

# RENOVATION OF INDUSTRIAL BUILDING



LI SICONG

Master thesis at Chalmers Architecture  
Architecture and Urban Design  
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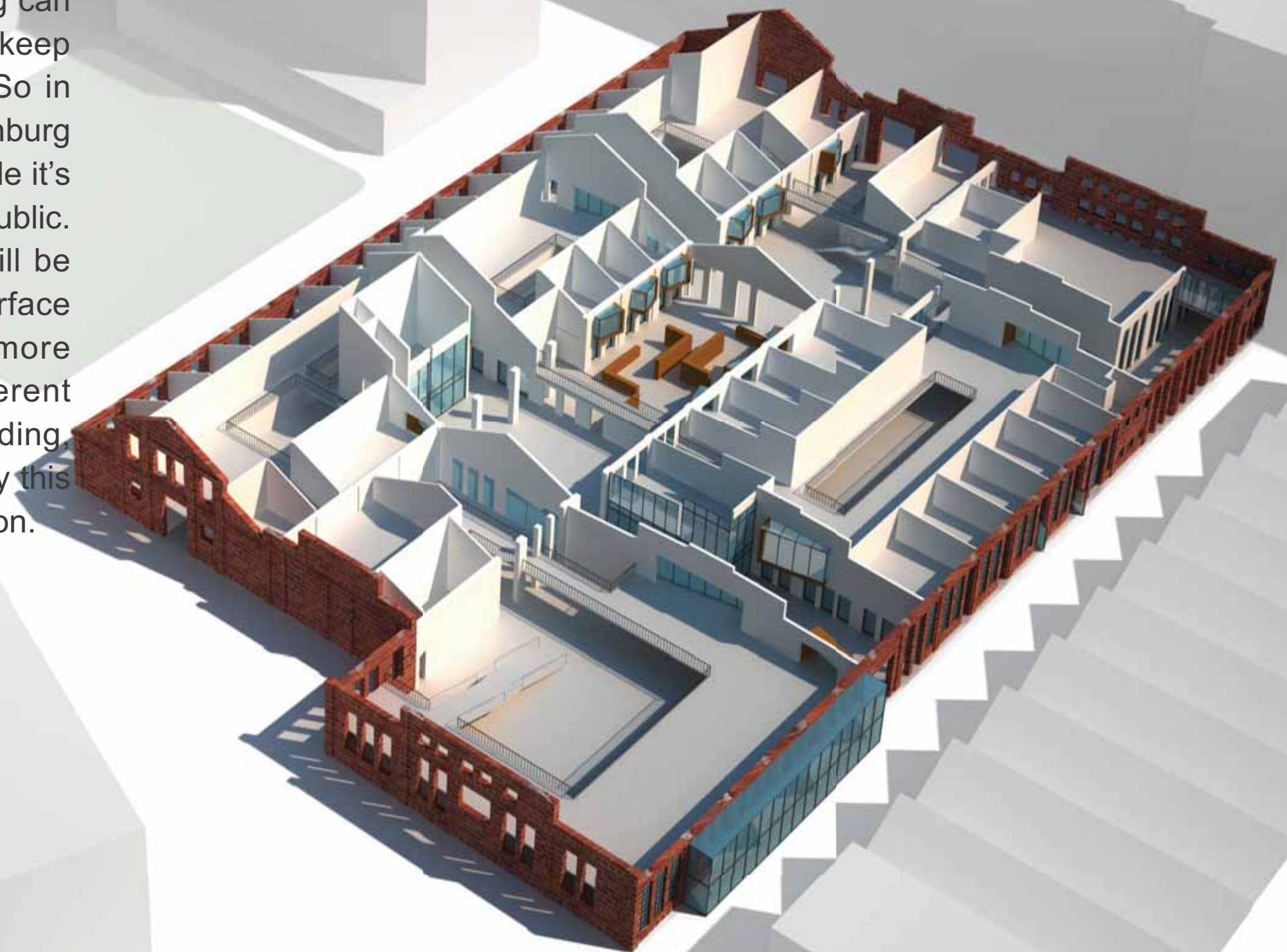


## ABSTRACT

The thesis is about the transformation and renovation of industrial buildings. In recent decades a large number of old industrial buildings have become a great challenge with the urban renewal and development. Many of them are not fit for the new urban context, so they have to move and the buildings are abandoned or torn down and replaced by a new one. But actually the industrial building can be transformed and reutilized in some way to keep the cultural, historical and economic values. So in my thesis I tried to preserve a factory in Gothenburg and transform it into an art centre. And meanwhile it's going to be a public place and bring art to the public. The interactions between the public and art will be increased and enhanced by increasing the surface of the building. There are supposed to be more communication or cooperation between different users of the building. As a result, the old building, even the surroundings, will be activated again by this new investment without much loss or consumption.

## KEYWORDS

renovation, artist, studio, interaction, surface



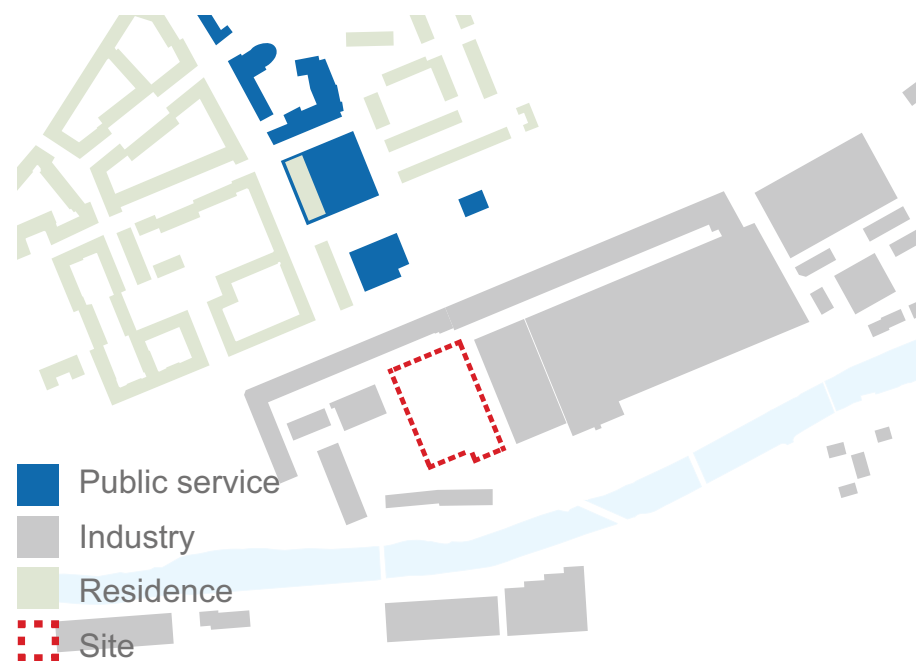
# SITE / SKF, GÖTEBORG

The site is a factory building in SKF plant in Göteborg, Sweden. It is close to the city center, about 5 minutes by car or tram. There is a highrise building, which is the SKF headquarter, some factories and office buildings and they are constructed in different years. So the building now are in different conditions. Some have been abandoned since it's too old to be used for productions and some are rent and used by other companies. The rest are still occupied by SKF. The chosen building is maintained quite well and is in a relatively good condition. But only parts of the building are used for production, the rest just for storage.

SKF has a renovation plan for the plant, which is to transform it to a commercial area, like a big shopping center. So this place is going to be public and attractive to activate the surrounding areas.

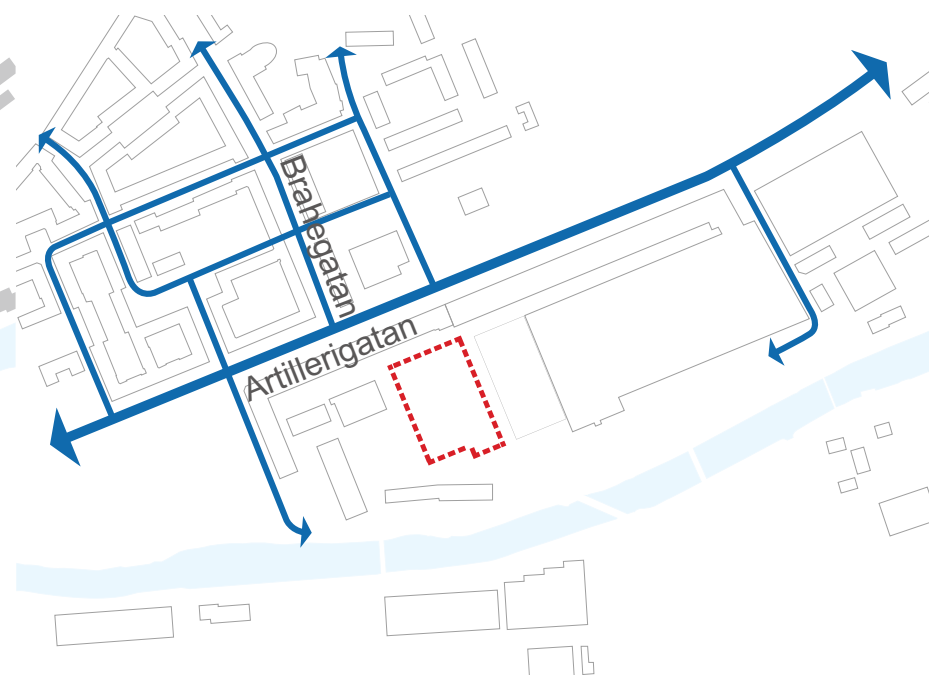


# URBAN CONTEXT / Present



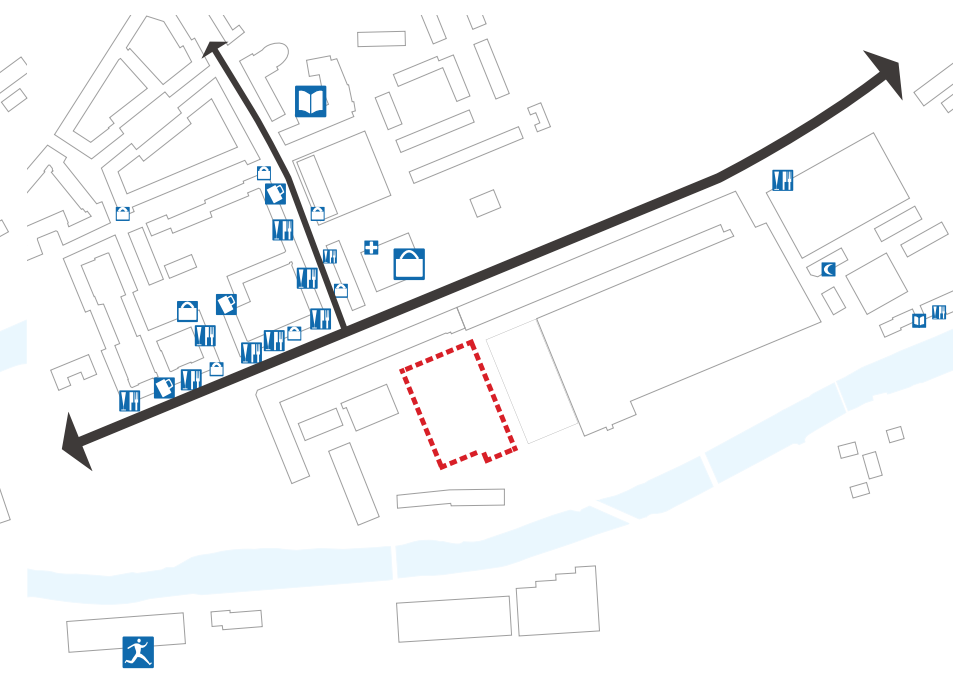
## Context

There is a big residential area on the north side of Artillerigatan, with some public service facilities, including a school, a library and a community center, and some shops and restaurants, etc. The industrial area is on the other side, and most buildings are occupied by SKF.



## Accessibility

The plant is just located beside the main road Artillerigatan, having a variety of transportation connections with the city. But the plant itself is not very accessible for public since it's a private area.

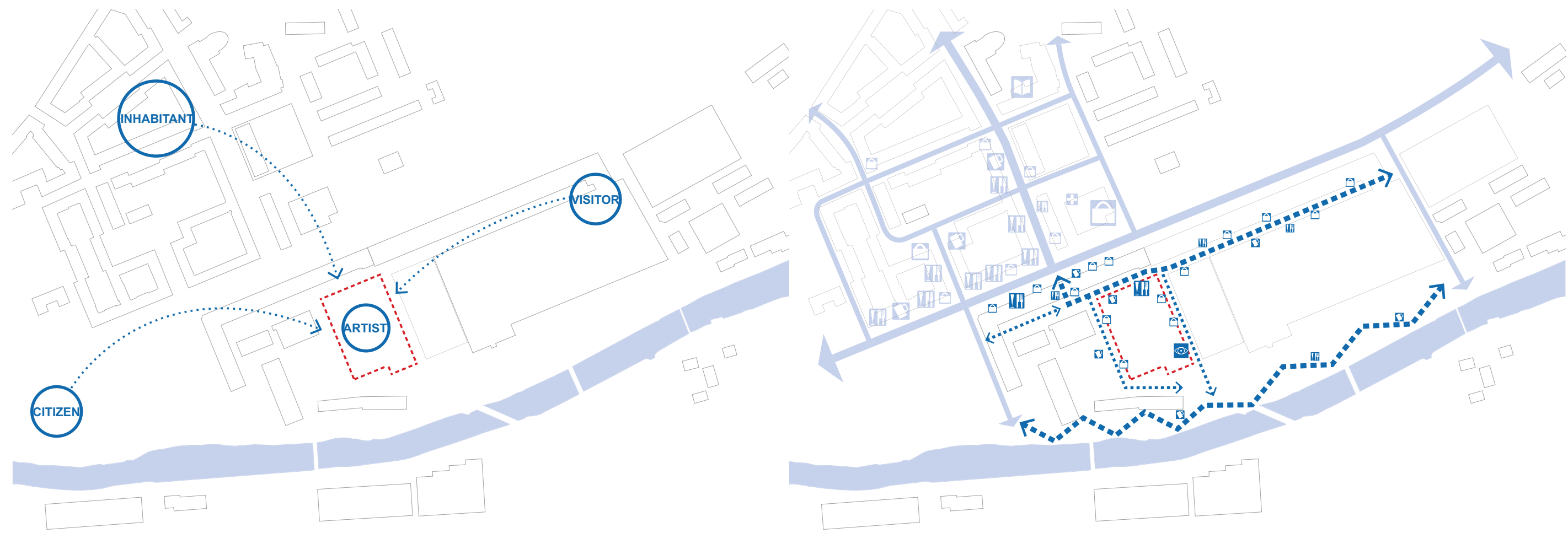


## Social spots

Most social spots of this area dot along two main roads, Artillerigatan and Brahegatan. And they are restaurants, cafe, shops, etc. Now some new spots come to the other side of Artillerigatan, on the same side with SKF plant.



