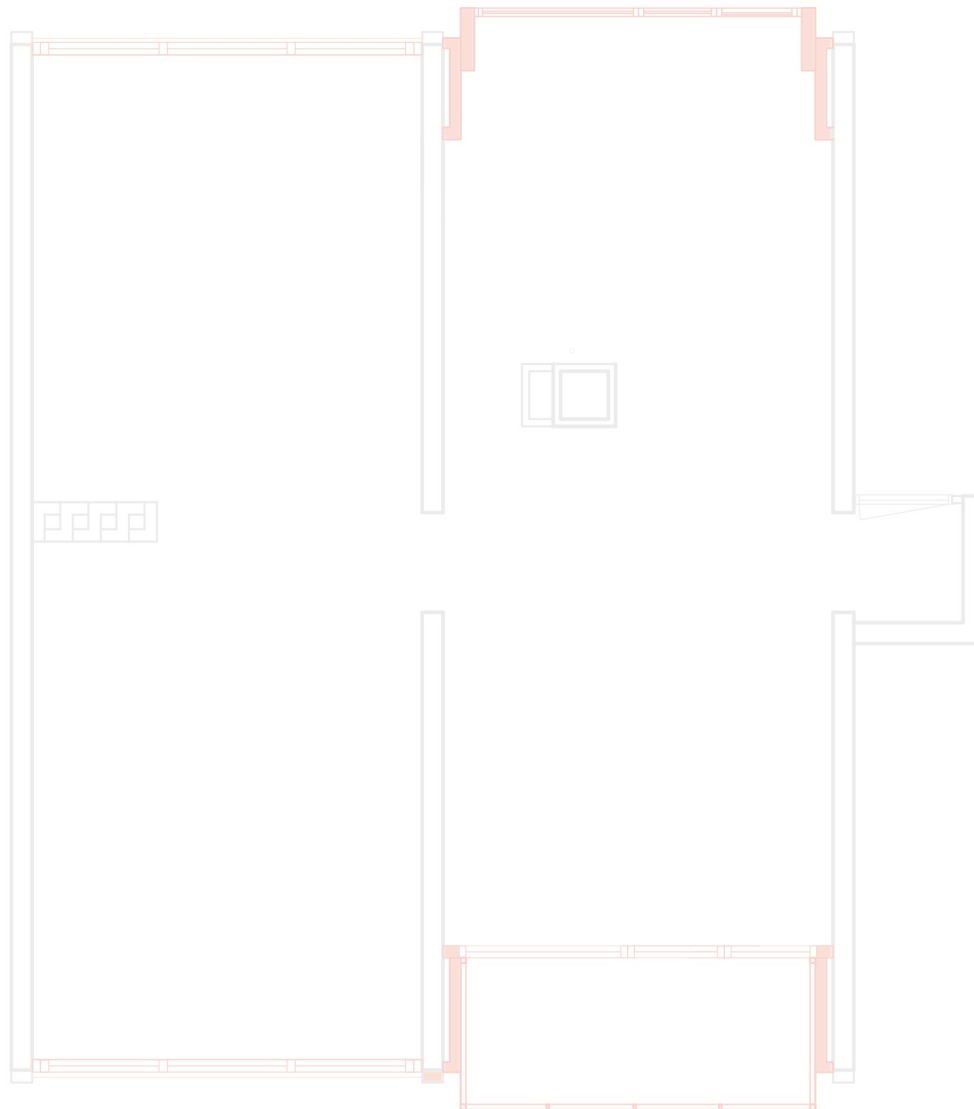
Doors



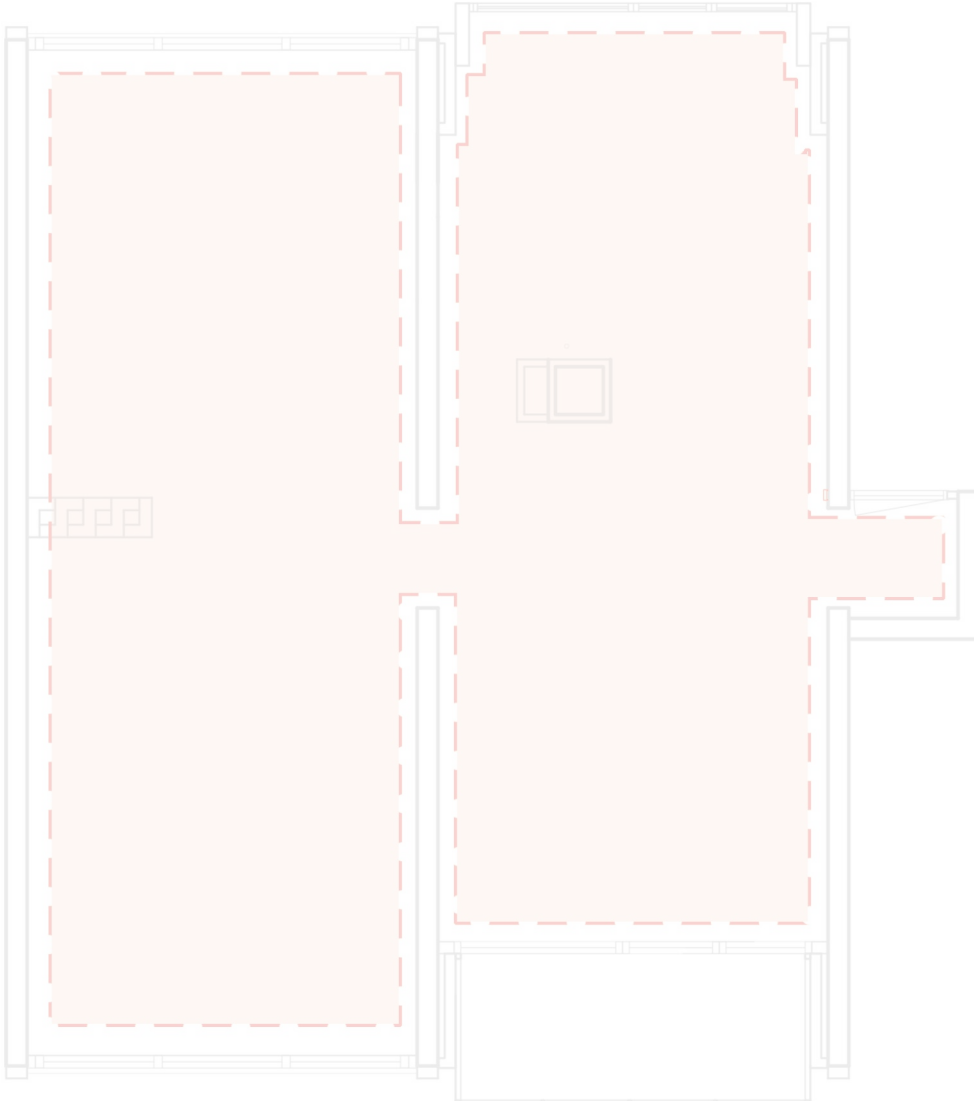
Fixed: Load-bearing structure  
(Kept)



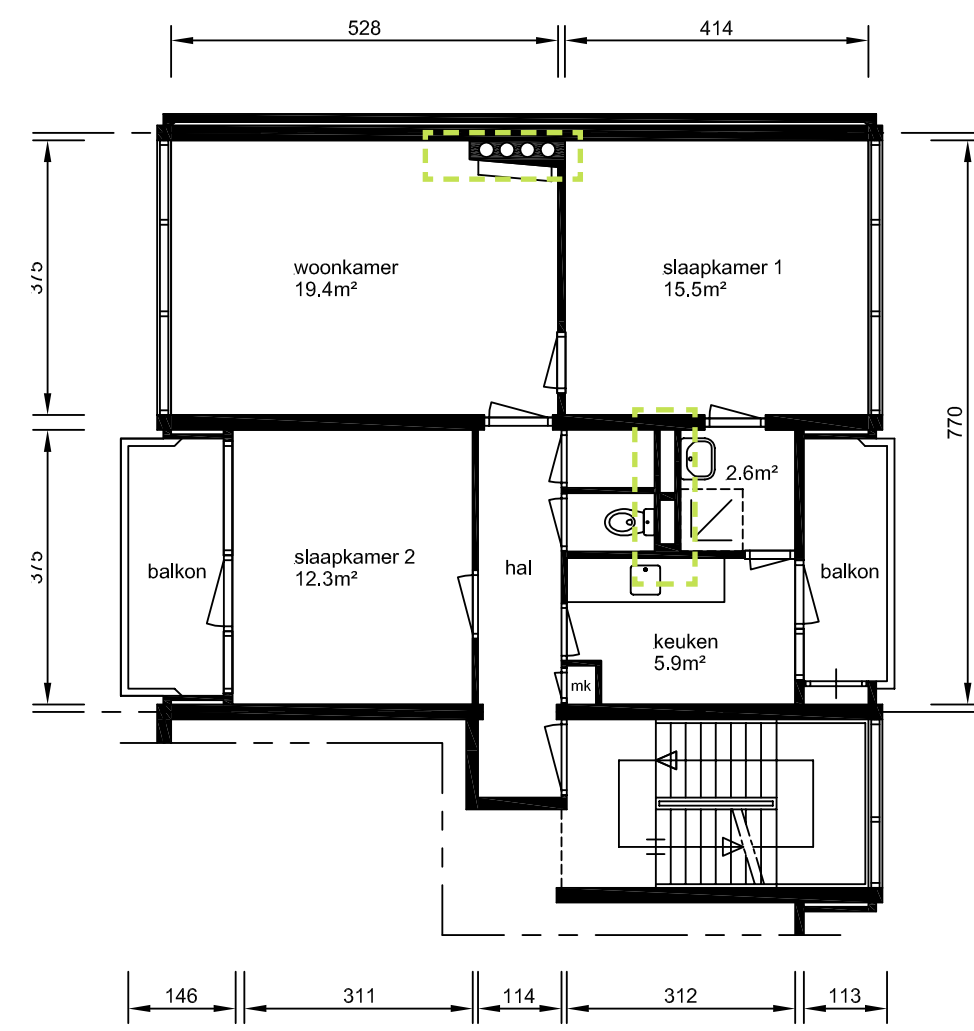
Fixed: Service facilities  
(Kept)



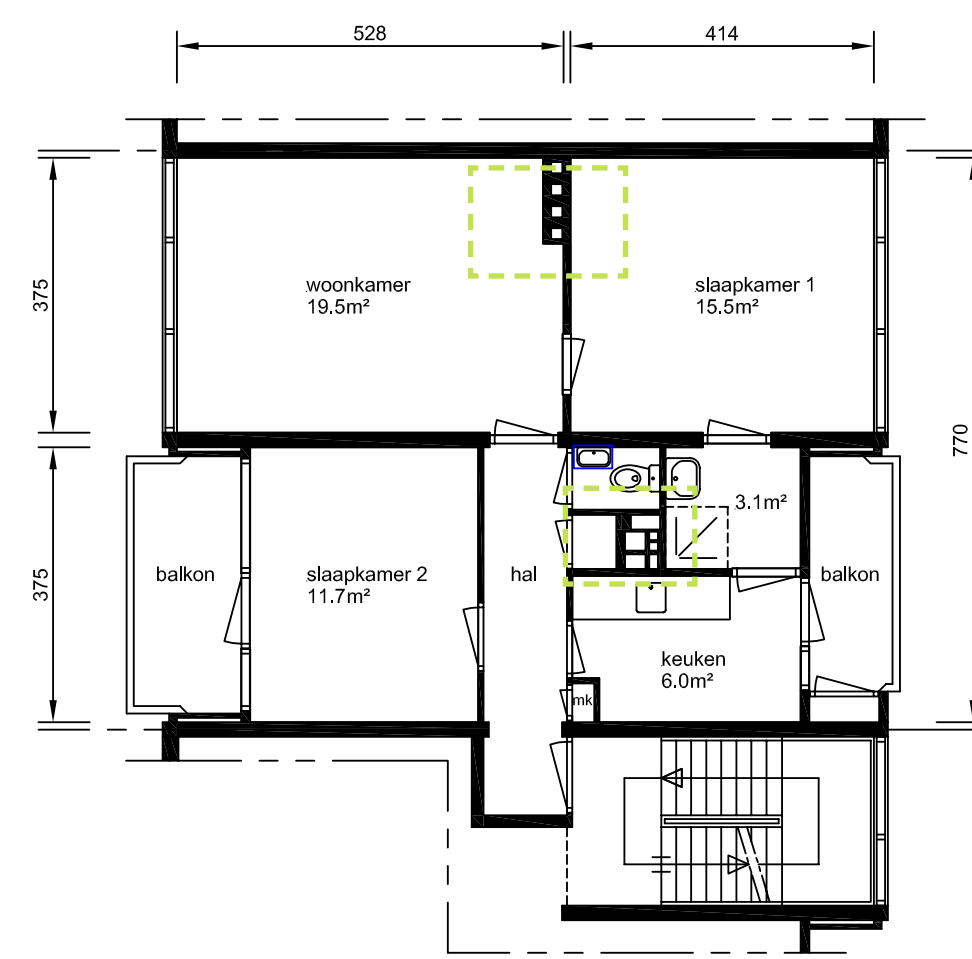
Semi-fixed: Skin  
(replaced)



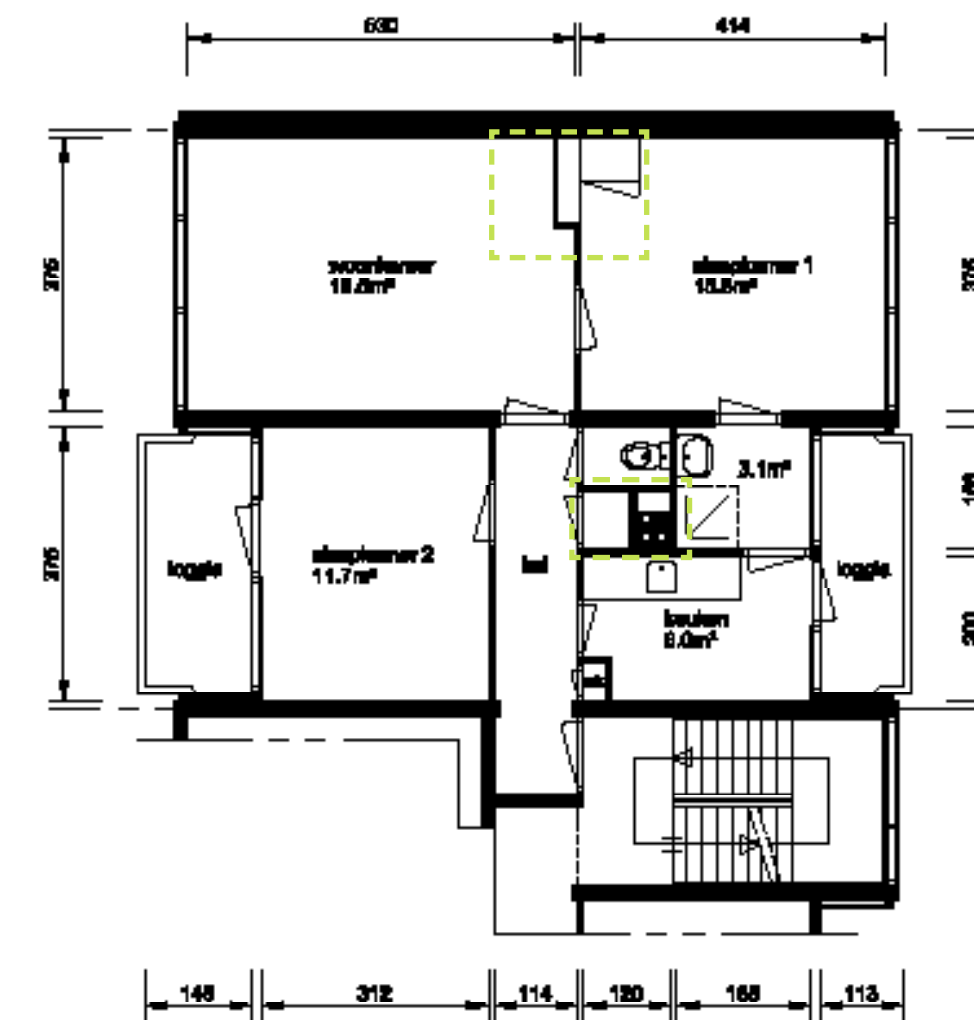
Flexible: Infilled fragments



Camera Obscuradreef



Marcopololaan



Stanleylaan

**Design**

Section 1  
Floor plan typology

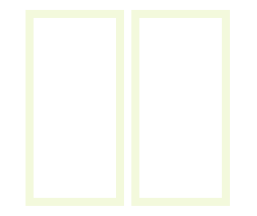
Studio



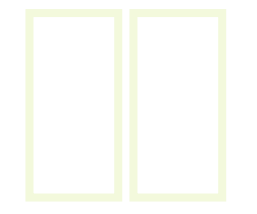
Shared apartment



Simplex



Duplex



+

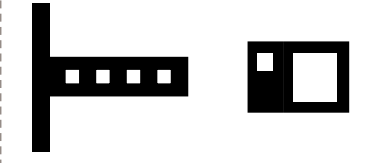


Section 2  
Interior fragments

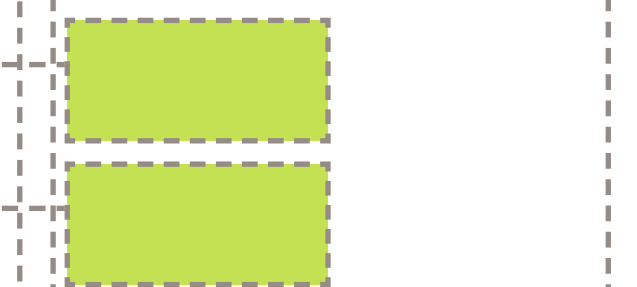
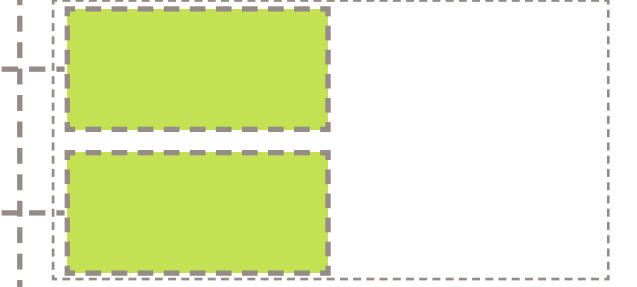
Studio

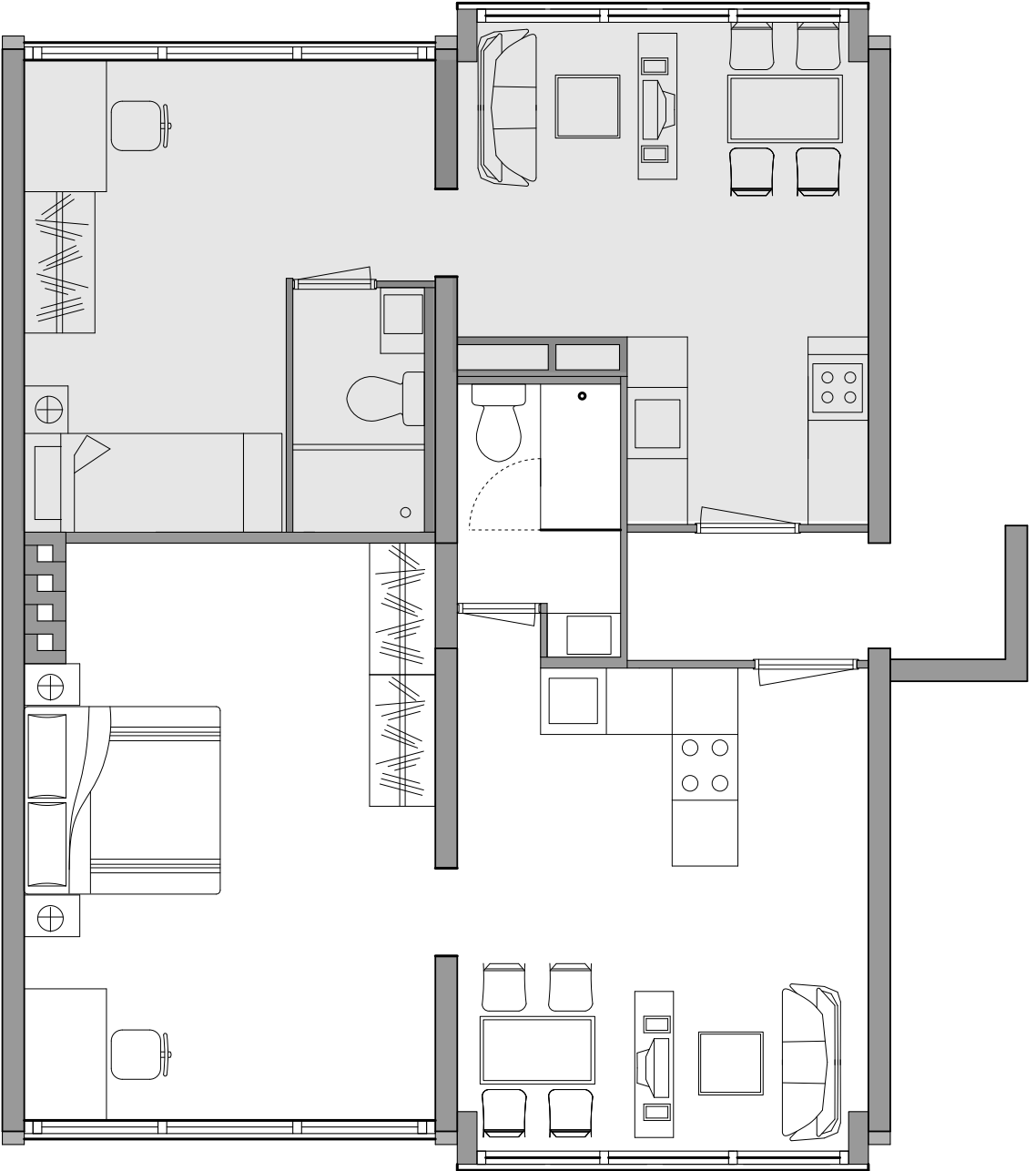
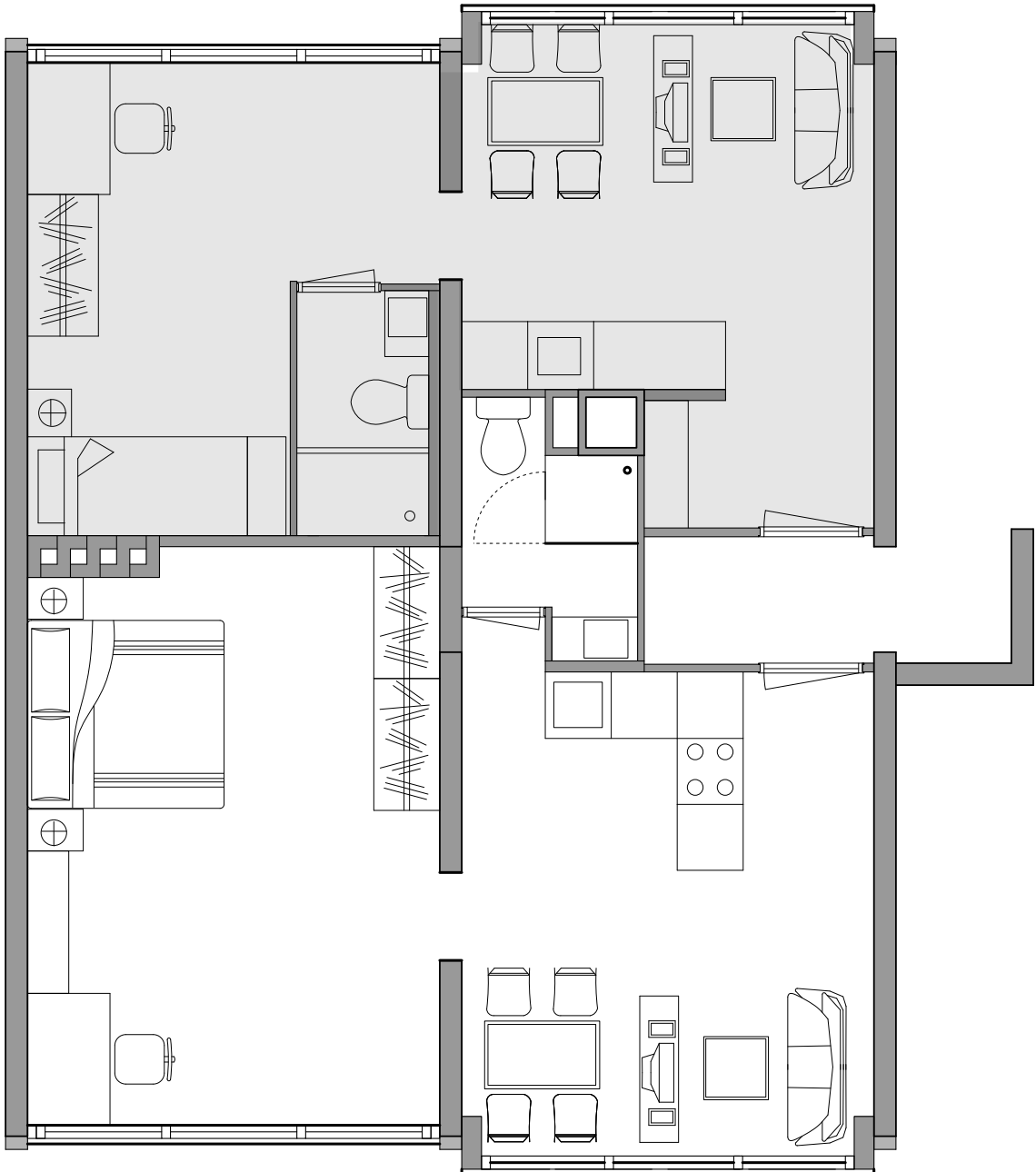


Grouped shaft



Linear shaft





**Design**

Section 1  
Floor plan typology

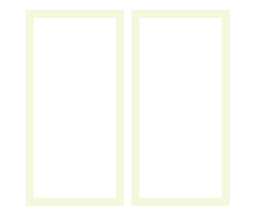
Studio



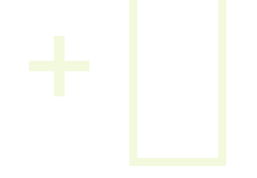
Shared apartment



Simplex



Duplex

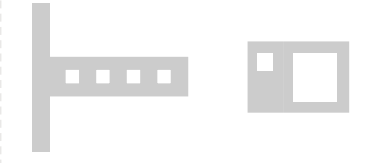


Section 2  
Interior fragments

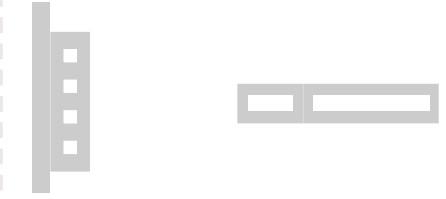
Studio



Grouped shaft



Linear shaft

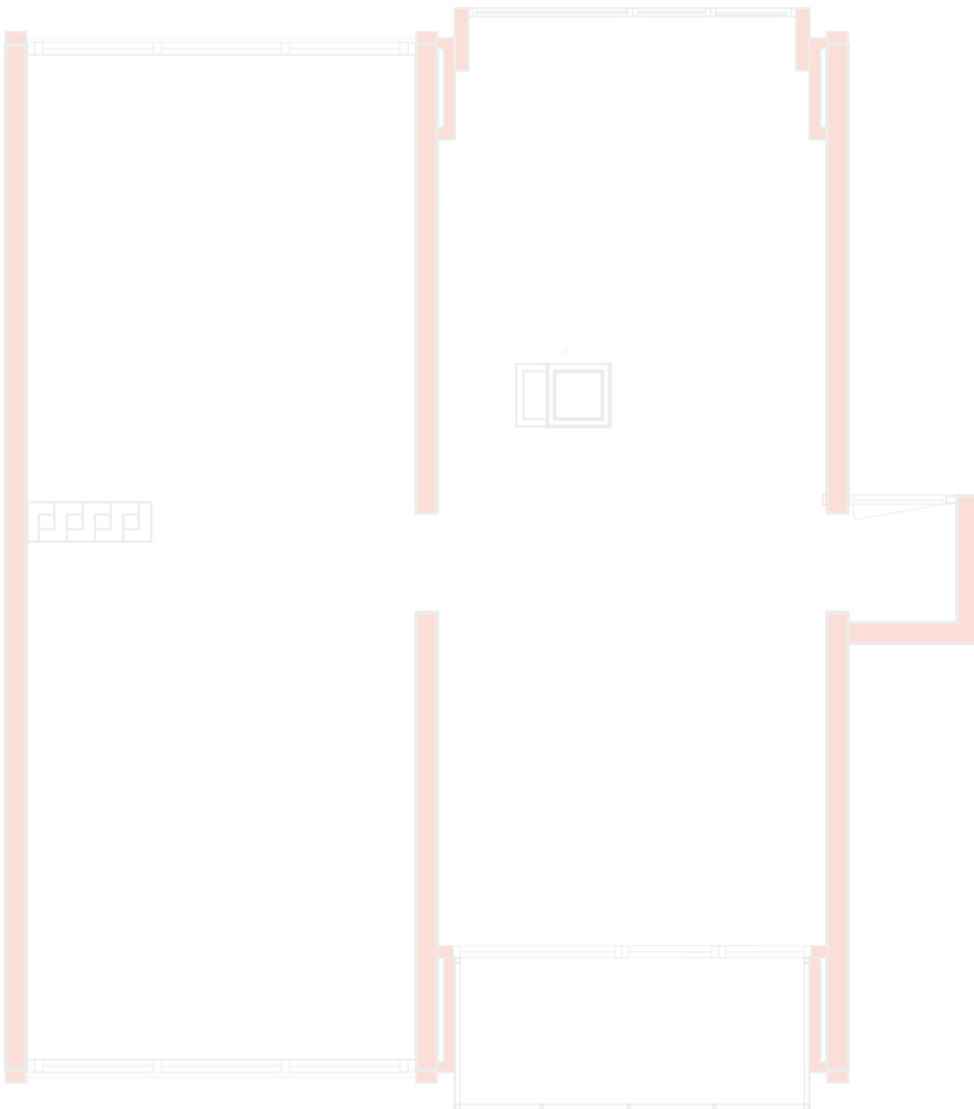


Shared apartment

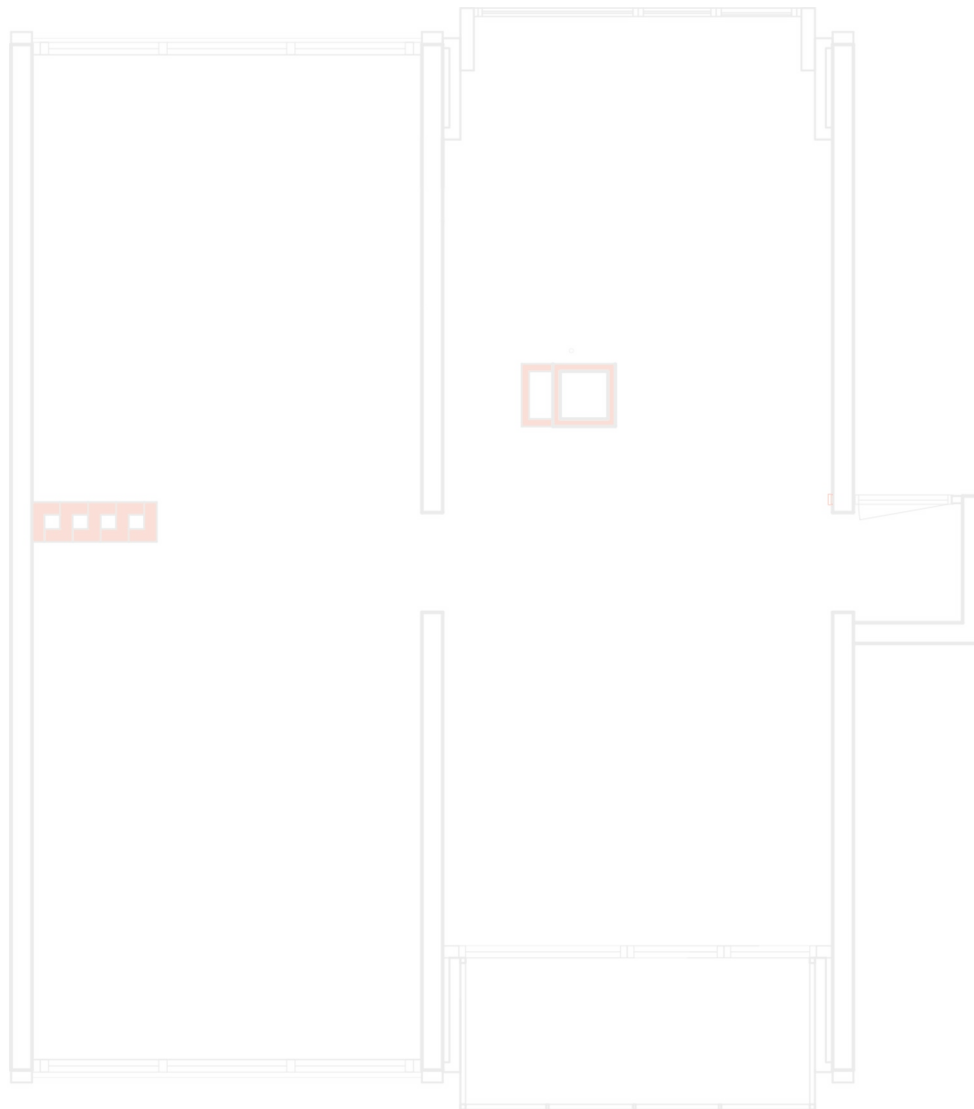




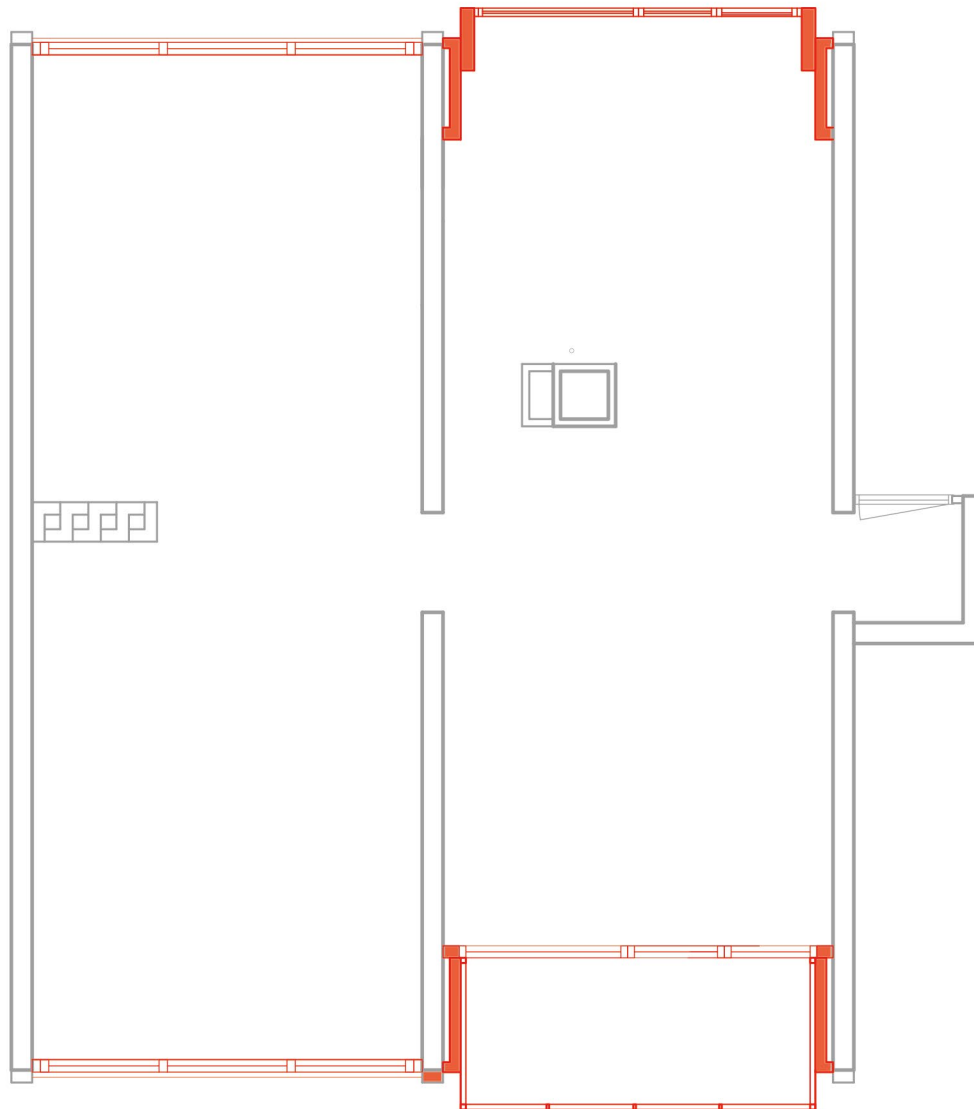
### What CAN be different?