# URBAN CONTEXT / Future



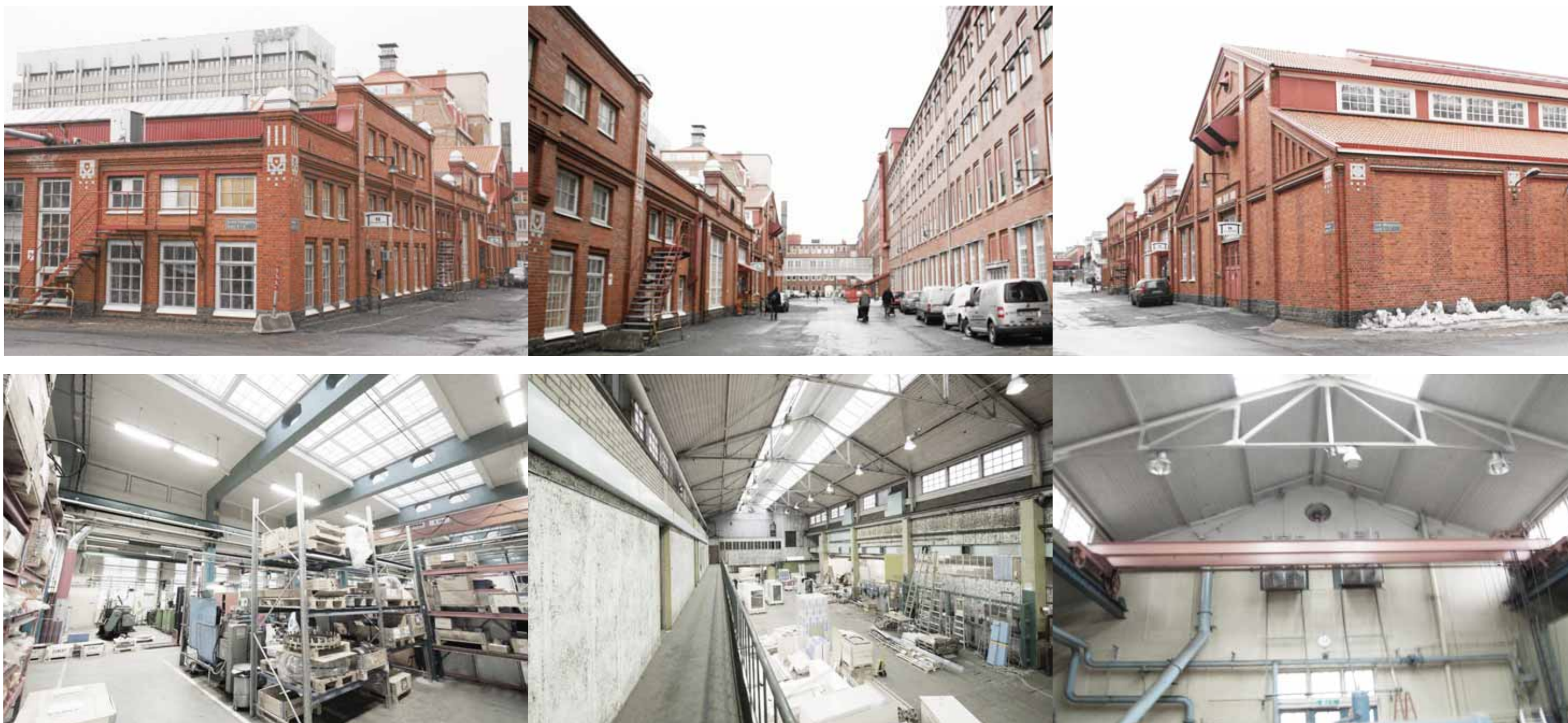
Potential stakeholders

New infrastructure



## TRANSFORMATION / **Object**

The chosen factory is still in a relatively good condition and in use partly for production and partly for storage. The red brick facade and regularly repeated windows are the typical characteristics of the appearance. There are also the typical industrial characteristics inside the building, like the large span structure, high space and skylight.



## TRANSFORMATION / Approach

### Principle

The building is supposed to be preserved and reutilized in some way, which is the first rule of this project.

### New content

That is going to be an art center of the city, both for artists and the public. Artists can buy or rent their studios for their working and it's also possible to set up their own business to support their lives. The center is also open to the public. People can participate in some different kinds of workshops, together with artists. And they can also see the works or even buy them.

### Memorial

Some symbolic and remarkable parts of the building need to be well preserved for industrial memorial as an important historic mark for the city. It reminds people of the prelife of the building, which is an important additional value of the project.



## NEW CONTENT

There are **studios** to be rent by the artists which they can use as their working spaces. They can also have their own business, selling the art works or products in the **retail shops** on the first floor. The **gallery** can be used by the artists to make different exhibitions. And people can also go to the **public workshop** and participate in workshops with different themes. The **restaurant and cafe** is also a public space for both artist and visitor.

STUDIO



RESTAURANT



SHOP



WORKSHOP

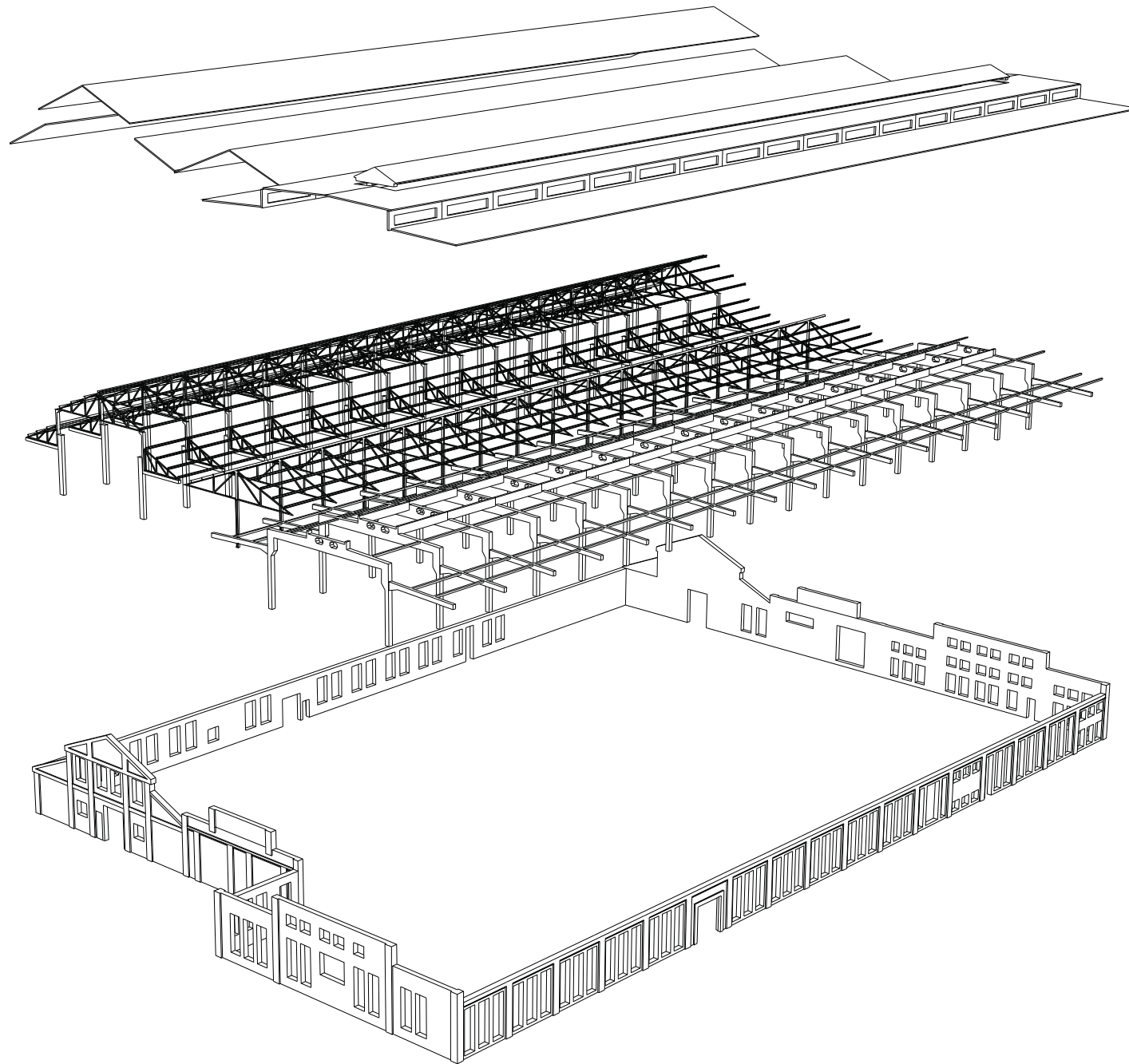


GALLERY



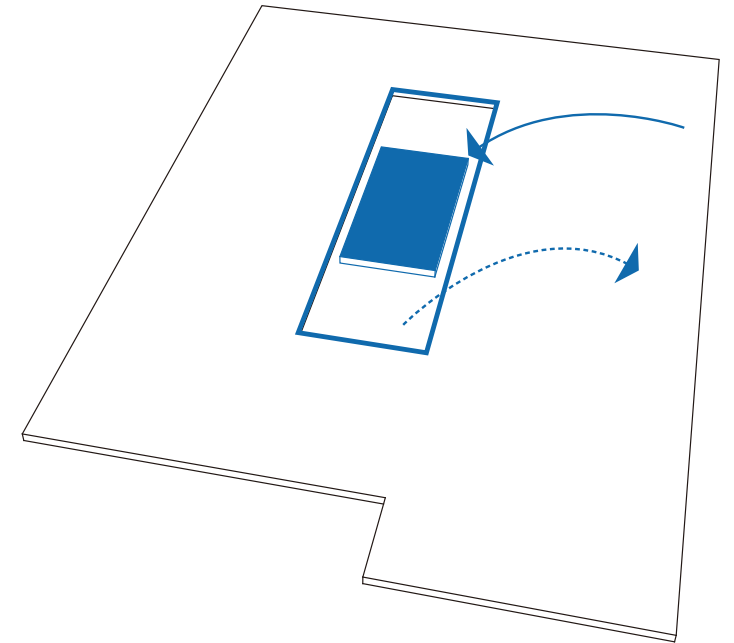


# / Preservative transformation



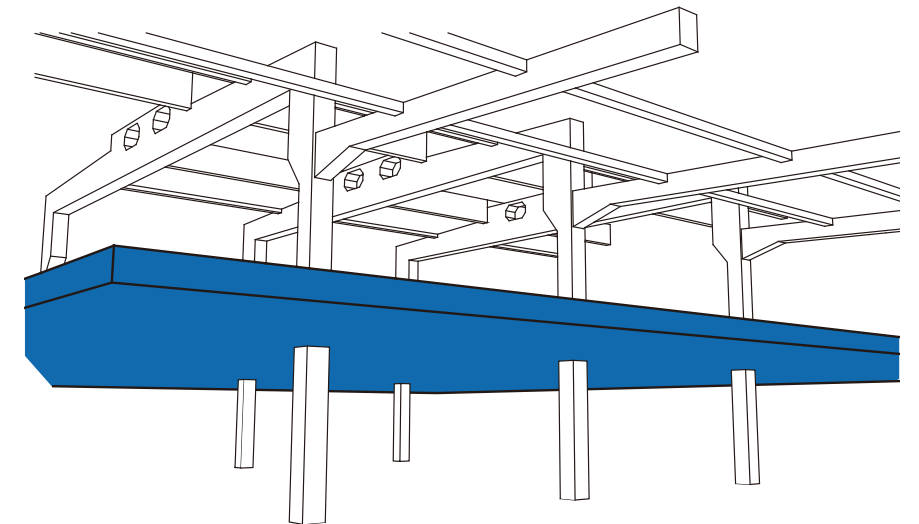
## Roof

The central part of the roof will be removed, and the middle part will be replaced by a glass roof for the public workshop.



## Structure

The structure will be all maintained, with some additional structural elements for new programs and spaces.



## Facade

The red brick facade will be preserved, but with some new openings for the public accessibility on the ground.

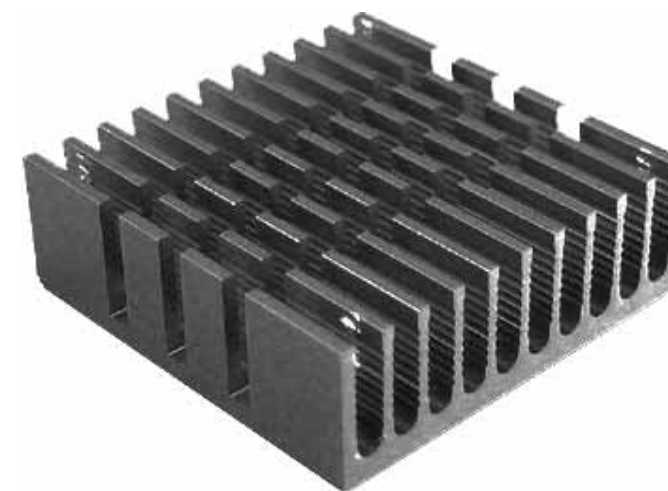


## CONCEPT

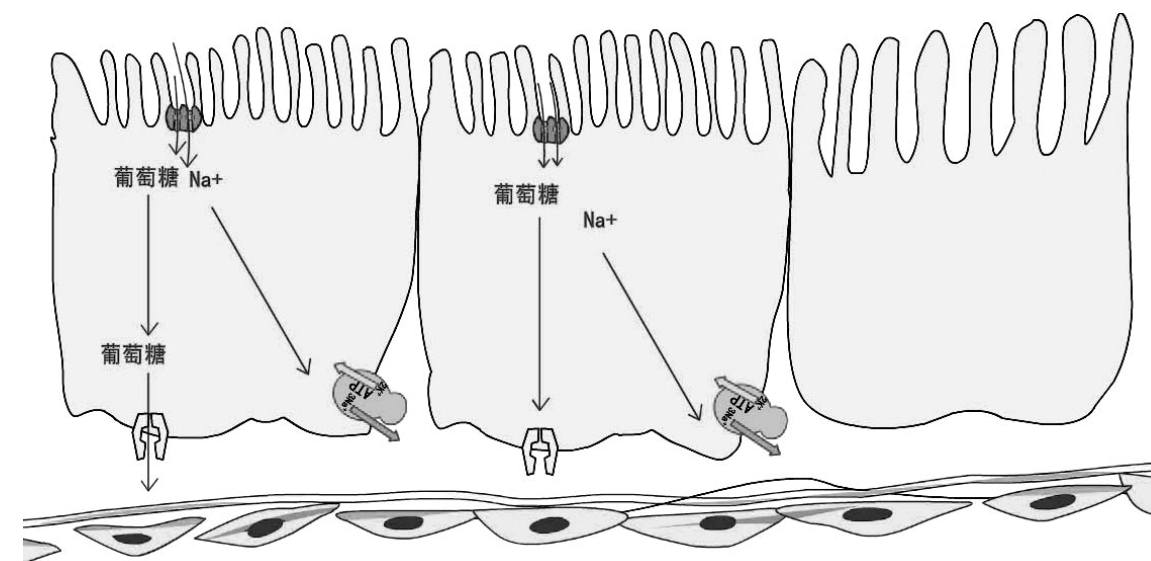
# To increase *interaction* by increasing *surface*

As social creatures, we need interactions in our daily life. The artists need to communicate and cooperate with each other in their work. And they need people to see their work and also sometimes clients to pay for that and support them. The public would like to get closer to art or even a closer touch on the art works. It will be better to take part in the production of art and be one in the art. For the interactions between ordinary people they are more common, but need space and atmosphere. It will be grate to have a meeting with someone in such an artistic surrounding.

For the surface where the interaction takes place, it's need to be increased in this building. It's standing on a large plan and too deep to go for the visitors to the central part. The strategy is to fold the existing surface to have more interface. It turns the building inside out in a way and lead or attract people to go further.



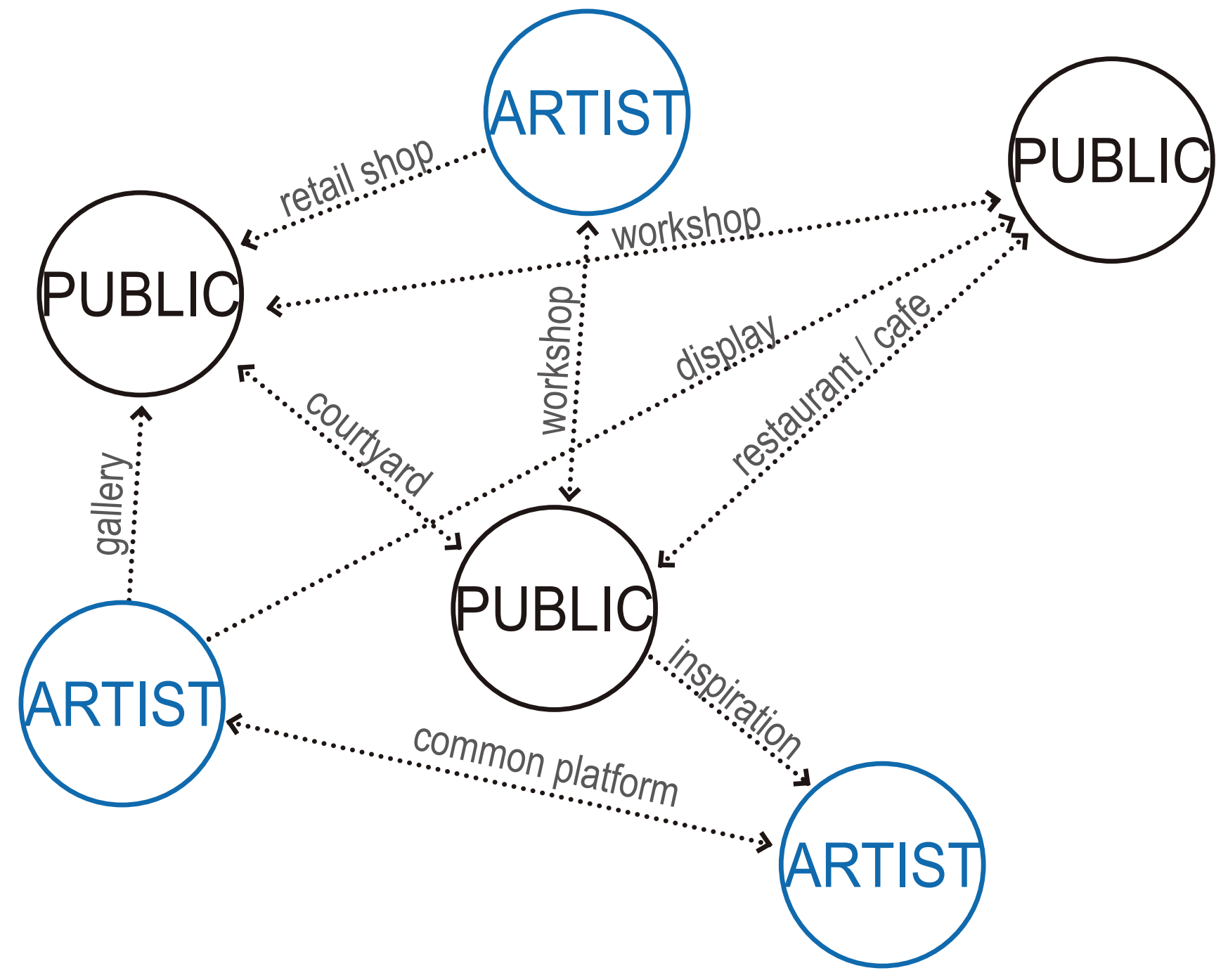
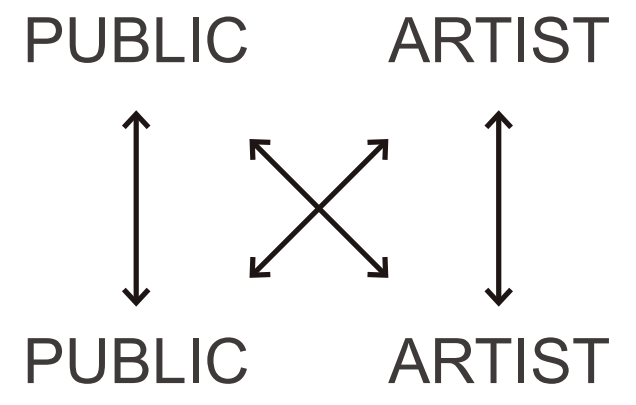
Heatsink



Intestinal villus

# CONCEPT / Interaction

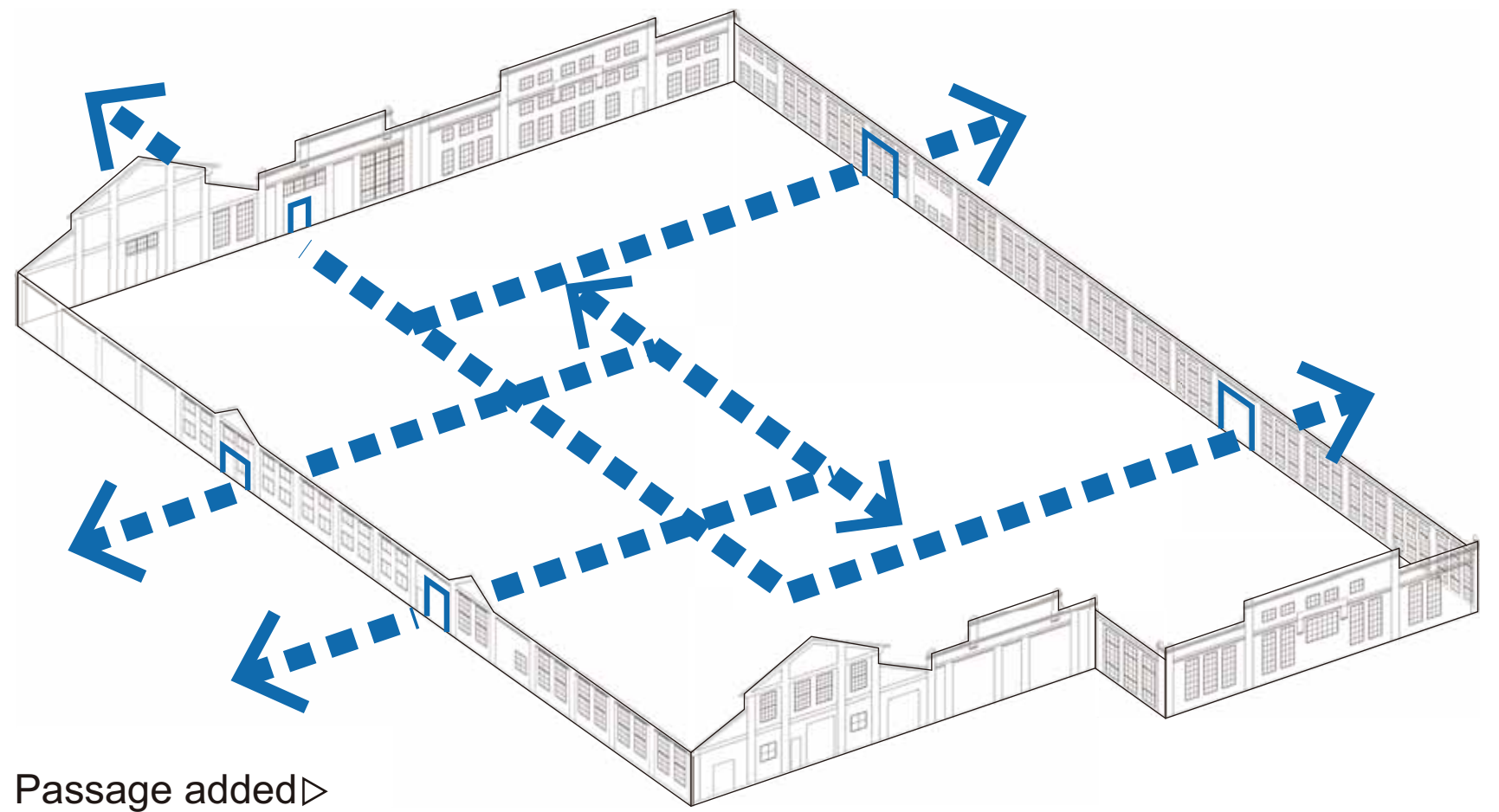
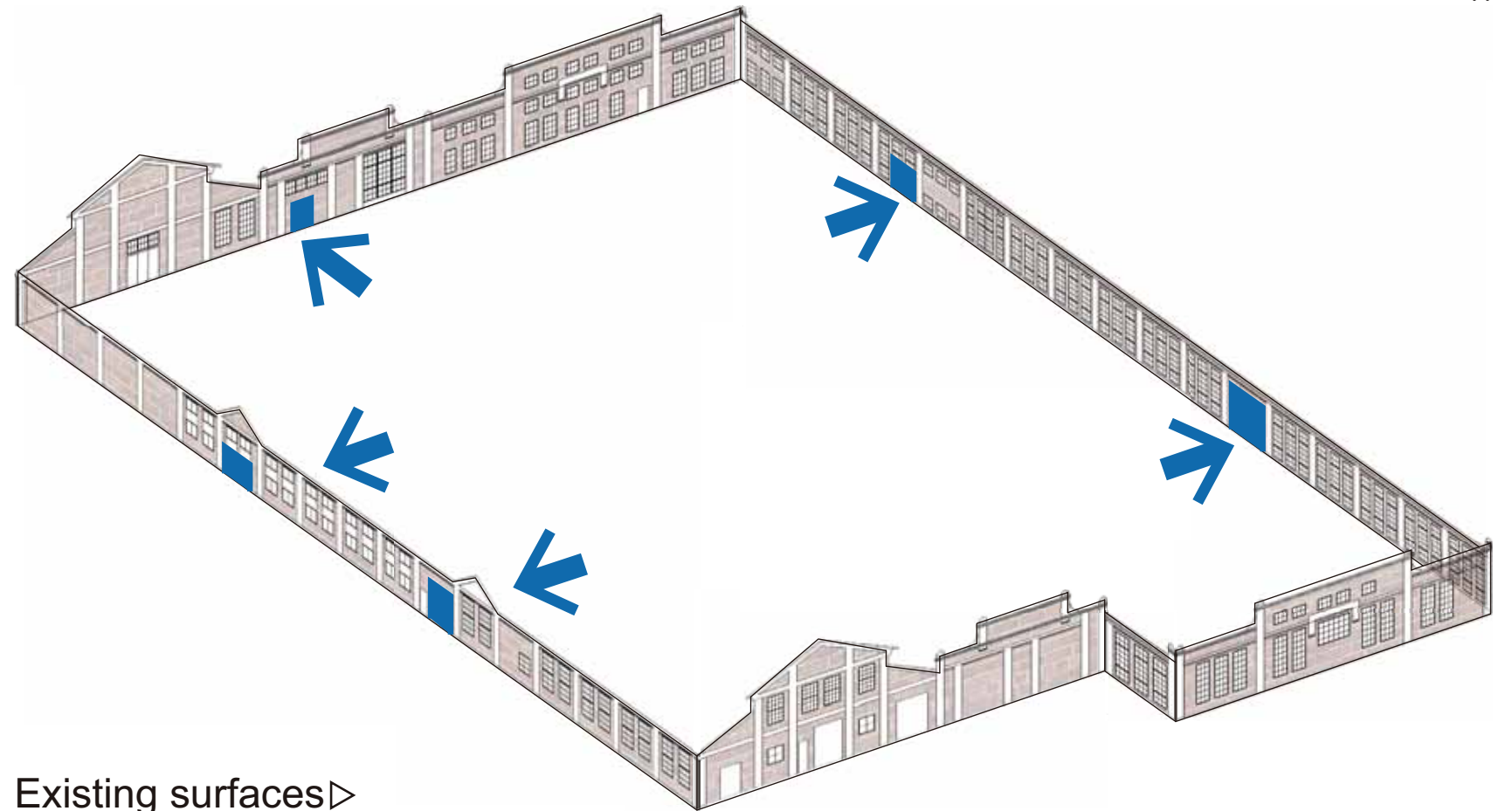
The interactions lie between the public, the artists and also between the public and artist. For instance the interaction is the talking or meeting between different people who come to visit this place, or the discussion and cooperation between the artists. And it can also be the cooperation or buying and selling between the public and artist.



## CONCEPT

# / Increasing surface

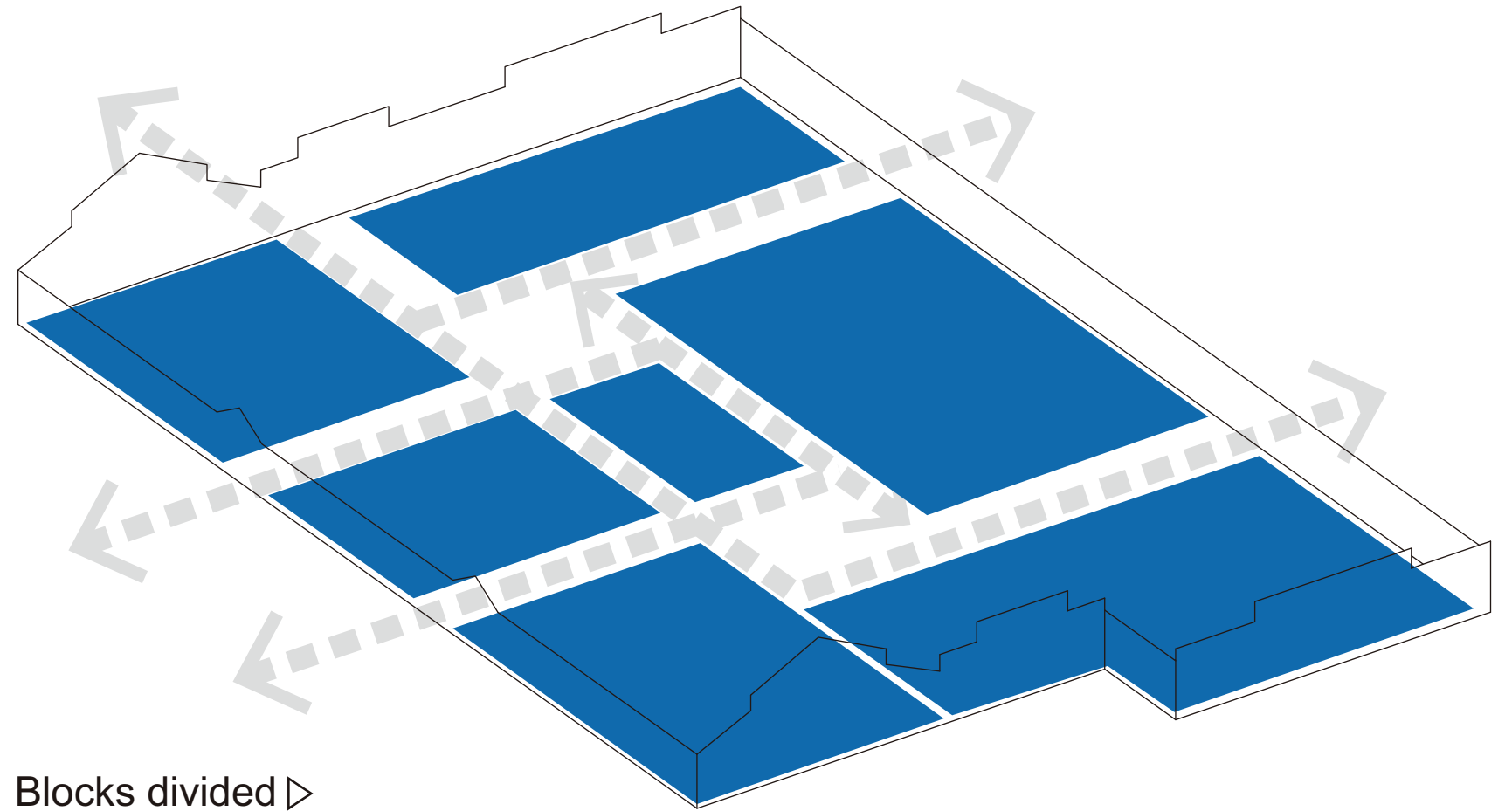
According to the existing entrances on the external facade, several paths or passages are added to the building. And the plan is divided into several blocks. To enclose these blocks new surfaces are created, where the interactions are supposed to take place.