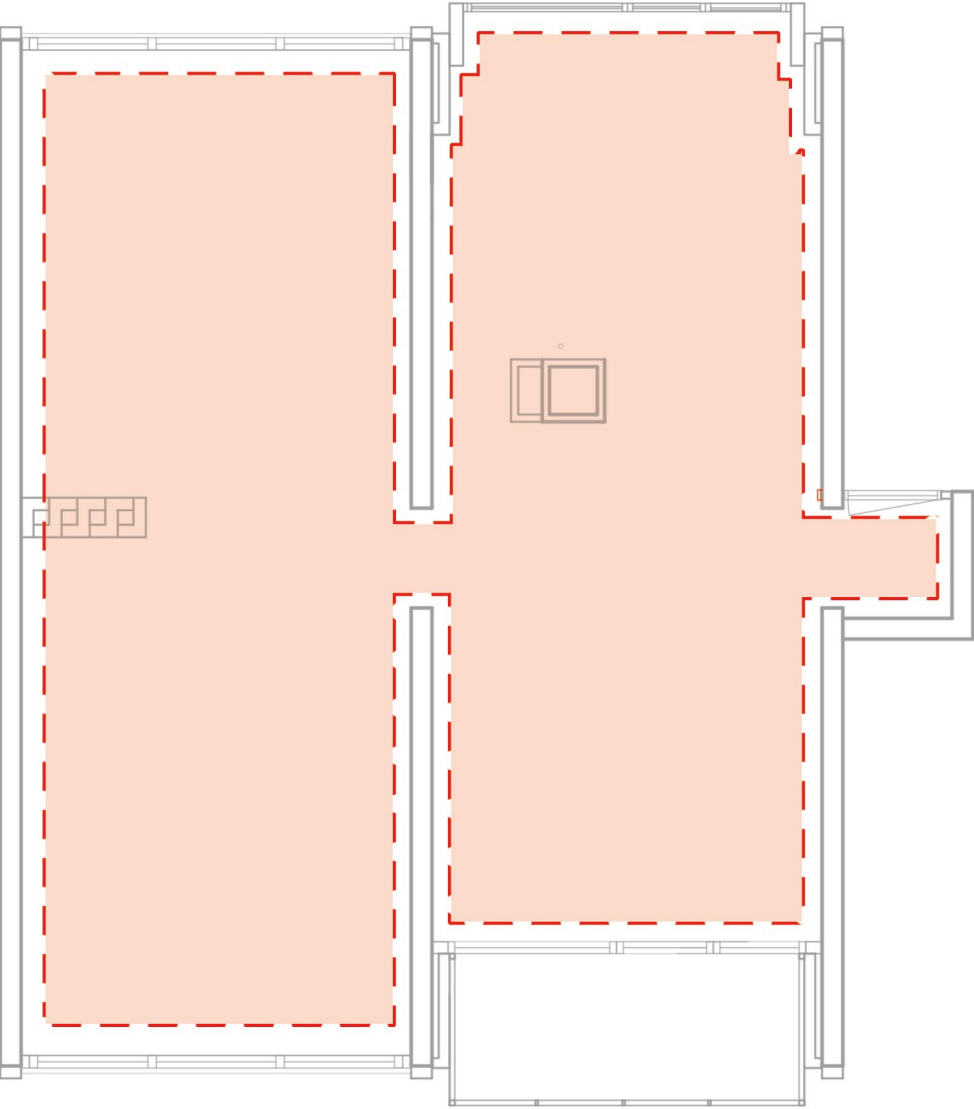
Fixed: Load-bearing structure  
(Kept)



Fixed: Service facilities  
(Kept)

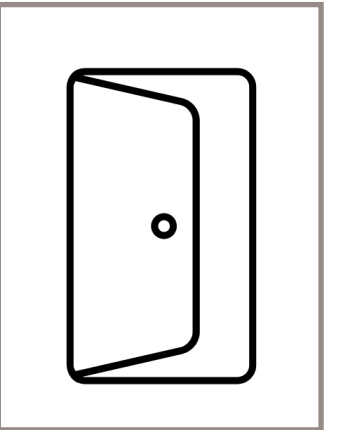
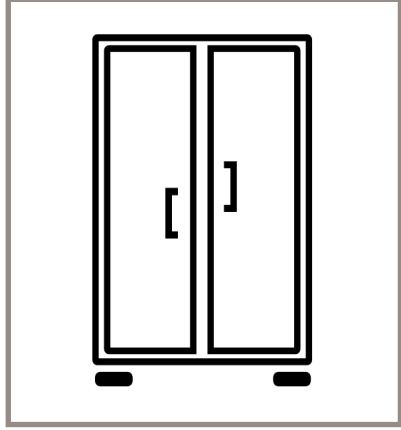
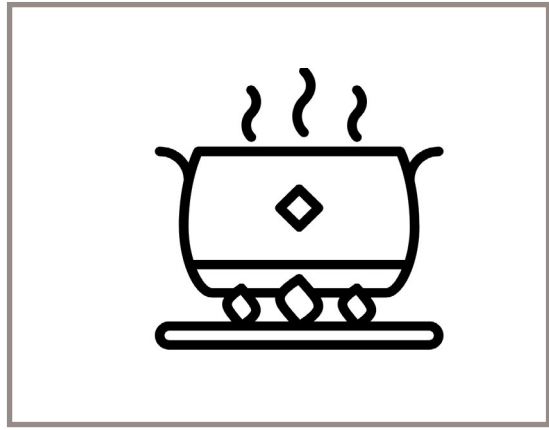
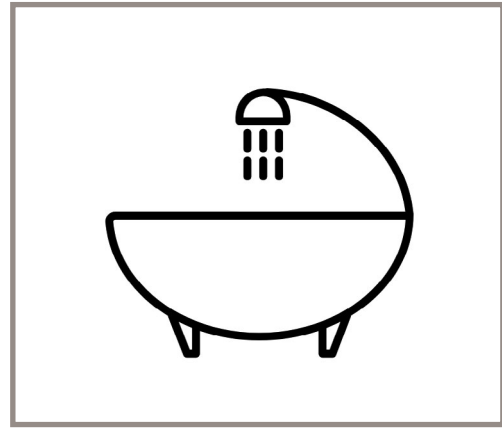
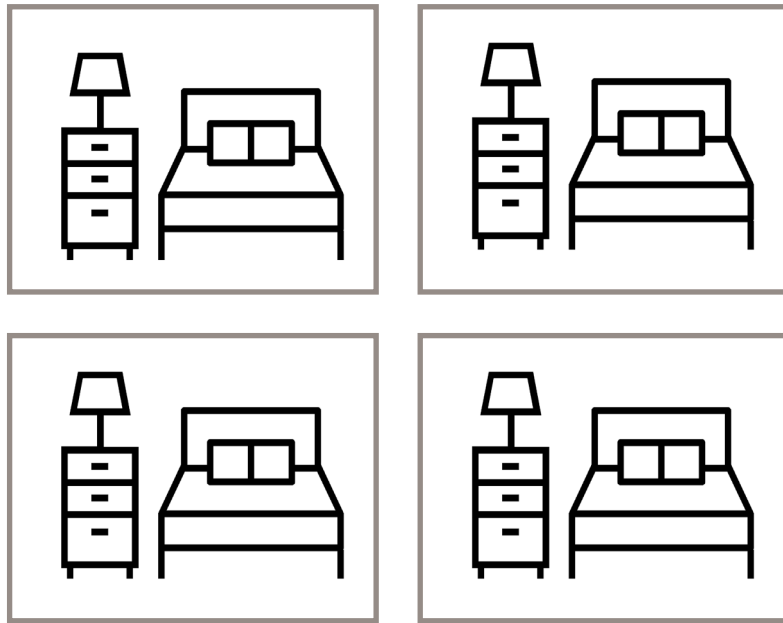
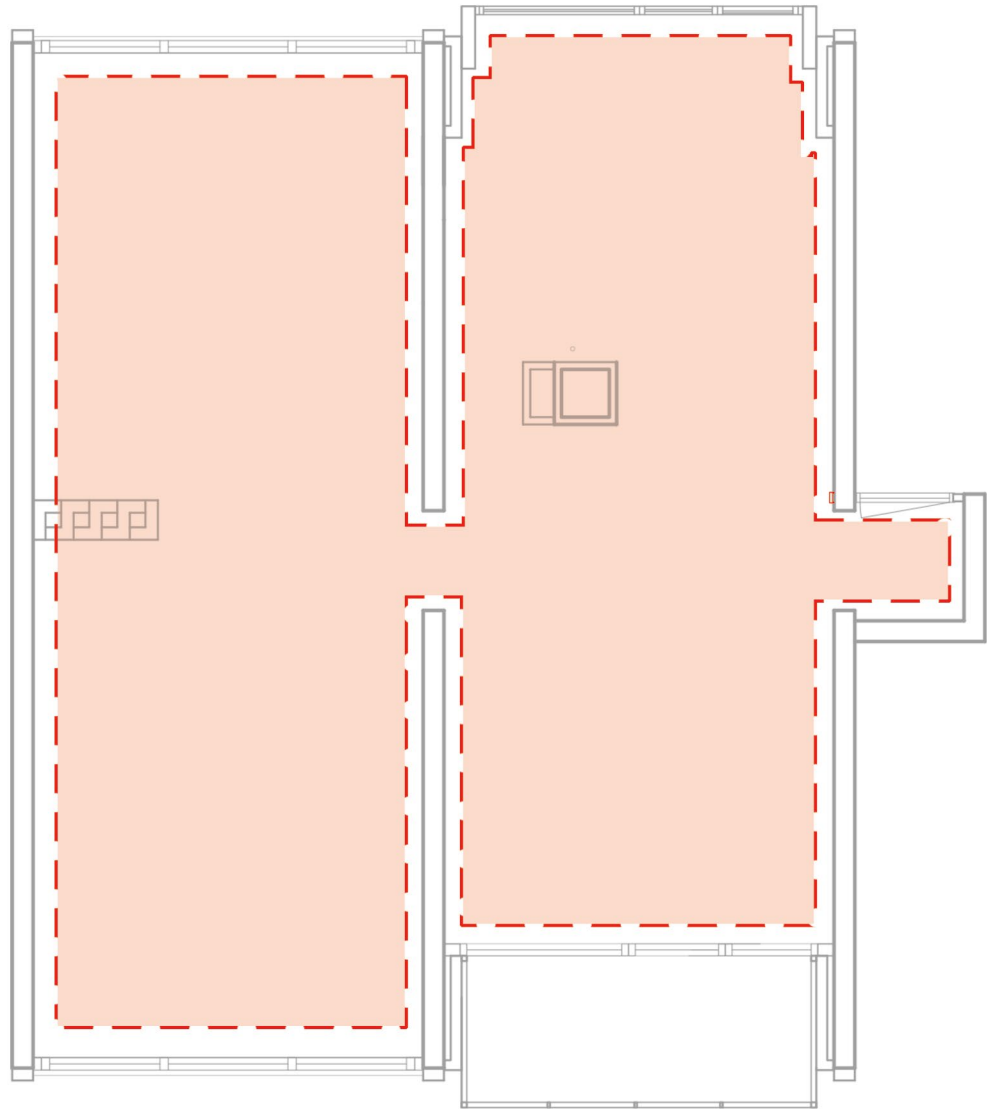


Semi-fixed: Skin  
(replaced)

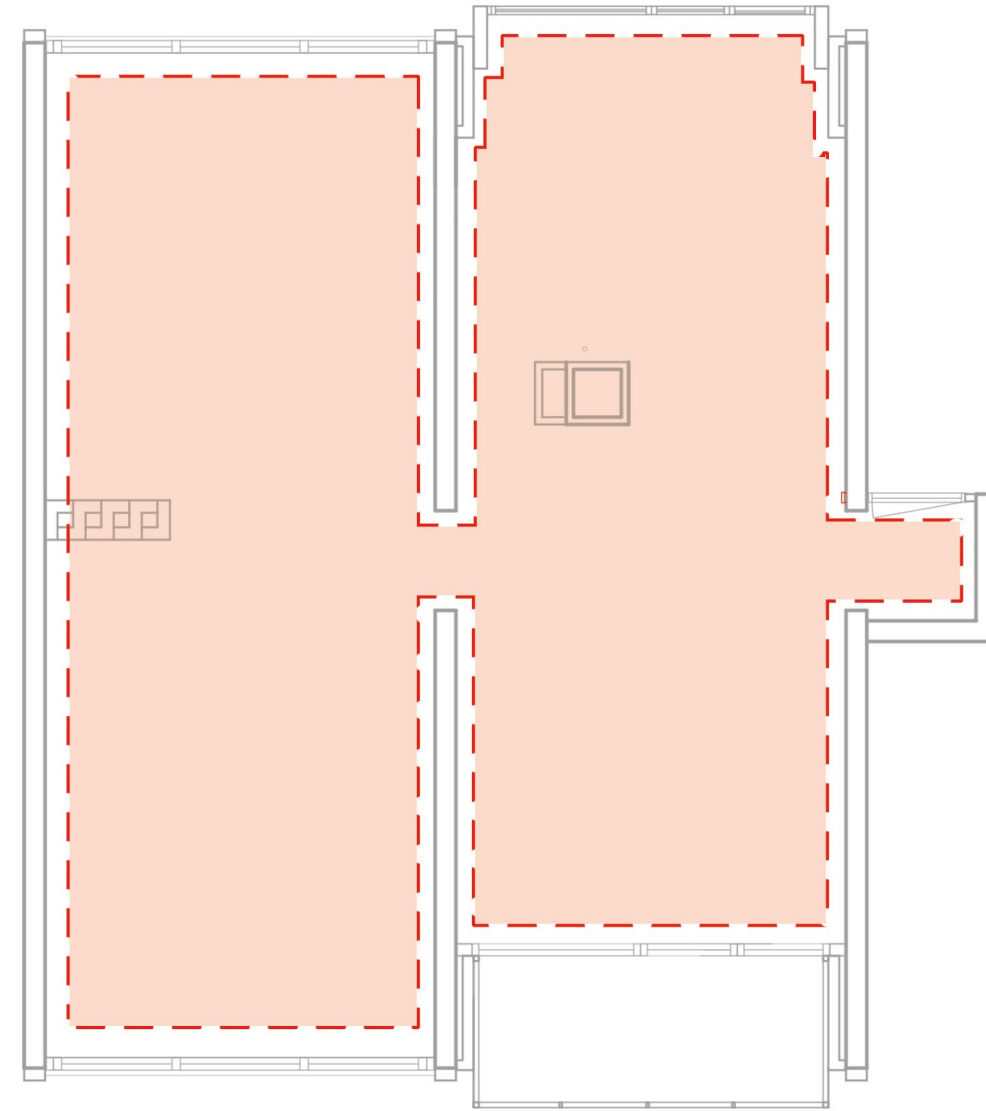


Flexible: Infilled fragments

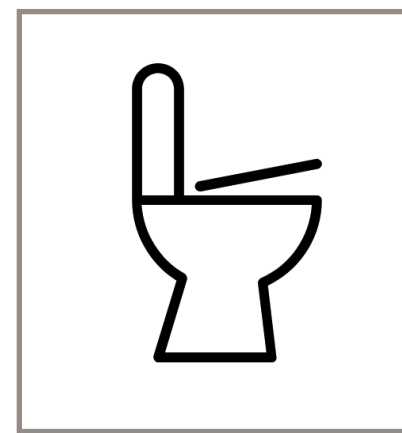
# What SHOULD be different?



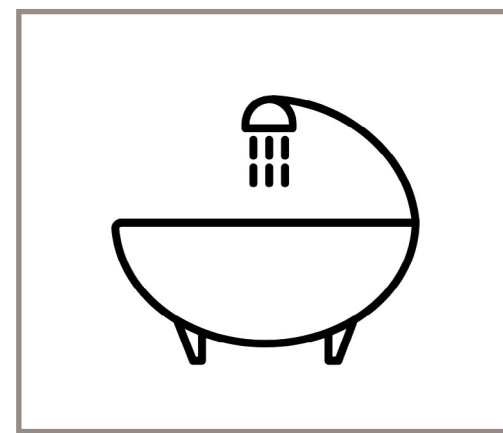
# What SHOULD be different?



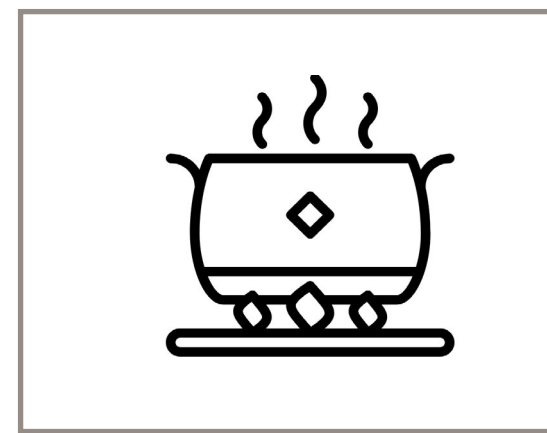
- Extra bedroom



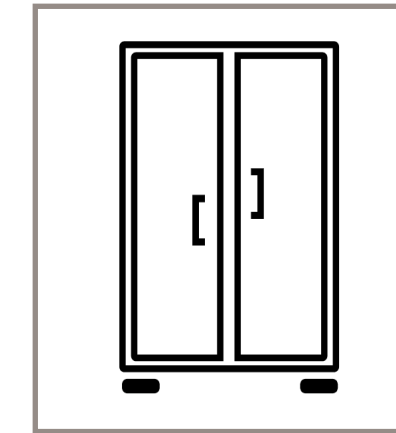
Extra Toilet  
Relocated toilet



- Extra Bathroom  
- Enlarged bathroom



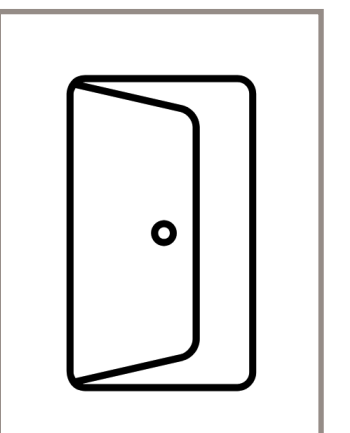
- Opened kitchen  
- Enclosed kitchen  
- Enlarged kitchen



- Extra storage



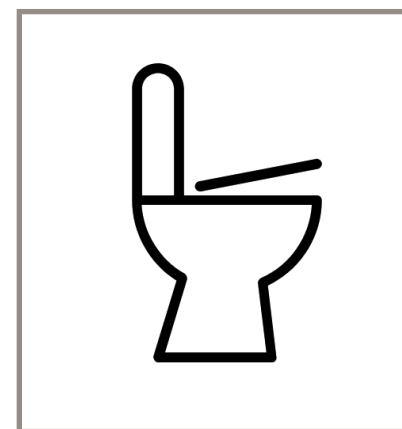
- Flexible use of Gathering space  
- Opened gathering space



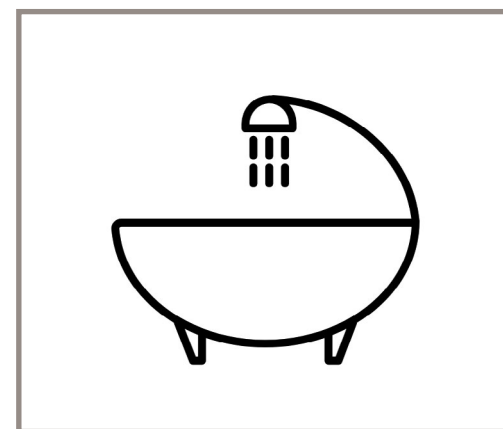
- Opened  
- Enclosed

## What can be the differences?

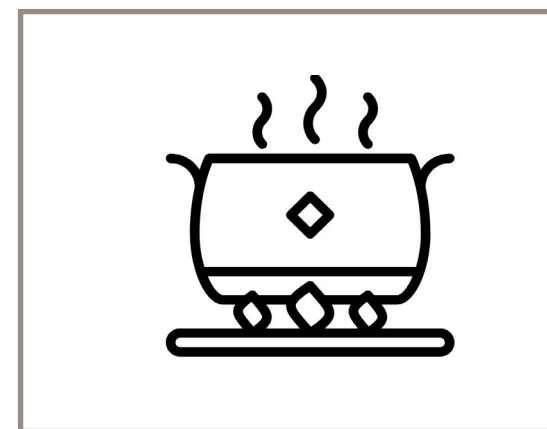
- Extra Toilet for the master's bedroom



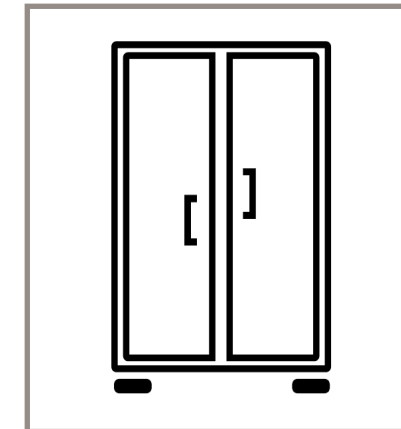
- Larger bathing space:  
Space for baby's bathing:  
1-2 adults + 1 kid;  
Large bathroom for the old
- Separated Wash basin,  
bath room and toilet
- Enough storage space
- Easy to clean
- Extra bathroom for the master's bedroom



- Extra storage
- Large working space
- Large amount of natural daylight
- Less fume problems
- Flexible space
- Open to gathering space



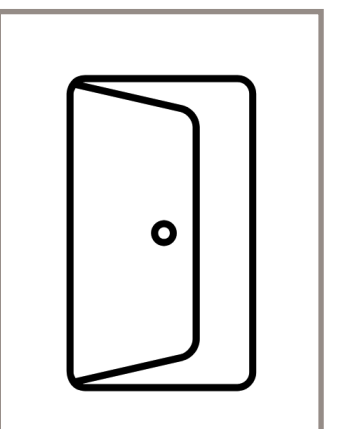
- Walk-in closet for master's bedroom
- Utility room for housework
- Storage of clothings and shoes for entrance
- Place for (foldable) baby carriage/handcart/ladder
- Sports accessories
- Small goods for daily use (toilet paper, toolbox...)



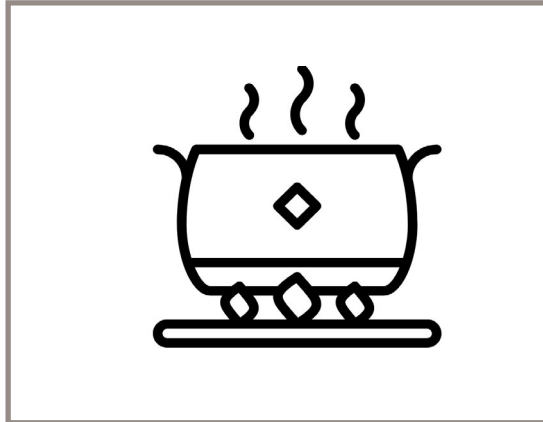
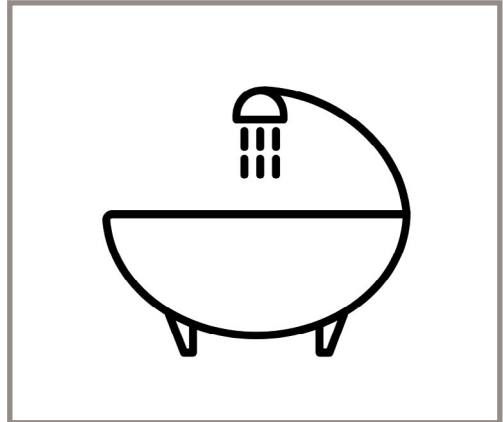
- Sufficient daylight
- Extra storage
- Connected dining space and livingroom
- Connected diningroom and kitchen
- Multi-function space
- Connected with outdoor space
- Possibility of having extra dining space



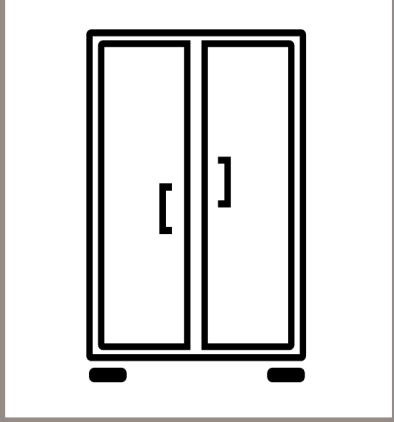
- Opened for free-flow
- Enclosed for private
- Mirror
- Seat for changing shoes
- Place for (foldable) baby carriage/handcart/ladder
- Sports accessories
- Small goods for daily use



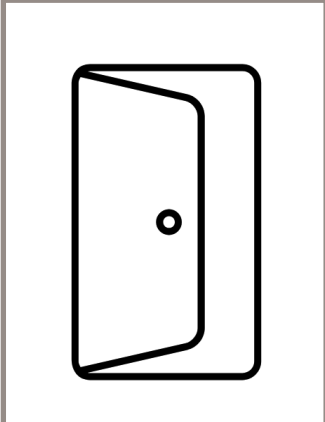
Combination of toilet, bathing, cooking and dining

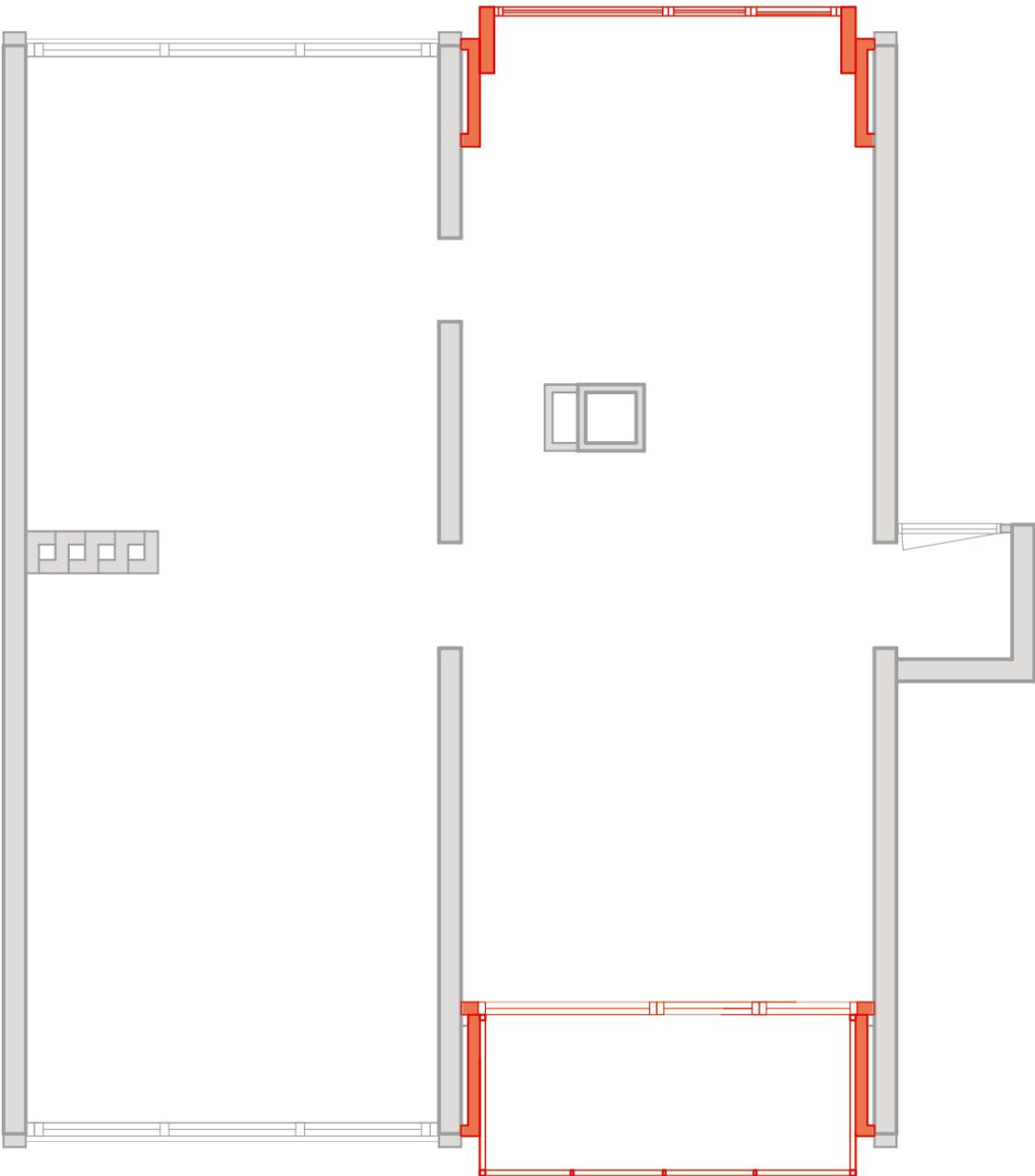


Bedroom storage/utility room

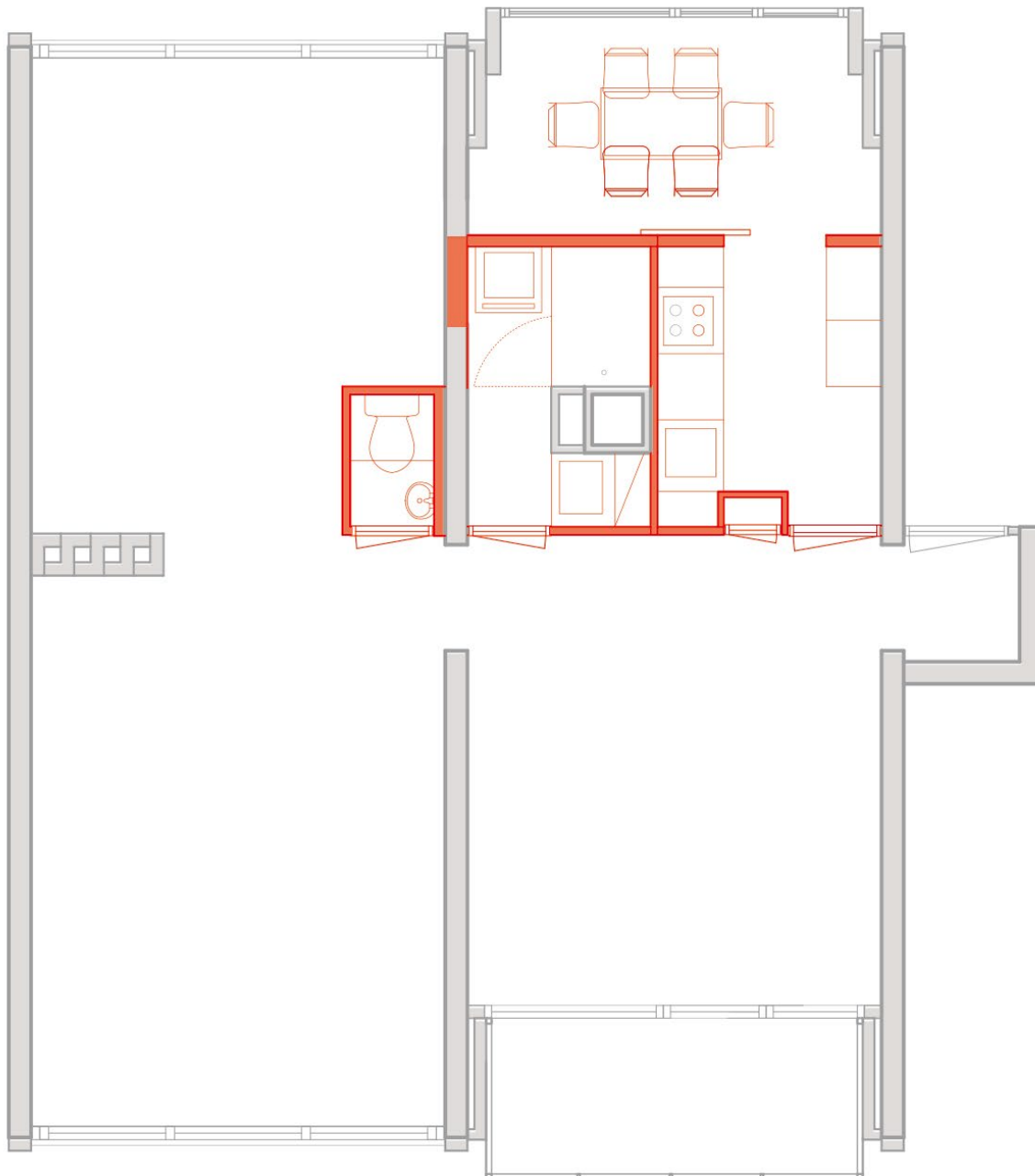


Entrance

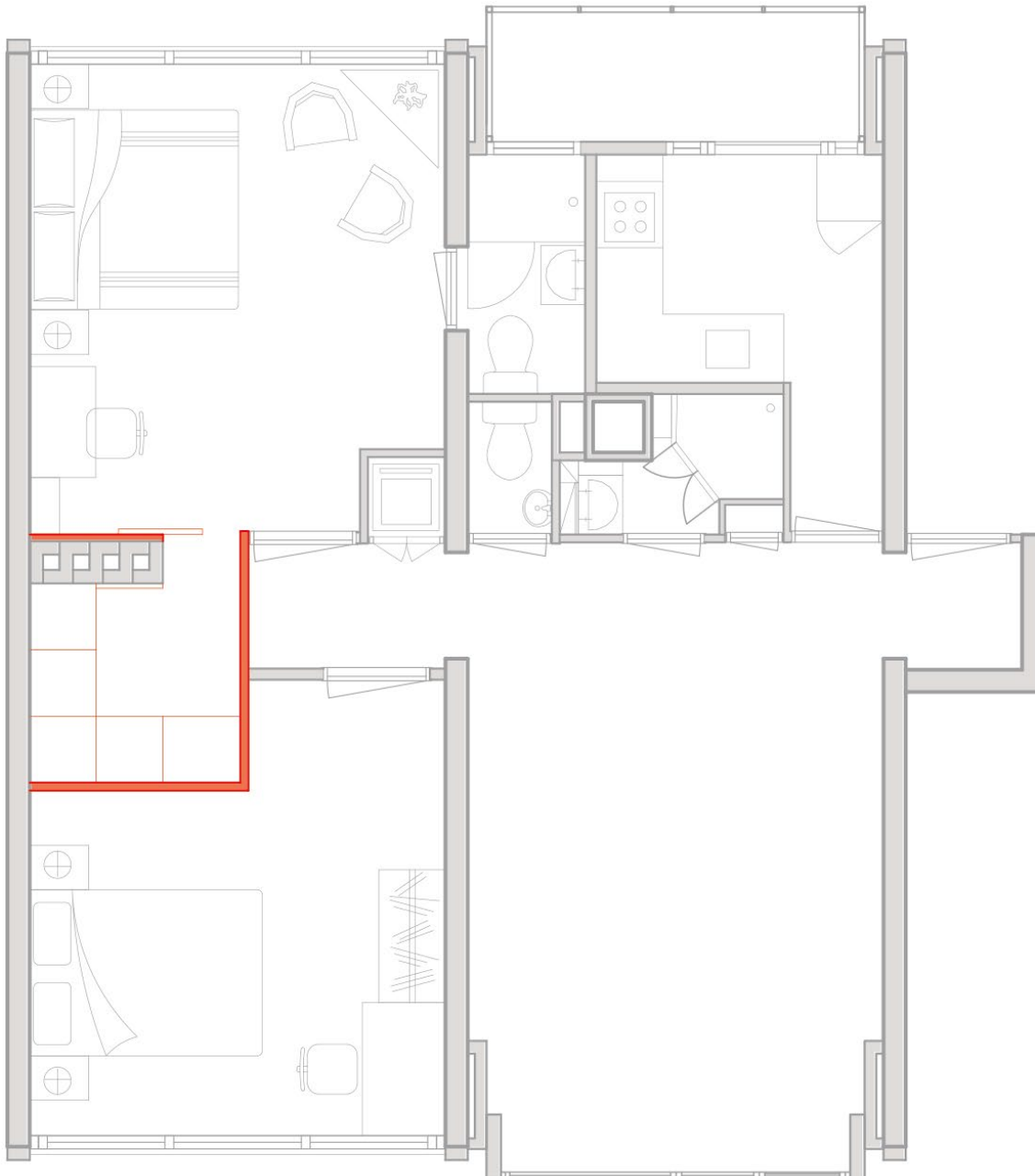




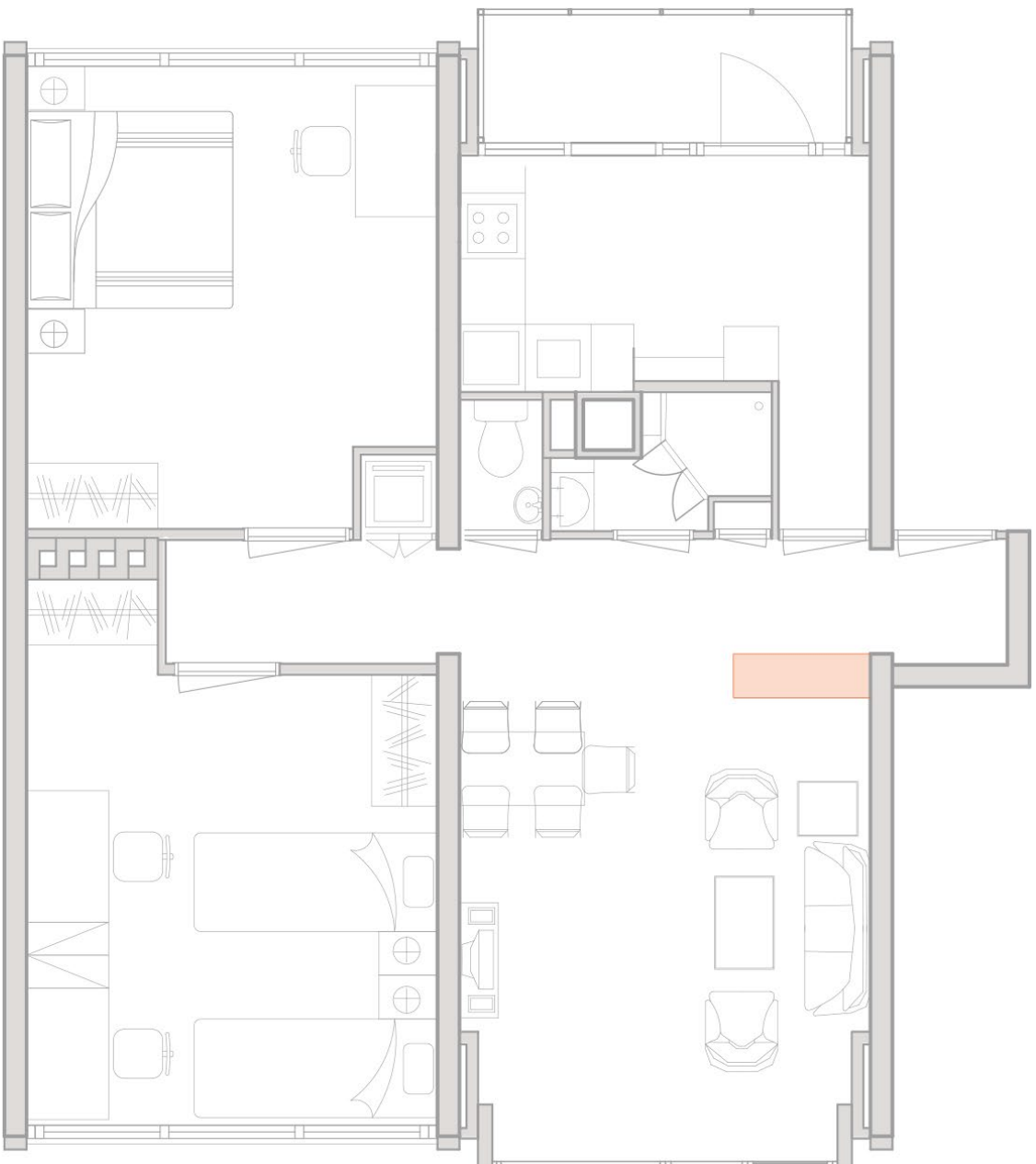
Floor plan typotype:  
open and enclosed balcony