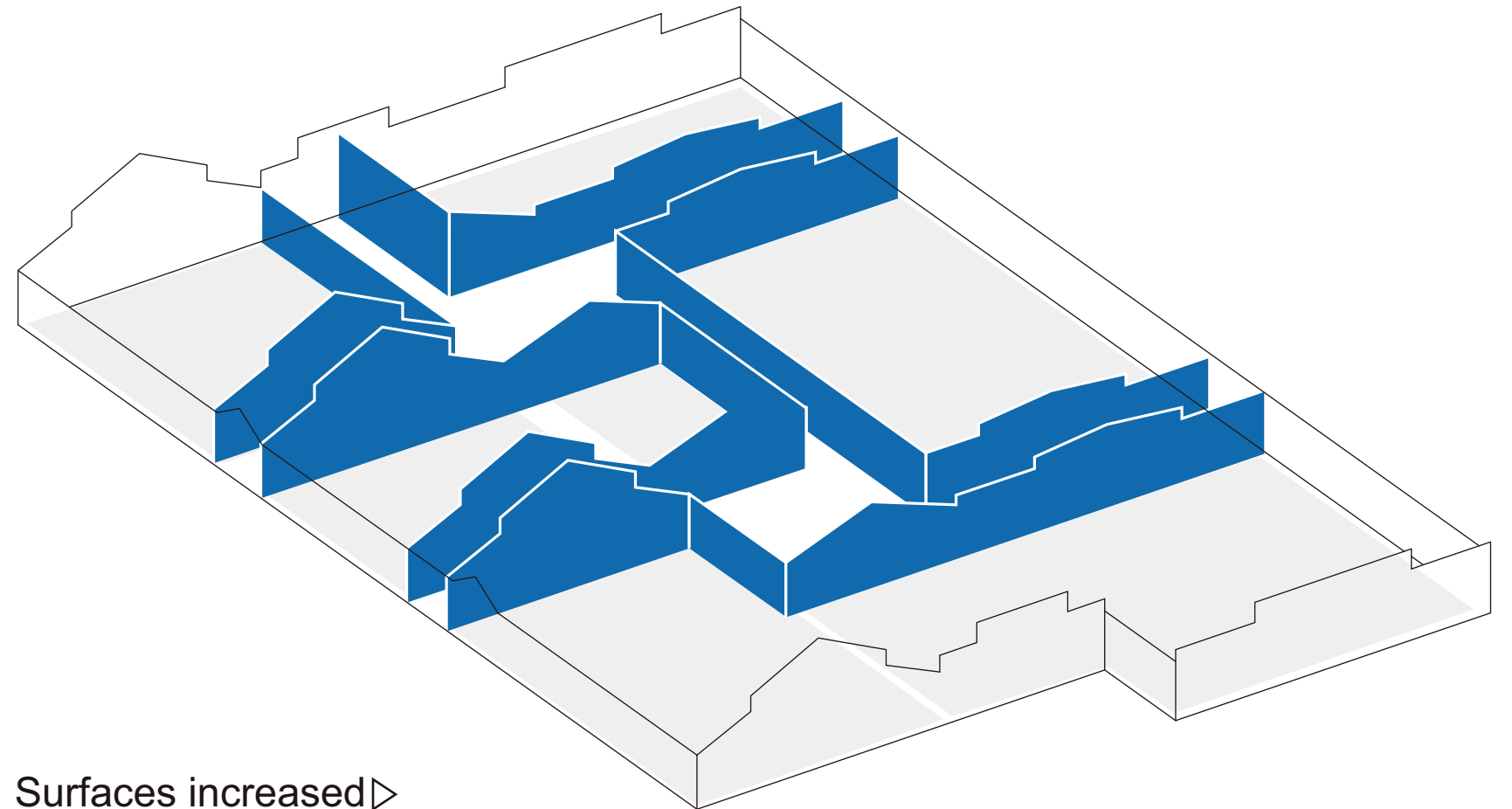
## CONCEPT

**/ Increasing surface**

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Blocks divided ▷



Surfaces increased ▷

# / Program diagram

## Studios

for artists' working or private meeting

## Restaurant / bar

for artist and the public

## Public workshop

for textile, carpentry, photograph, painting, ceramic, etc

## Administration

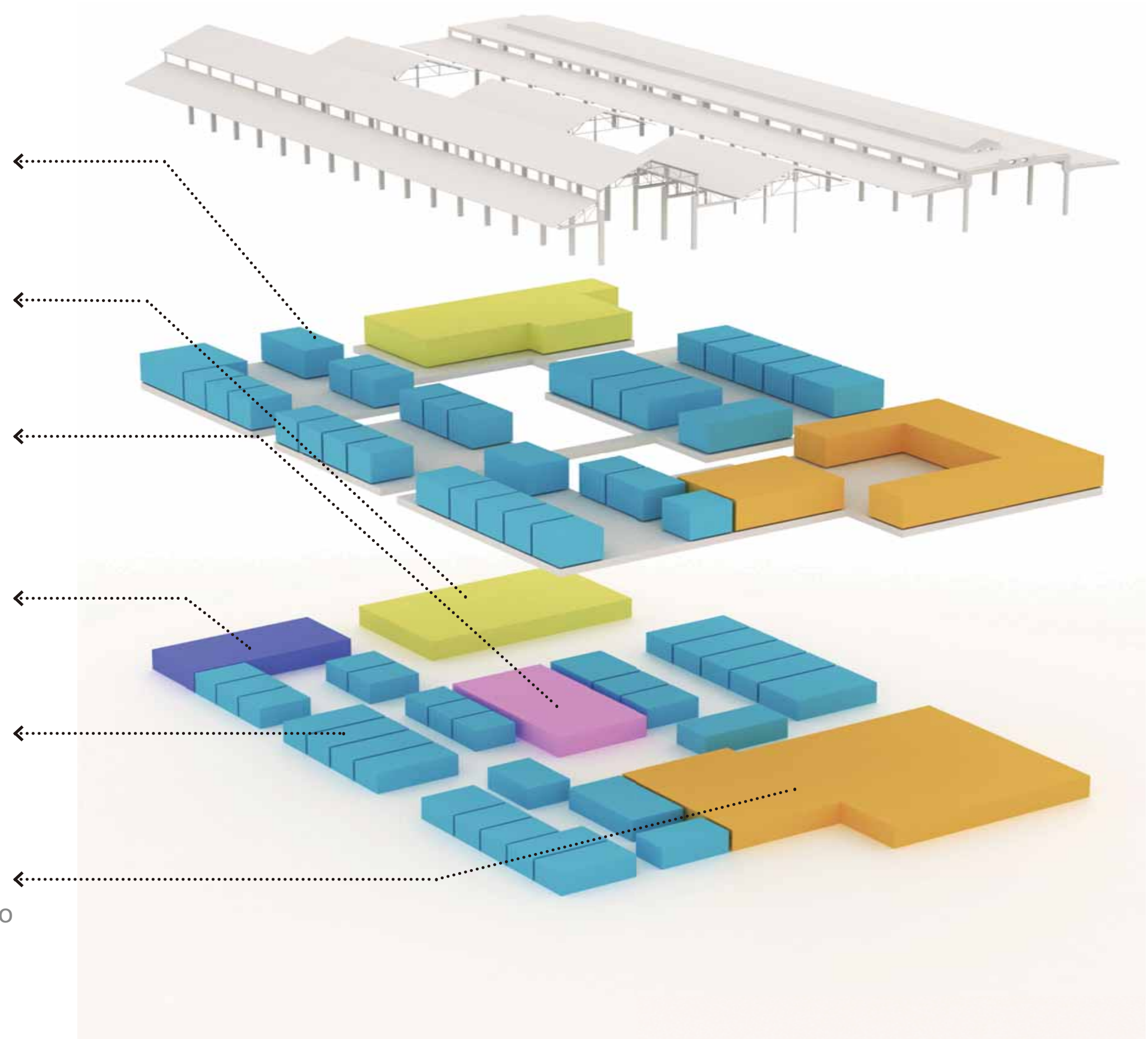
reception, maintainance

## Retail shops

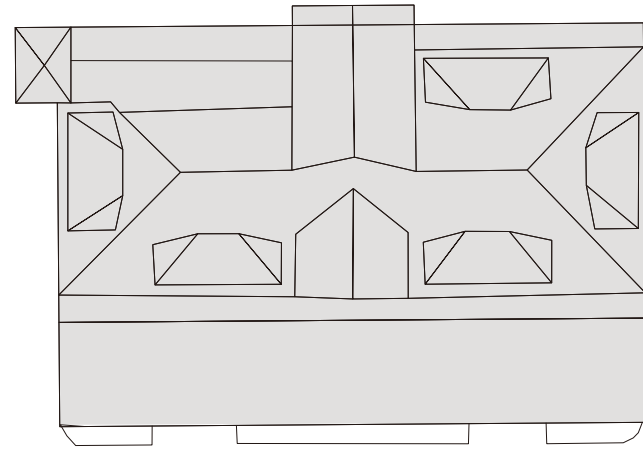
displaying and selling the artists' products

## Gallery

can be used by artests to make exhibitions



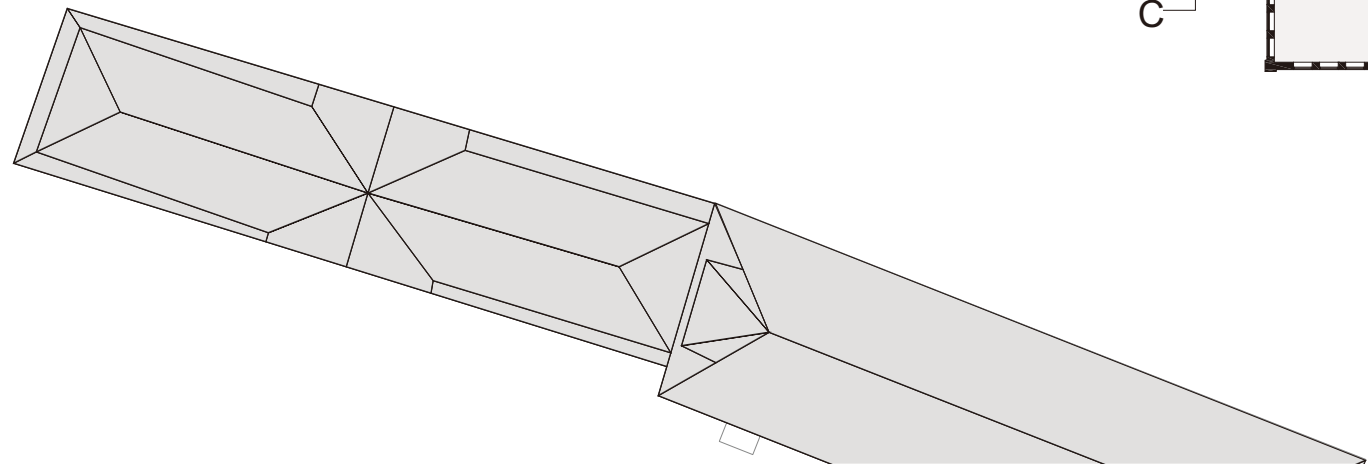
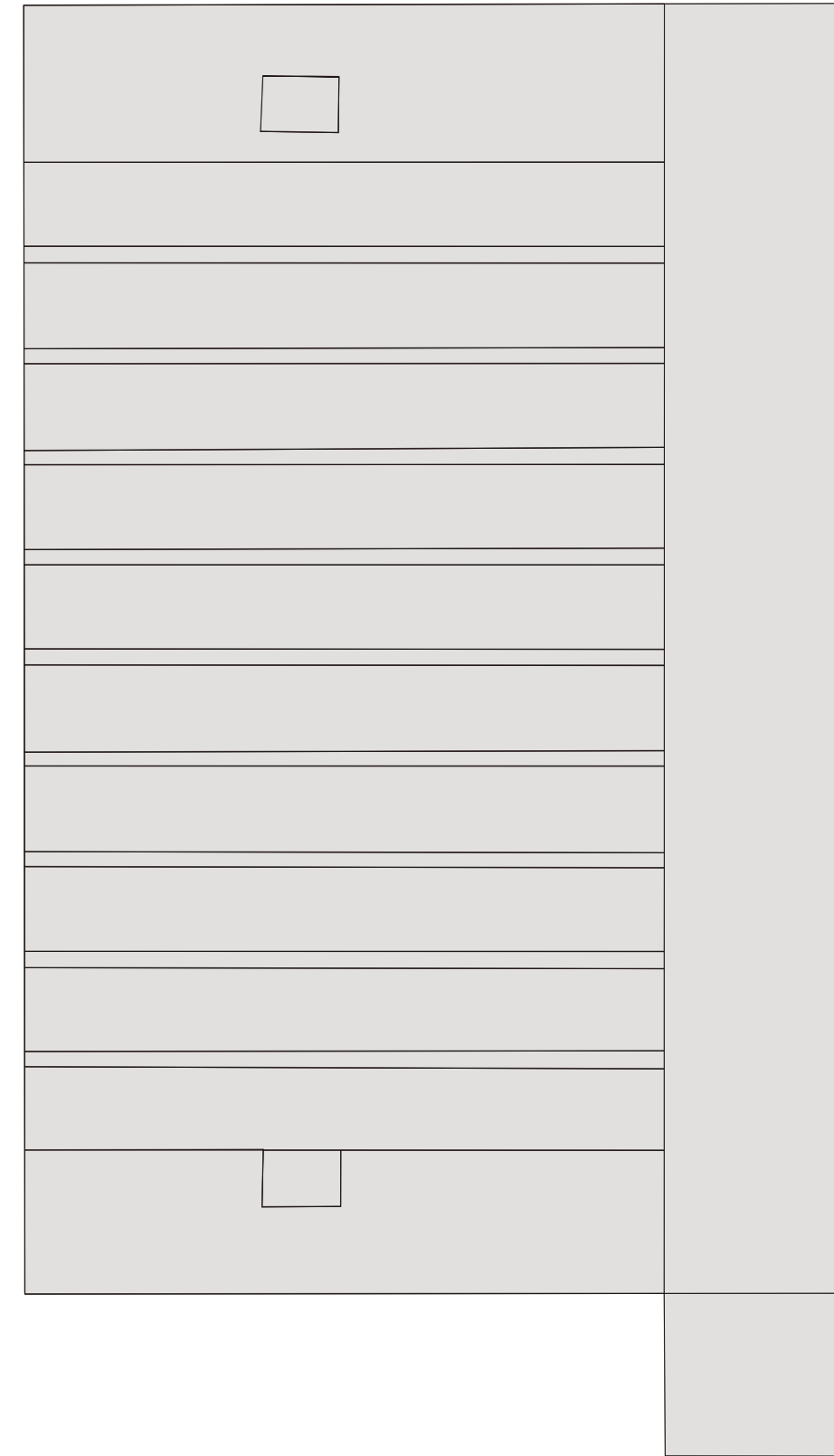
# DESIGN / Plans



- 1. Restaurant, bar
- 2. Kitchen
- 3. Reception / Administration
- 4. Retail shop
- 5. Studio
- 6. Public workshop
- 7. Courtyard
- 8. Gallery
- 9. Cafe
- 10. Storage
- 11. Office



Ground floor plan  
1:500

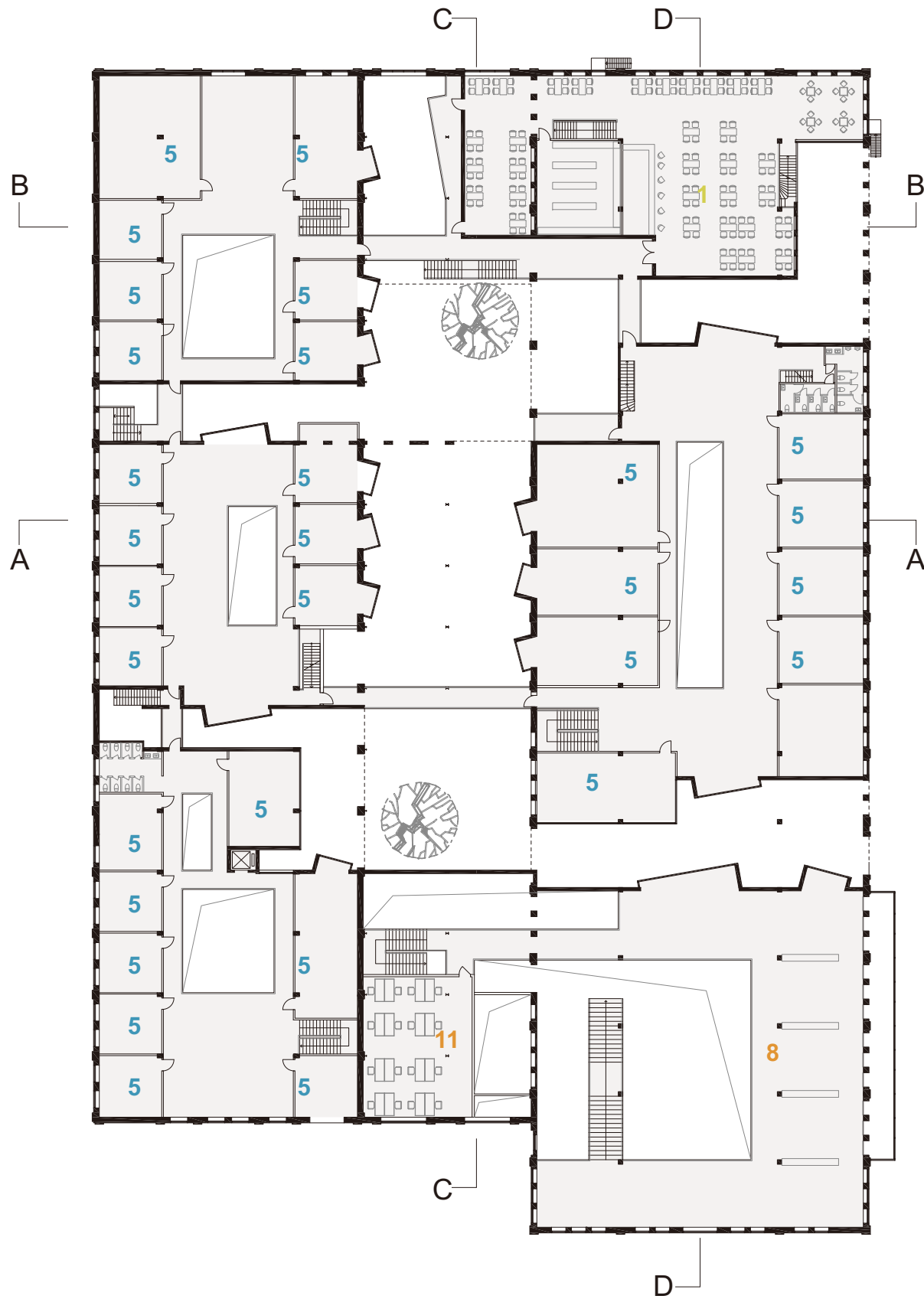


DESIGN  
/ Plans

- 1. Restaurant, bar
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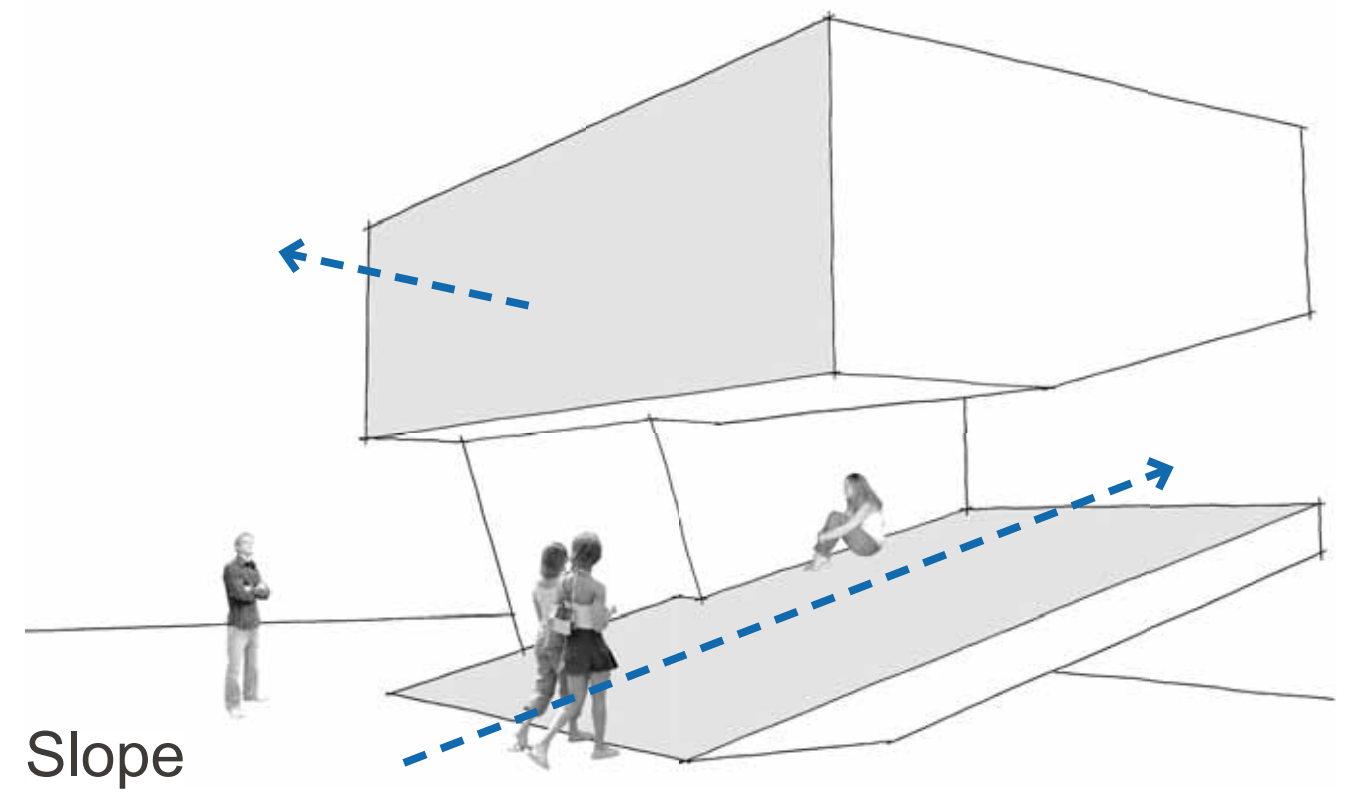
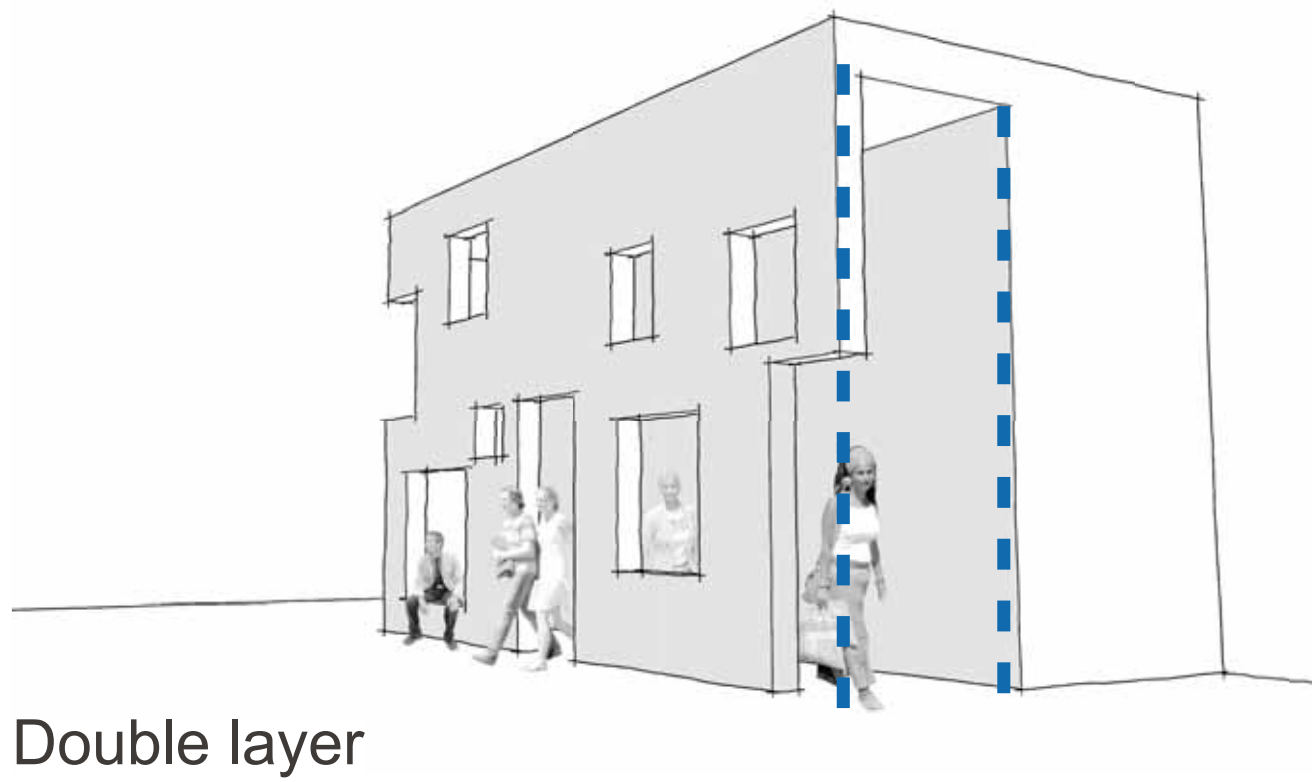
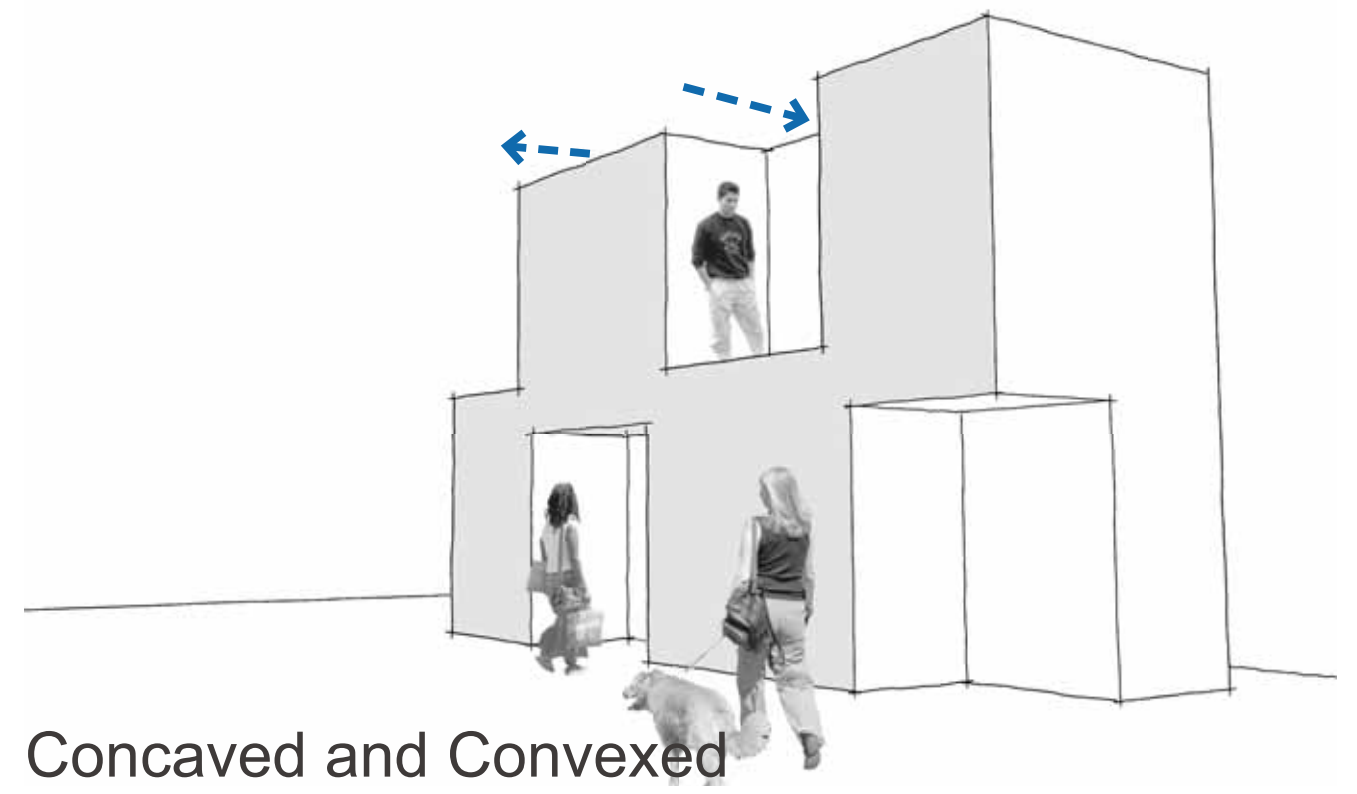
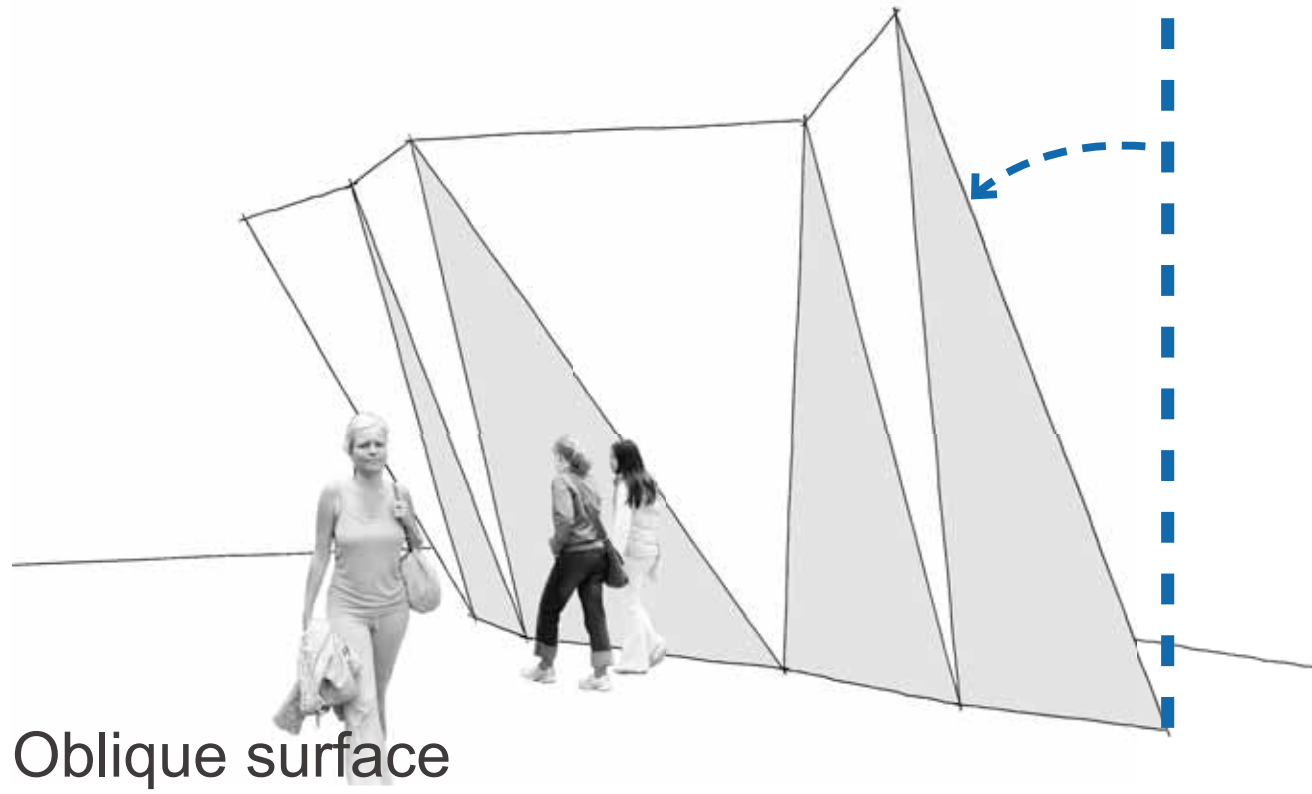