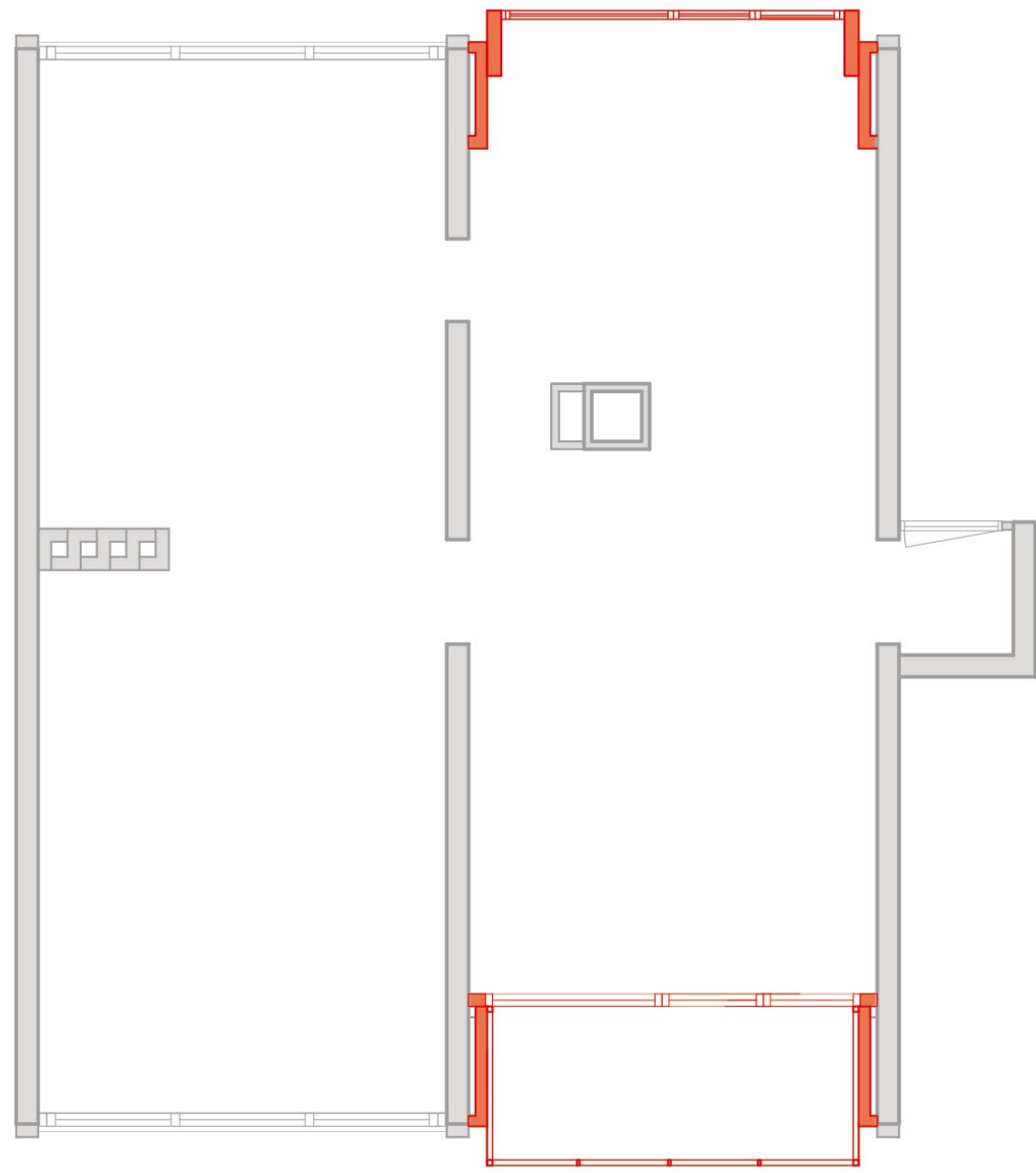
Kitchen and sanitary



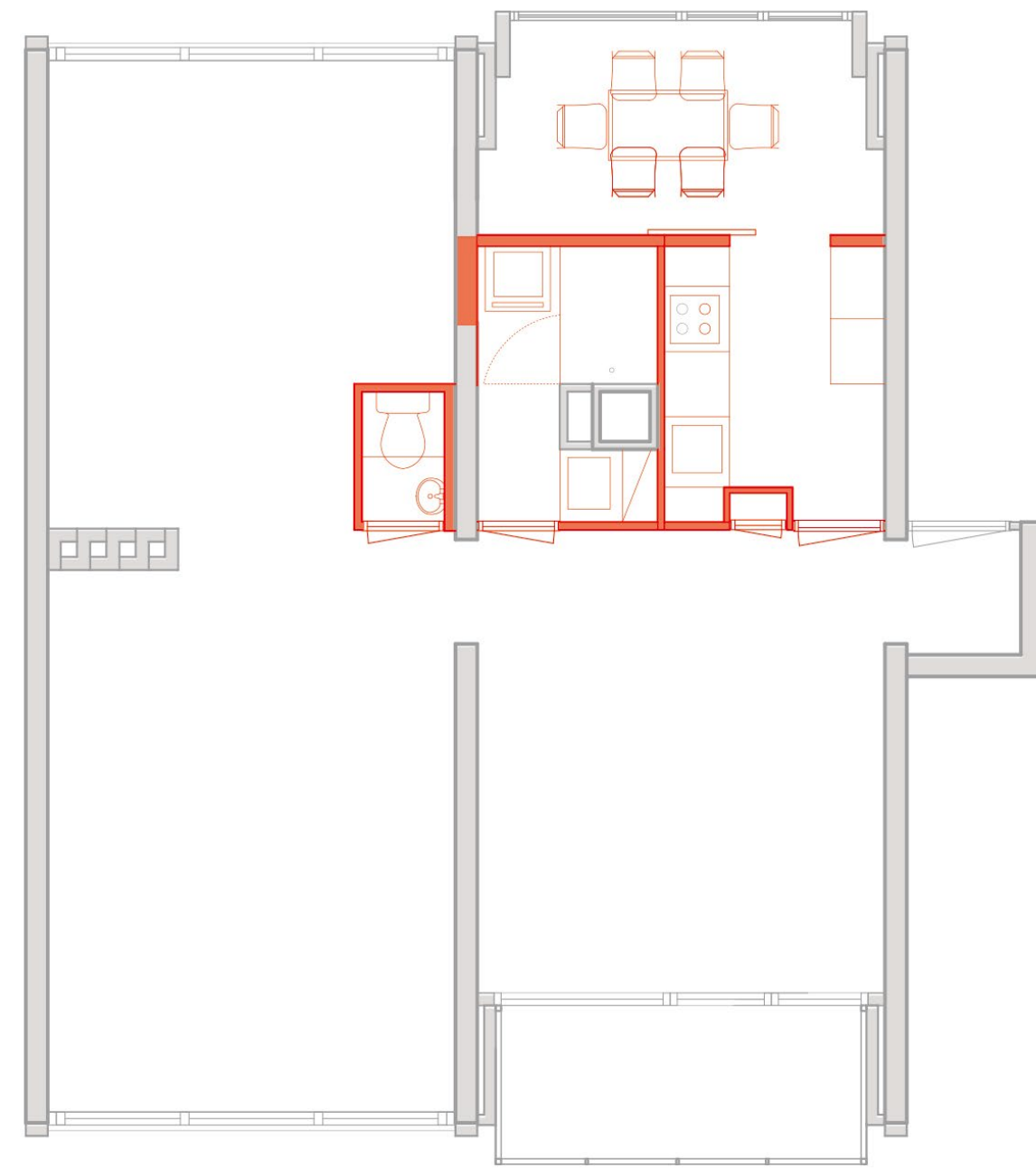
Extra storage



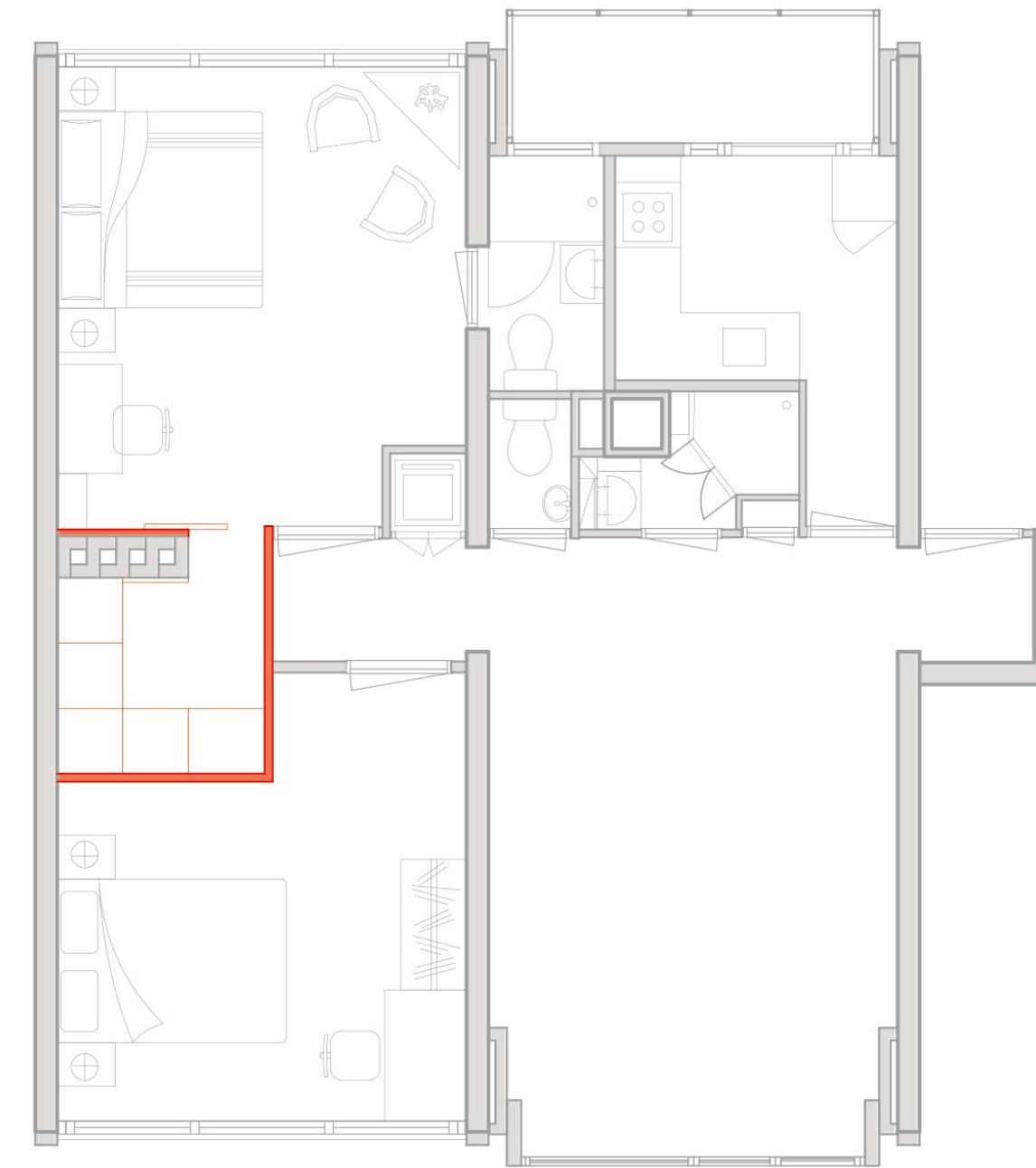
Entrance:  
Openness and storage



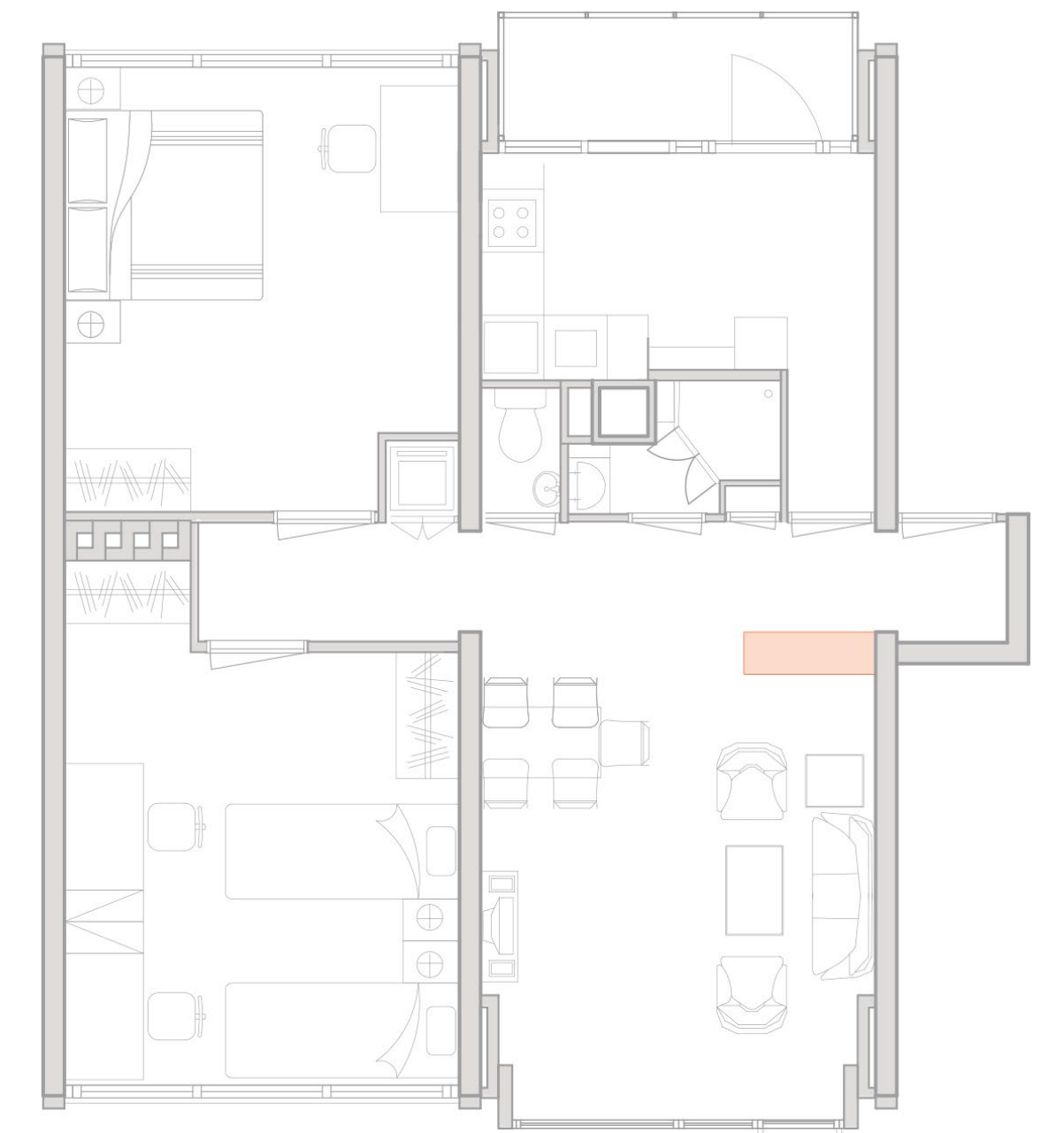
Floor plan typotype:  
open and enclosed balcony



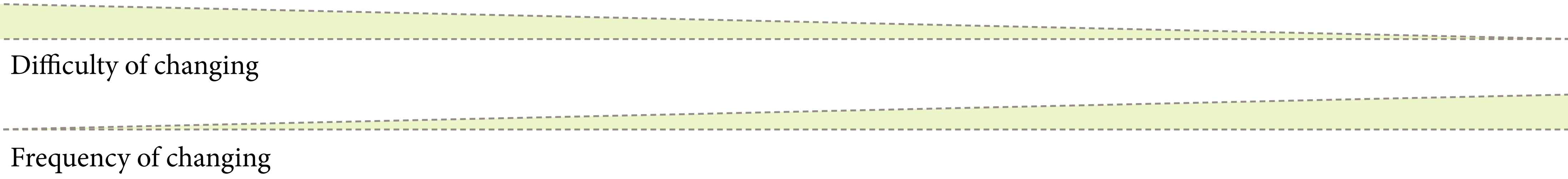
Kitchen and sanitary



Extra storage



Entrance:  
Openness and storage



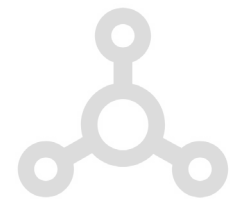
**Design**

Section 1  
Floor plan typology

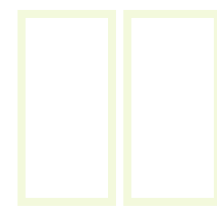
Studio



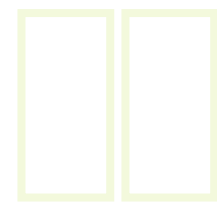
Shared apartment



Simplex



Duplex



+



Section 2  
Interior fragments

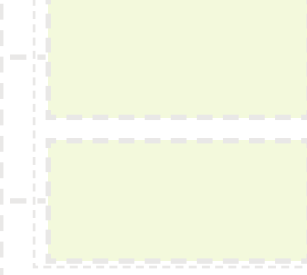
Studio



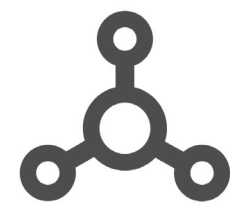
Grouped shaft



Linear shaft

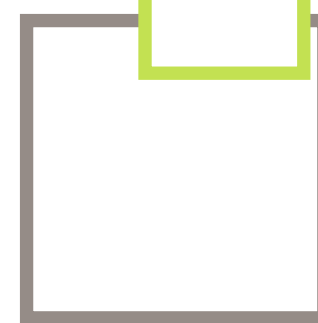


Shared apartment

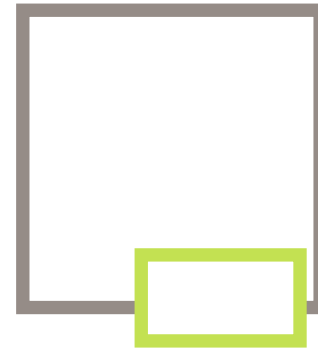


Floor plan prototype

Kitchen with balcony



Livingroom with balcony

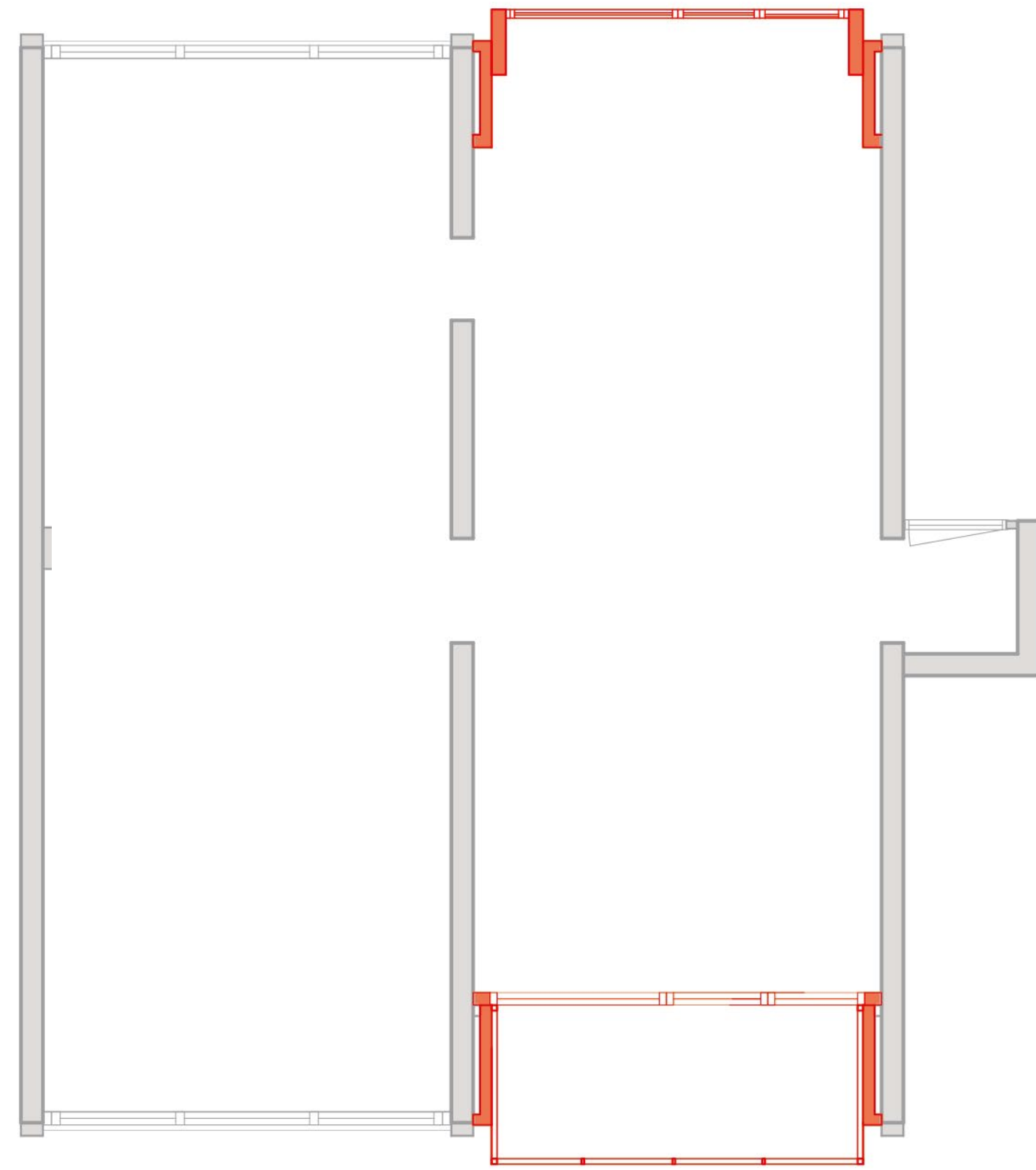




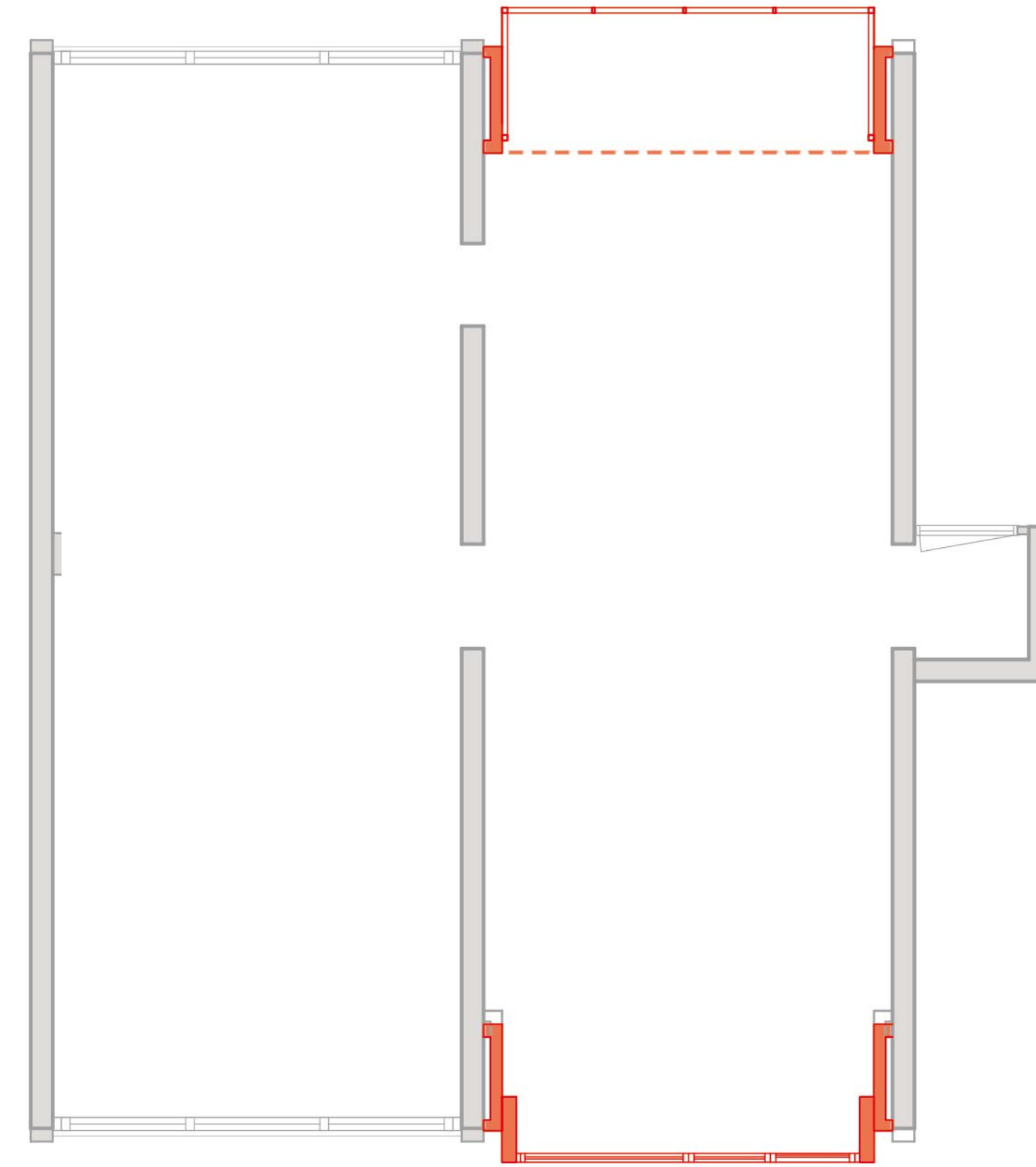
# Design



Livingroom with balcony  
Large kitchen



Kitchen with balcony  
Large gathering space



Design

Section 1  
Floor plan typology

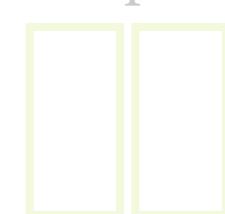
Studio



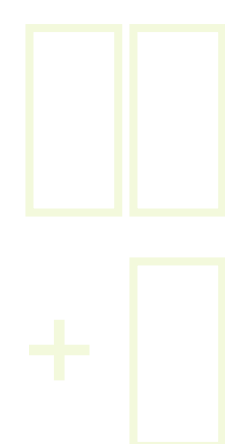
Shared apartment



Simplex



Duplex



Section 2  
Interior fragments

Studio



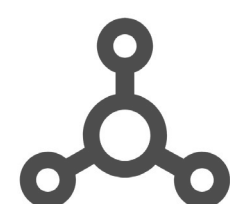
Grouped shaft



Linear shaft

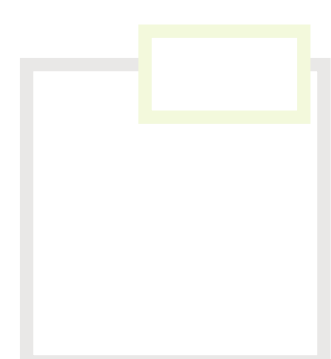


Shared apartment

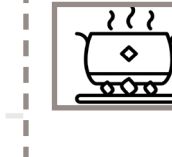
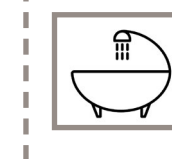
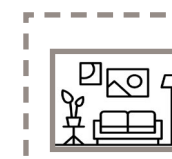
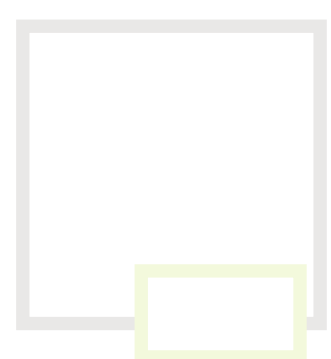


Floor plan prototype

Kitchen with balcony

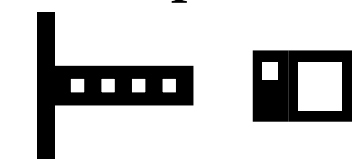


Livingroom with balcony



Kitchen + Sanitary

Grouped shaft



Linear shaft



Grouped shaft



Linear shaft



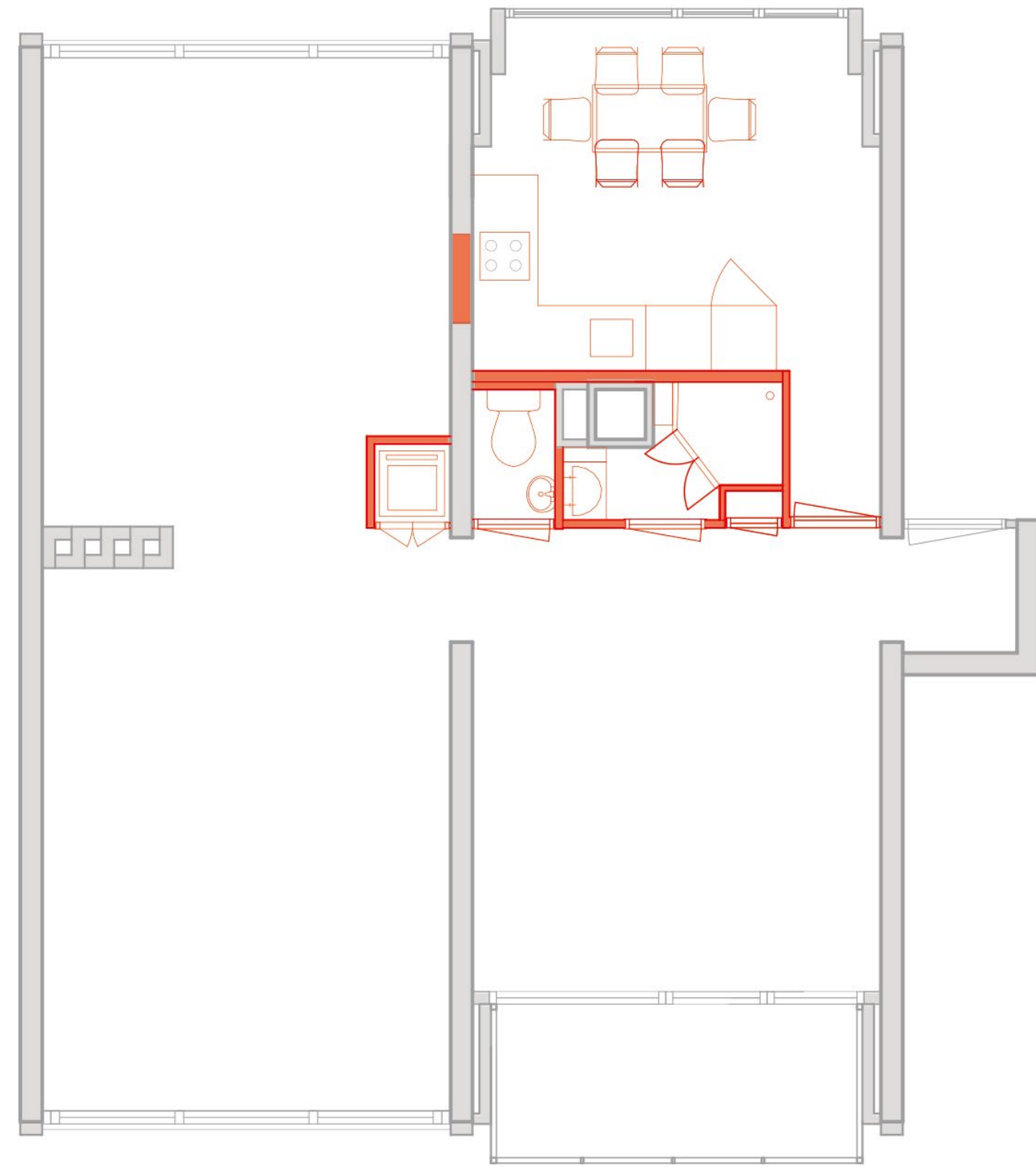
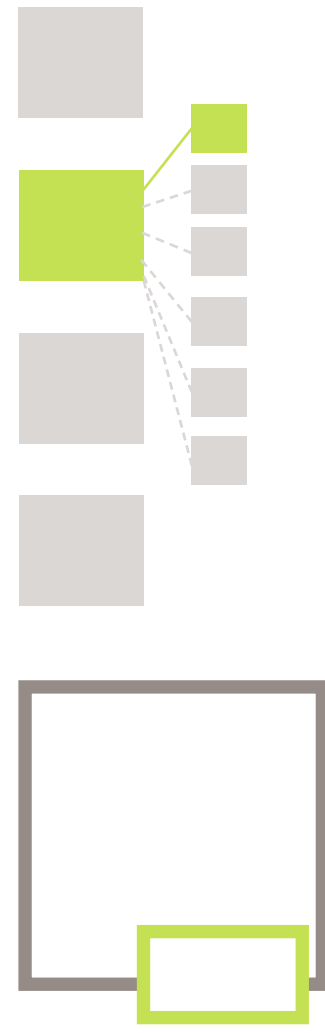
Grouped shaft



Linear shaft



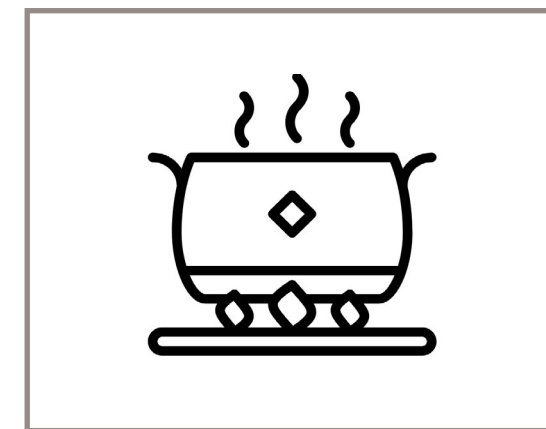
# Design



## Feature:

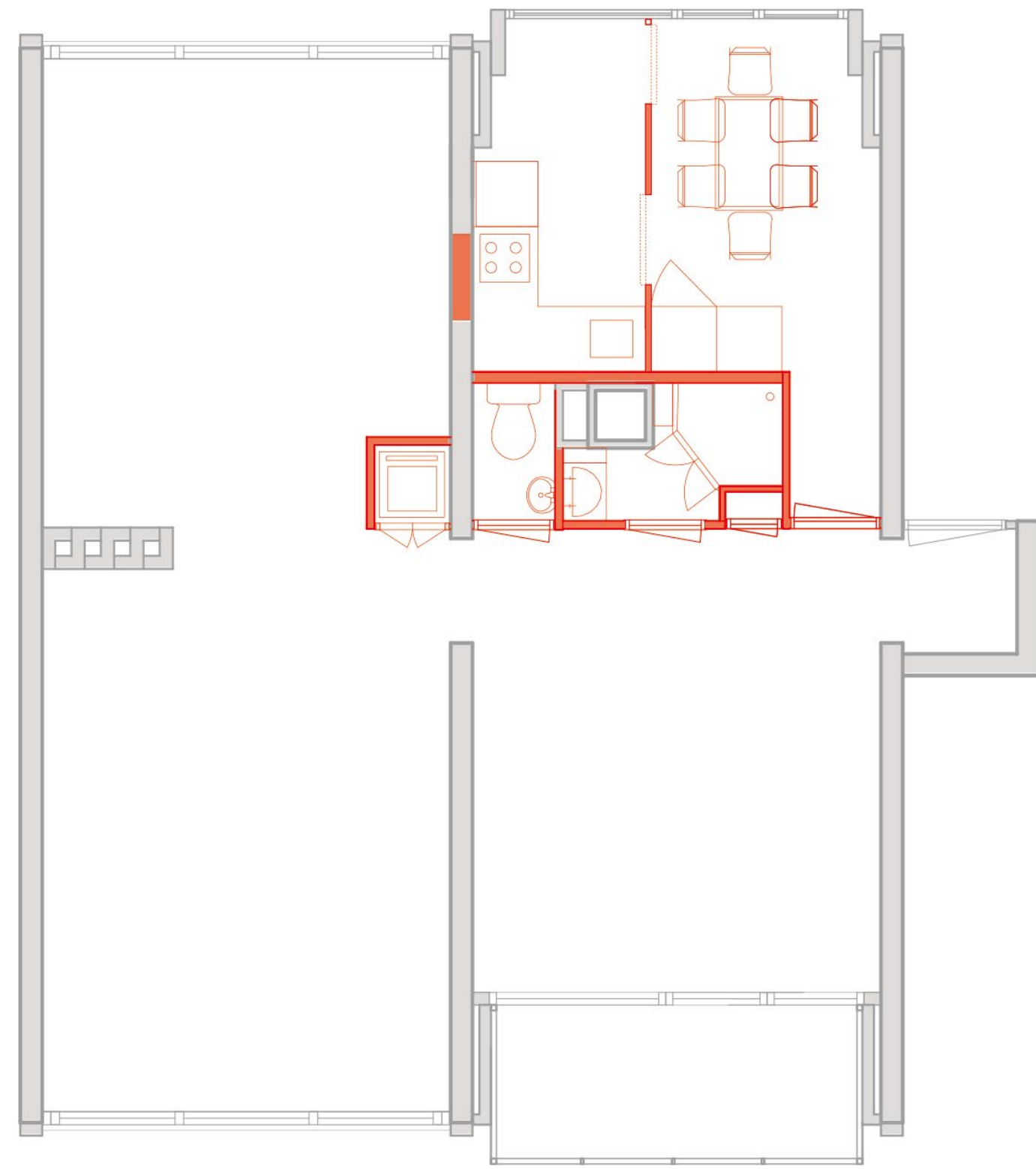
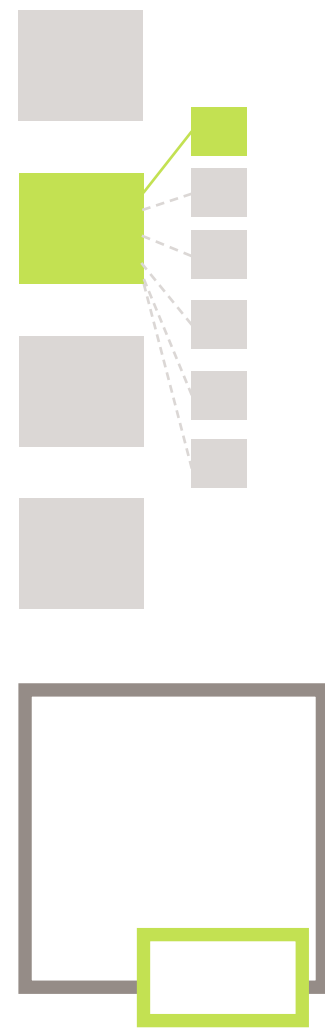
Pro: Free-flow and flexible large kitchen and dining space

Con: Dining space may be influenced by cooking fumes



- Large working space
- Adequate natural daylight
- Flexible space
- Open to gathering space