Second floor plan  
1:500





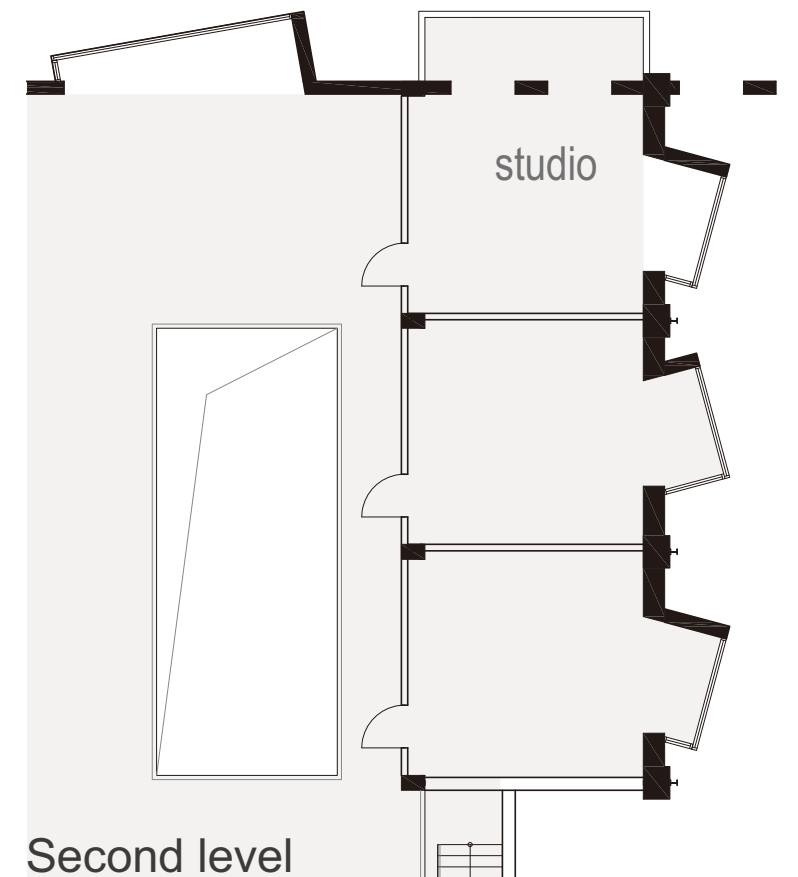
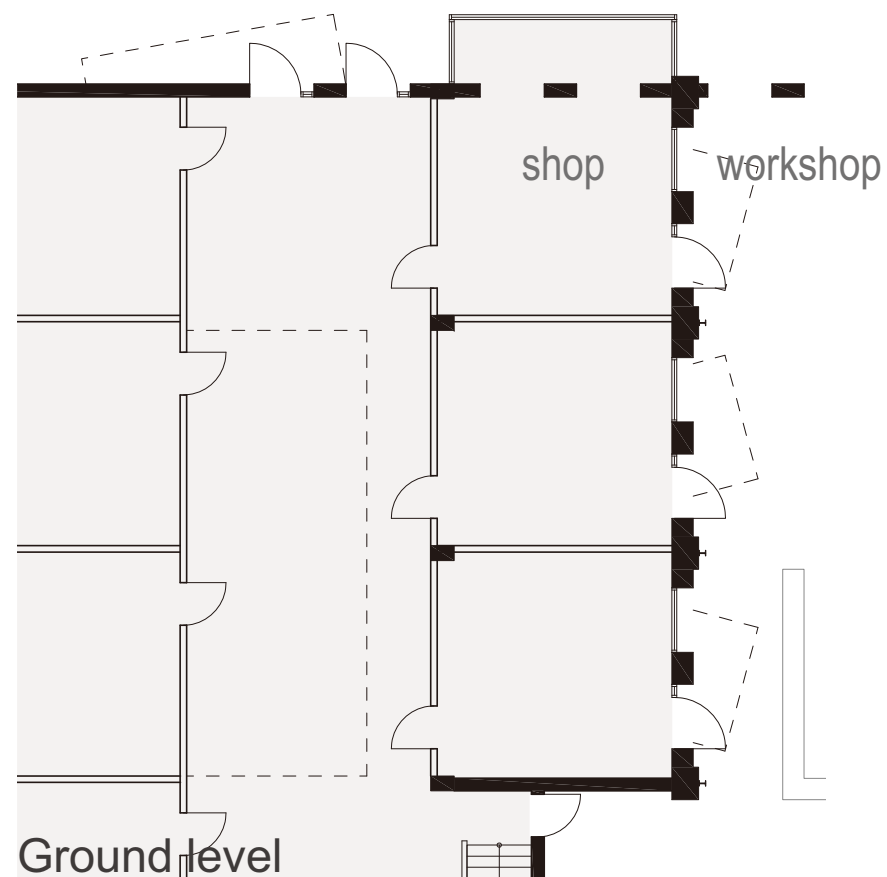
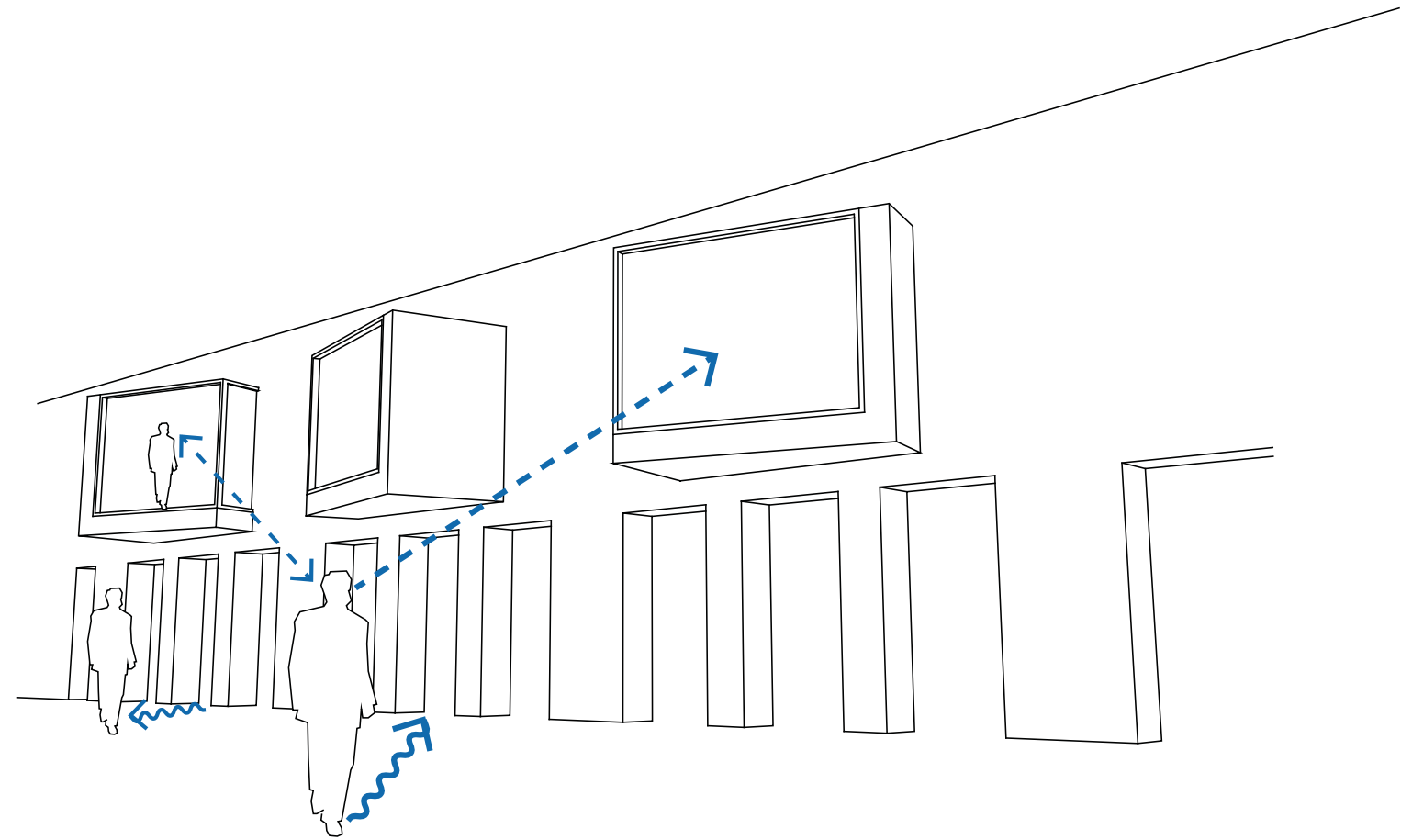
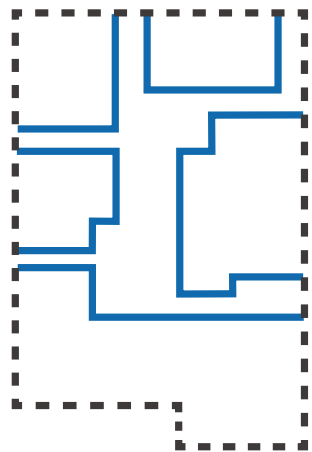
STRATEGY  
/ Interface



## STRATEGY / Interface

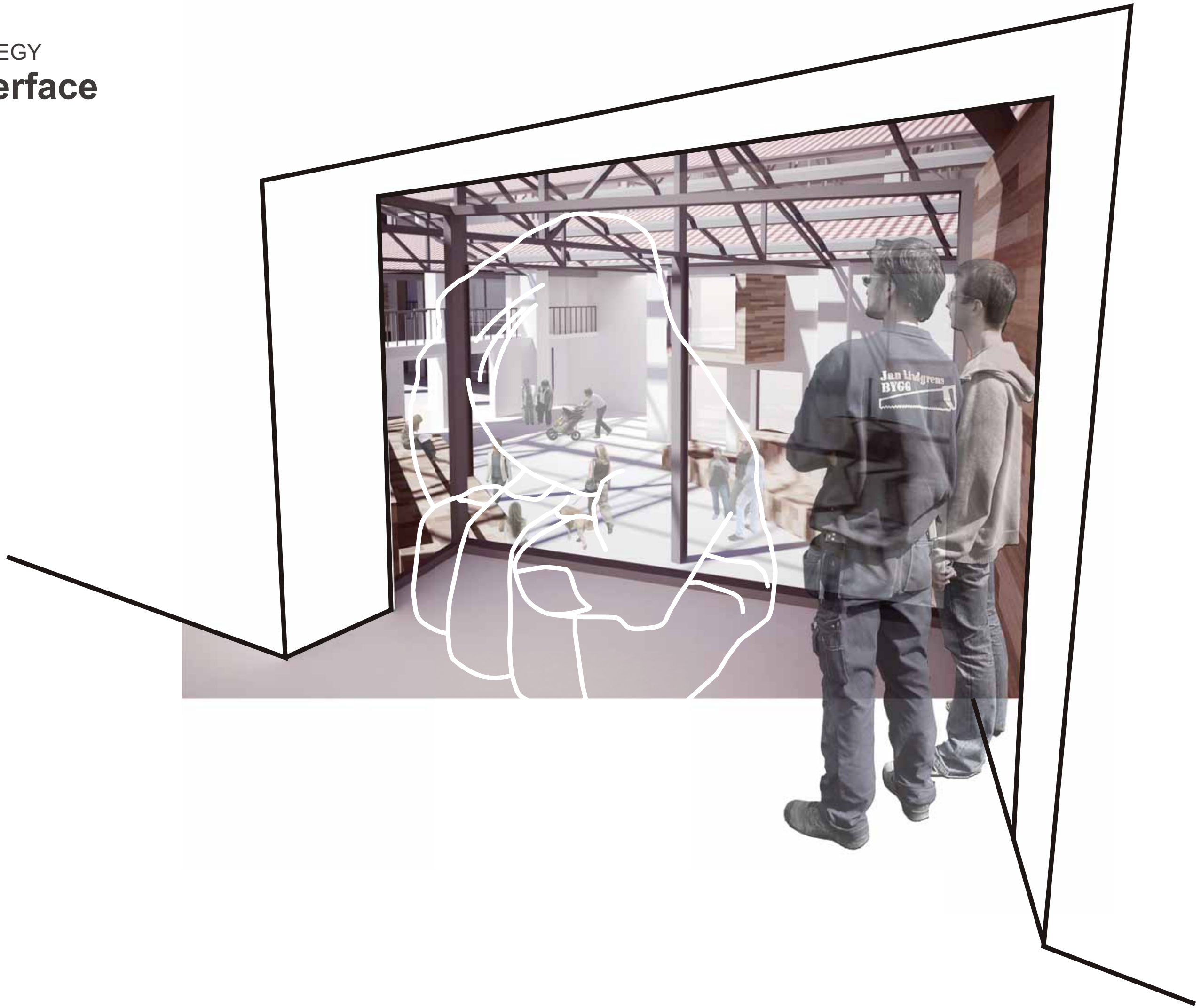
The new interface is divided into two parts, one on the ground and the other in the air. The patterns on the original facade are extended to the new surface, the same size and position of the openings. And it also fits to the public programs on the ground level and allows the spaces to open to every one.

In the air some glass boxes are extruded through the surface and twisted a bit. They are used for displaying the artists' works since there are studios on the second floor and usually artists would like others to see their creations. Meanwhile artists can also see what happening underneath, and maybe get some inspiration from the live scenes. So in a way it can be thought of as a kind of visual interaction.



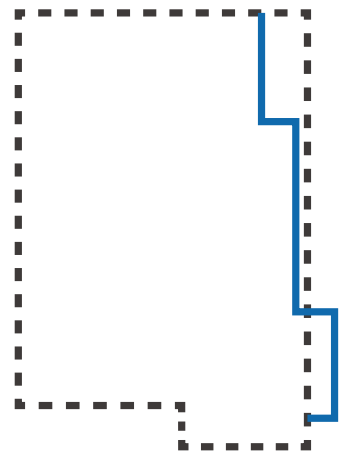
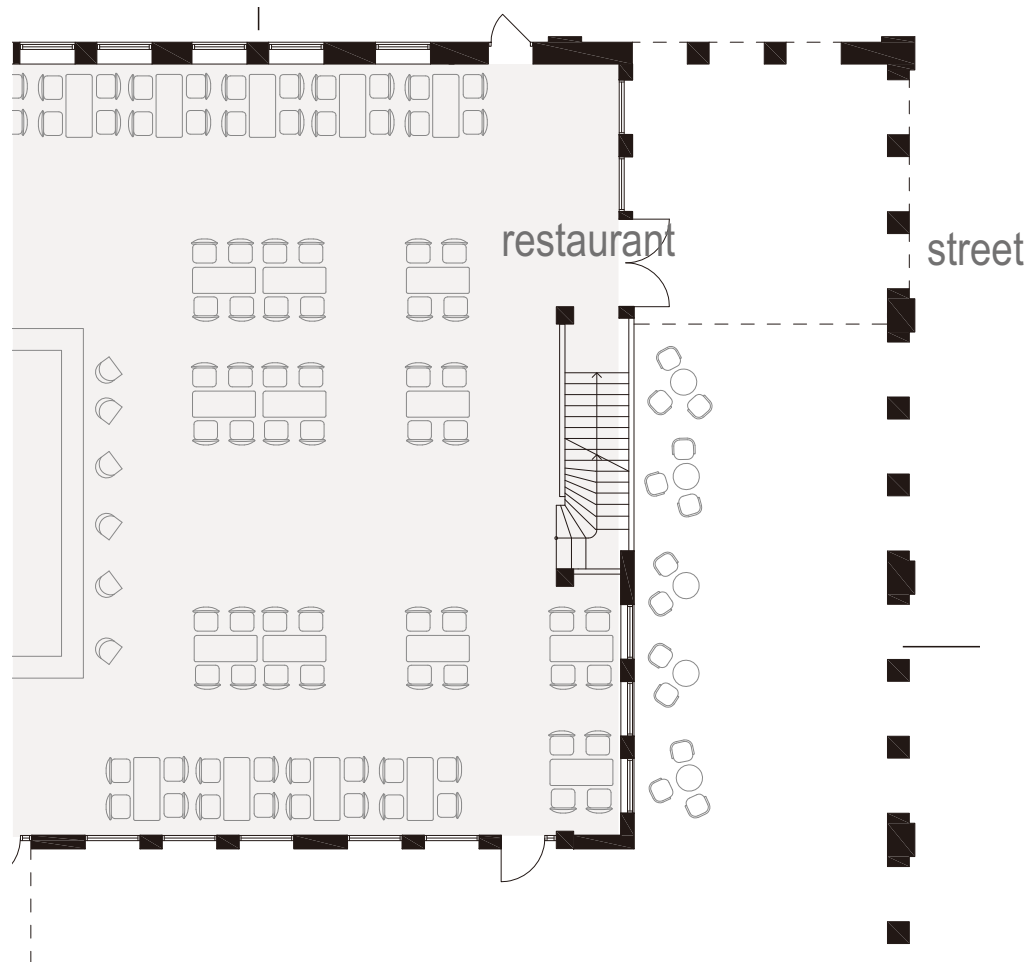


STRATEGY  
/ **Interface**



# STRATEGY / Street

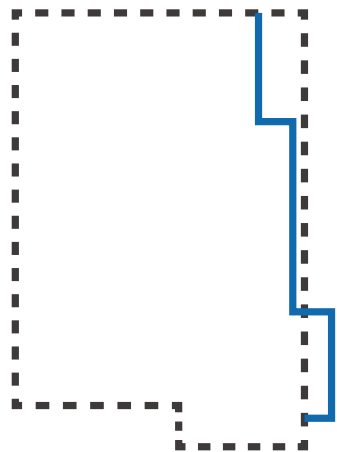
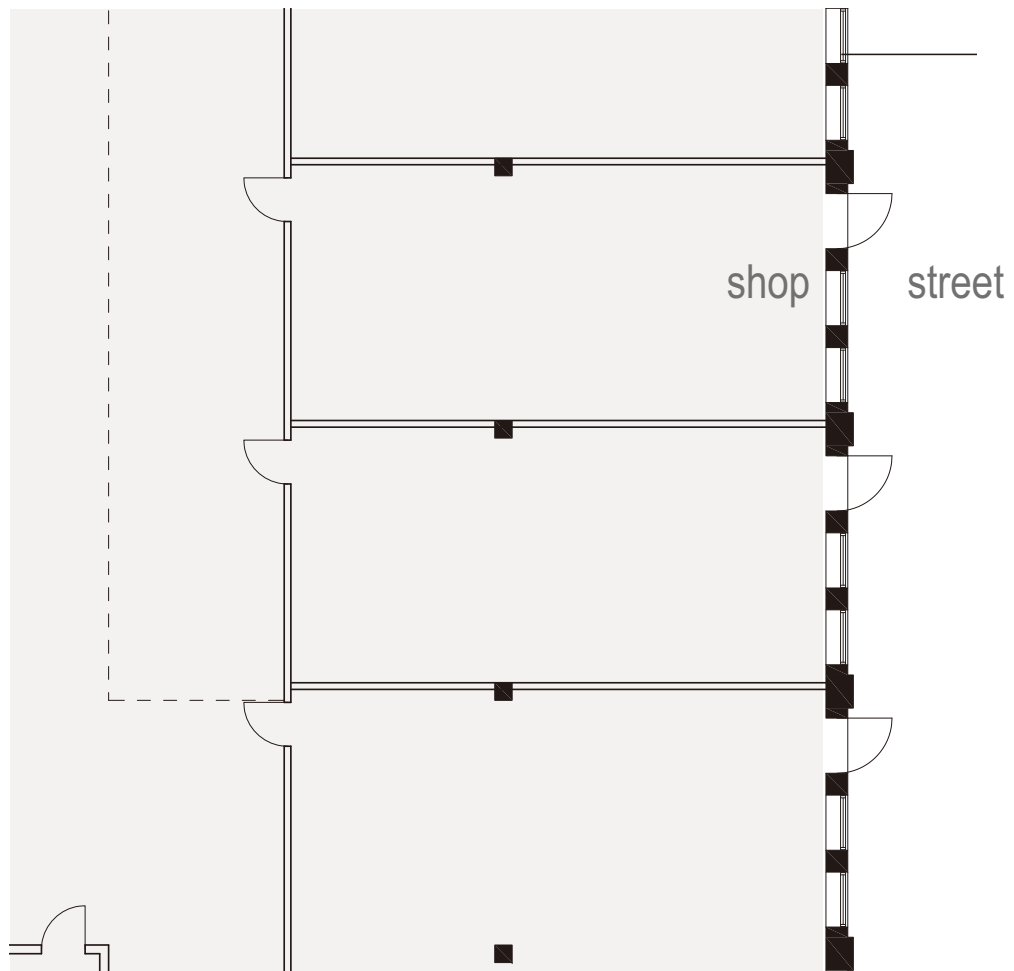
The surface of the street is folded to create some "grey space", blurring the street's boundary. Some part of the building is extruded into the street or conversely merged into the street.



***Intrusion***  
Origin  
Extrusion

# STRATEGY / Street

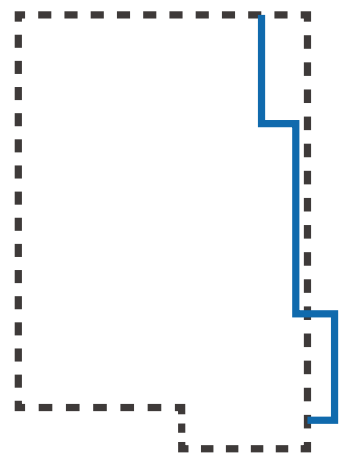
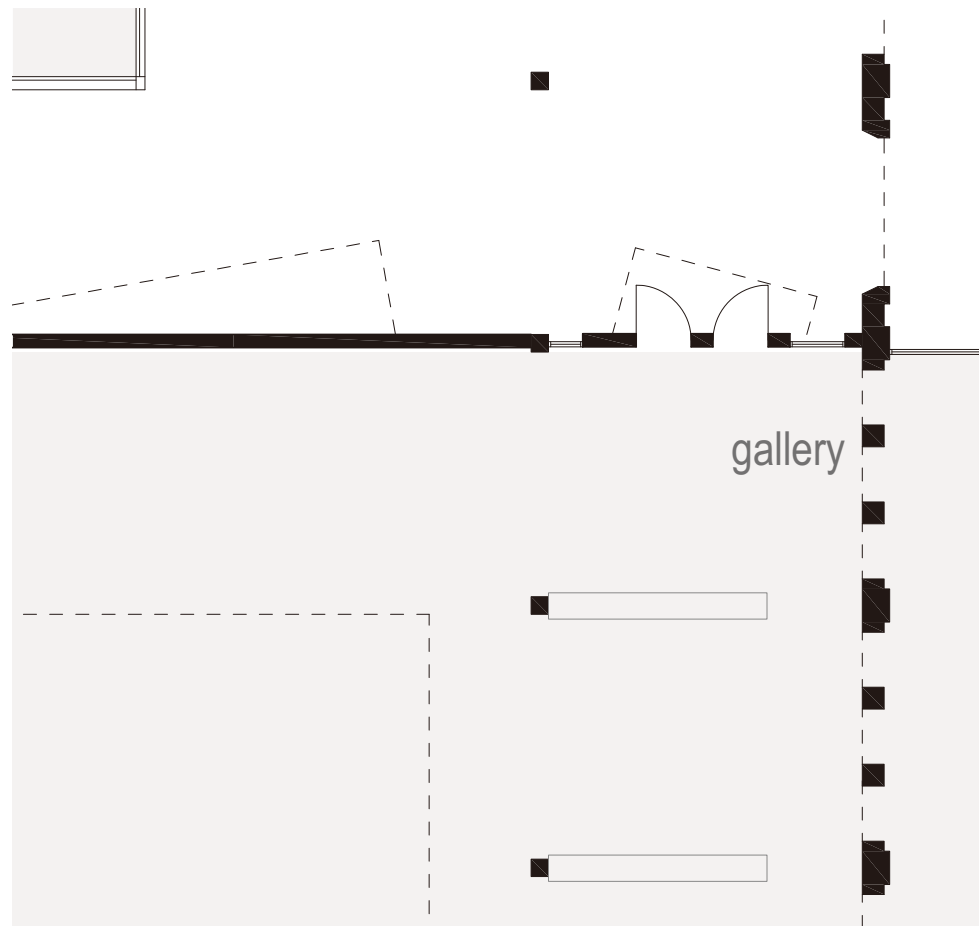
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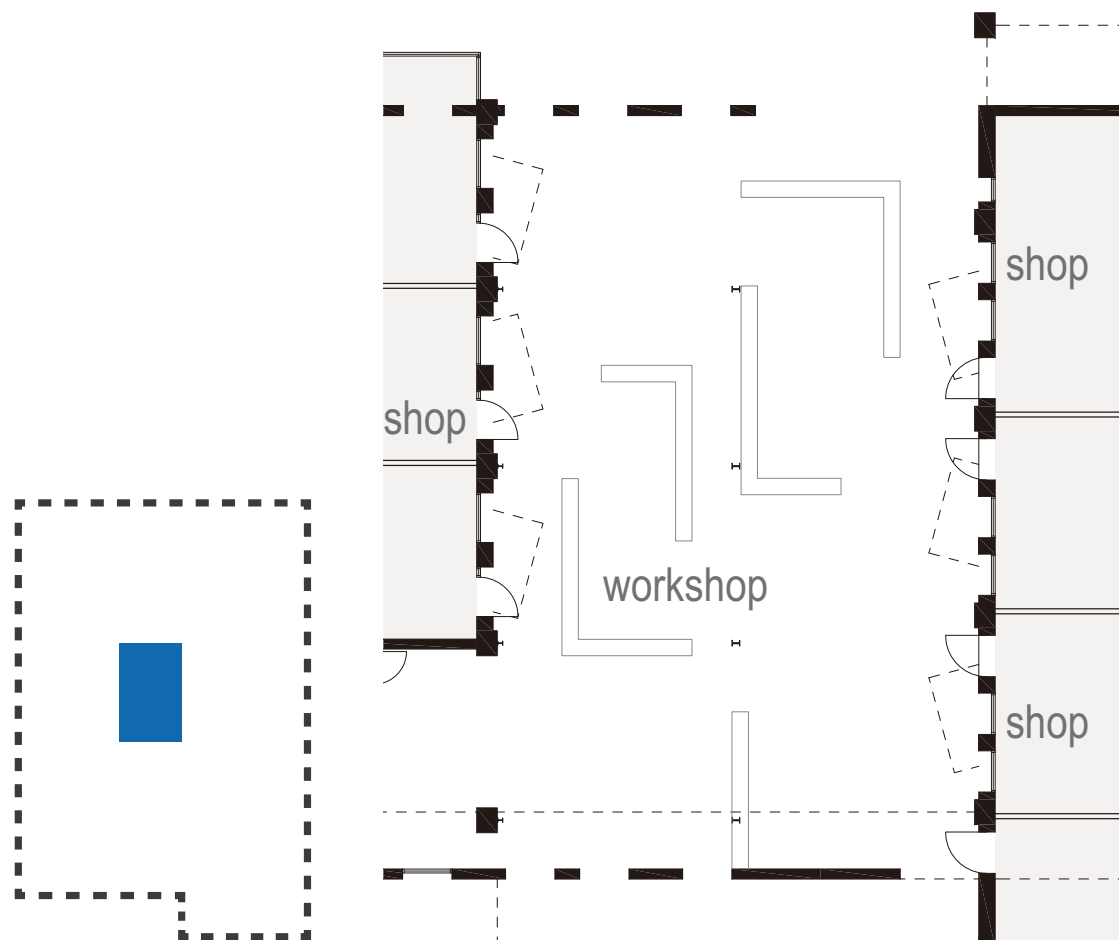
Intrusion  
Origin  
***Extrusion***

## STRATEGY

# / Workshop

The theme of the workshop is supposed to be changed regularly. So the public can participate in different workshops at different time, cooperating with artists. And the space of the workshop is flexible by using some temporary furnitures.

The roof of the workshop is replaced by a glass roof to bring more light underneath. Then it gets light so that people would come inside and find the secret surprise.



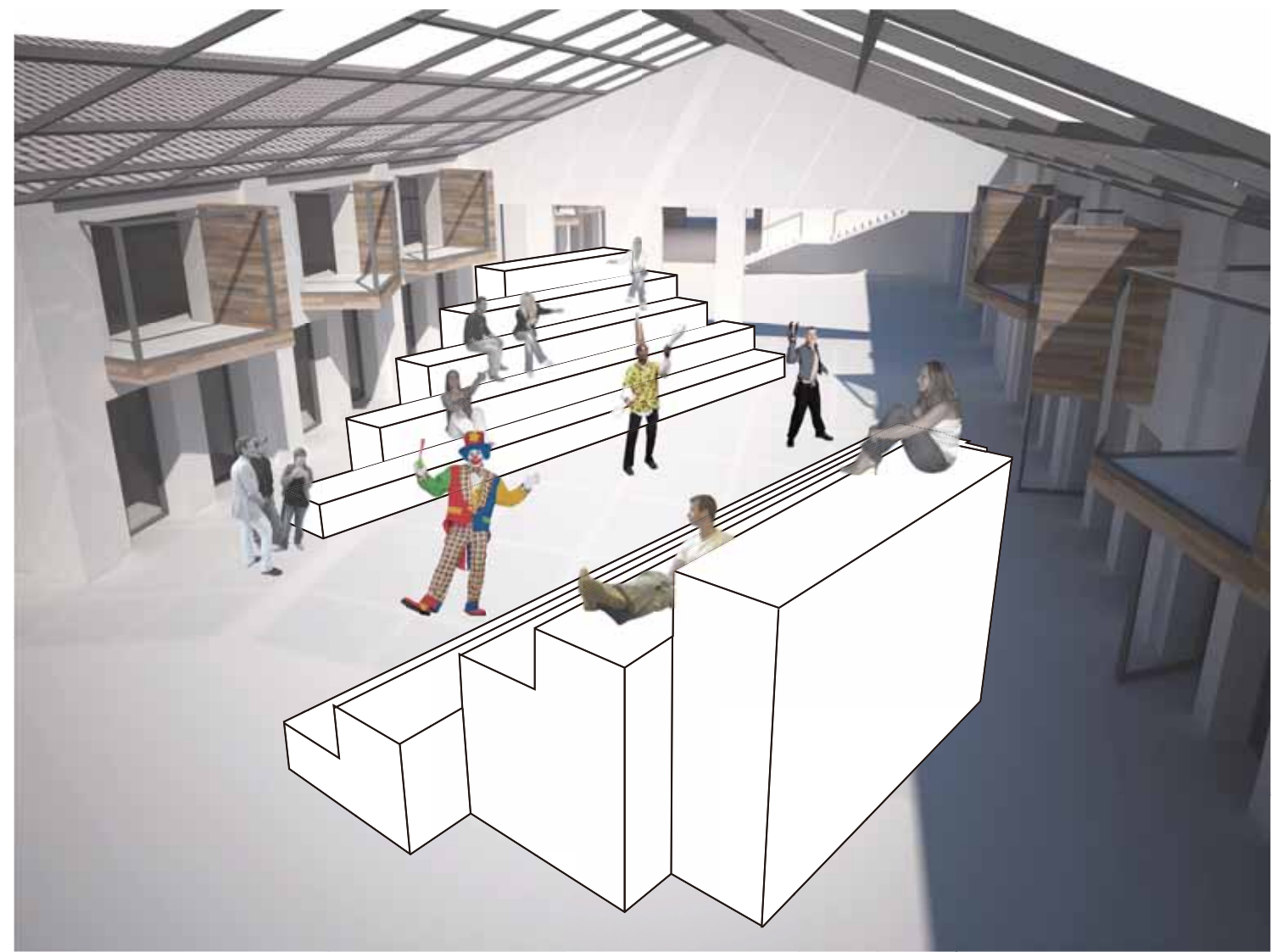
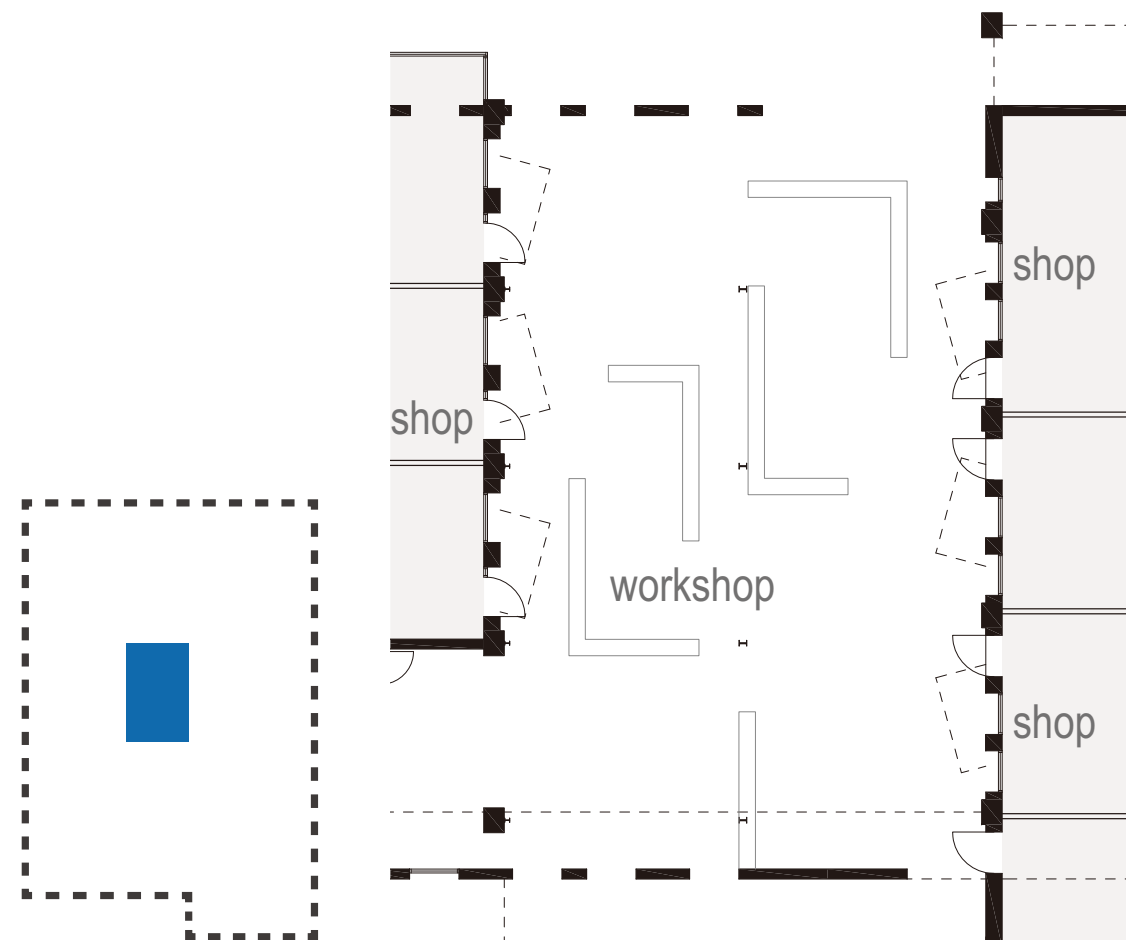