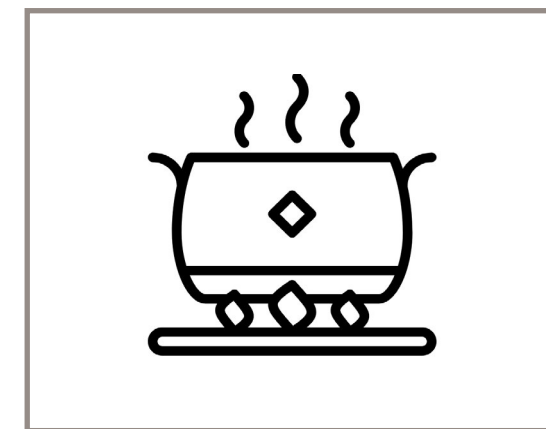
# Design



## Feature:

Pro: Free-flow and flexible large kitchen and dining space

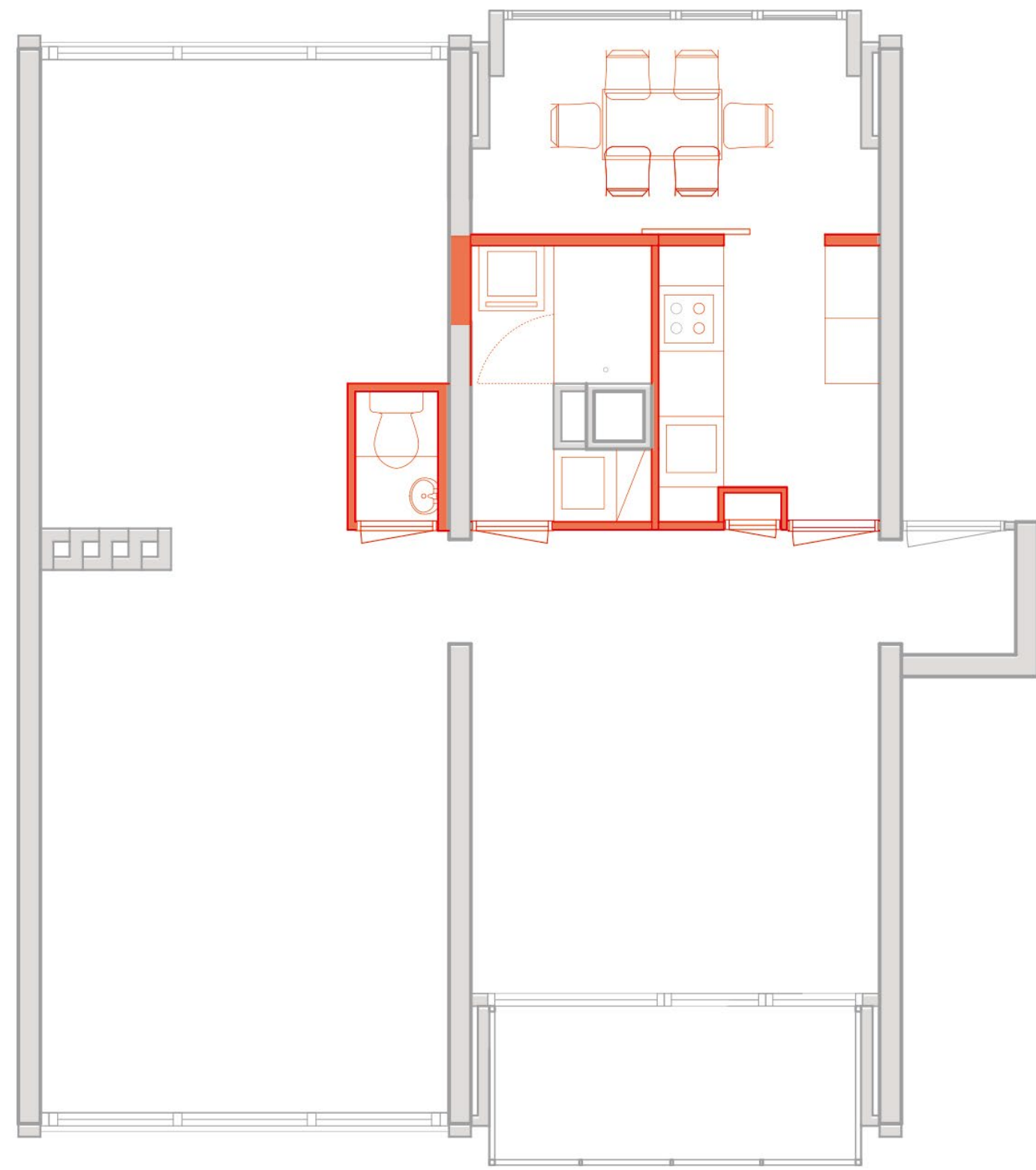
Con: Dining space may be influenced by cooking fumes



- Large working space
- Adequate natural daylight
- Flexible space
- Open to gathering space



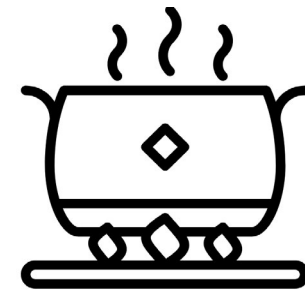
- Connected diningroom and kitchen
- Multi-function space
- Possibility of having an extra dining space



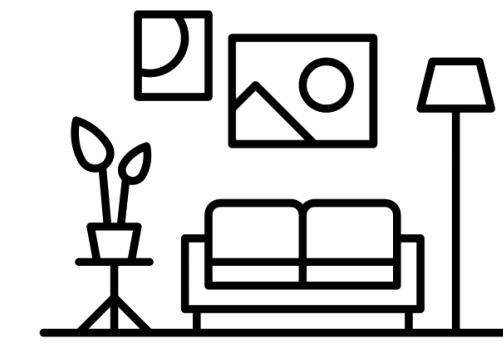
**Feature:**

Pro: Separated kitchen and dining space,  
Large bathroom

Con: Working space of the kitchen can be limited  
Smaller bedroom

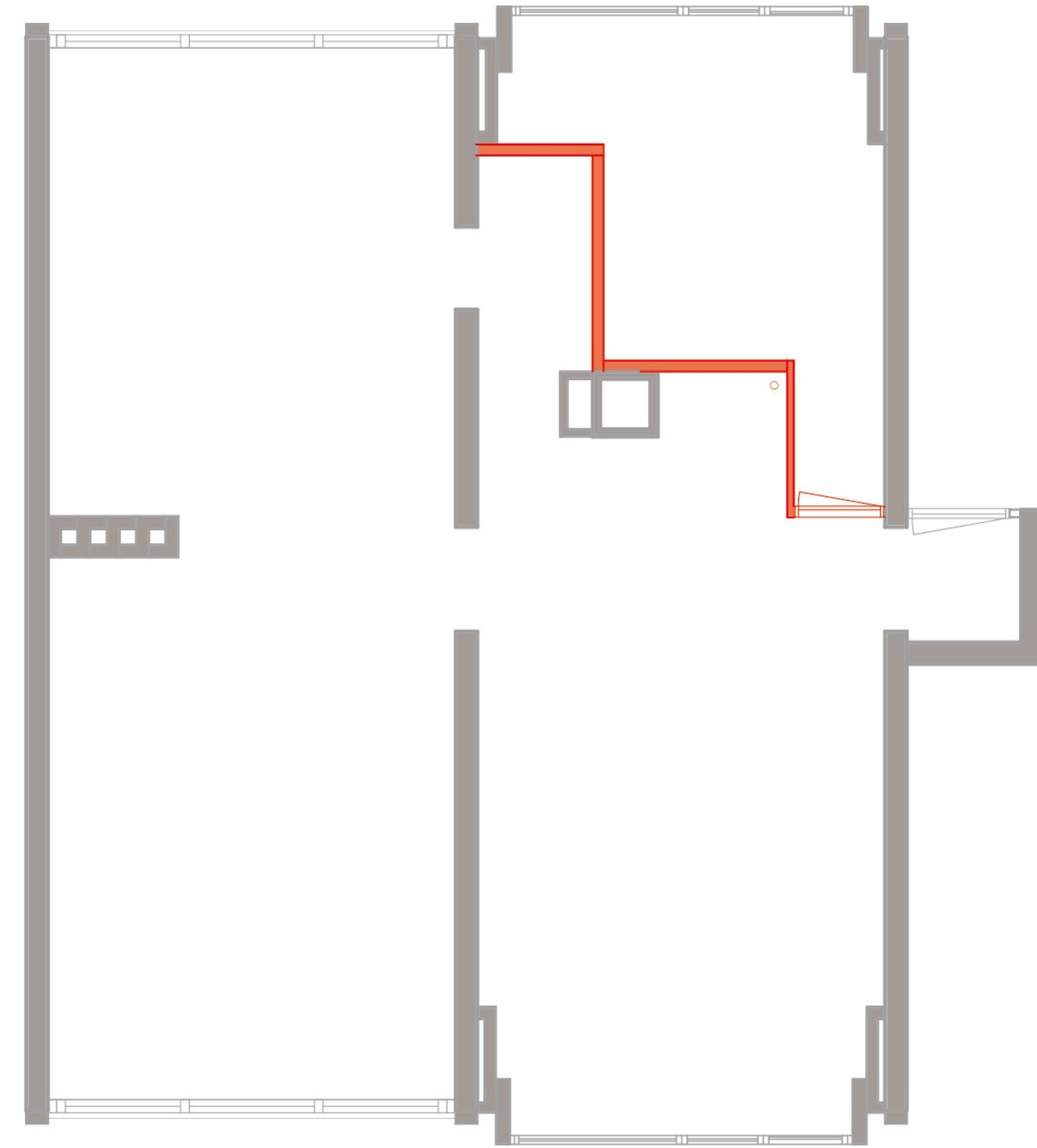
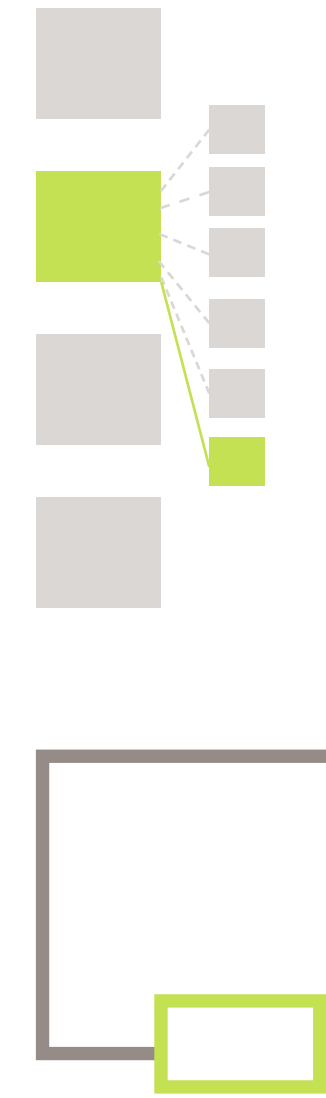
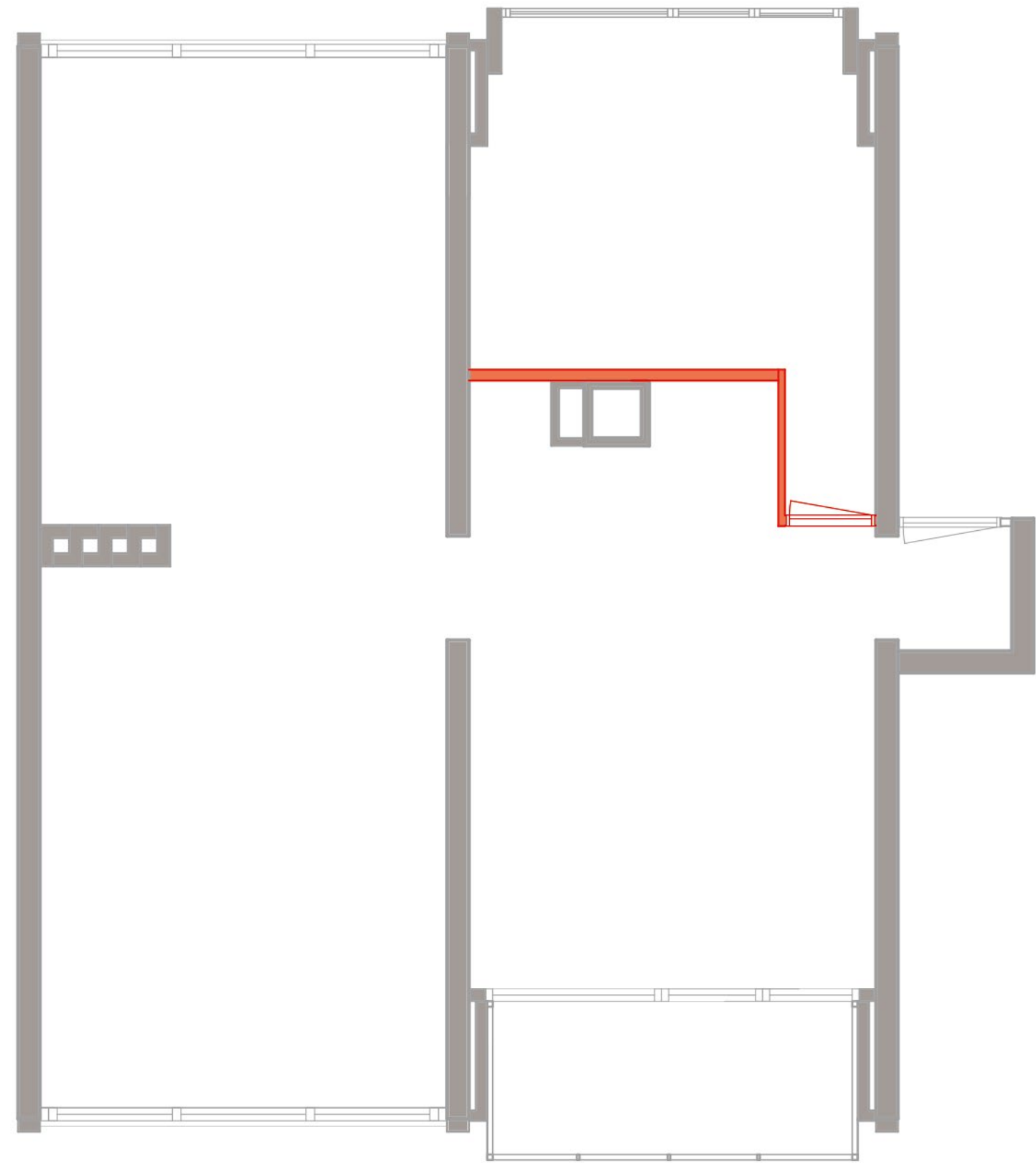
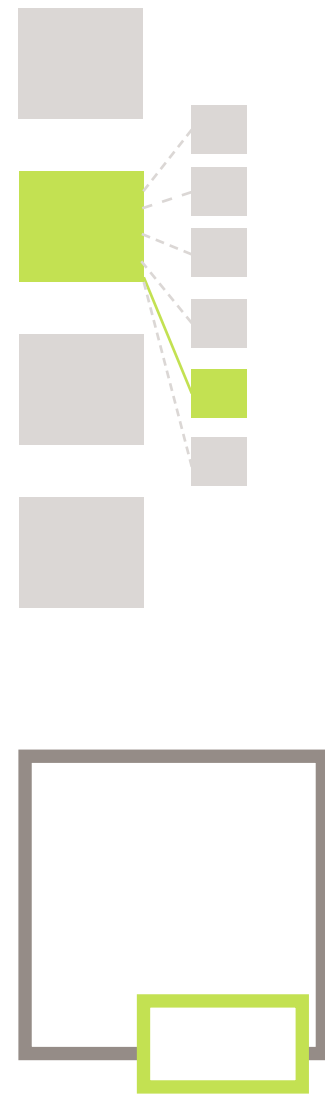


- Large working space
- Adequate natural daylight
- Flexible space
- Open to gathering space

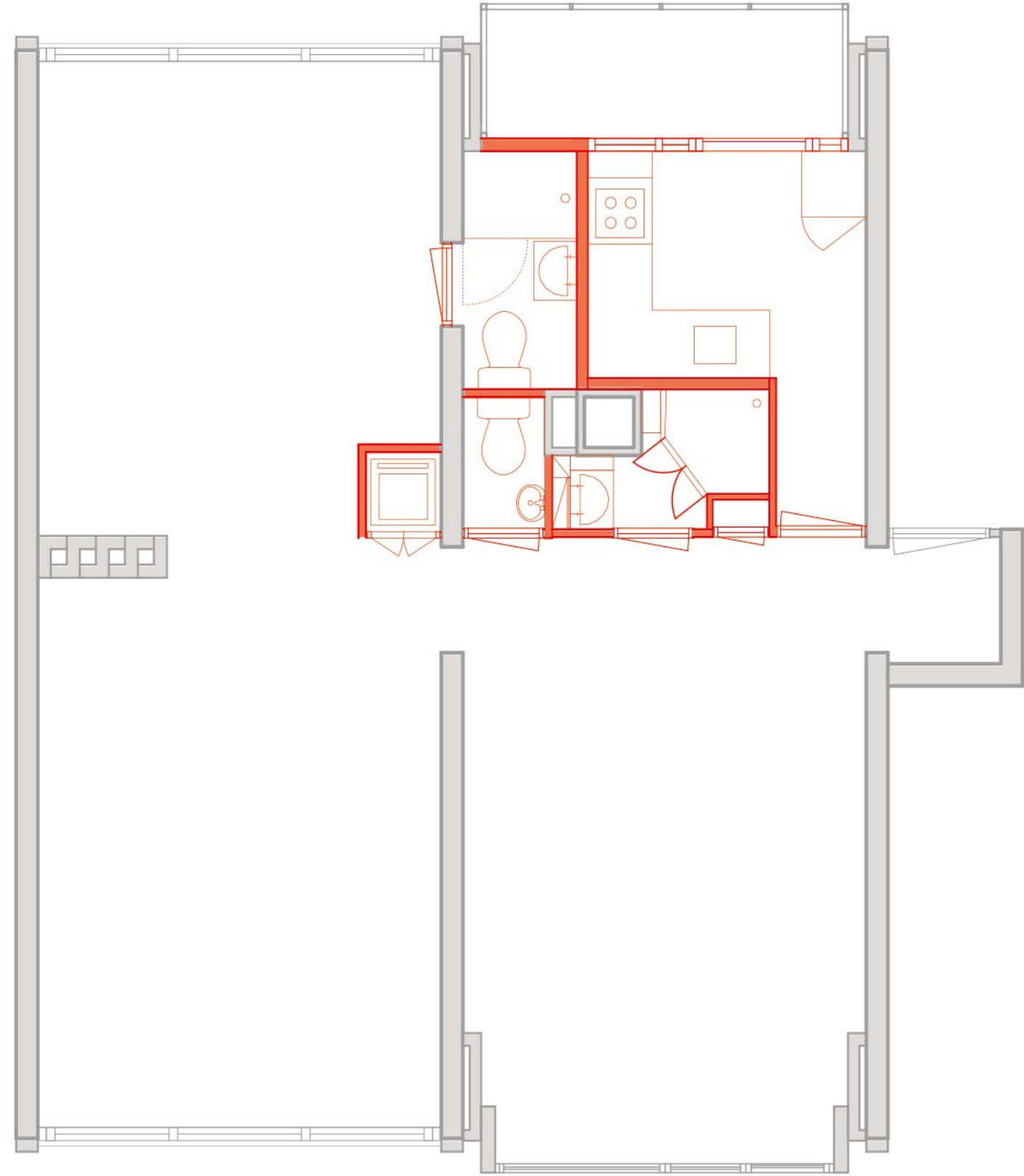
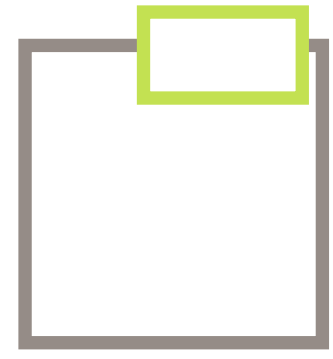
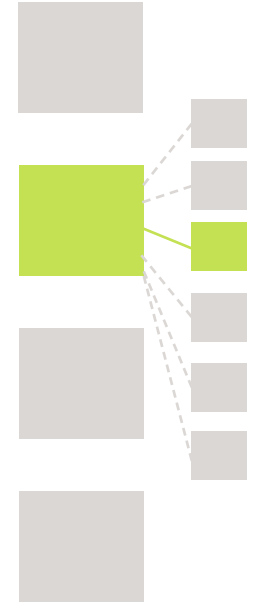


- Connected diningroom and kitchen
- Possibility of having an extra dining space

# Design



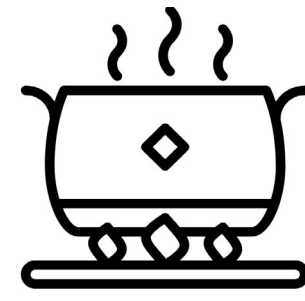
# Design



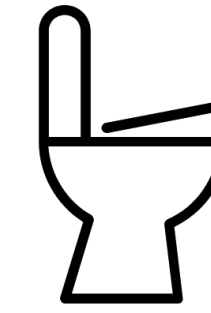
## Feature:

Pro: Extra toilet with natural ventilation and daylight

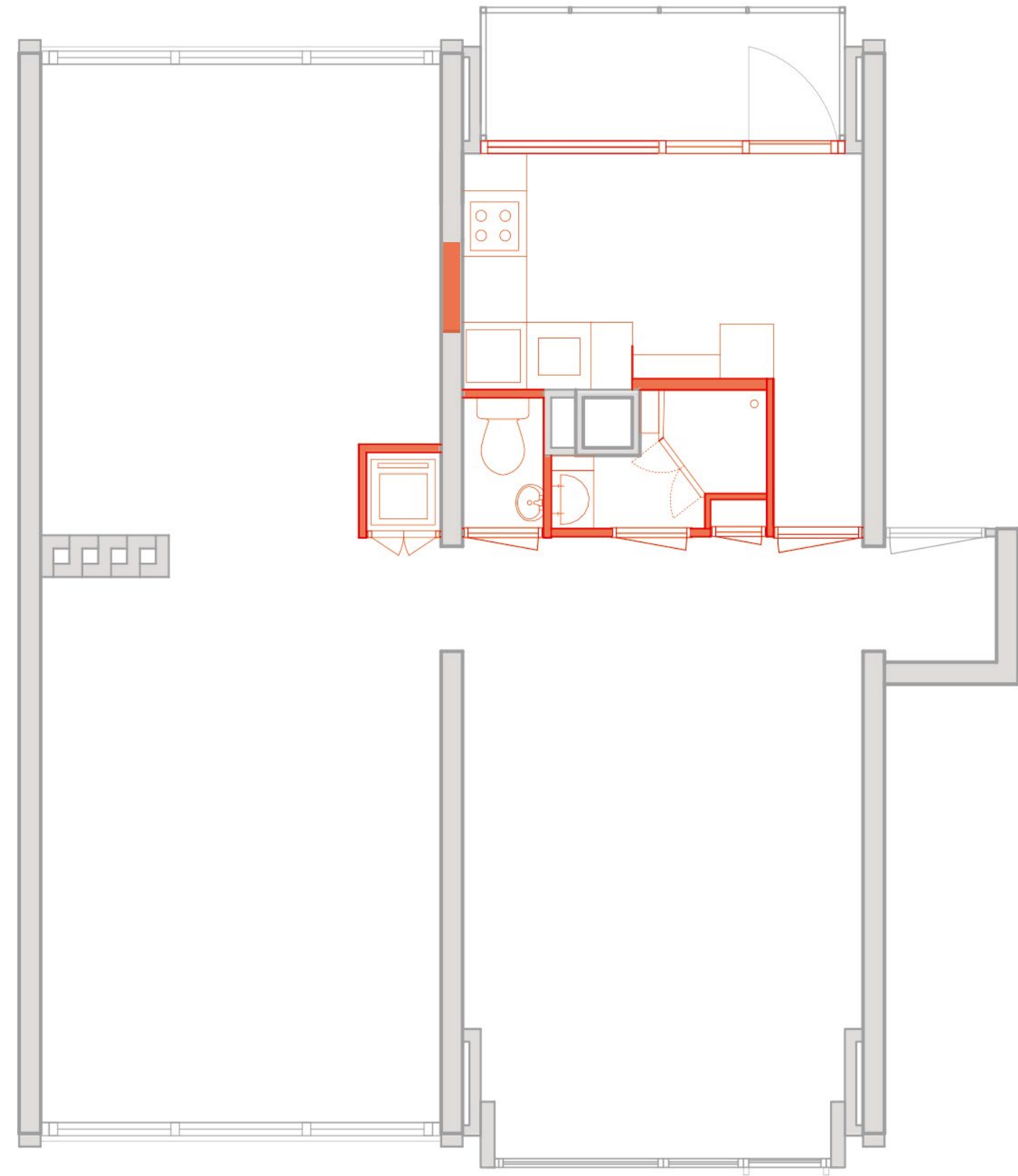
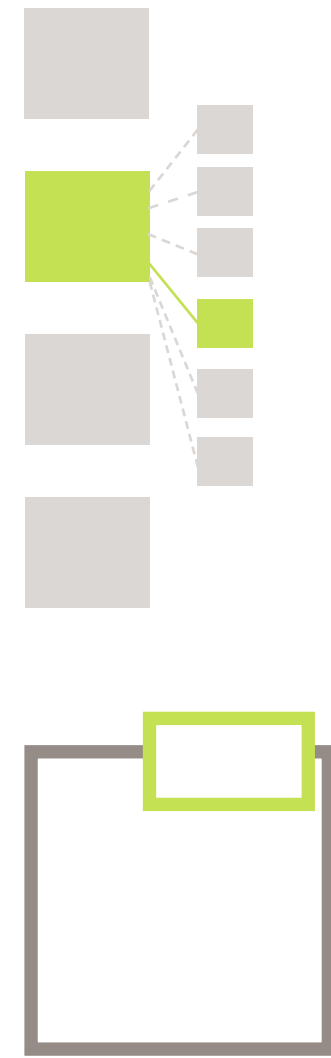
Con: Small kitchen



- Less fume problems
- Connected to working balcony



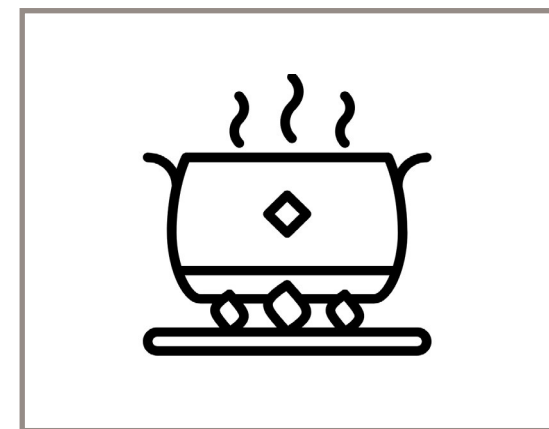
- Extra Toilet for the master's bedroom



**Feature:**

Pro: Separated kitchen and dining space,  
Large bathroom

Con: Working space of the kitchen can be limited  
Smaller bedroom



- Large working space
- Adequate natural daylight
- Less fume problems
- Connected to working balcony



- Connected diningroom and kitchen



Design

Section 1  
Floor plan typology

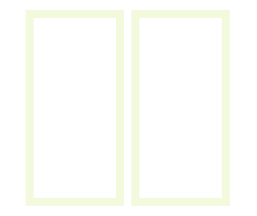
Studio



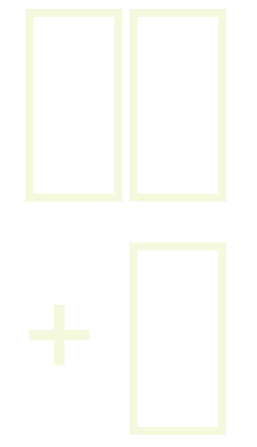
Shared apartment



Simplex



Duplex



Section 2  
Interior fragments

Studio

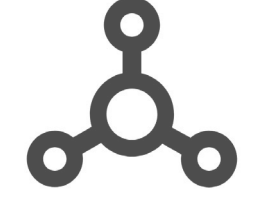


Grouped shaft

Linear shaft

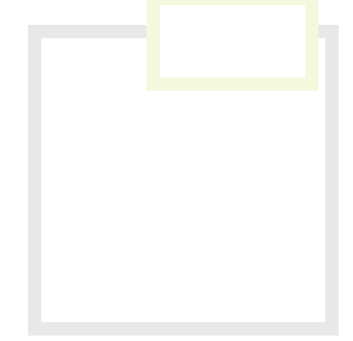


Shared apartment

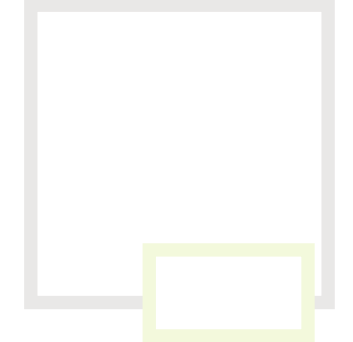


Floor plan prototype

Kitchen with balcony



Livingroom with balcony



Kitchen +Sanitary

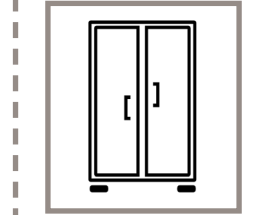
Grouped shaft

Linear shaft

Grouped shaft

Linear shaft

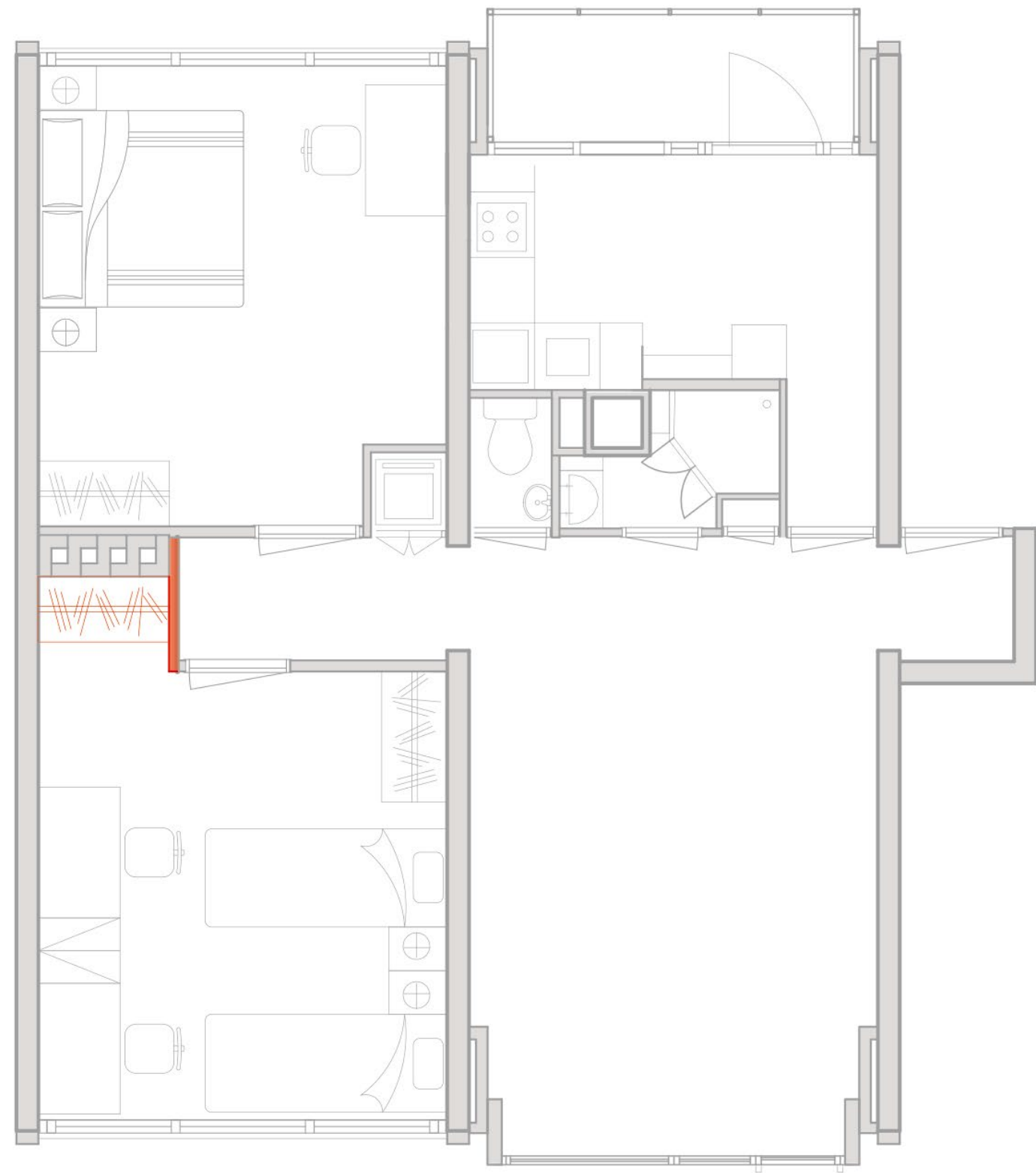
Storage



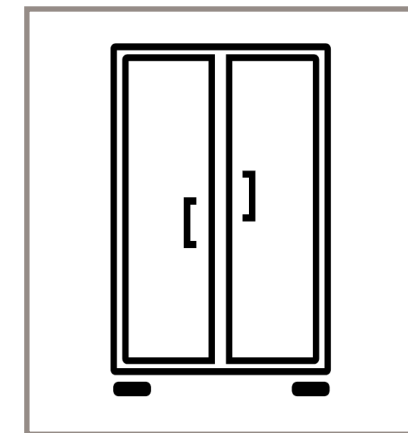
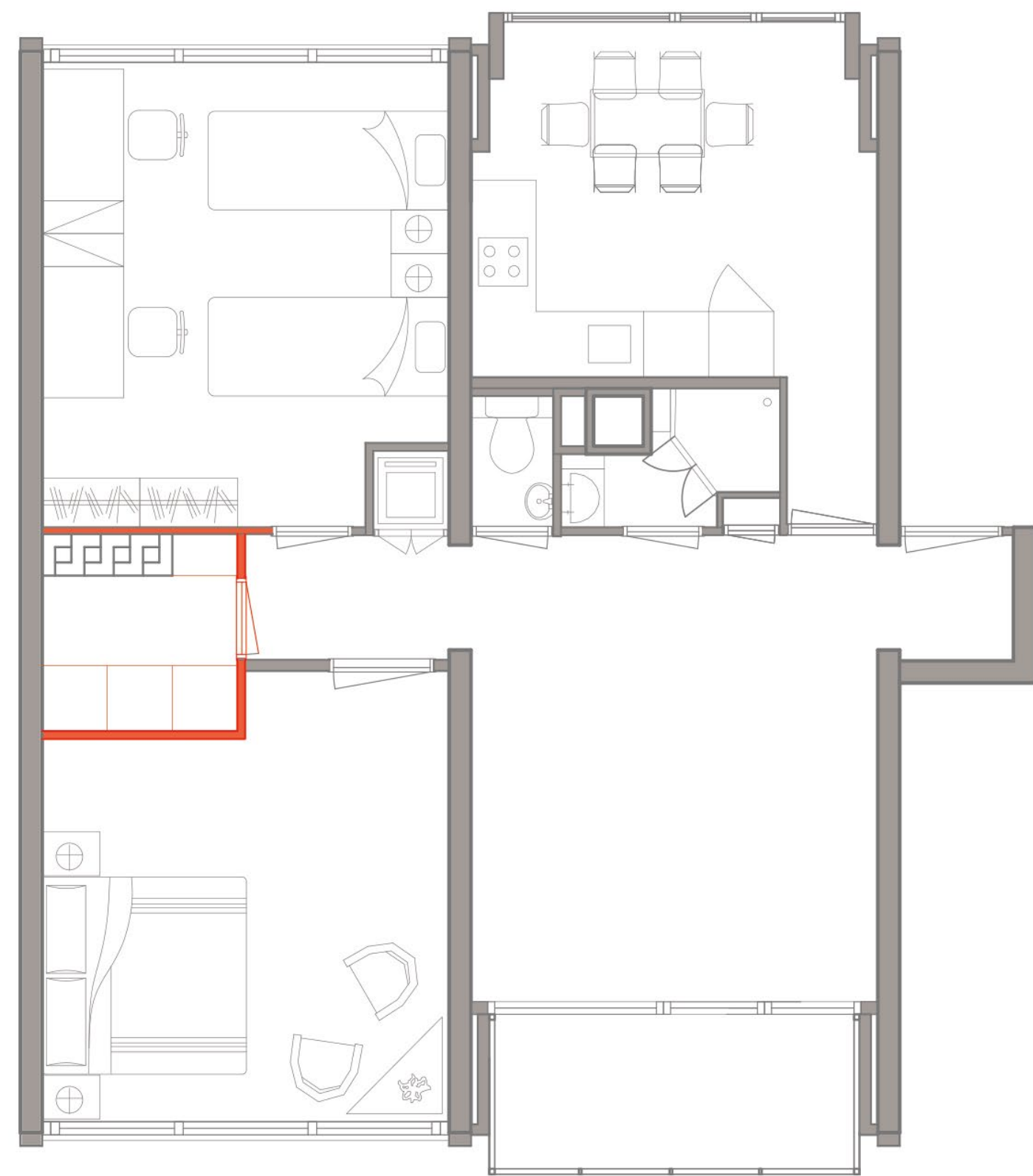
Grouped shaft

Linear shaft

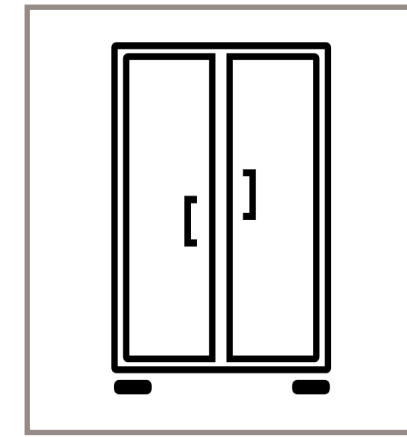
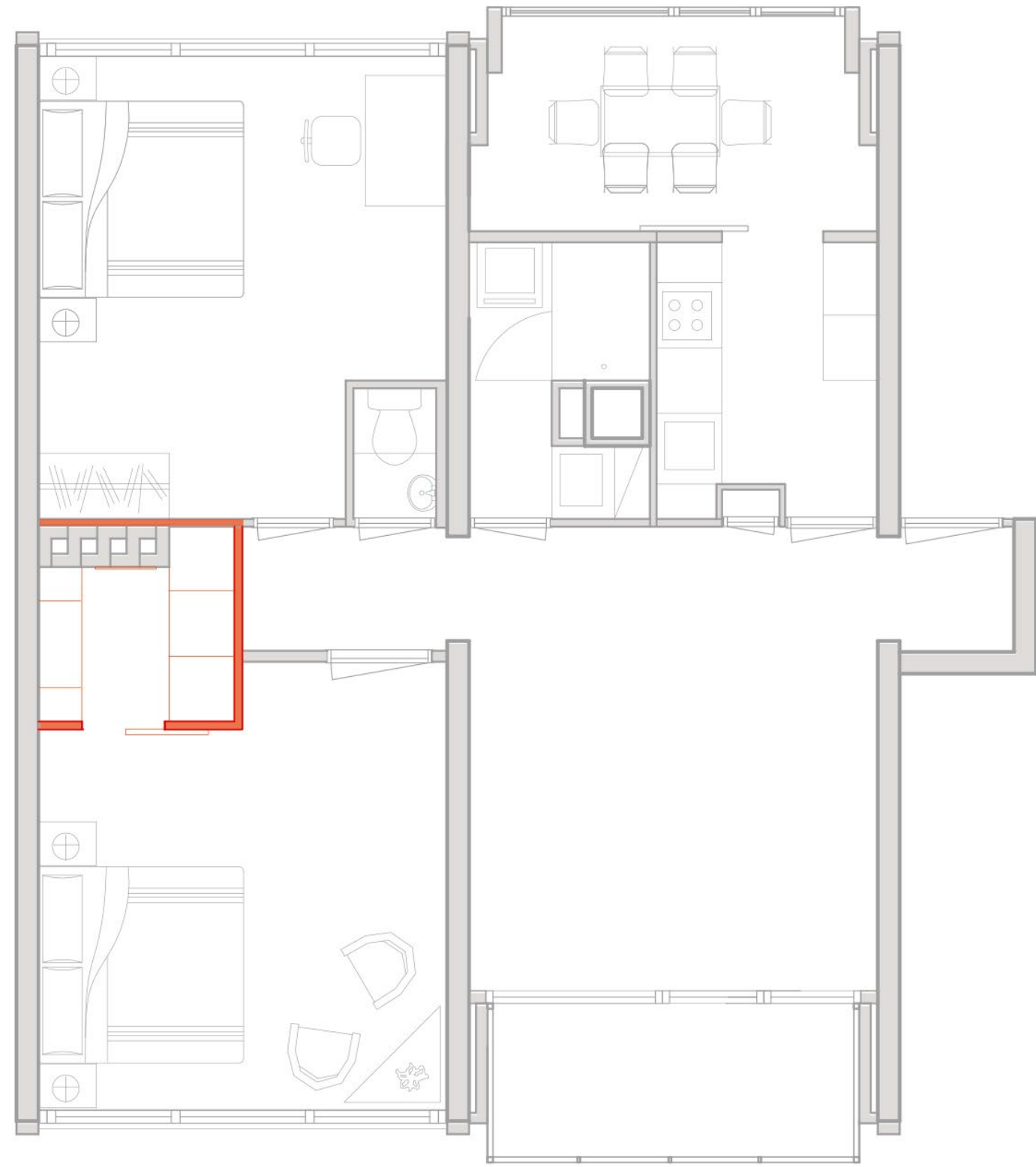
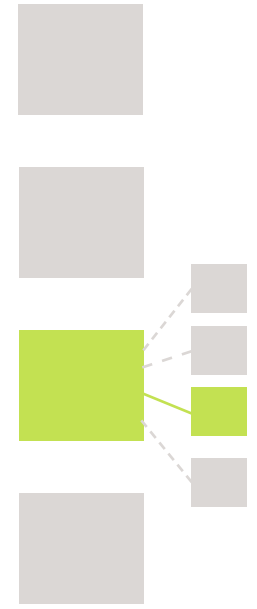
# Design



Basic: No extra storage

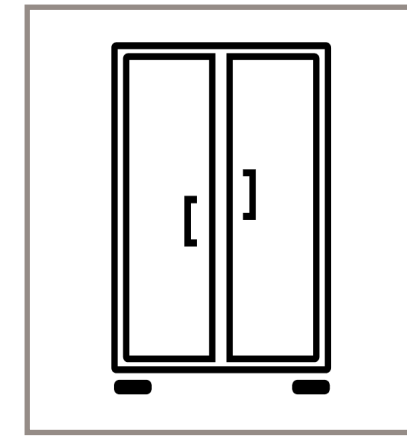
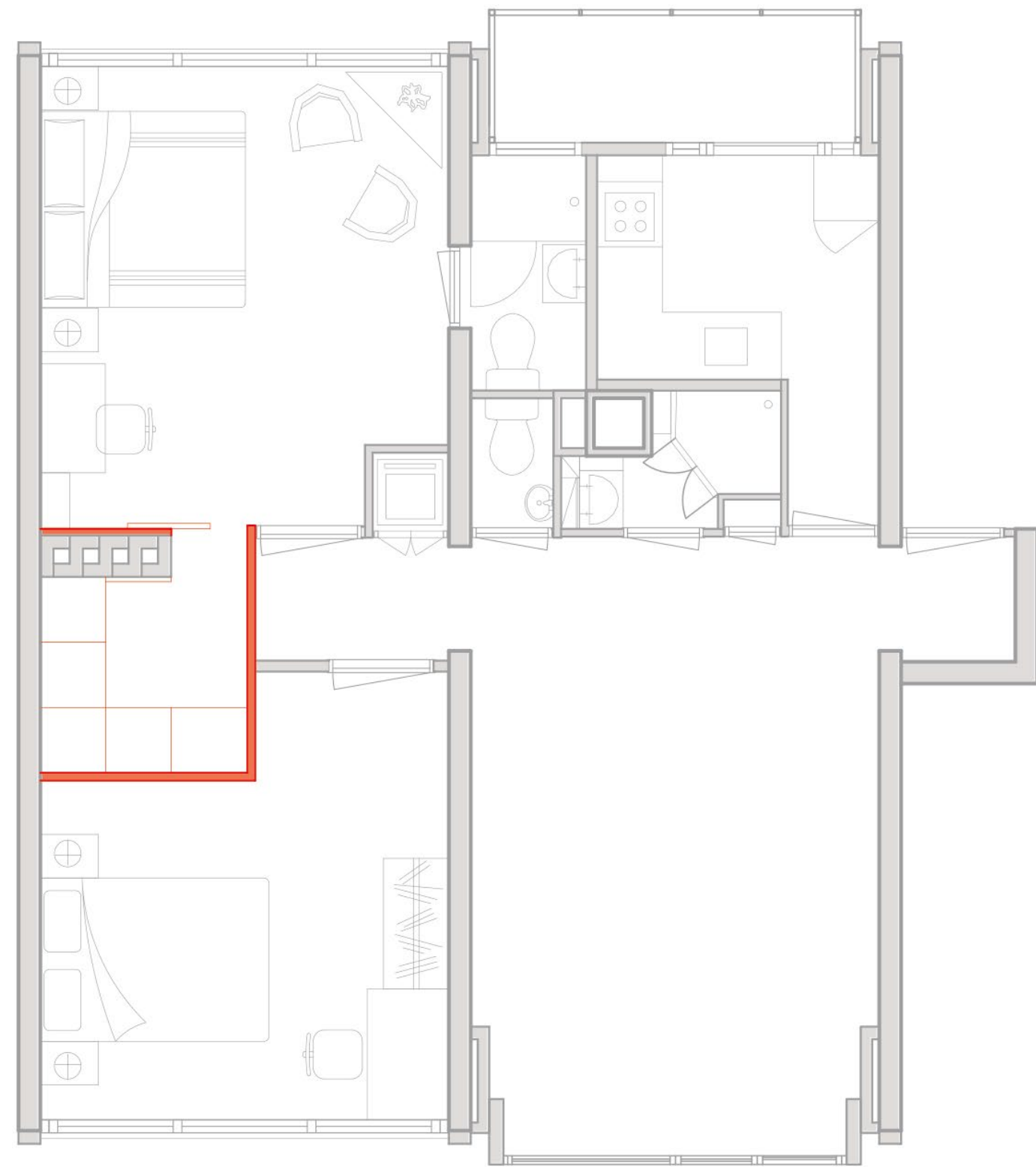


- Utility room opened to the whole flat for house-work
- Extra storage of clothings and shoes for large family



- Walk-in closet for master's bedroom

-Extra storage of clothings and shoes for large family



- Walk-in closet for master's bedroom  
-Extra storage of clothings and shoes for large family

Design

Section 1  
Floor plan typology

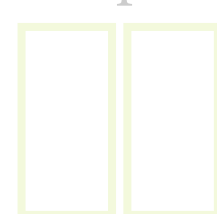
Studio



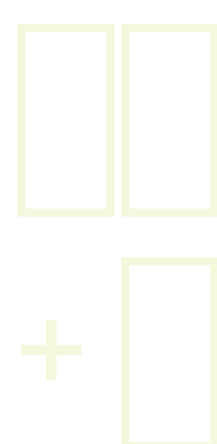
Shared apartment



Simplex



Duplex



Section 2  
Interior fragments

Studio



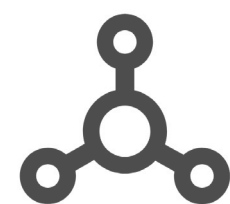
Grouped shaft



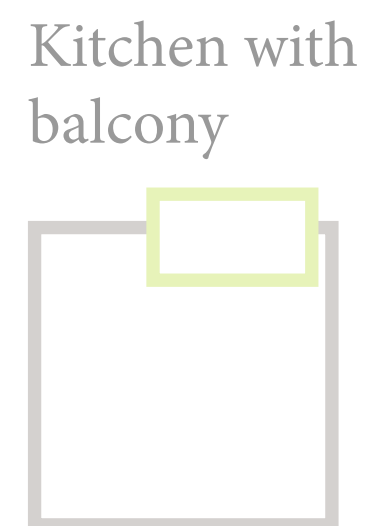
Linear shaft



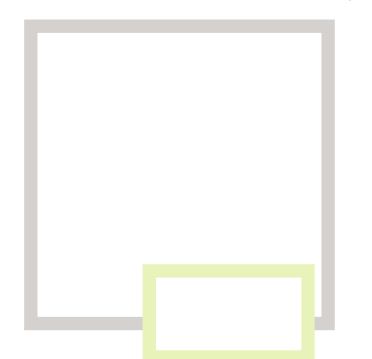
Shared apartment



Floor plan prototype

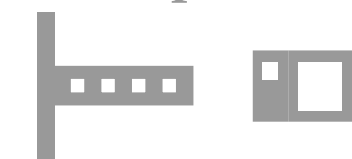


Kitchen with balcony



Kitchen +Sanitary

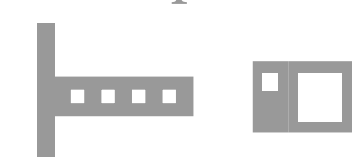
Grouped shaft



Linear shaft



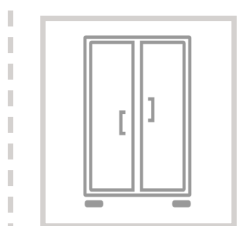
Grouped shaft



Linear shaft



Storage



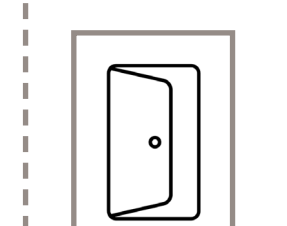
Grouped shaft



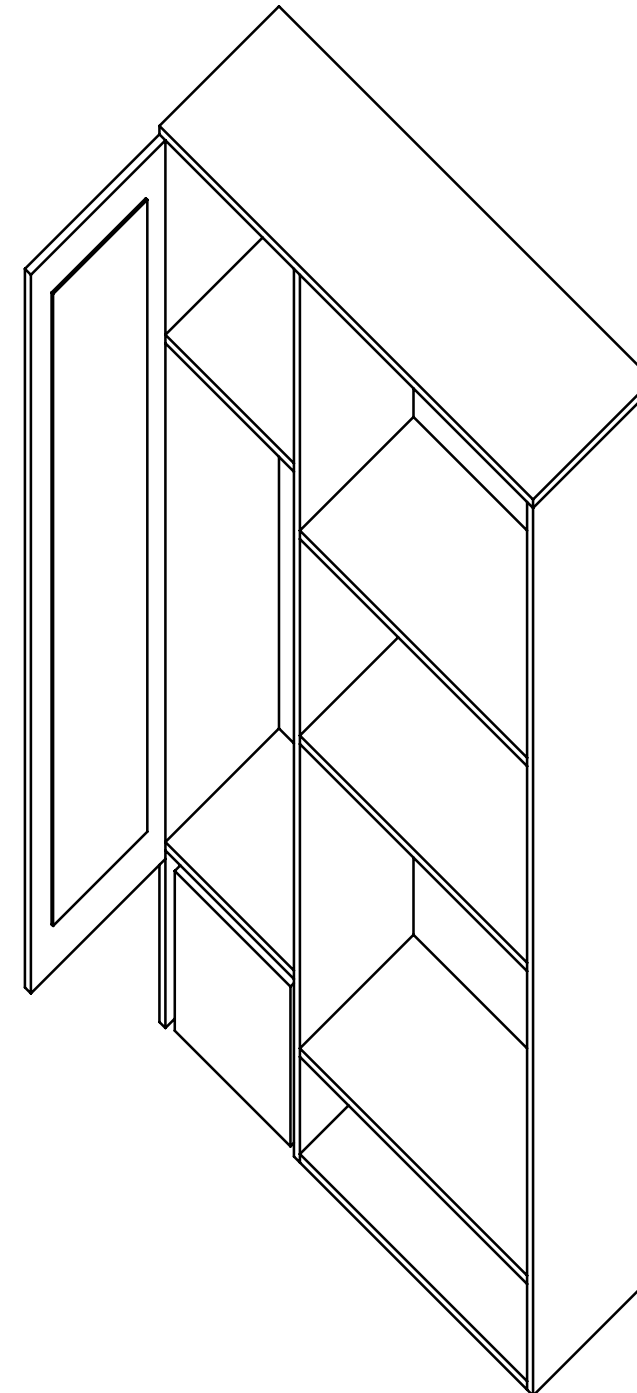
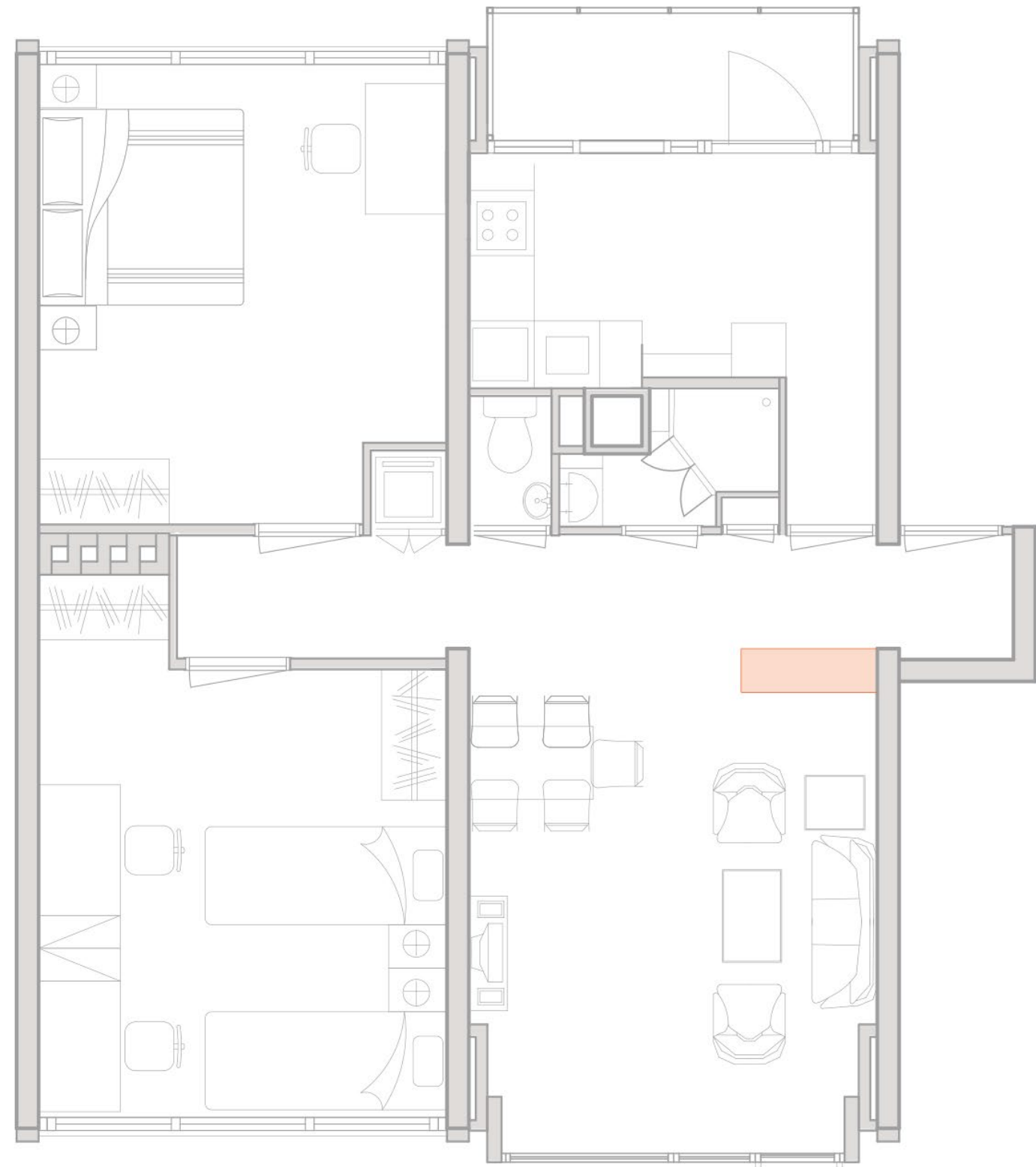
Linear shaft



Entrance



# Design



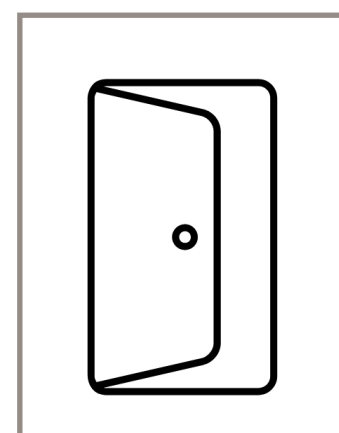
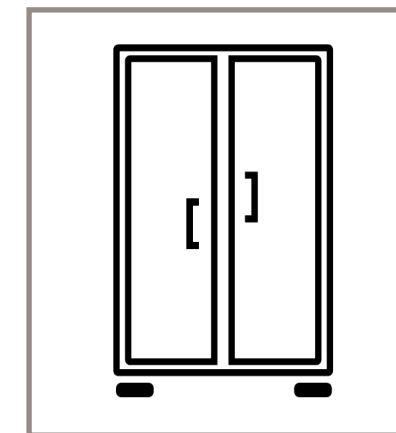
-Storage of frequently used  
clothings and shoes for en-  
trance

- Small goods for daily use  
(toilet paper, toolbox...)

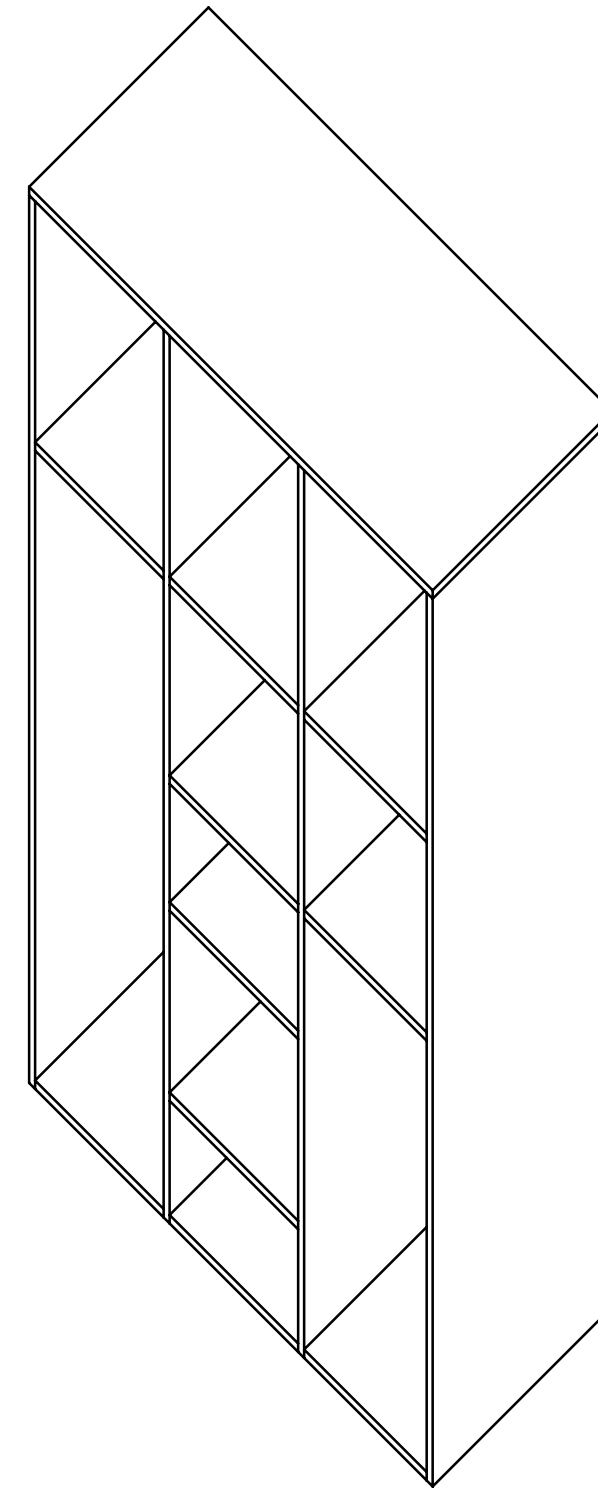
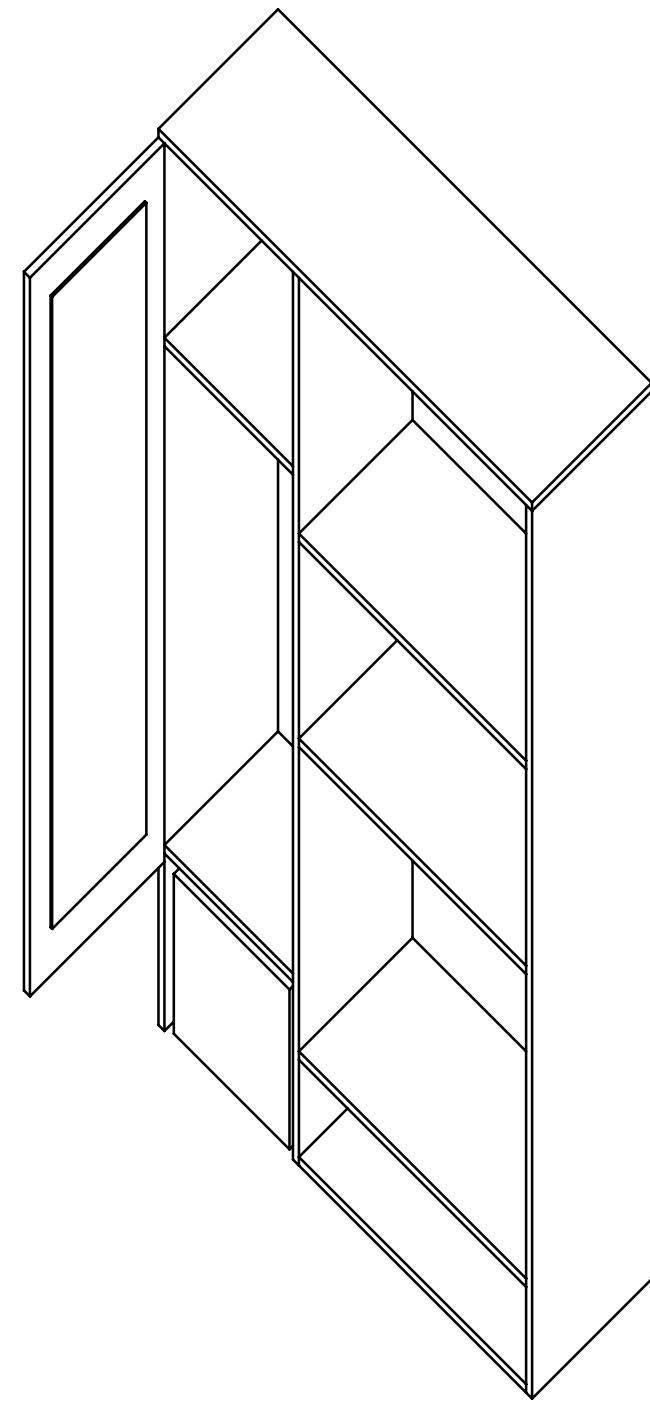
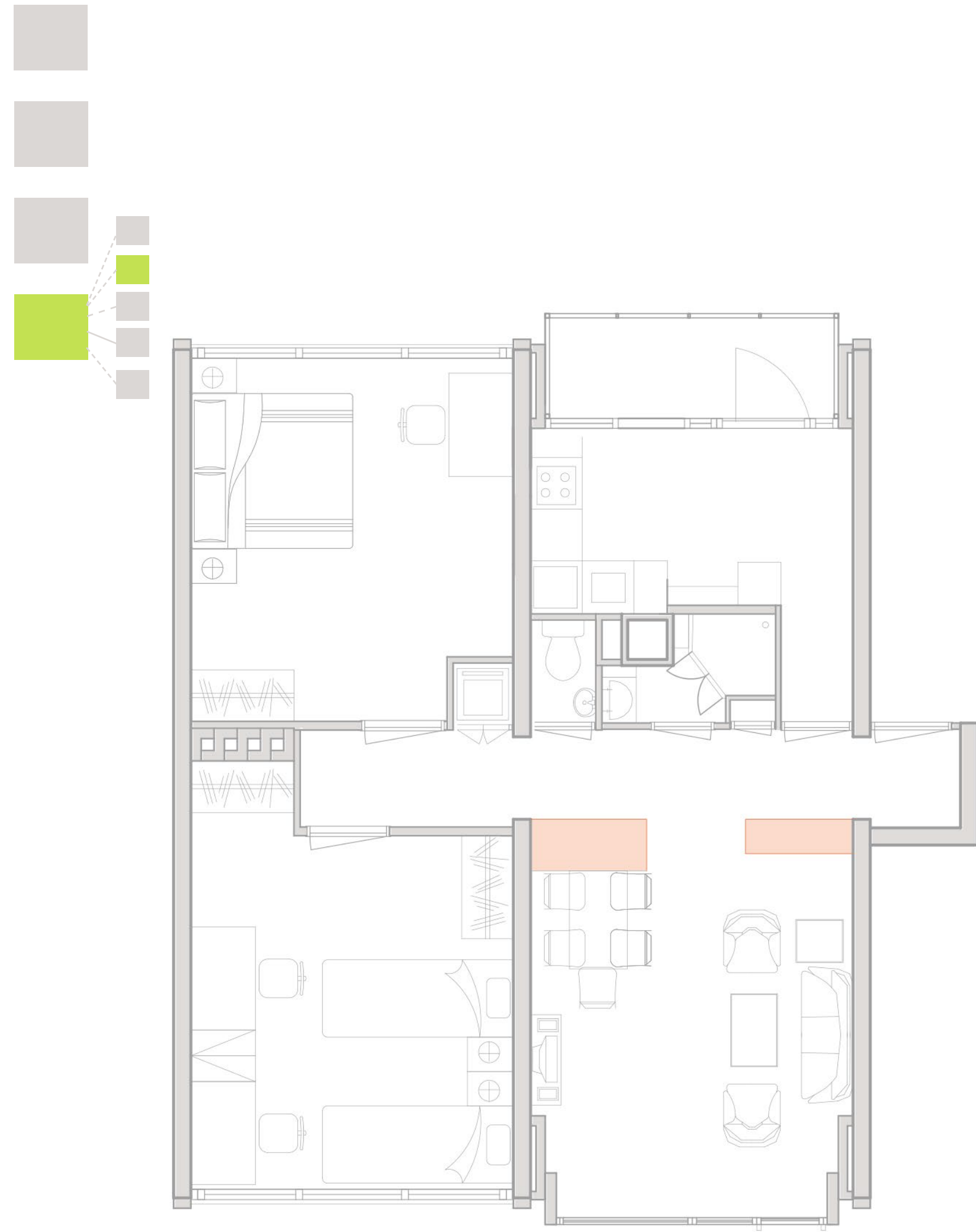
- Opened for free-flow

- Mirror

-Seat for changing shoes

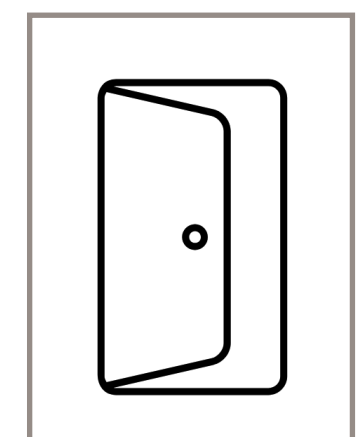
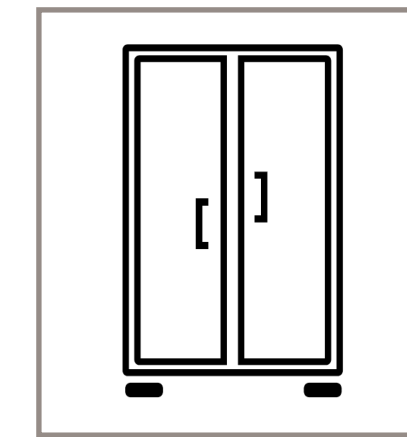


# Design



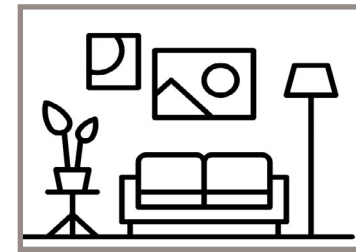
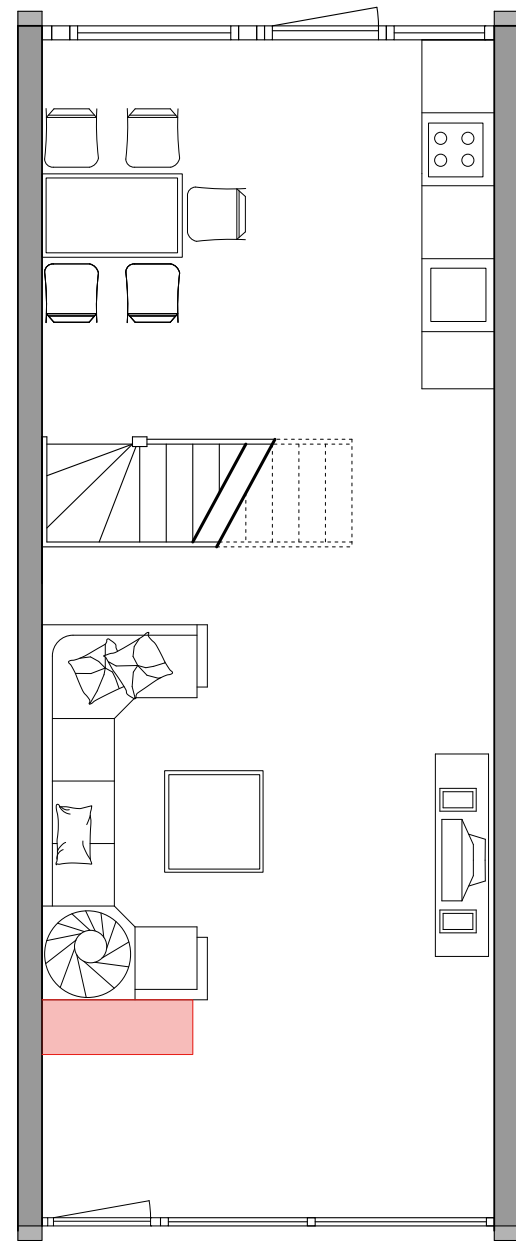
- Storage of frequently used clothings, bags and shoes for entrance
- Storage of other bags and shoes
- Place for (foldable) baby carriage/handcart/ladder
- Sports accessories
- Small goods for daily use (toilet paper, tool-box...)
- 

- Enclosed for private
- Mirror
- Seat for changing shoes

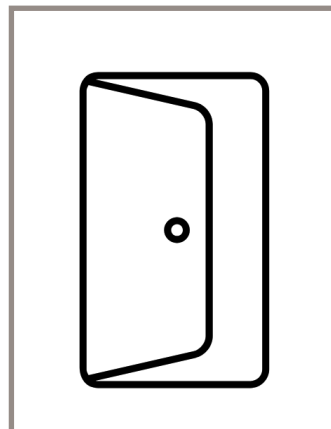




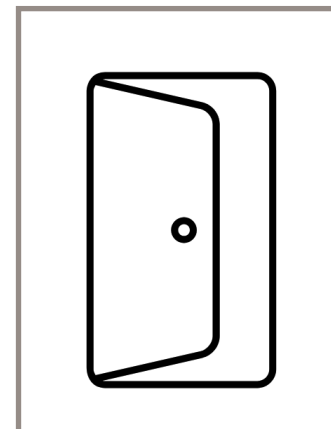
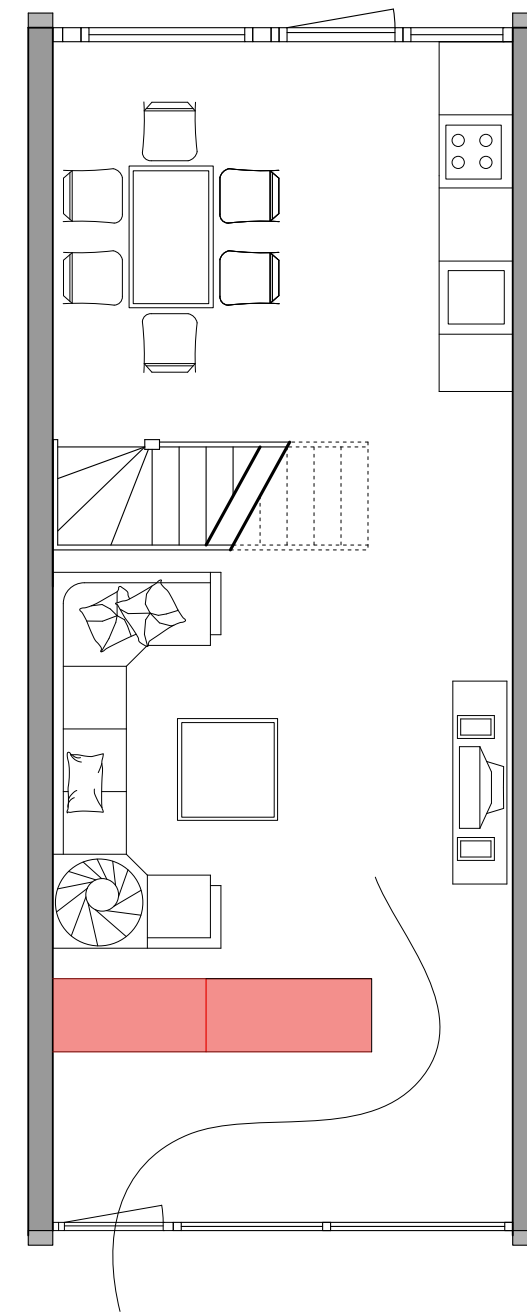
# Design



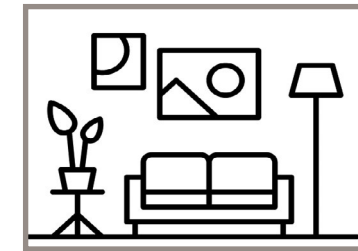
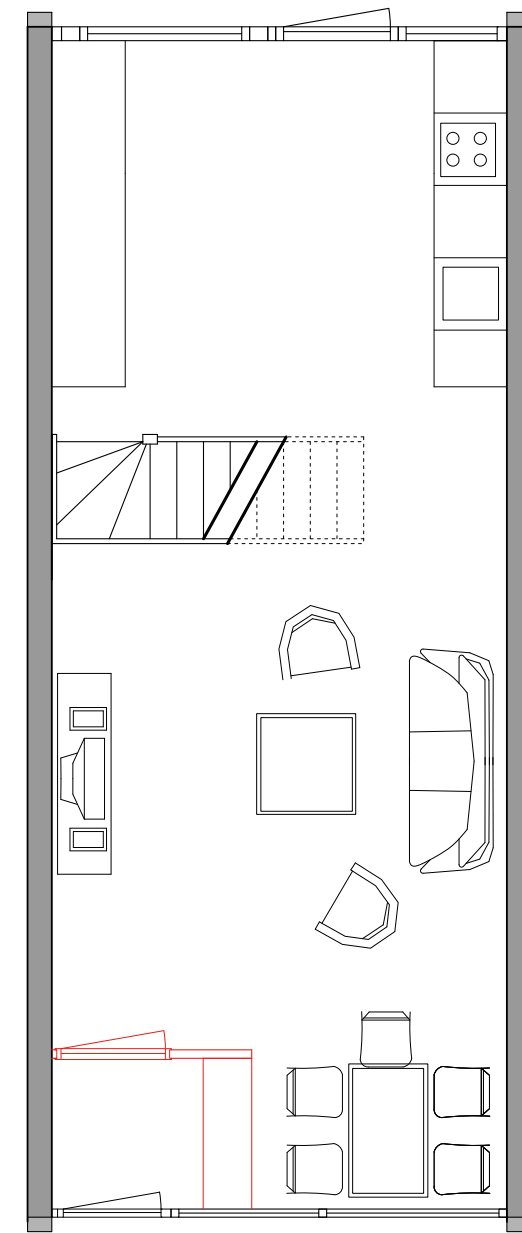
- Connected diningroom and Livingroom
- Flexible use of living-room
- Possibility of having an extra dining space



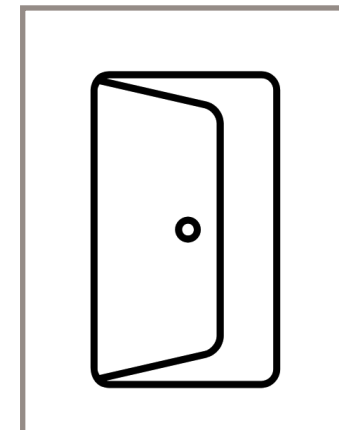
- Clear space (ideal for wheelchair and baby carriage)
- Adequate daylight



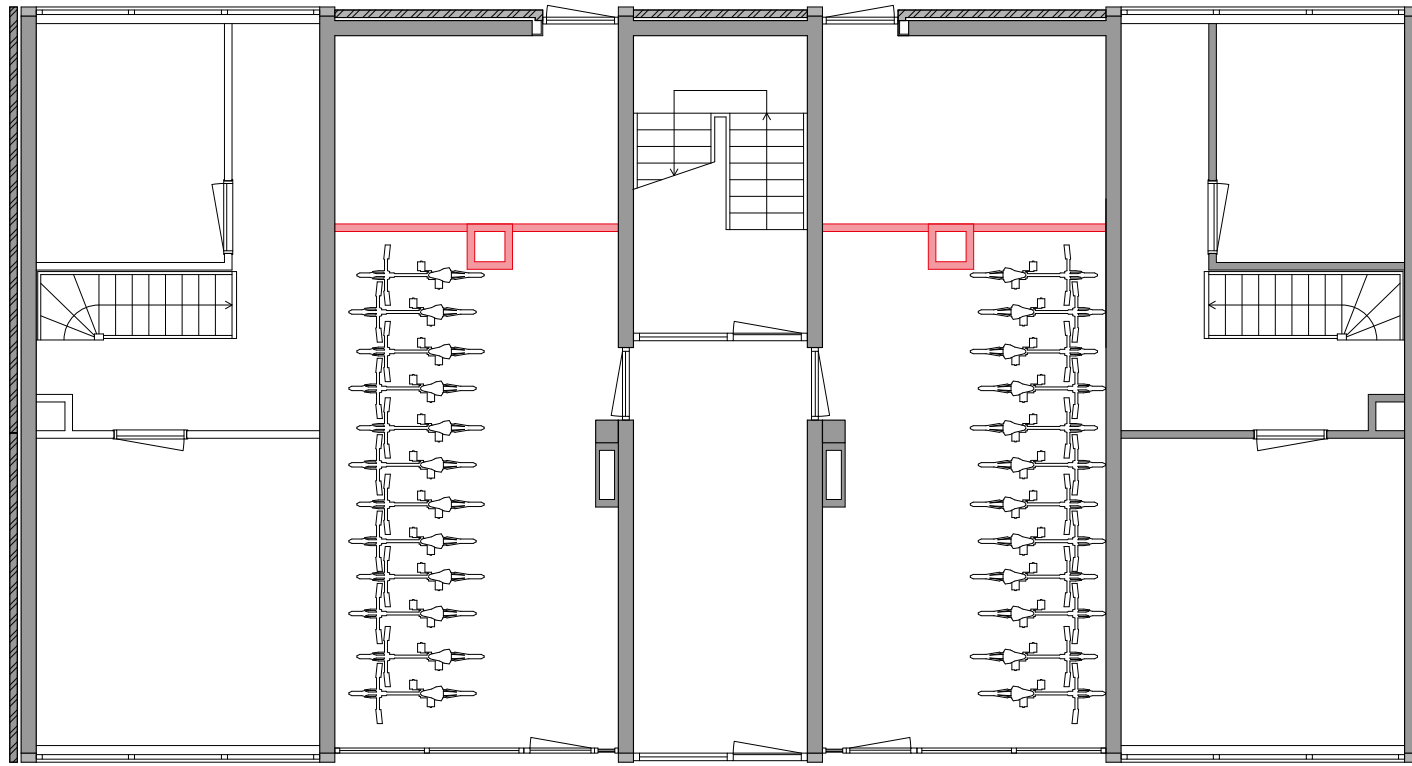
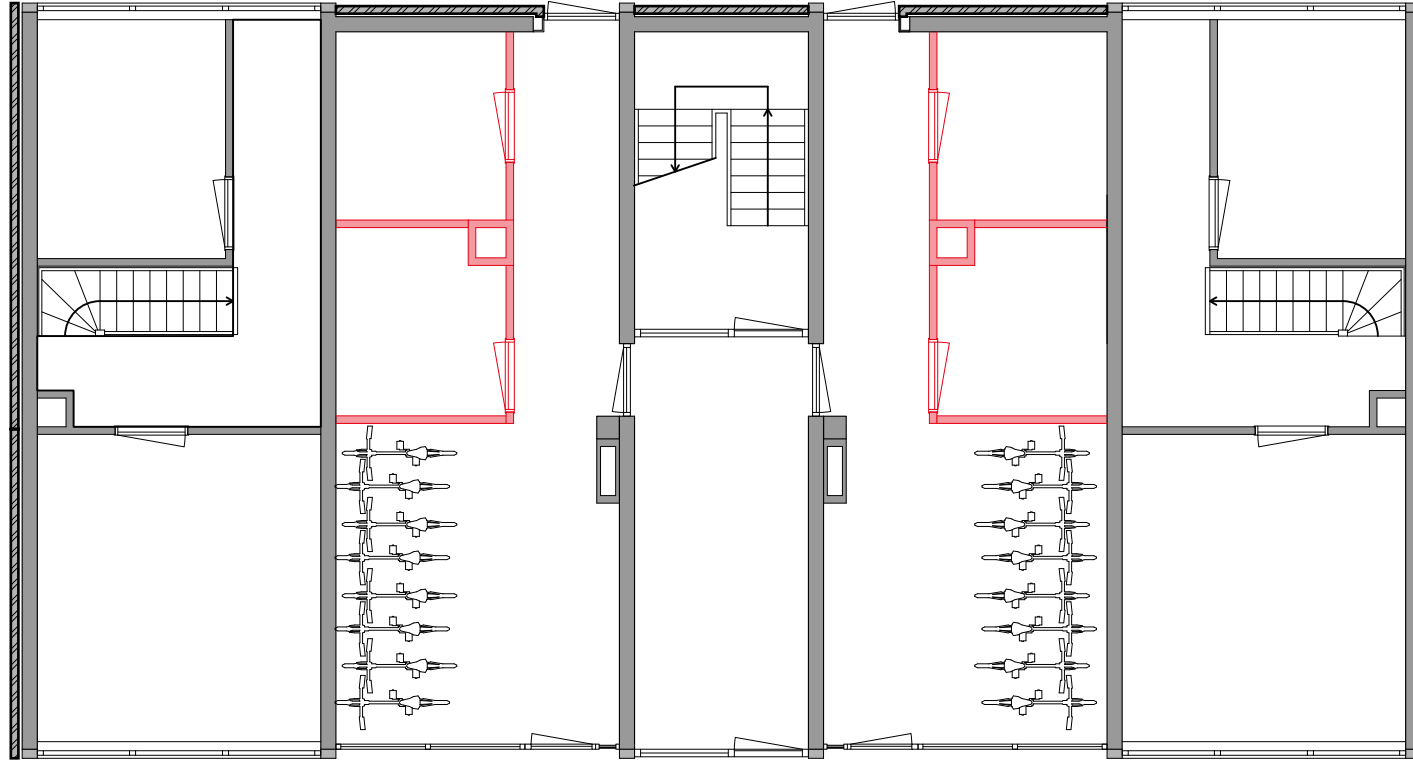
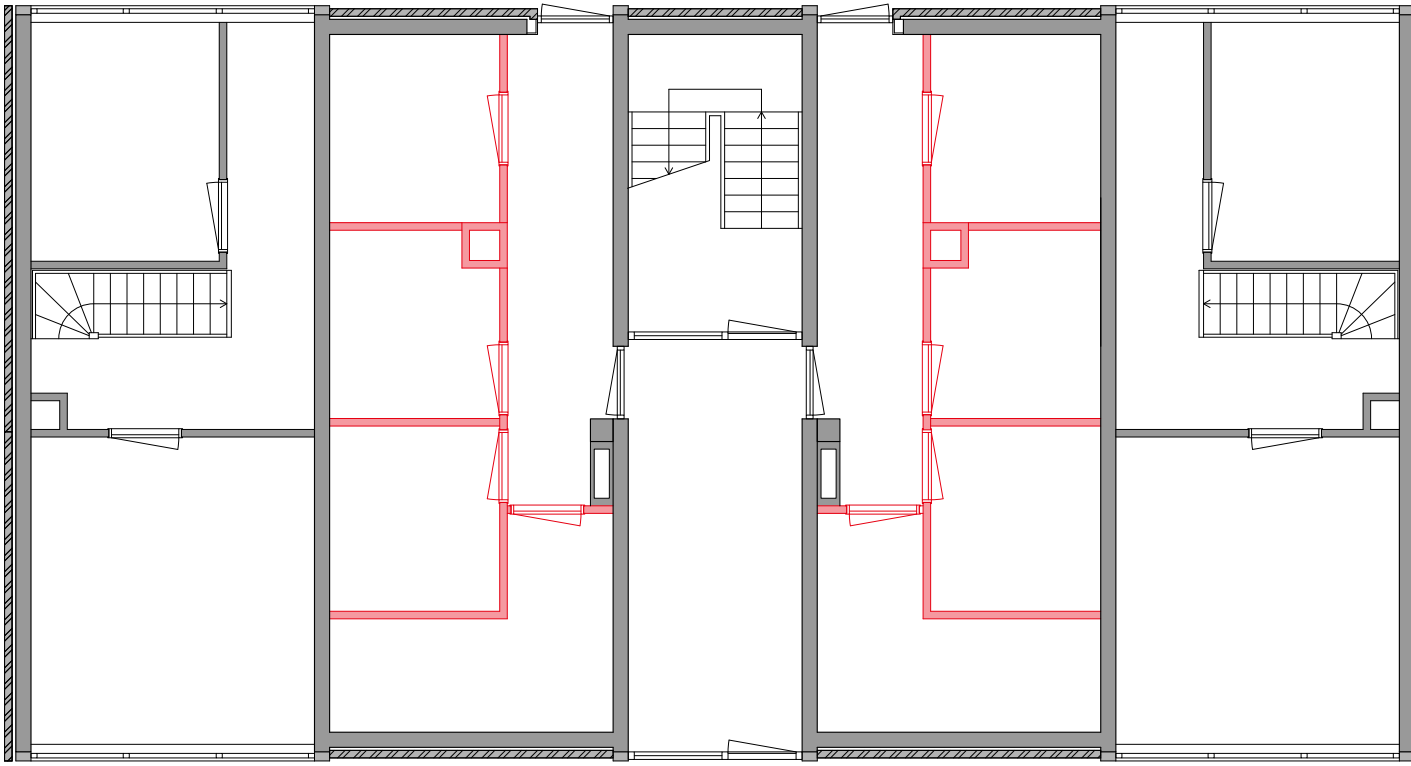
- Clear space (ideal for wheelchair and baby carriage)
- Enclosed for private



- Connected diningroom and Livingroom
- Flexible use of living-room
- Possibility of having an extra dining space

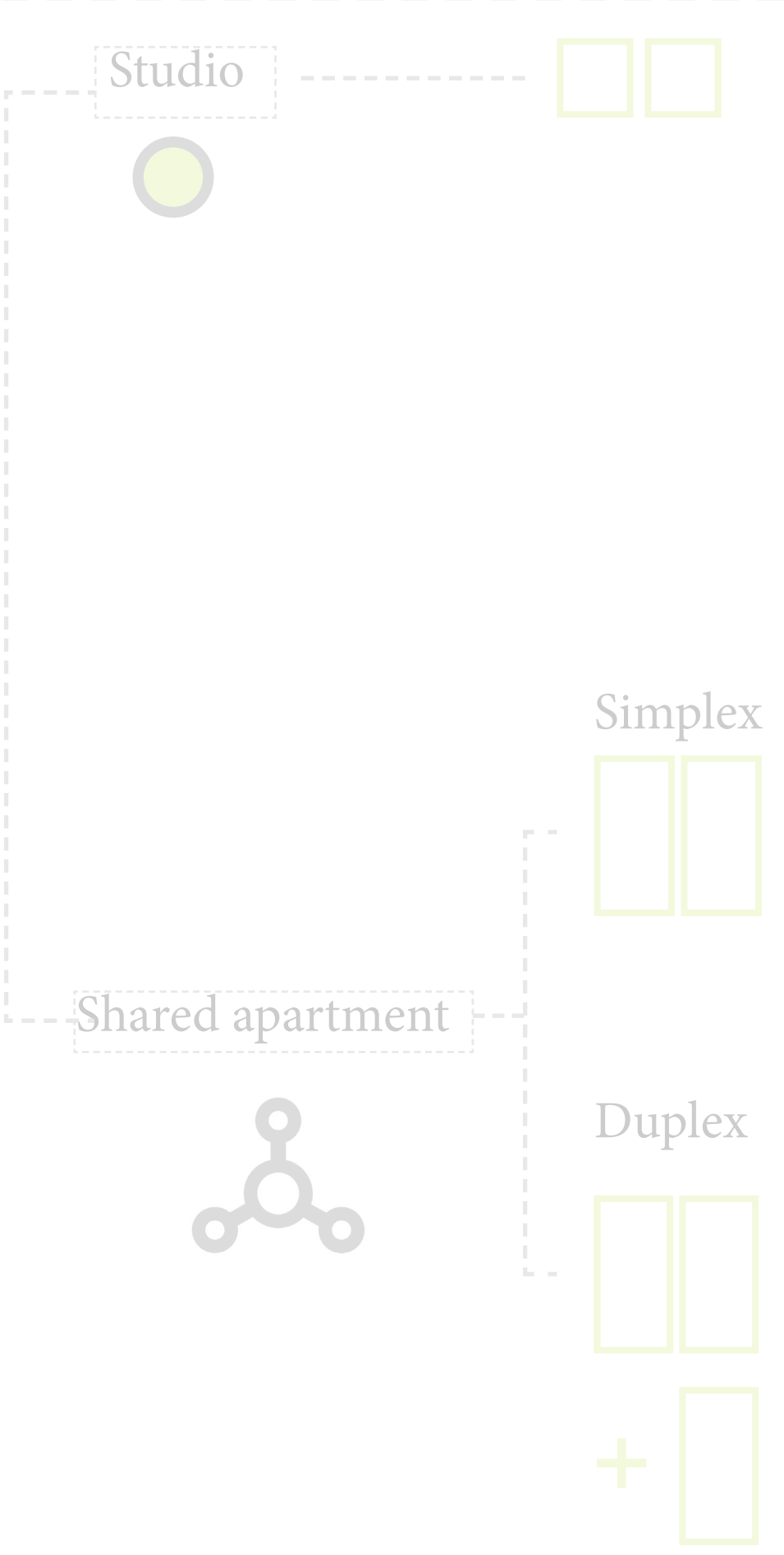


- Enclosed for private

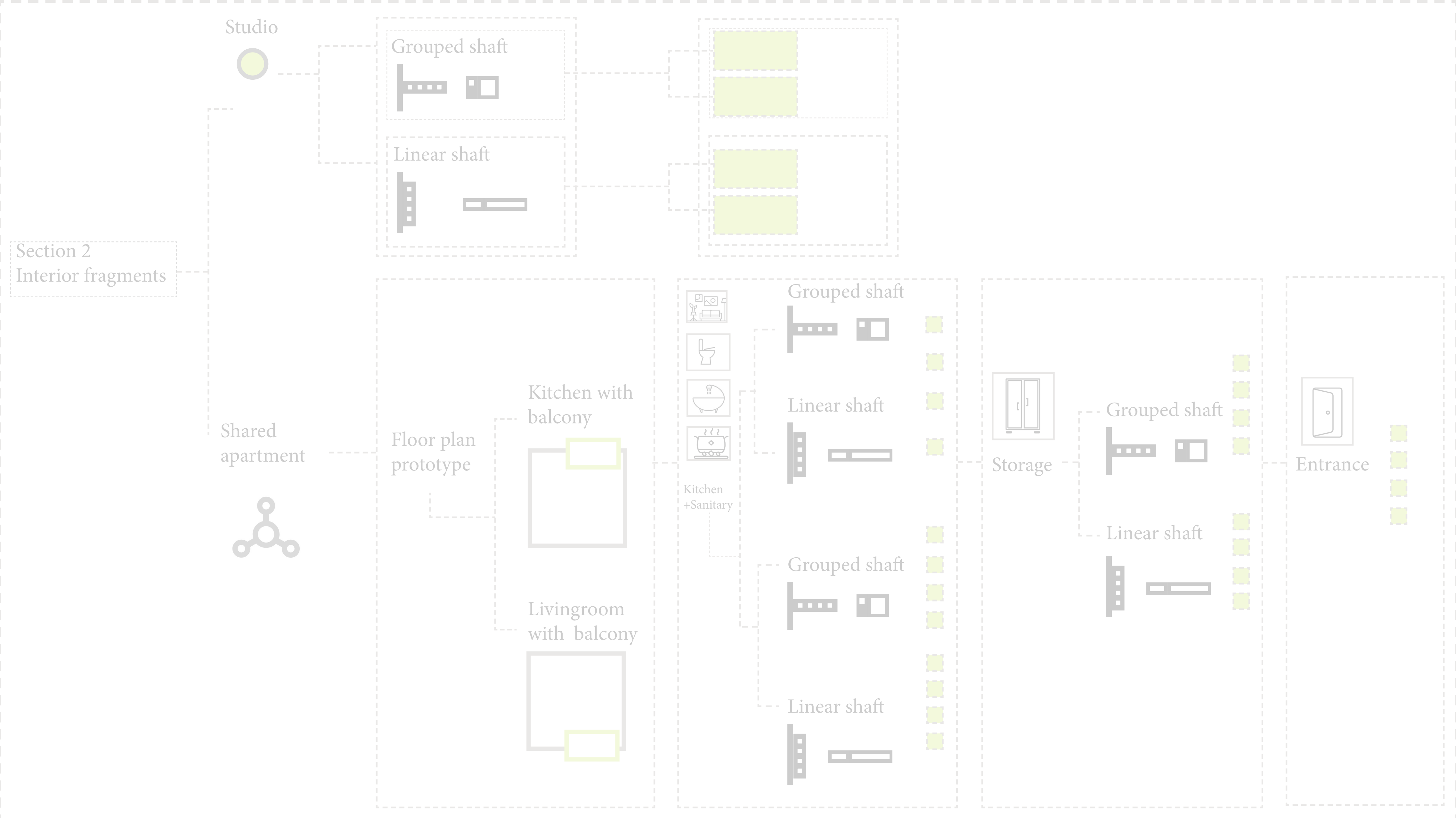


**Ambition | X**

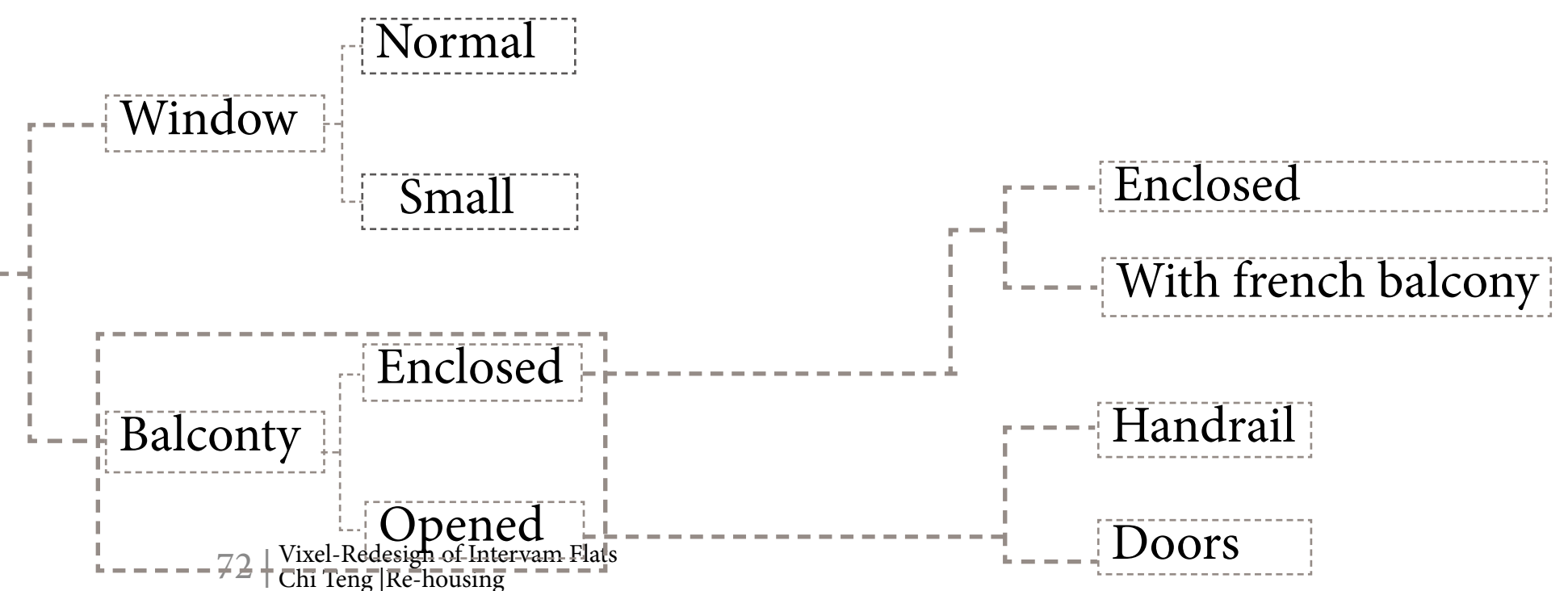
Section 1  
Floor plan typology



Section 2  
Interior fragments



Section 3  
Exterior fragments



# Design

## Section 1 Floor plan typology

Studio 

Shared apartment 

Simplex 

Duplex 

## Section 2 Interior fragments

Studio 


Grouped shaft 

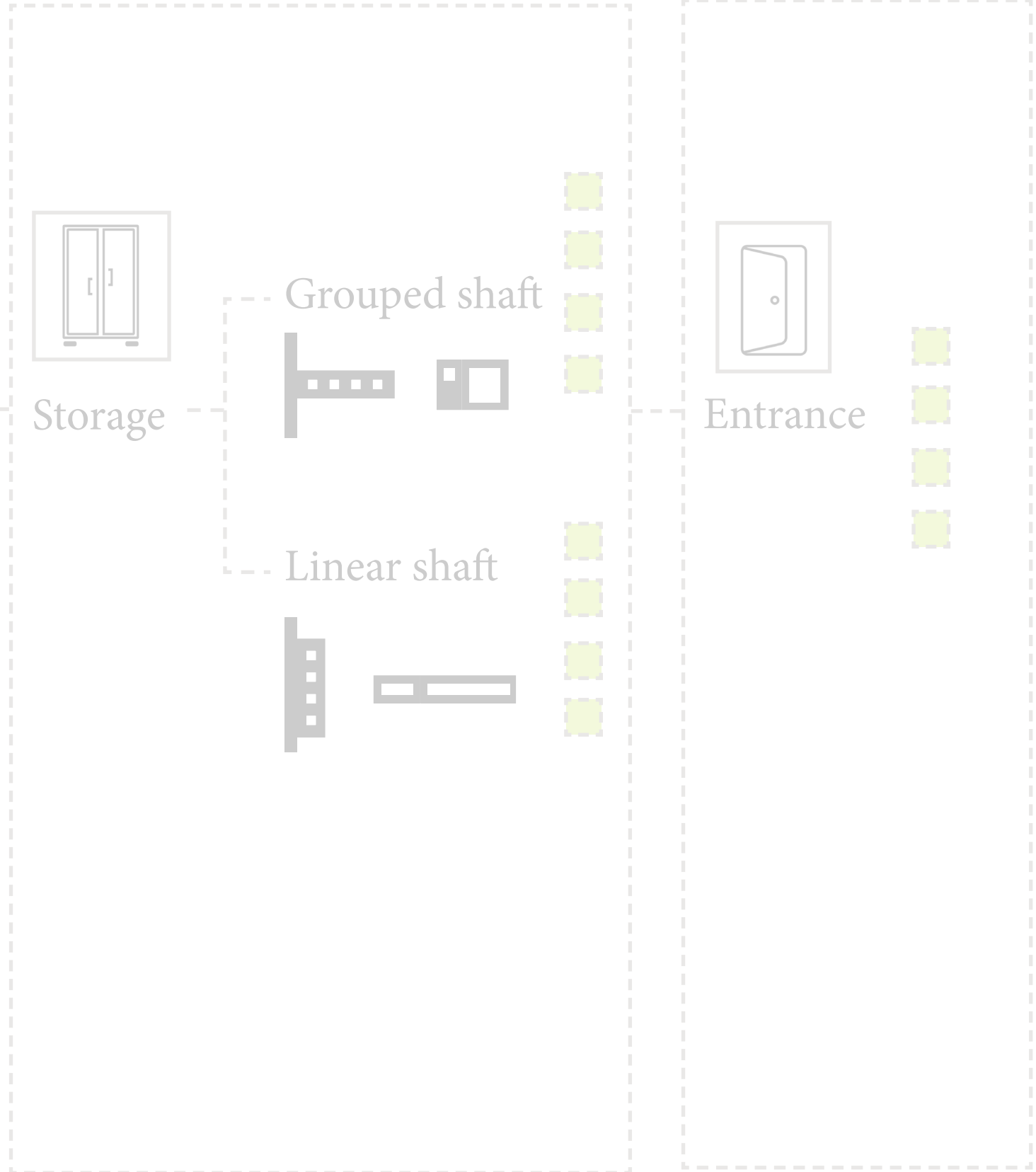
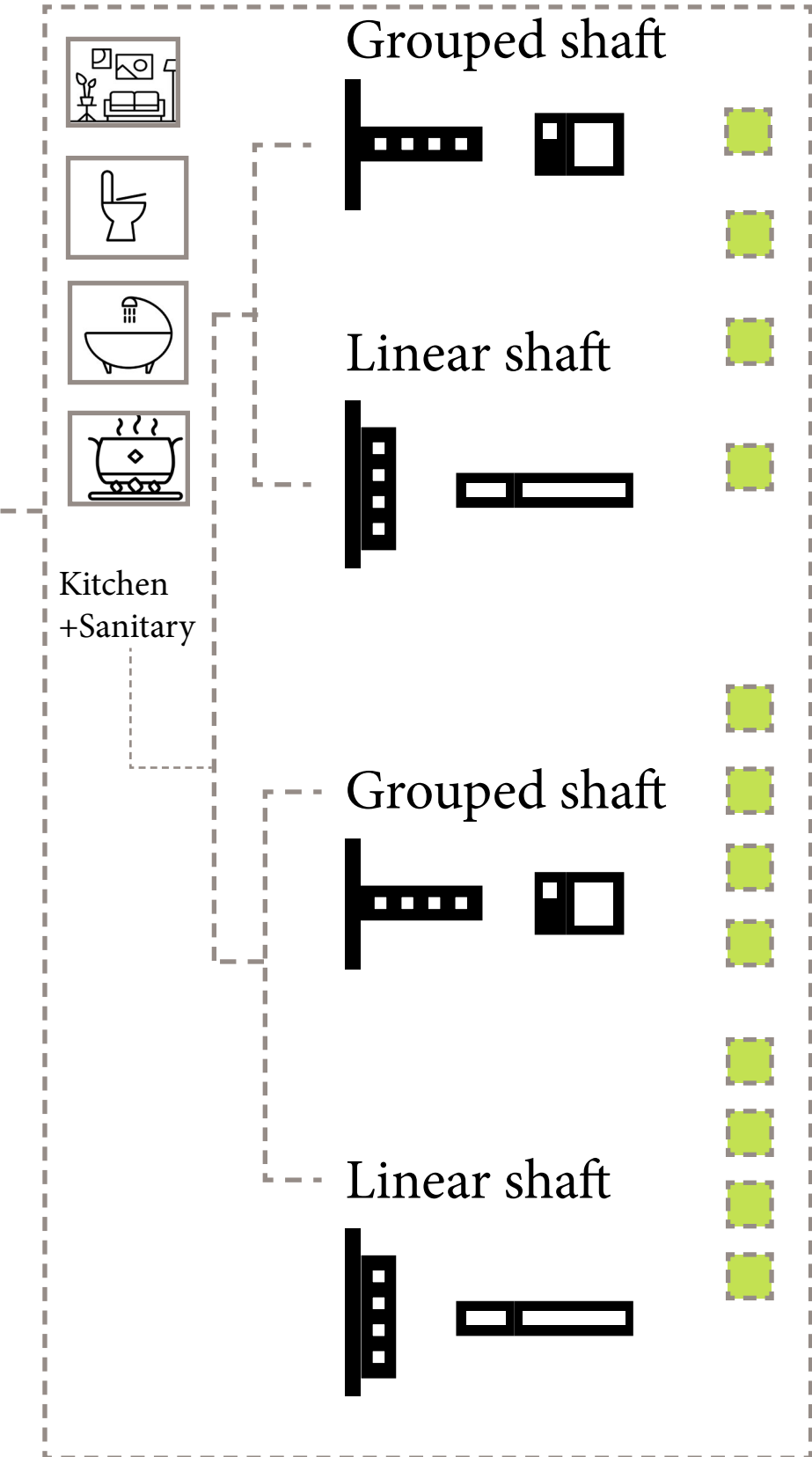
Linear shaft 

Shared apartment 




Floor plan prototype 




Kitchen with balcony 





Livingroom with balcony 



## Section 3 Exterior fragments

Window   
Normal   
Small 

Balconty   
Enclosed   
Opened 

Enclosed   
With french balcony   
Handrail   
Doors 

Ambition:  
Express the variant;  
Organize the variant;  
Not to show-off from the context



Current

In-progress

Finished

Finished

Composition



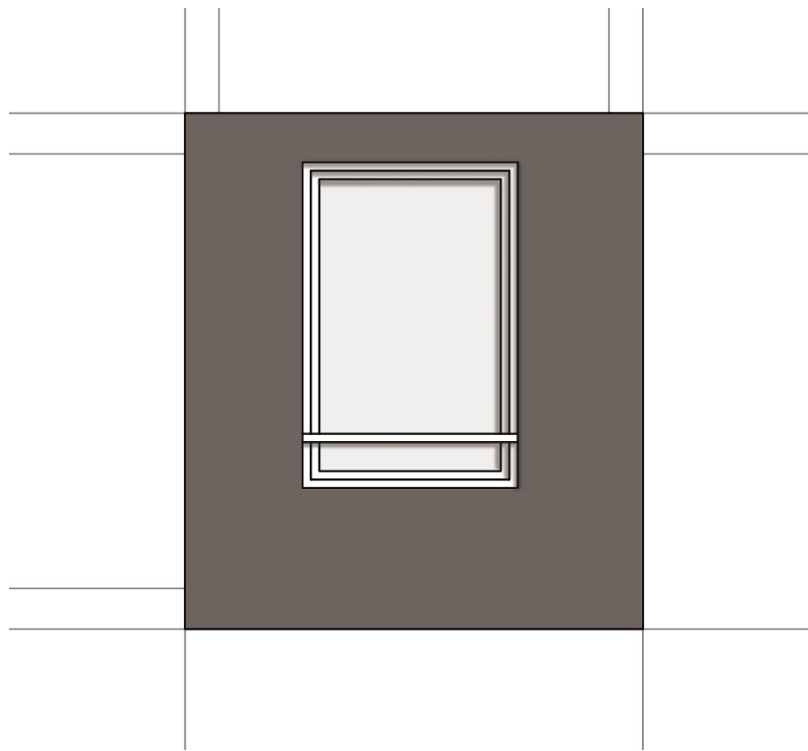
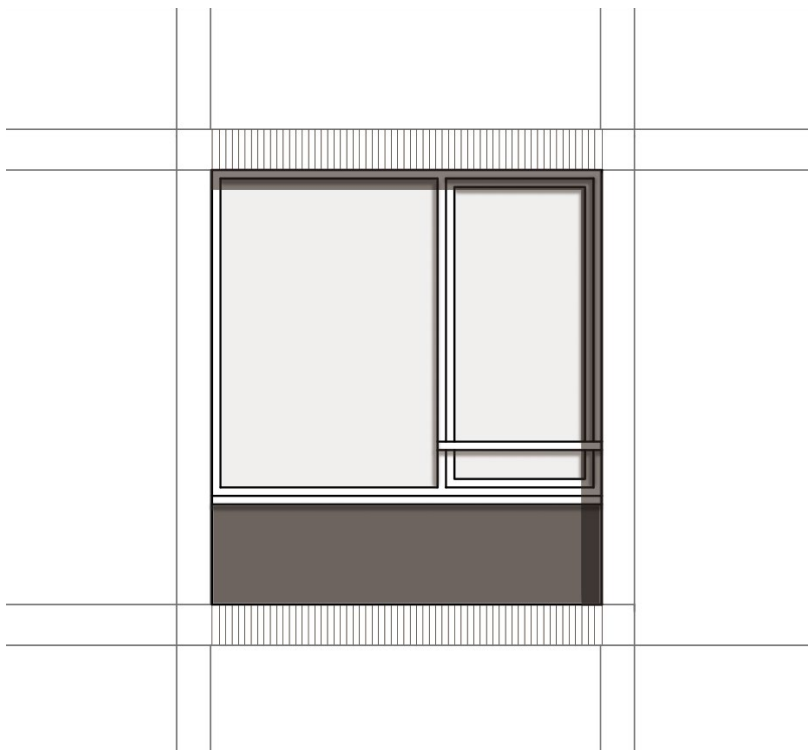
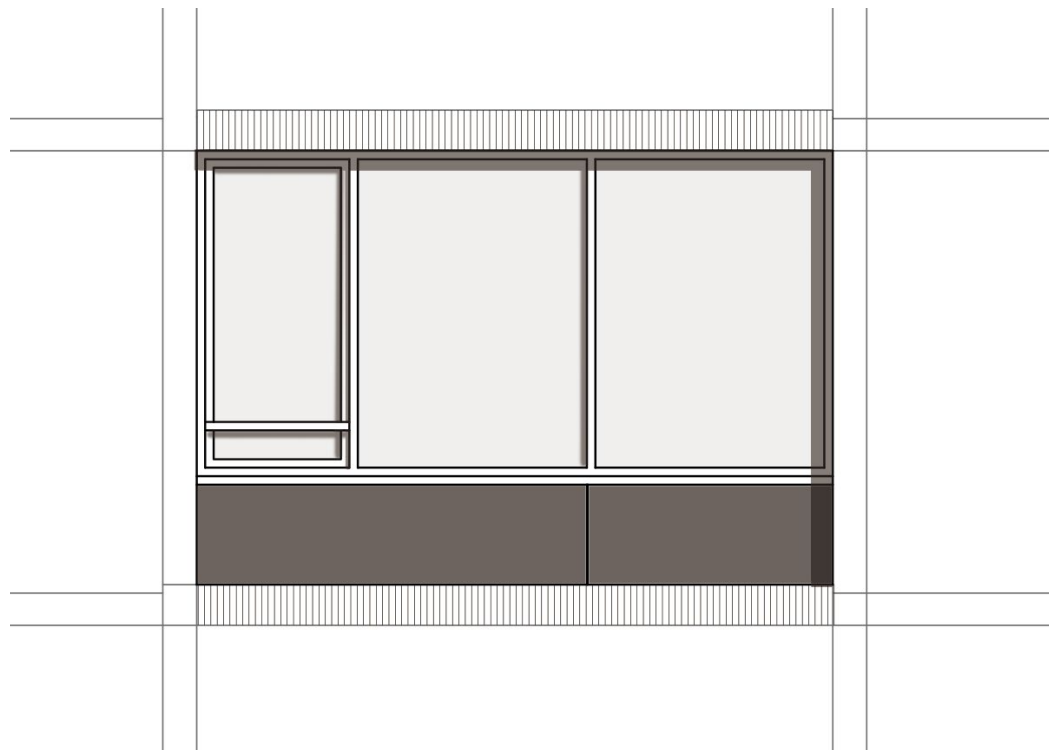
Grid:  
Flexible infills  
Organize variants

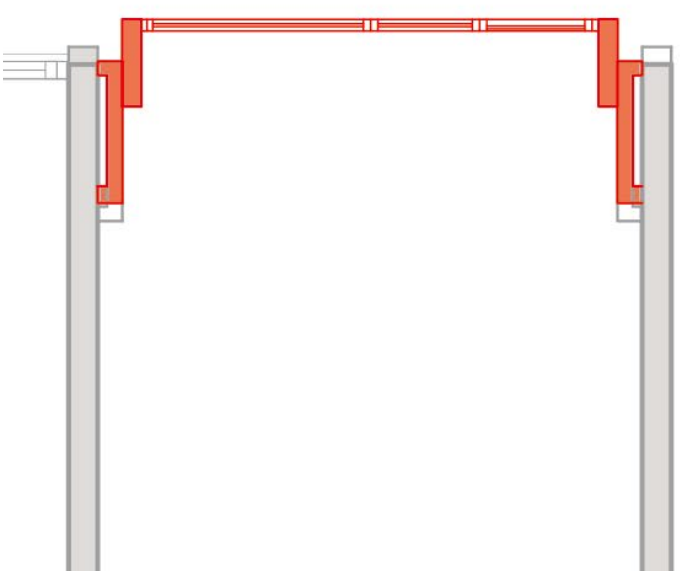
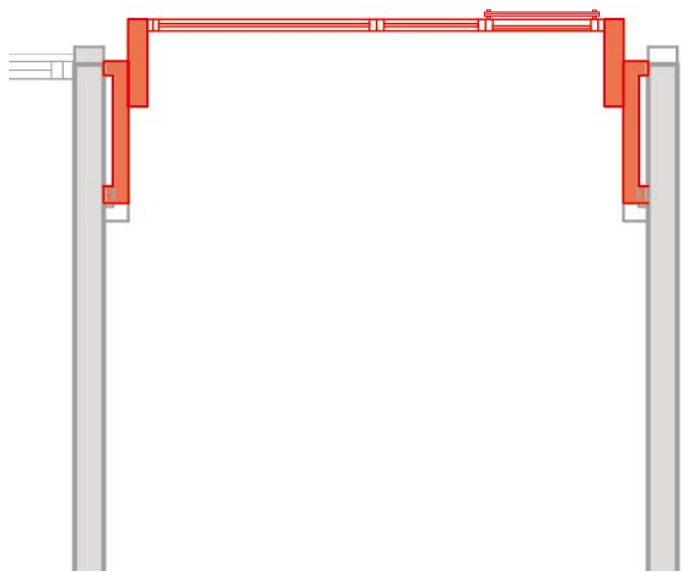
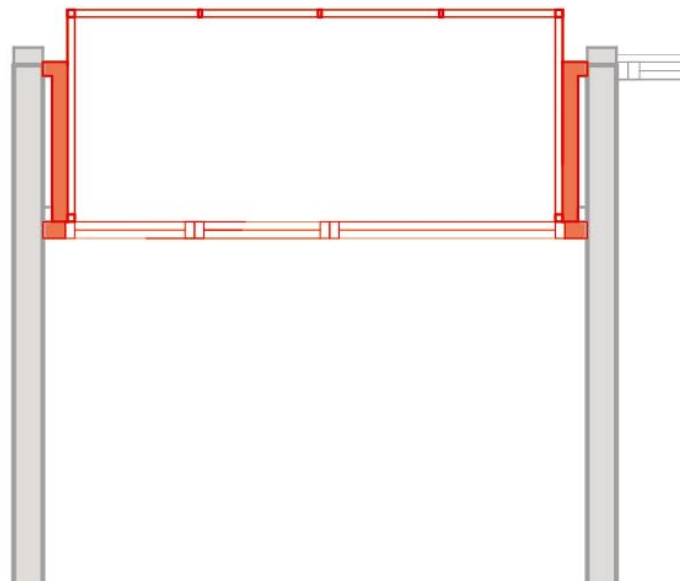
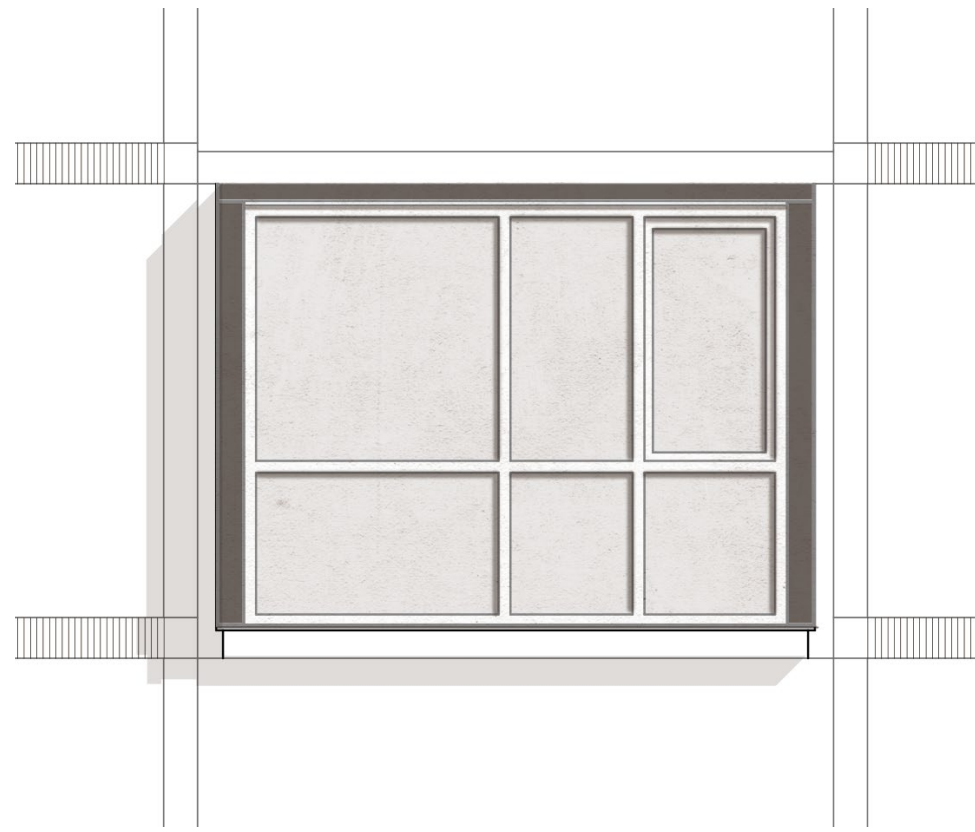
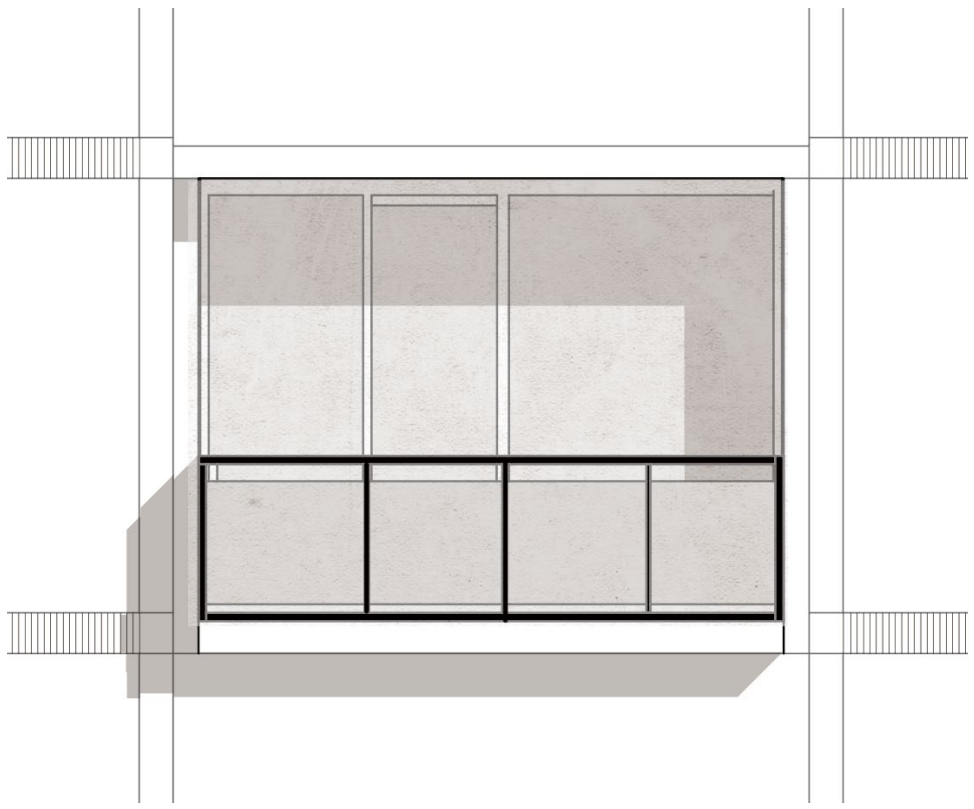
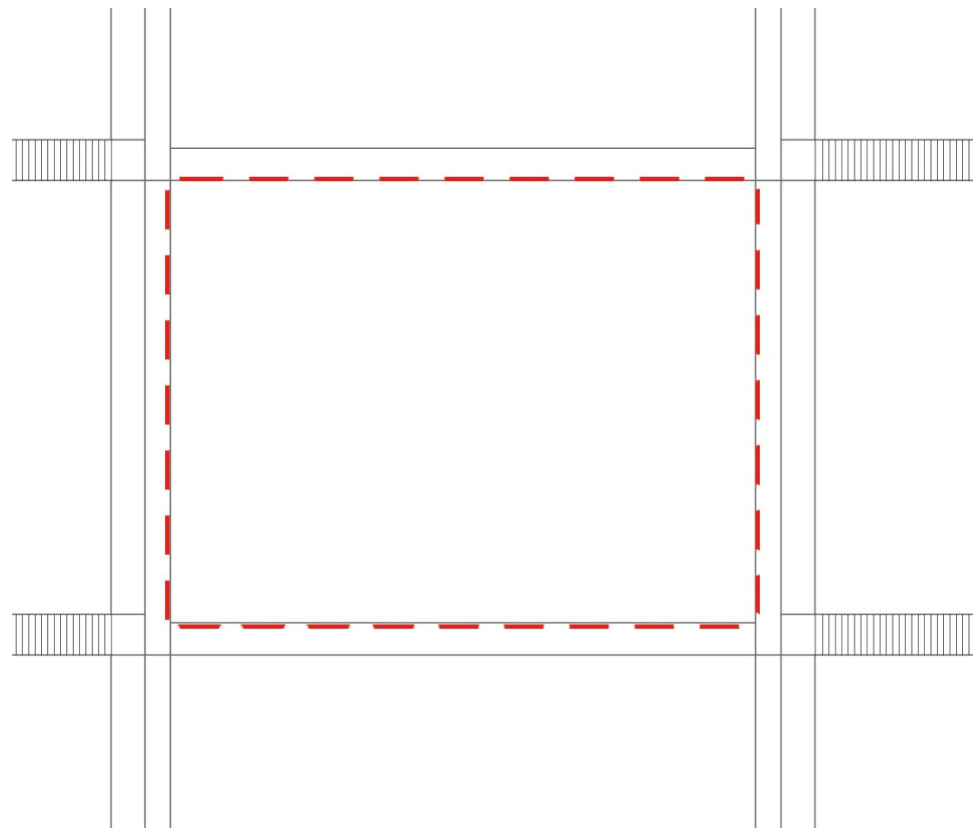
Axisymmetric:  
Organize variants

Windows:  
rigid

Balcony:  
flexible

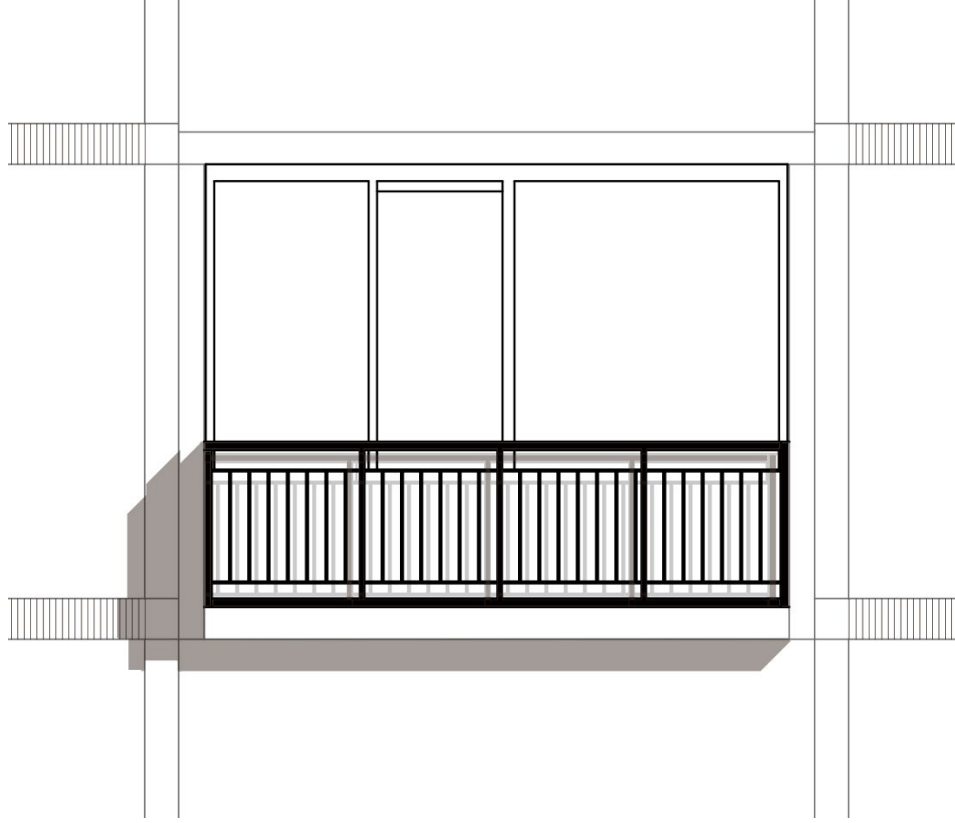
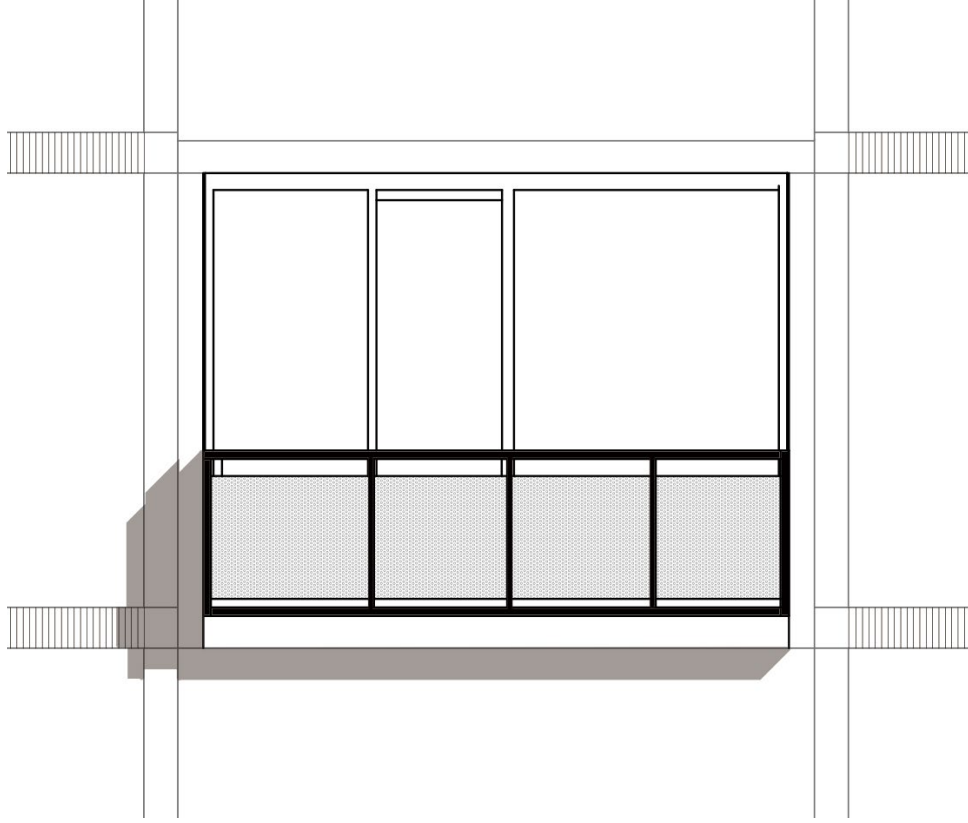
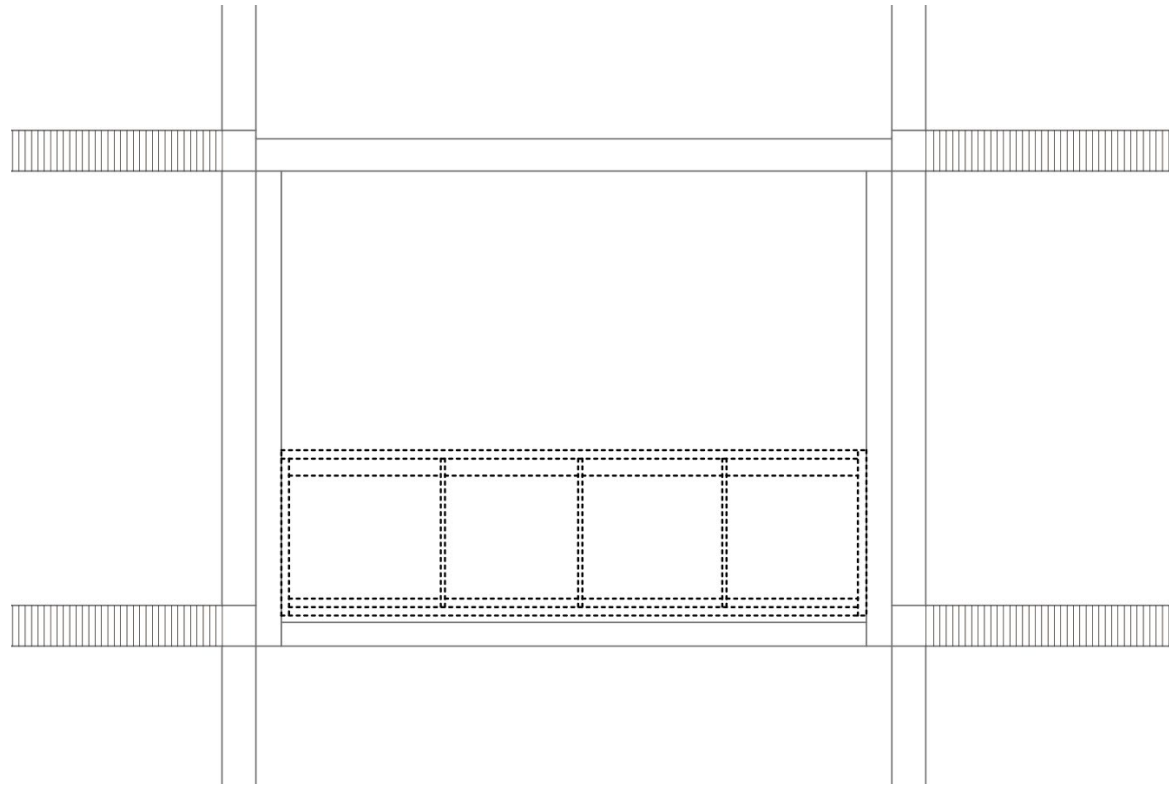
- Material of parapet:  
Fibre cement panel
- Thin
  - Light weight
  - Variable colour and texture
  - Easy to be maintained

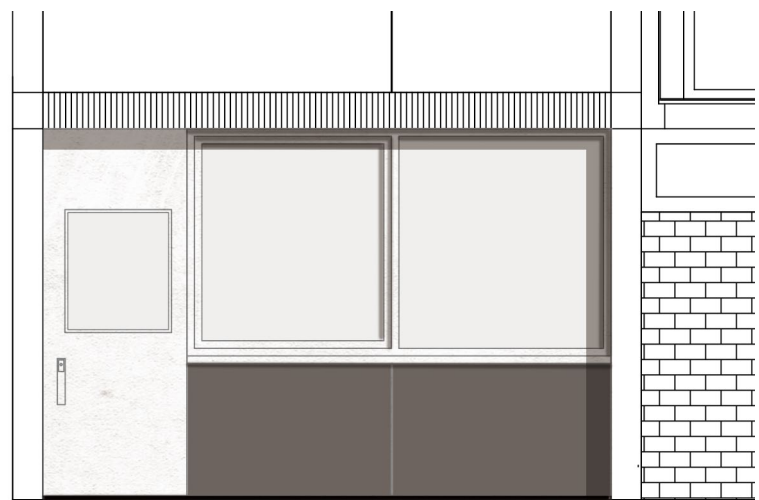
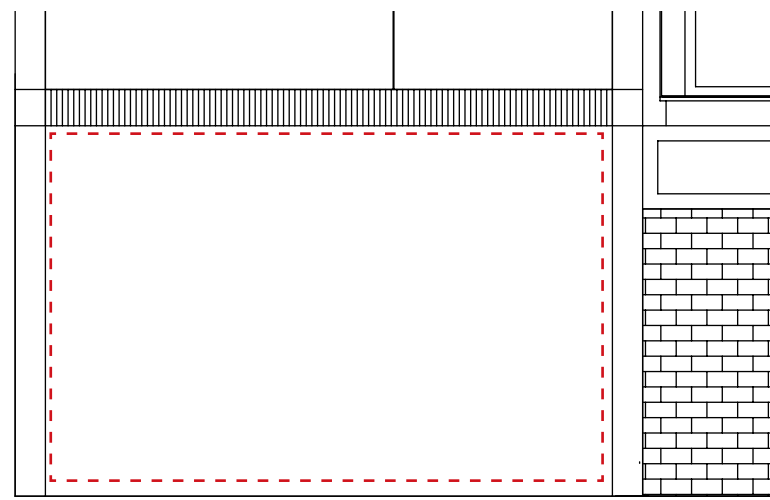




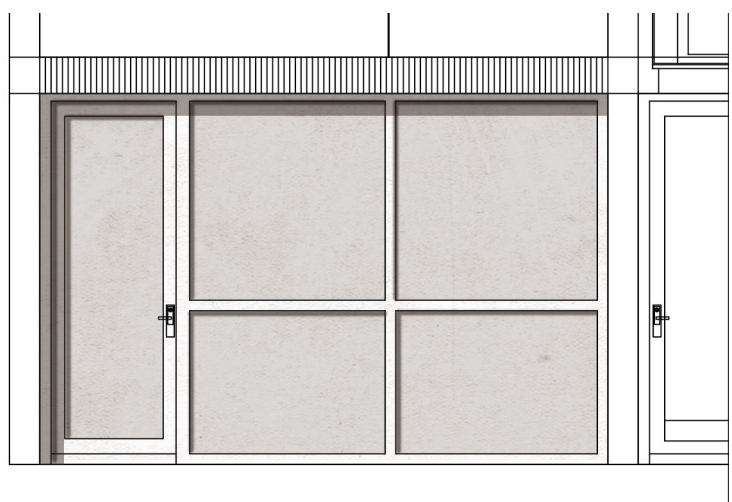




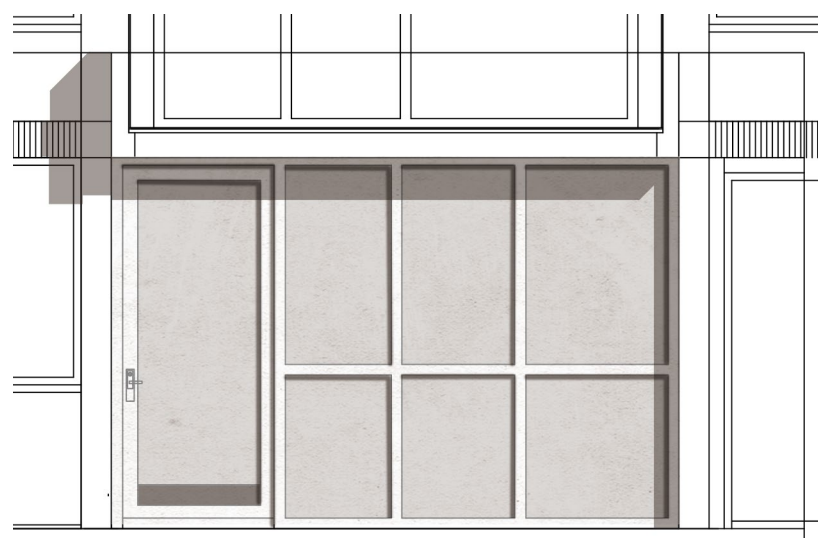
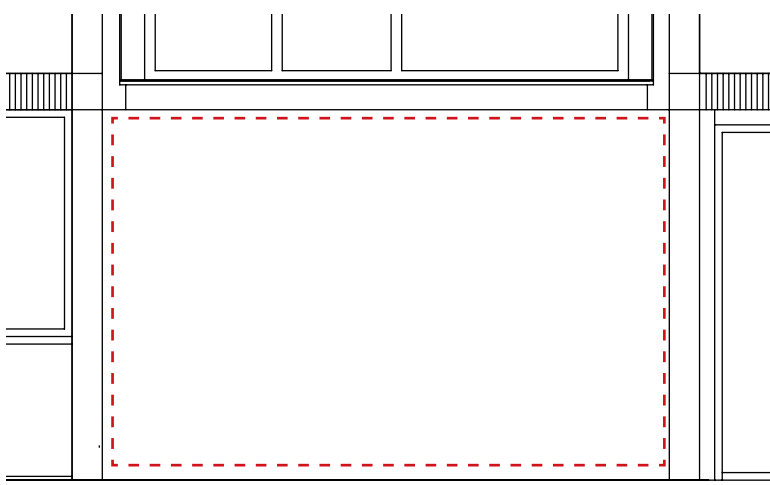




Apartment



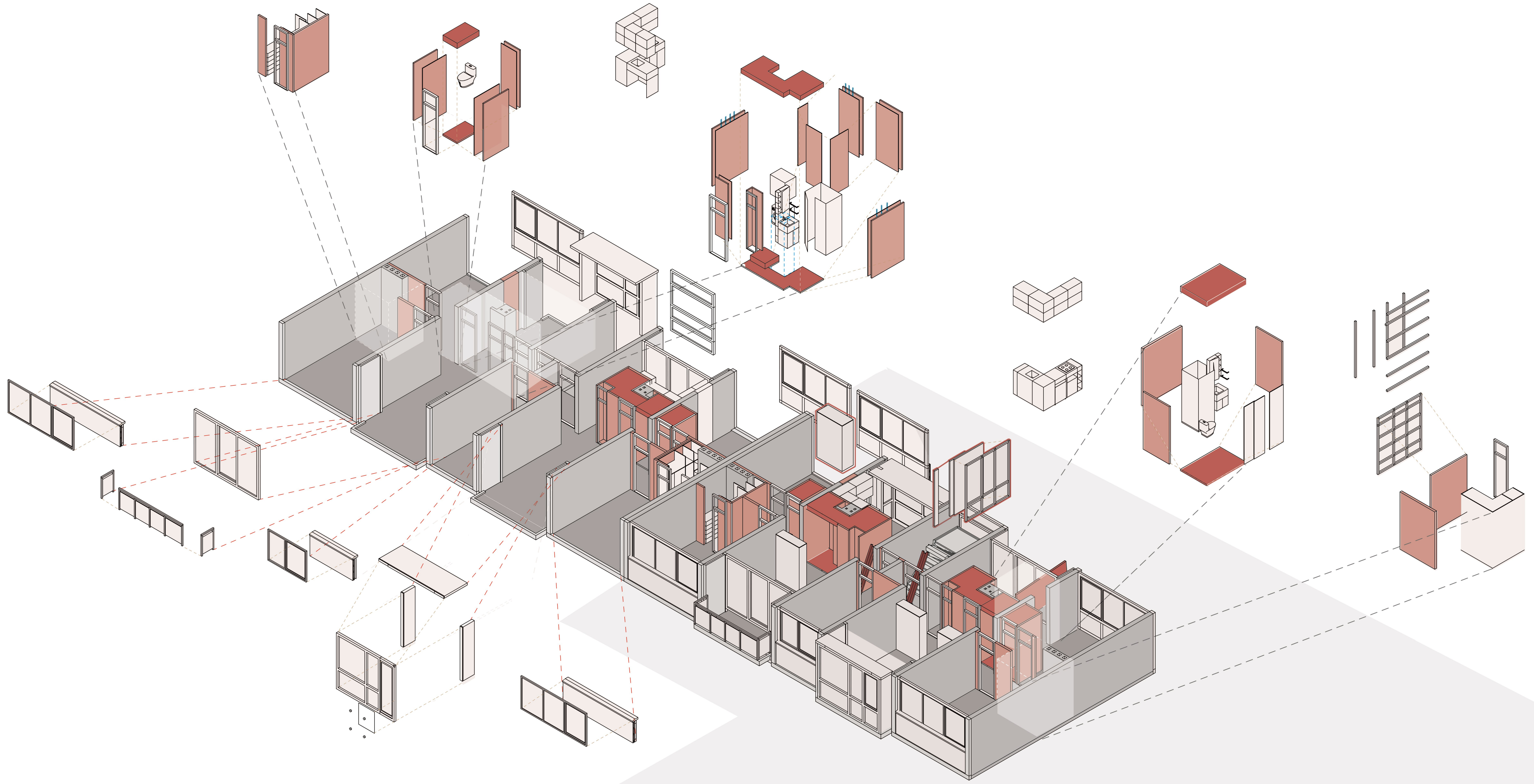
Commercial/  
social community

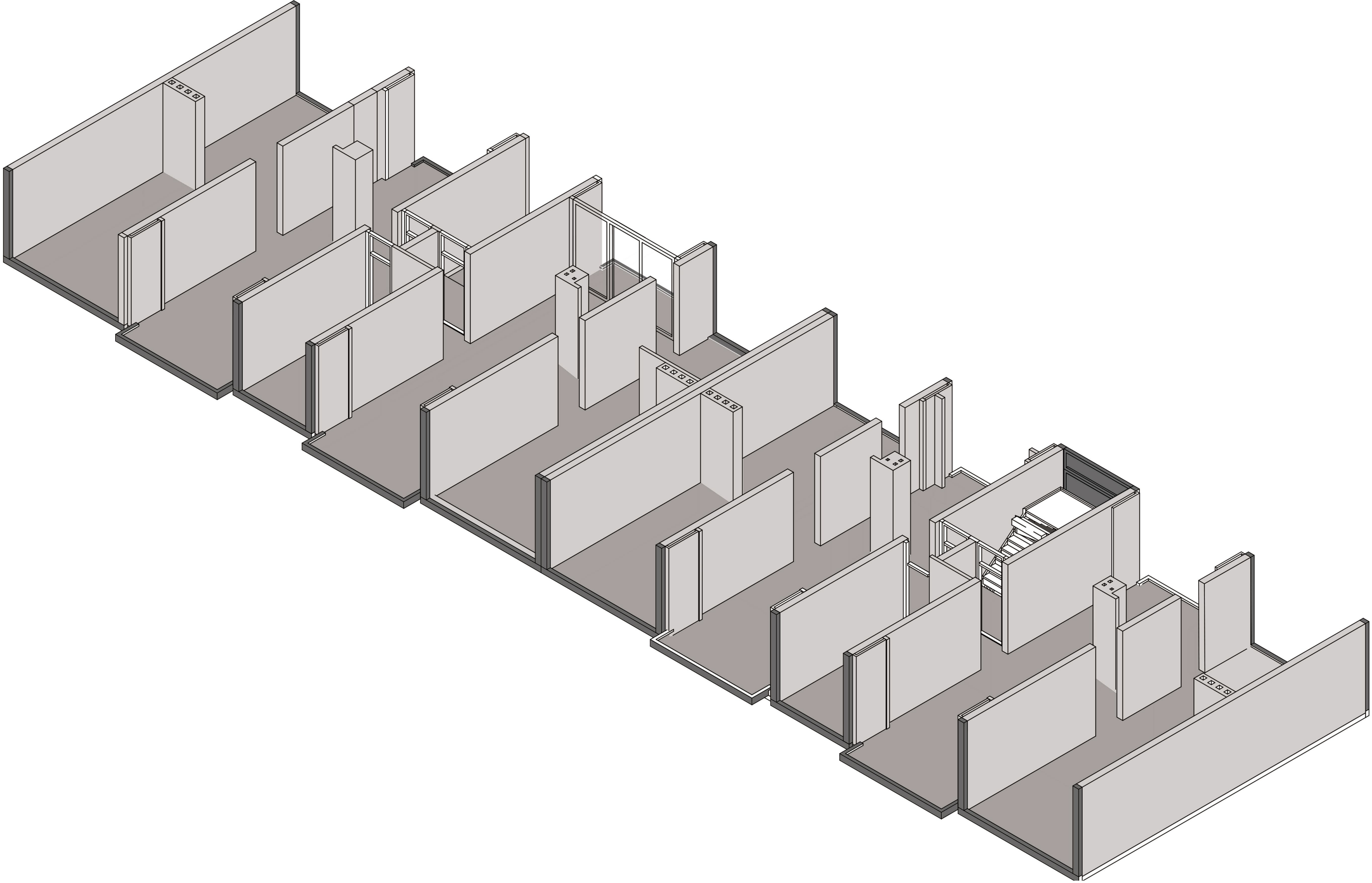


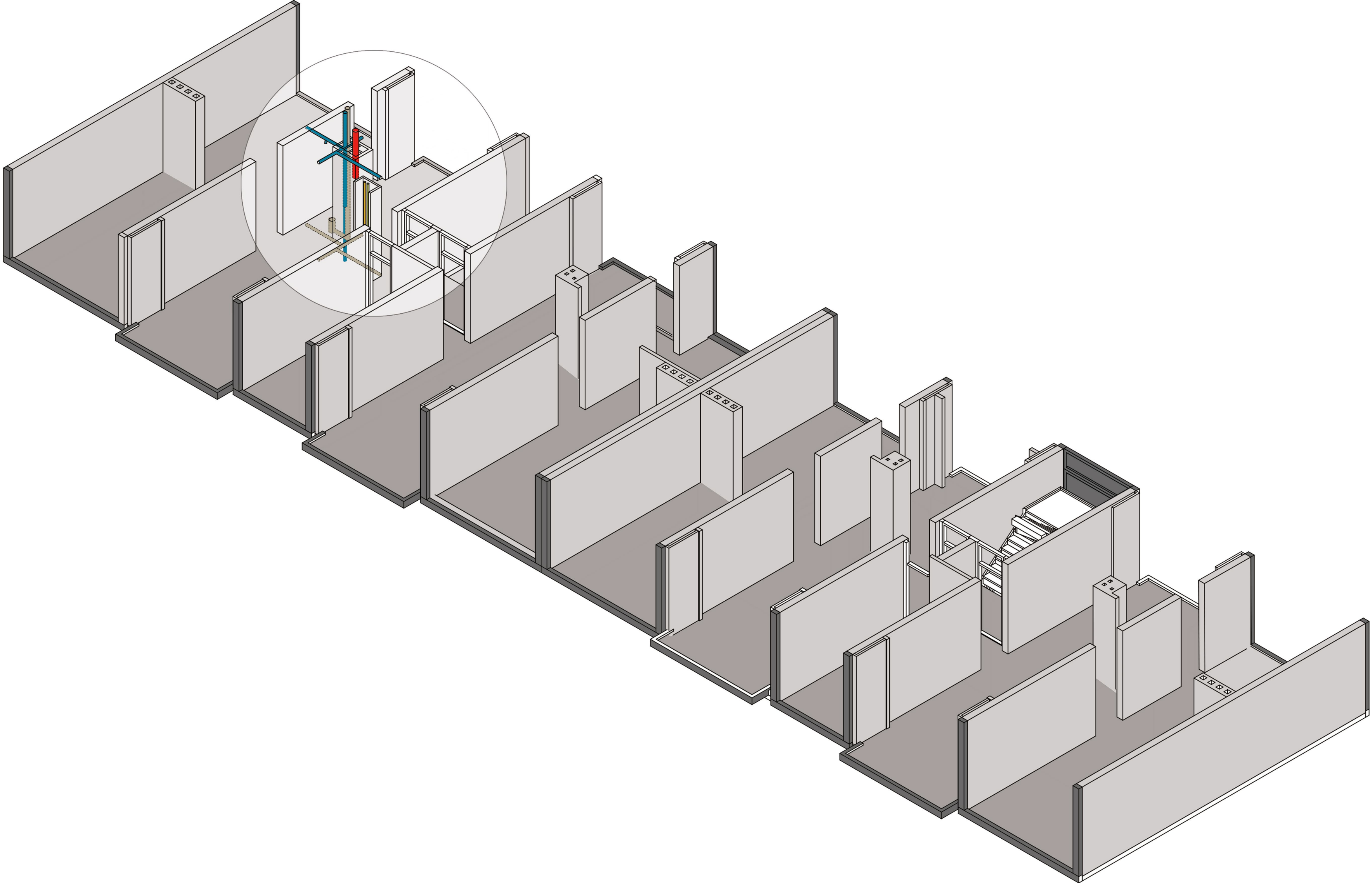
bicycle storage

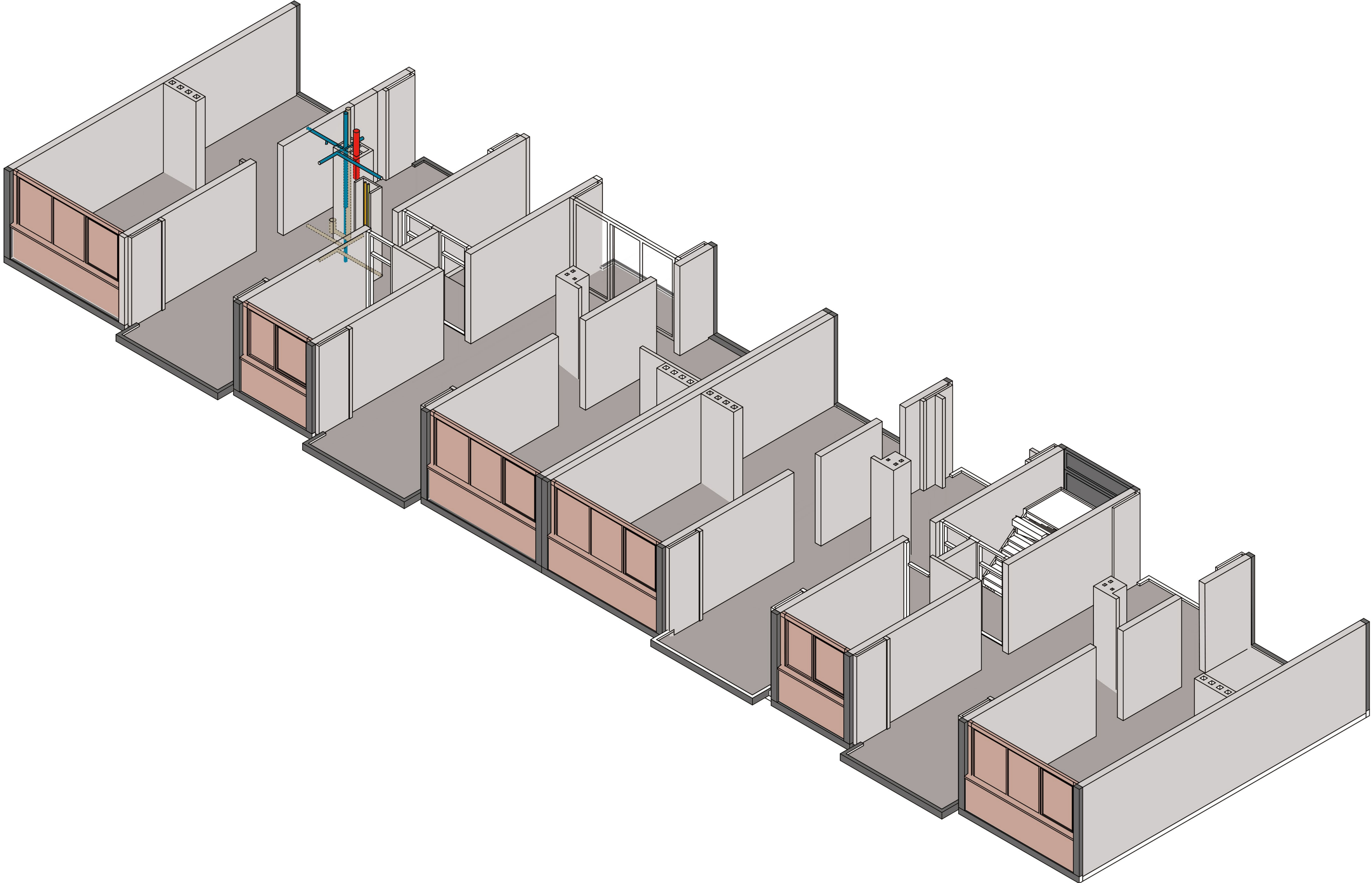


Stage 2 Construction

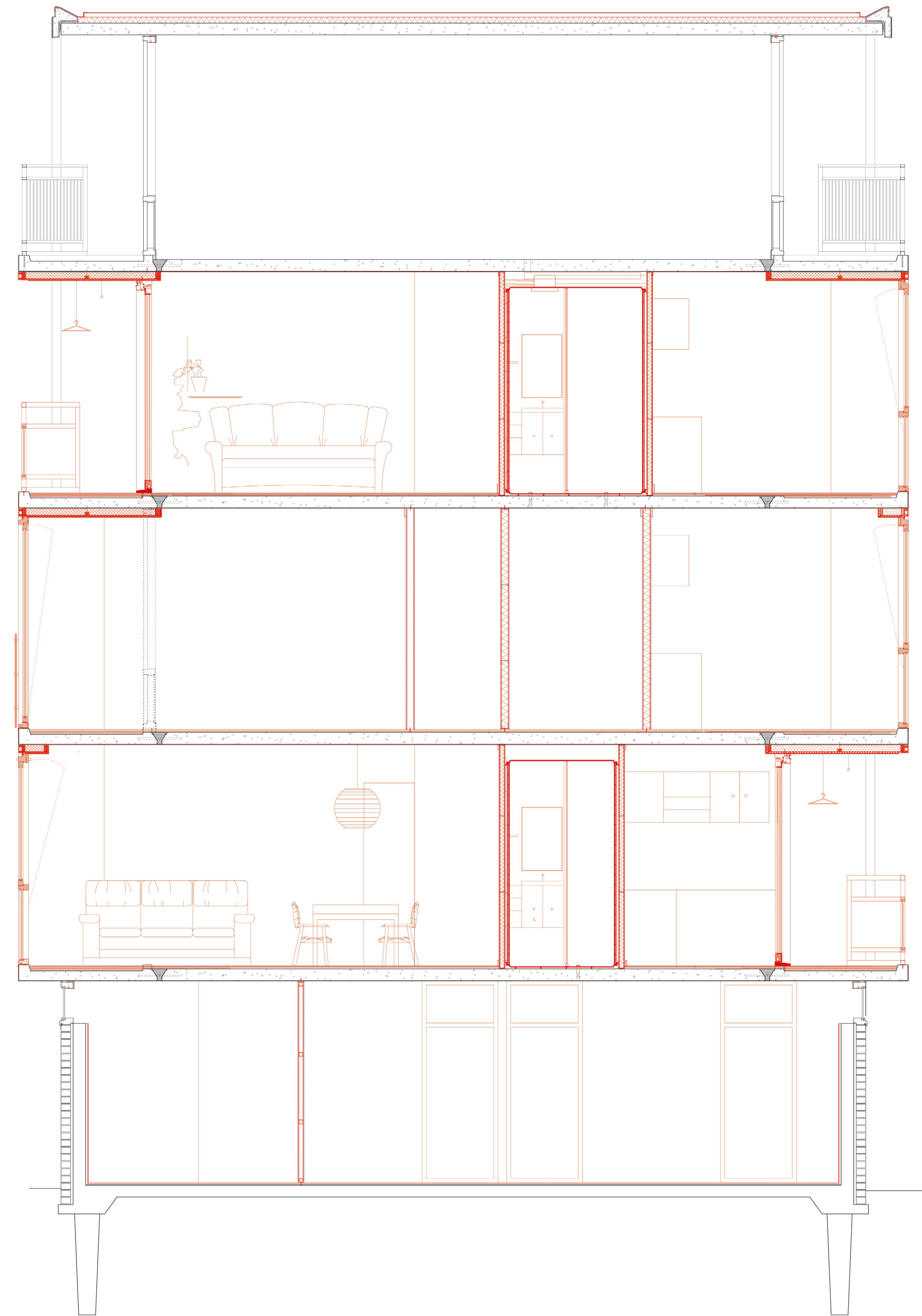




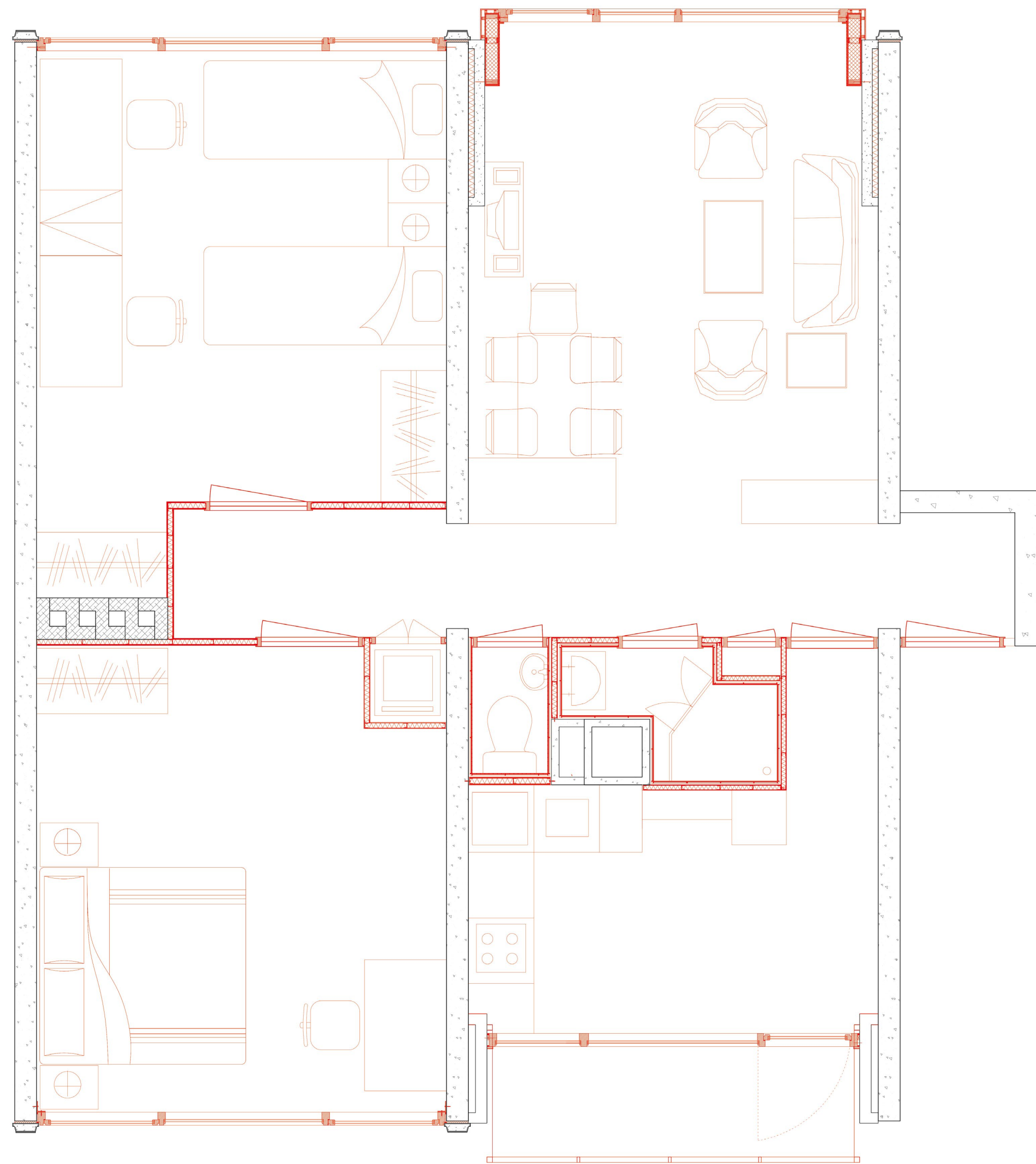


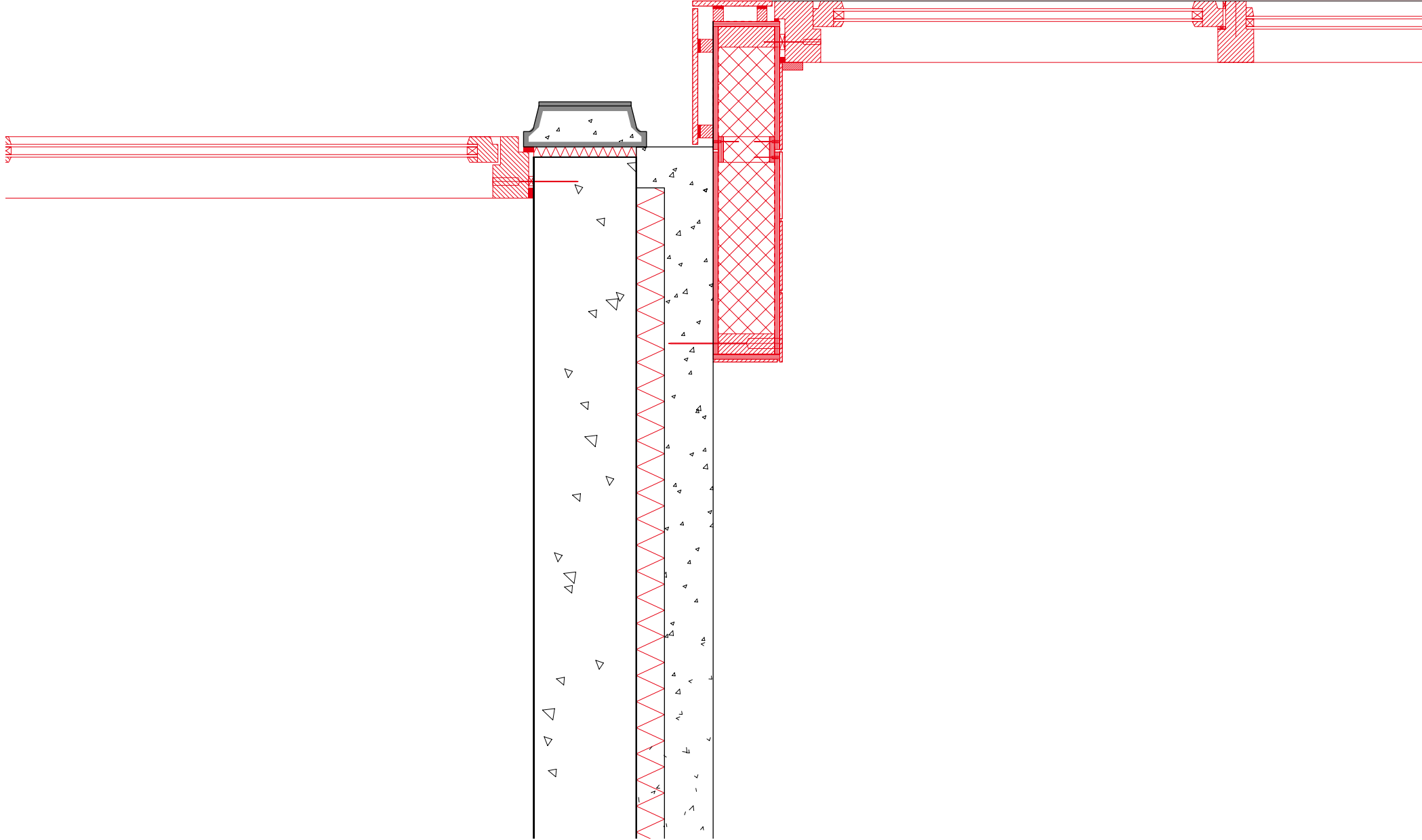
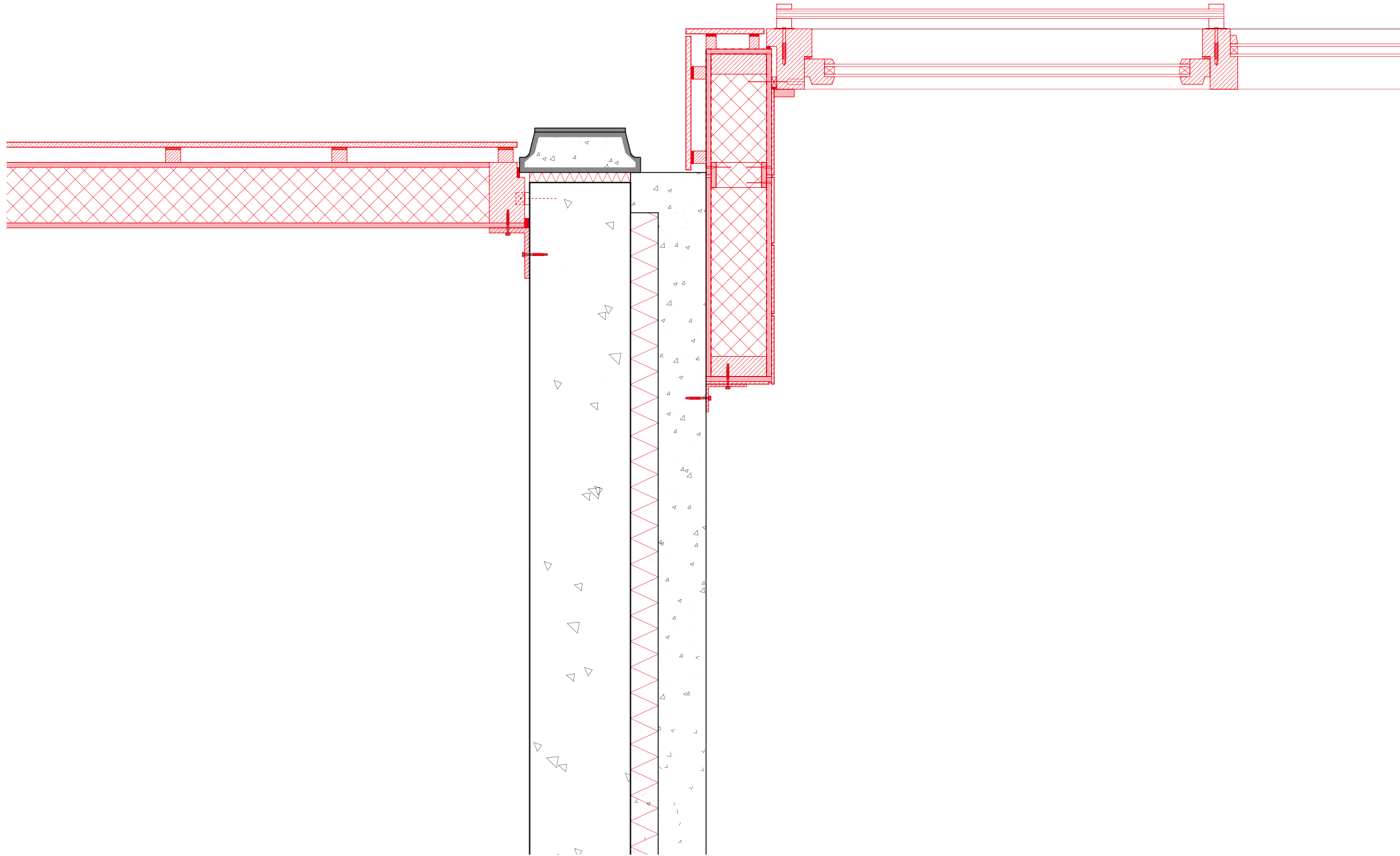


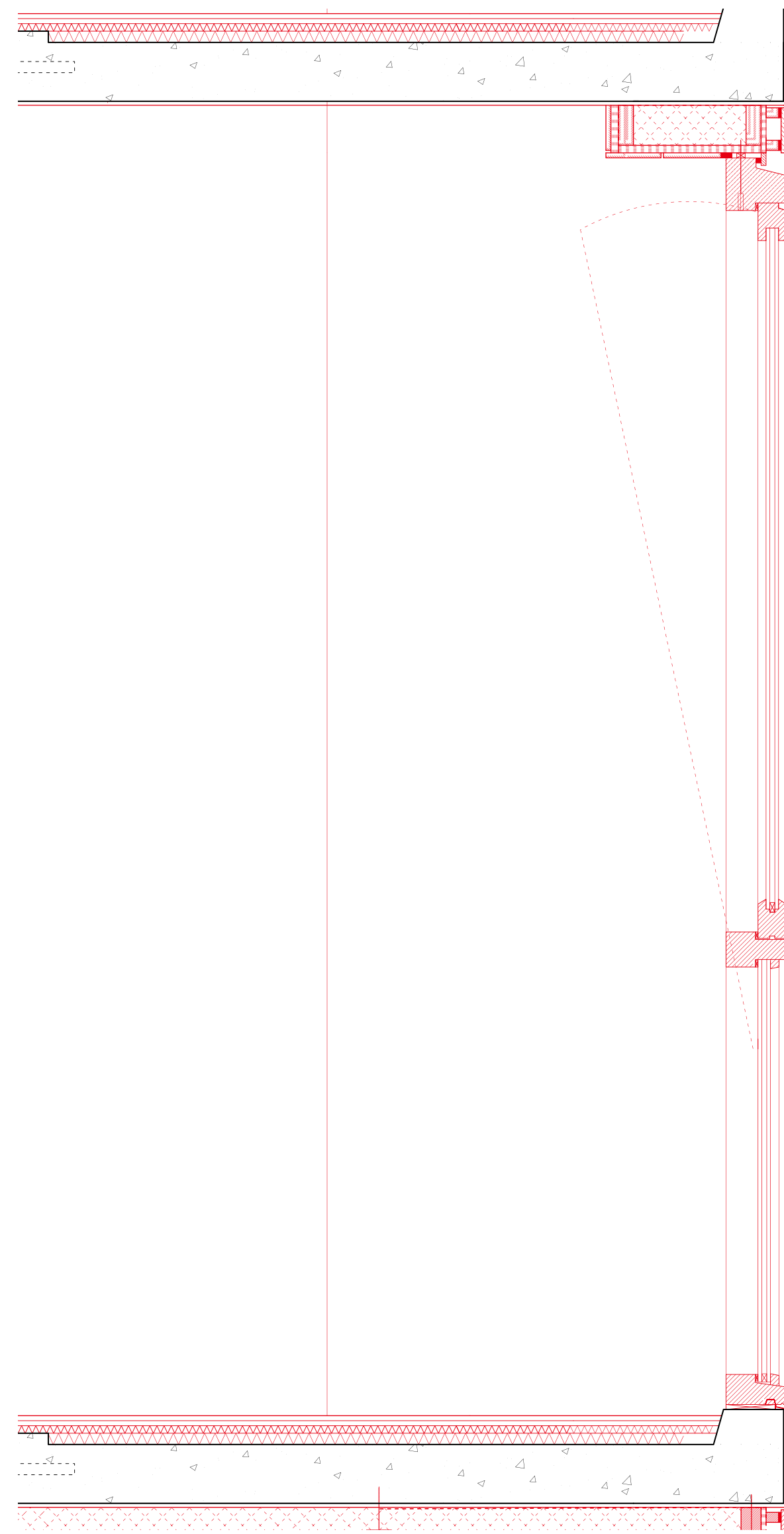
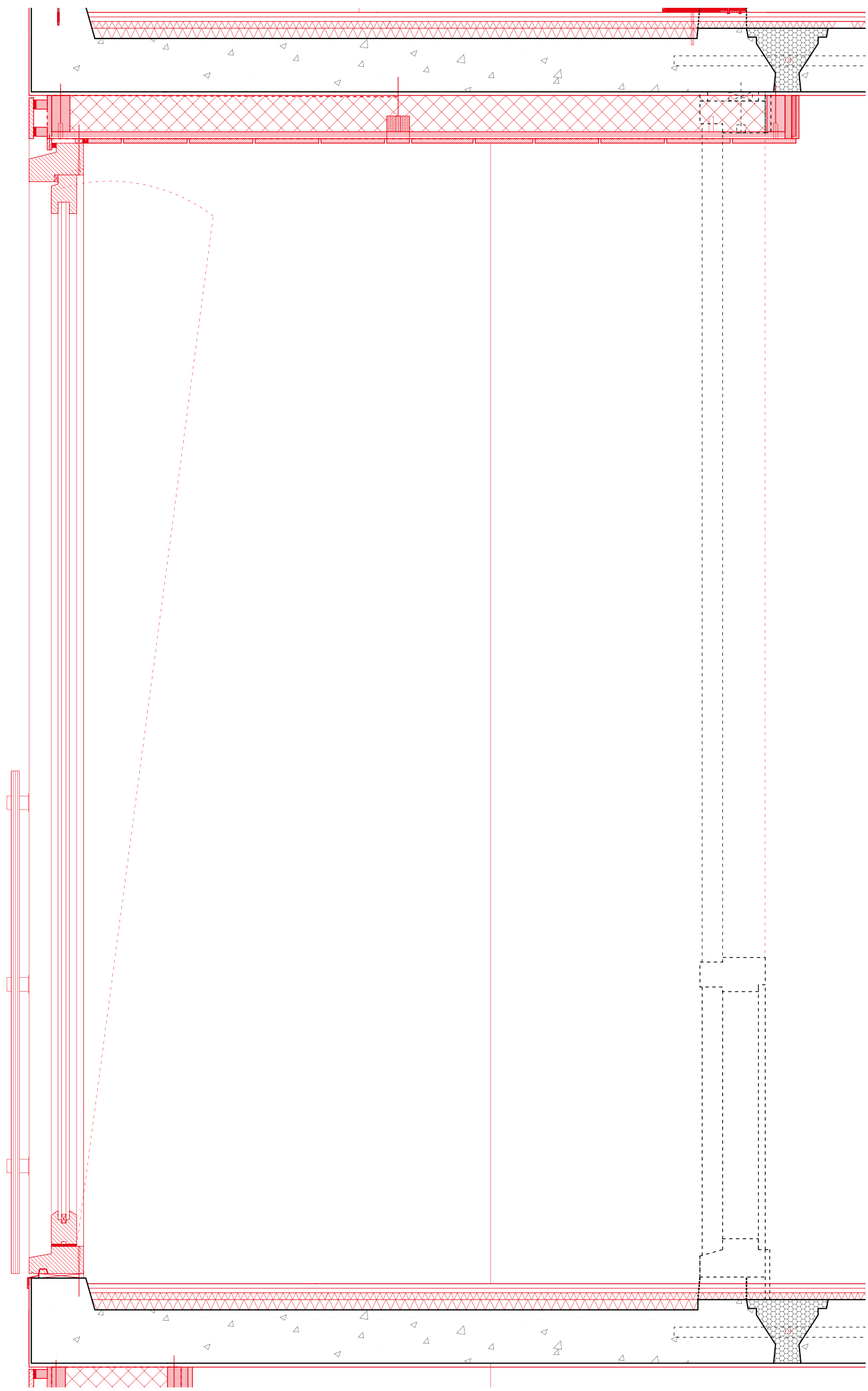


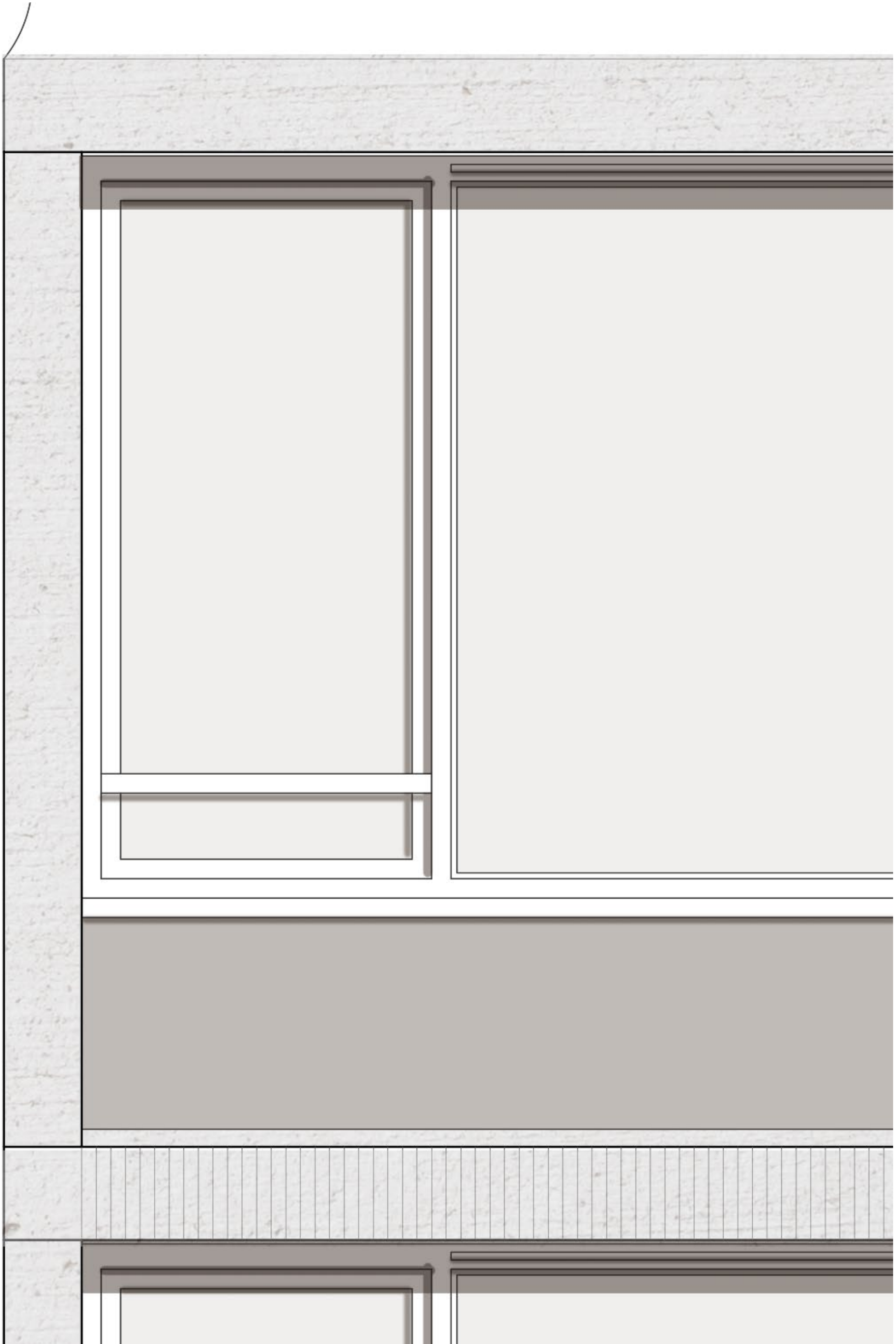
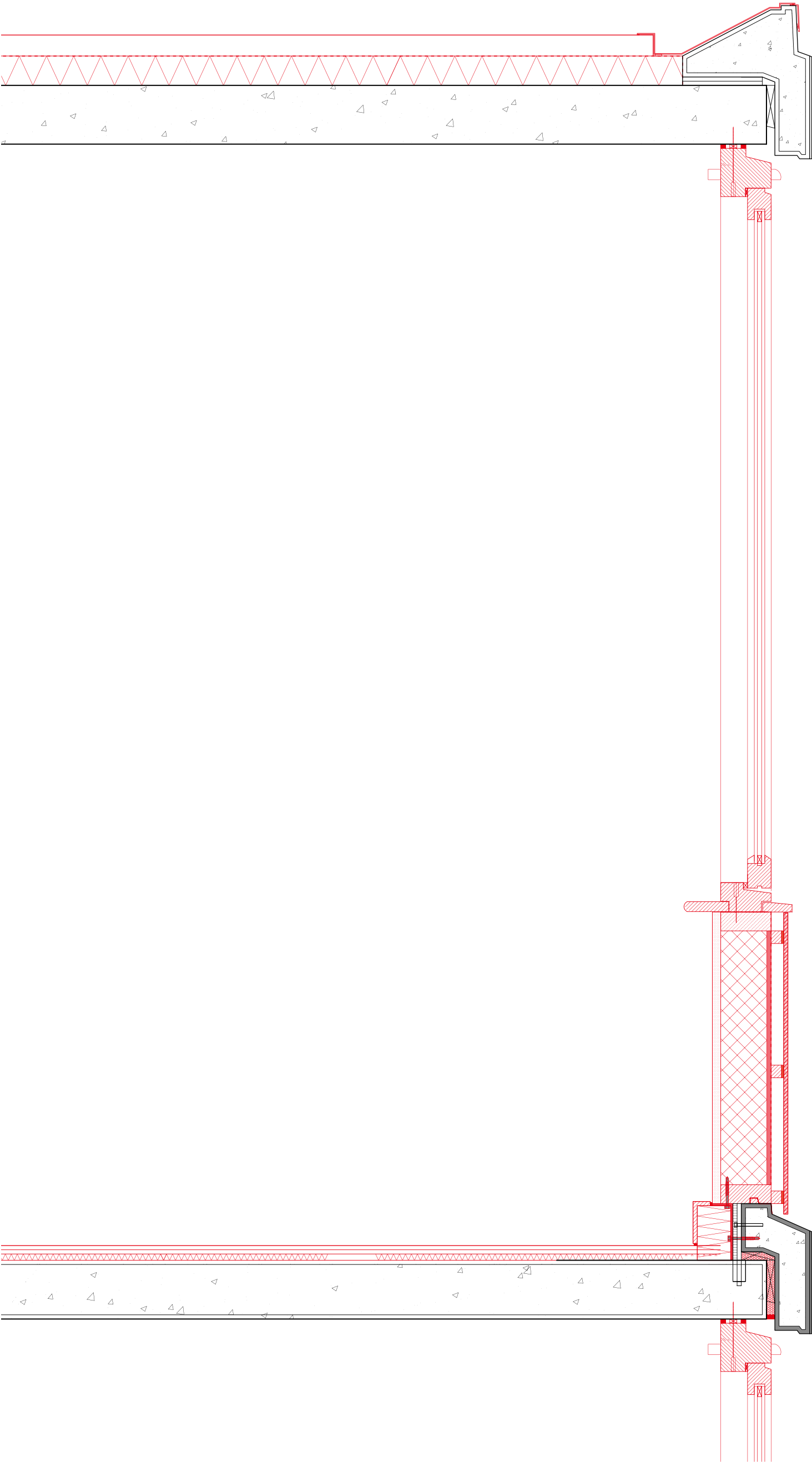


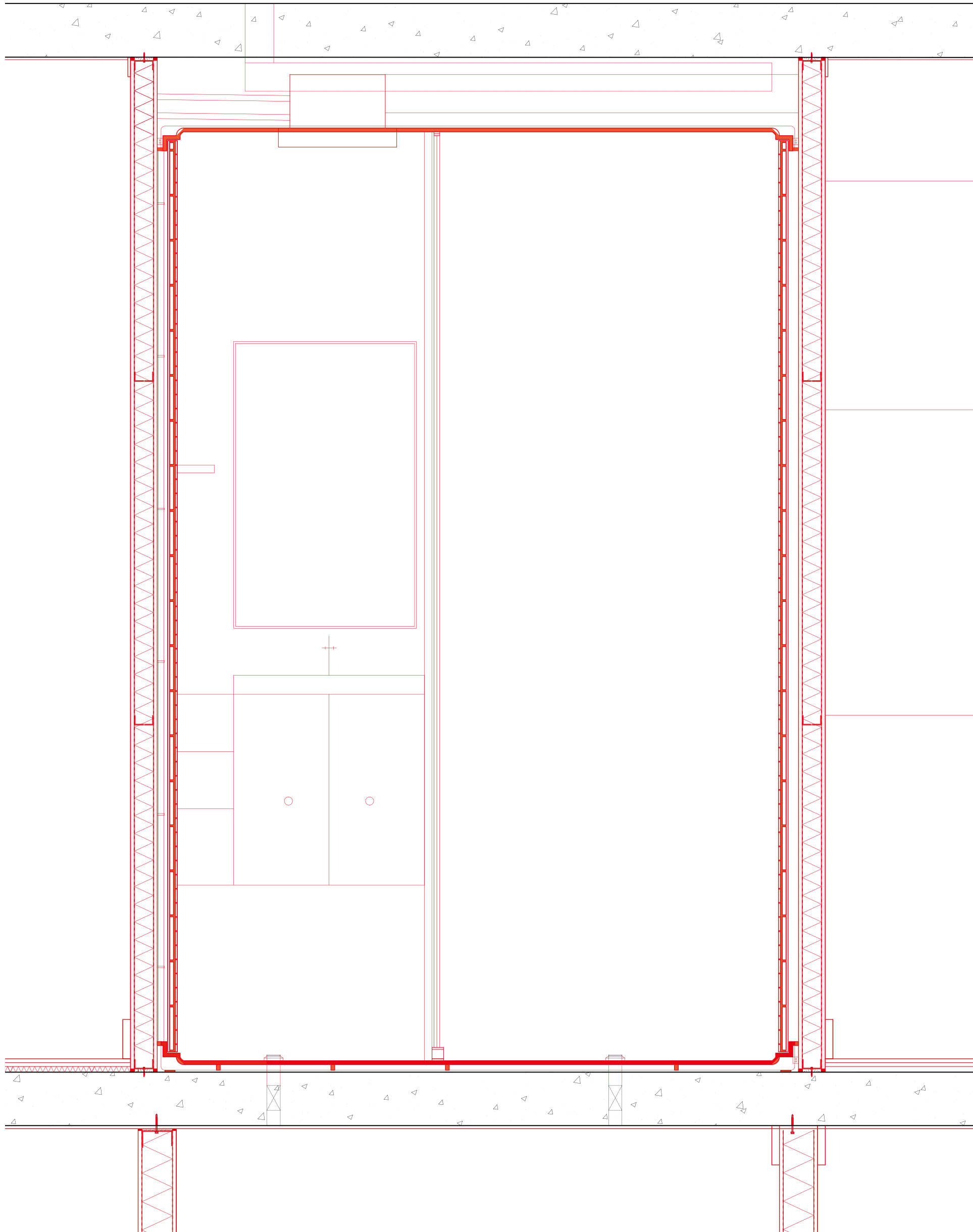
Construction

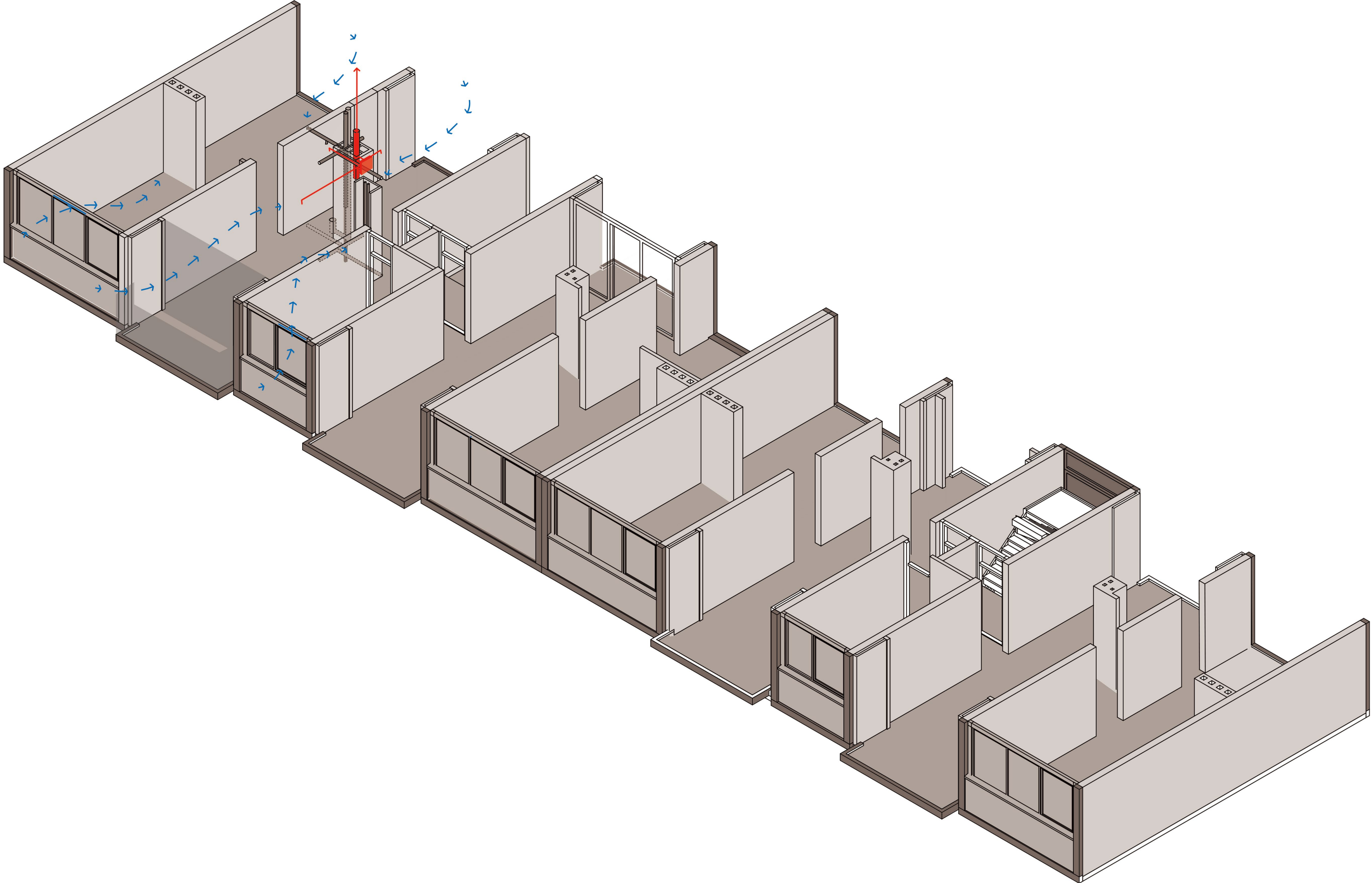


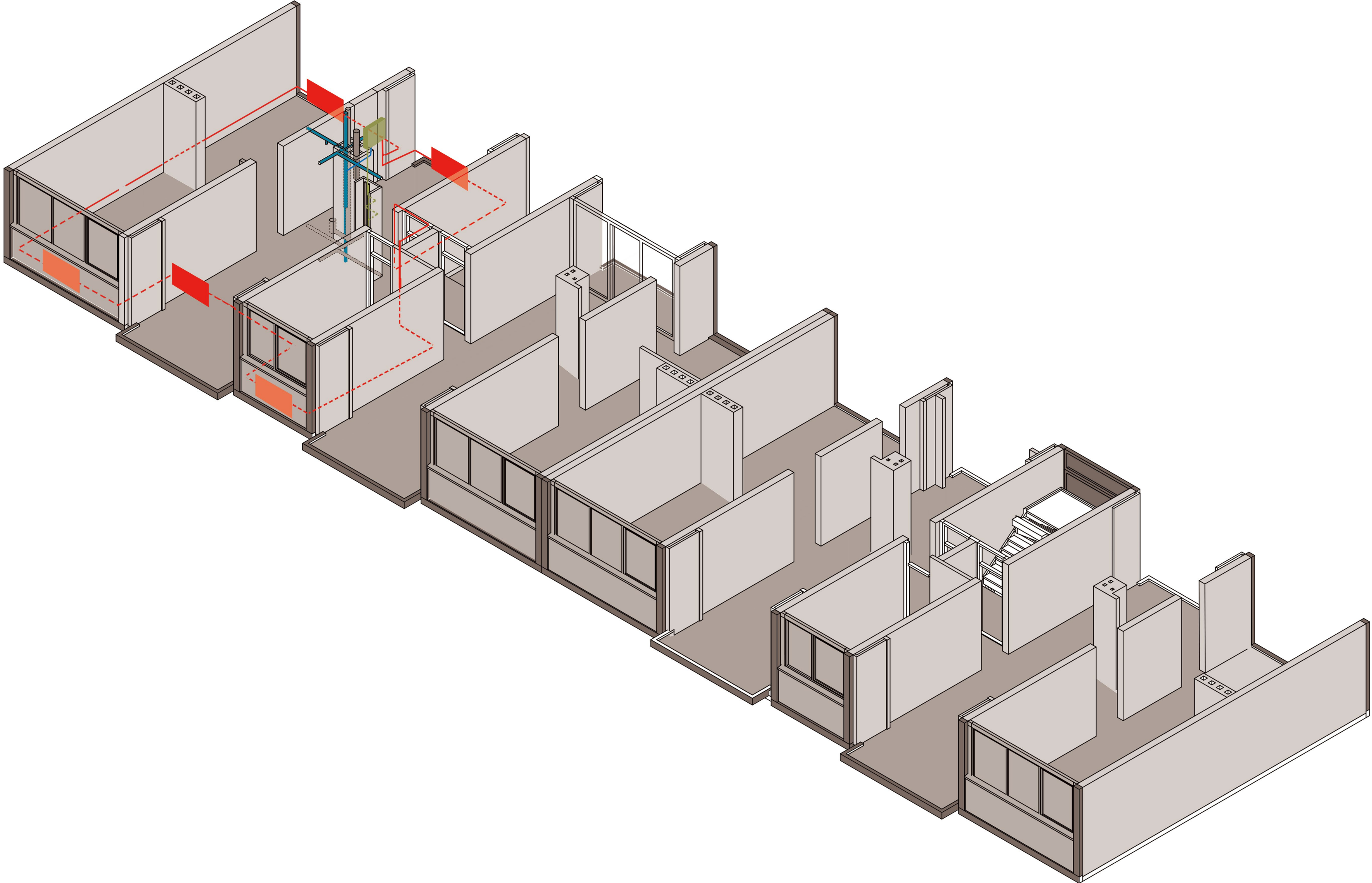














Value added by the scheme

- Gradually renovate the old building
- Potential to gradually replace and update the occupants of neighborhood
- Provide an efficient method to partly “customize” the systematic and rigid post-war construction system, making the system more sustainable
- Can be applied in various scale

- Artistic: the method of prefabrication means imperfect skin finish
- Technology: not perfectly insulated
- Limiting the change of space plan since no changes can be done outside the renovated apartment.
- Limiting the re-design of facade because of kept cladding, and following the current composition
- Can be a long process, which might mean a lot of problem