## STRATEGY

# / Workshop

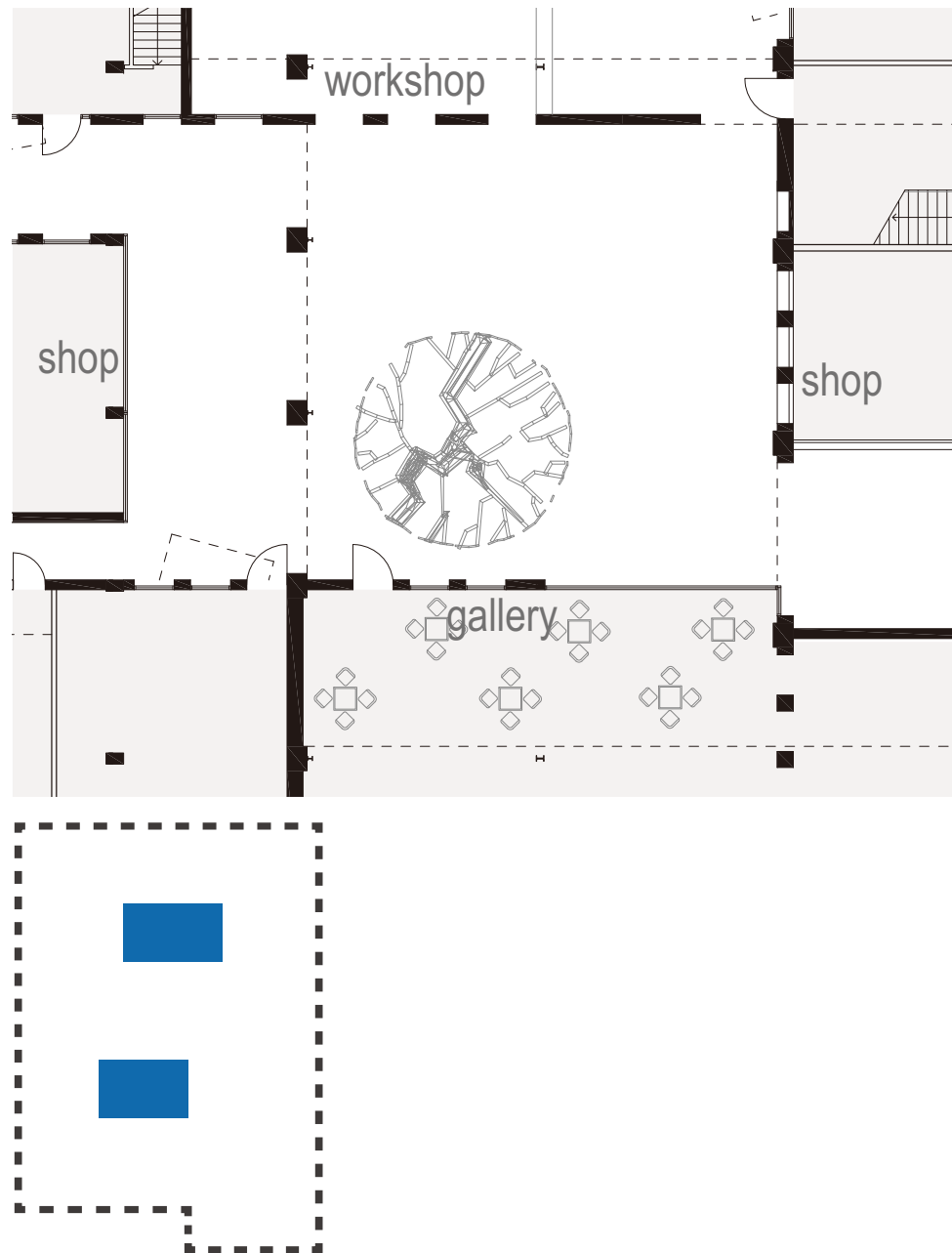
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# STRATEGY / Courtyard

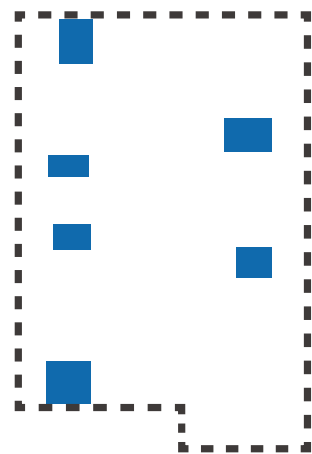
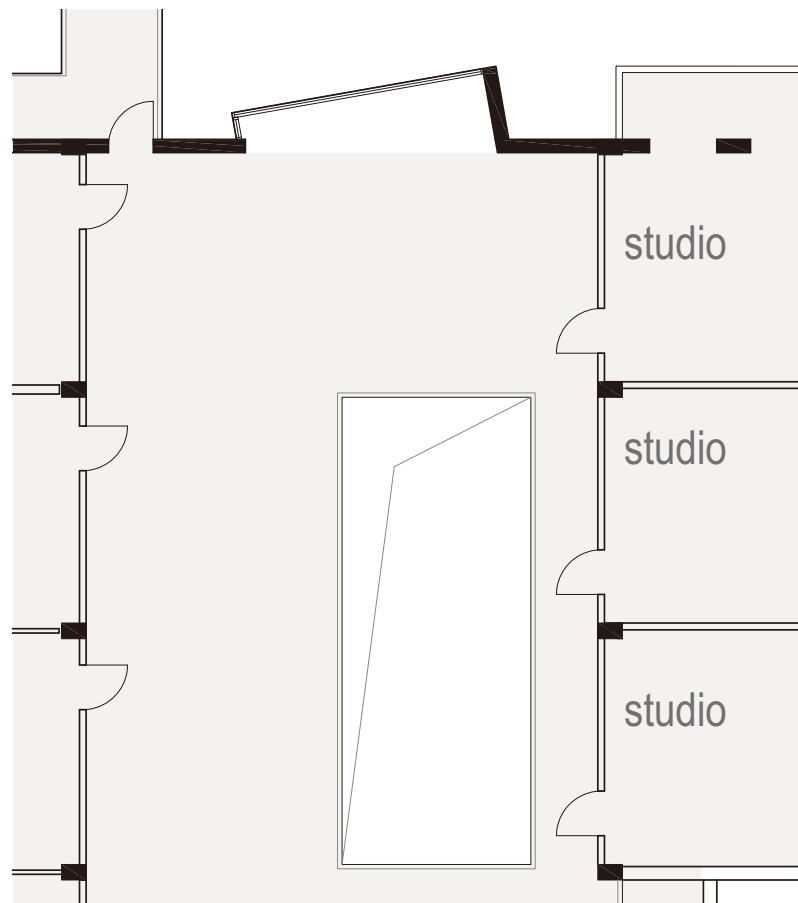
The two courtyards, are the meeting points of the passages in the center of the building. They will be outdoor social spots where people would go, stay and talk to others. The two openings also contribute to introducing light to improve the physical environment. The courtyards can also be the extension of the public workshop.

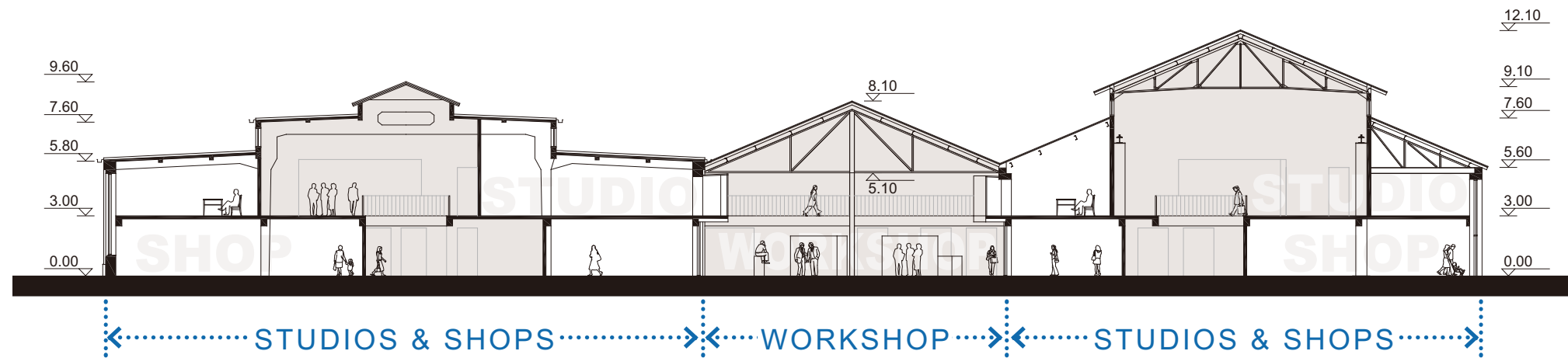


## STRATEGY

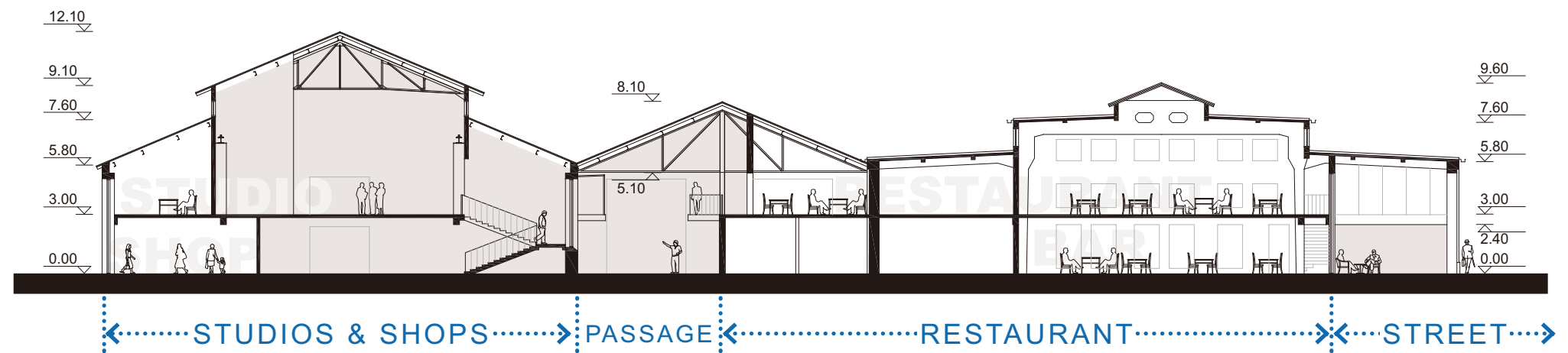
**/ Common platform**

The common platform on the second floor is a more private space for artists and their meeting, working, etc. Sometimes the interaction between artist is expected to be private and not to be interrupted by the public.

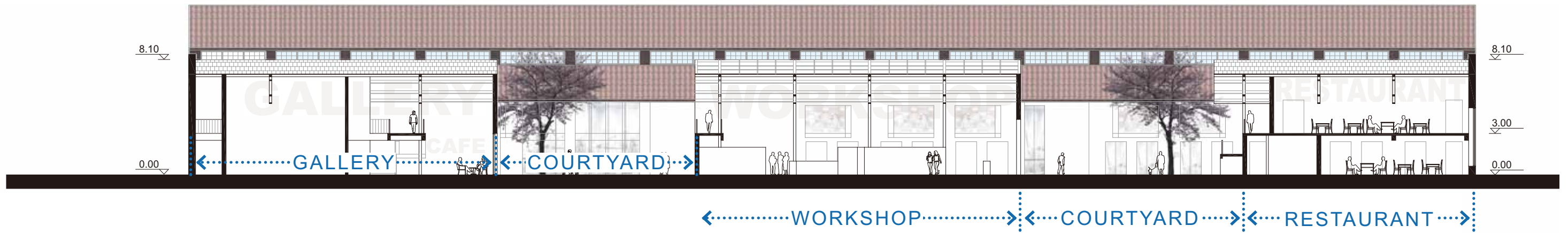




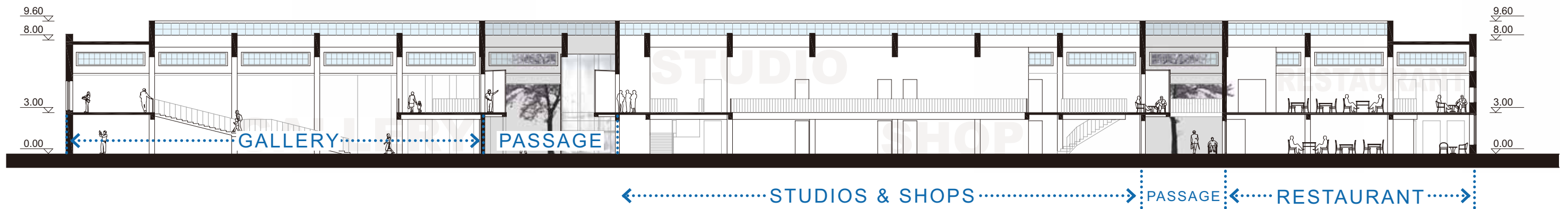
Cross section through workshop  
Section A 1:500



Cross section through passage  
Section B 1:500



Longitudinal section through courtyards  
Section C 1:500



Longitudinal section through passages  
Section D 1:500

## DESIGN

### / Material

Red brick and concrete were used as the wall and floor materials, which were both widely-used materials in industrial buildings during that period.

The idea of the materials for the new construction is about continuation and distinction. And the new materials should also be fit for the new programs and help to improve the architectural environment.

#### **White-painted wall**

Brick is again used as the wall material as the continuation from the old to the new. But the new wall is painted white for the reasons that white is a good background for displaying, or projection. It can also help to increase the reflection of light to improve the light environment.

#### **Wood-glass box**

Wood is used in the boxes in the air and makes them highlighted because it's a totally different material in color and texture from white-painted brick. So eyes can be easily attracted on the boxes which artists use for displaying. And for the glass, the frameless installation can ensure the maximization of views.

#### **Concrete floor**

The old concrete floor with some marks will be kept in the outdoor space in the building, including the passages, courtyards and public workshop. And in the blocks, new concrete floor will be constructed. By comparing, the distinction between old and new will be realized. So they are enhanced by each other in some way.



DESIGN

## / Material

### White-painted brick wall

Continuation of material  
Background for displaying  
Increasing the reflection

### Wood-glass box

Out standing  
Attractive

### Concrete floor

Kept for outdoor space  
reconstructed for indoor space



DESIGN  
/ **Details**



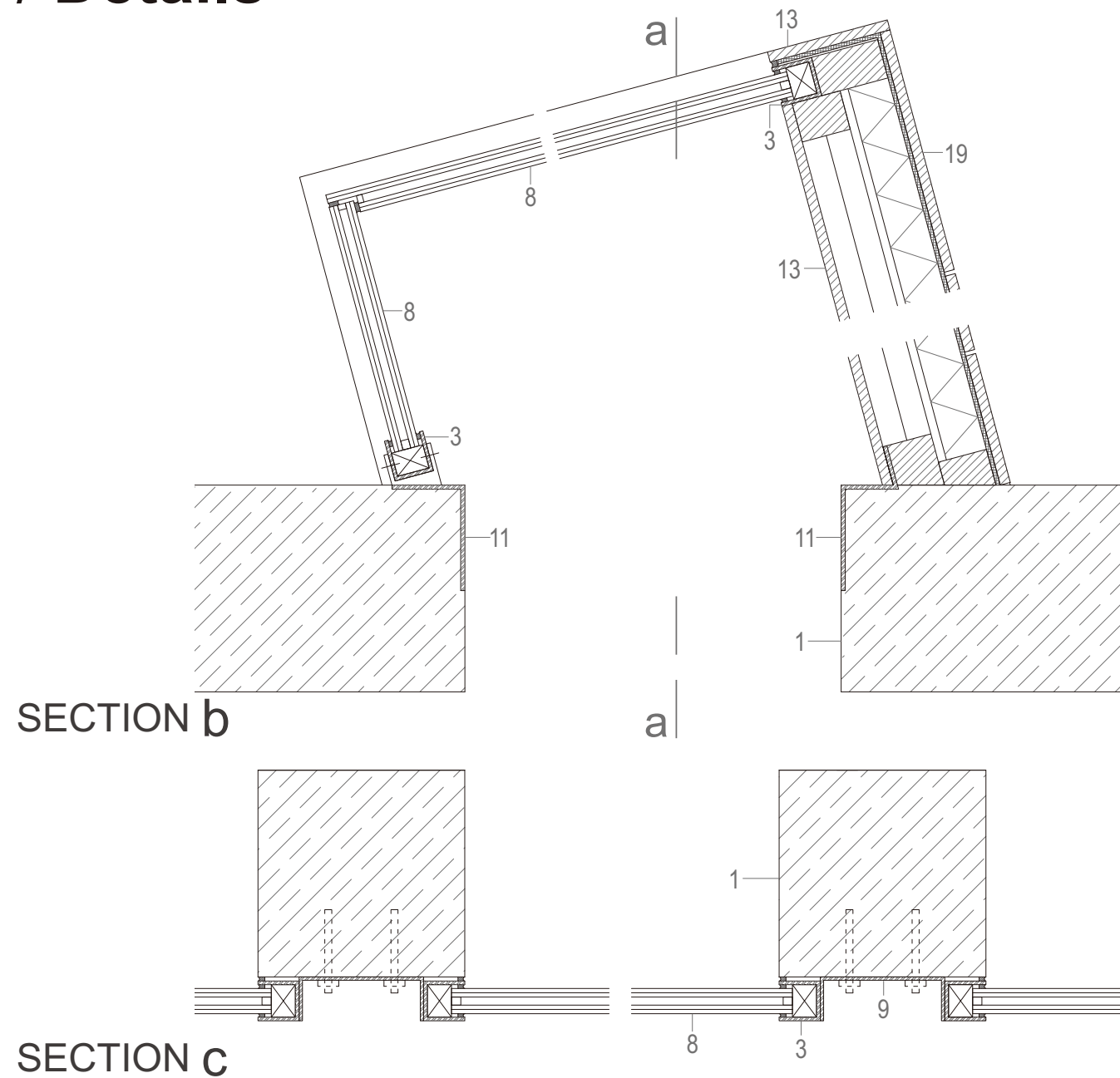
Frameless glazing

Glass box

Joints between new and old

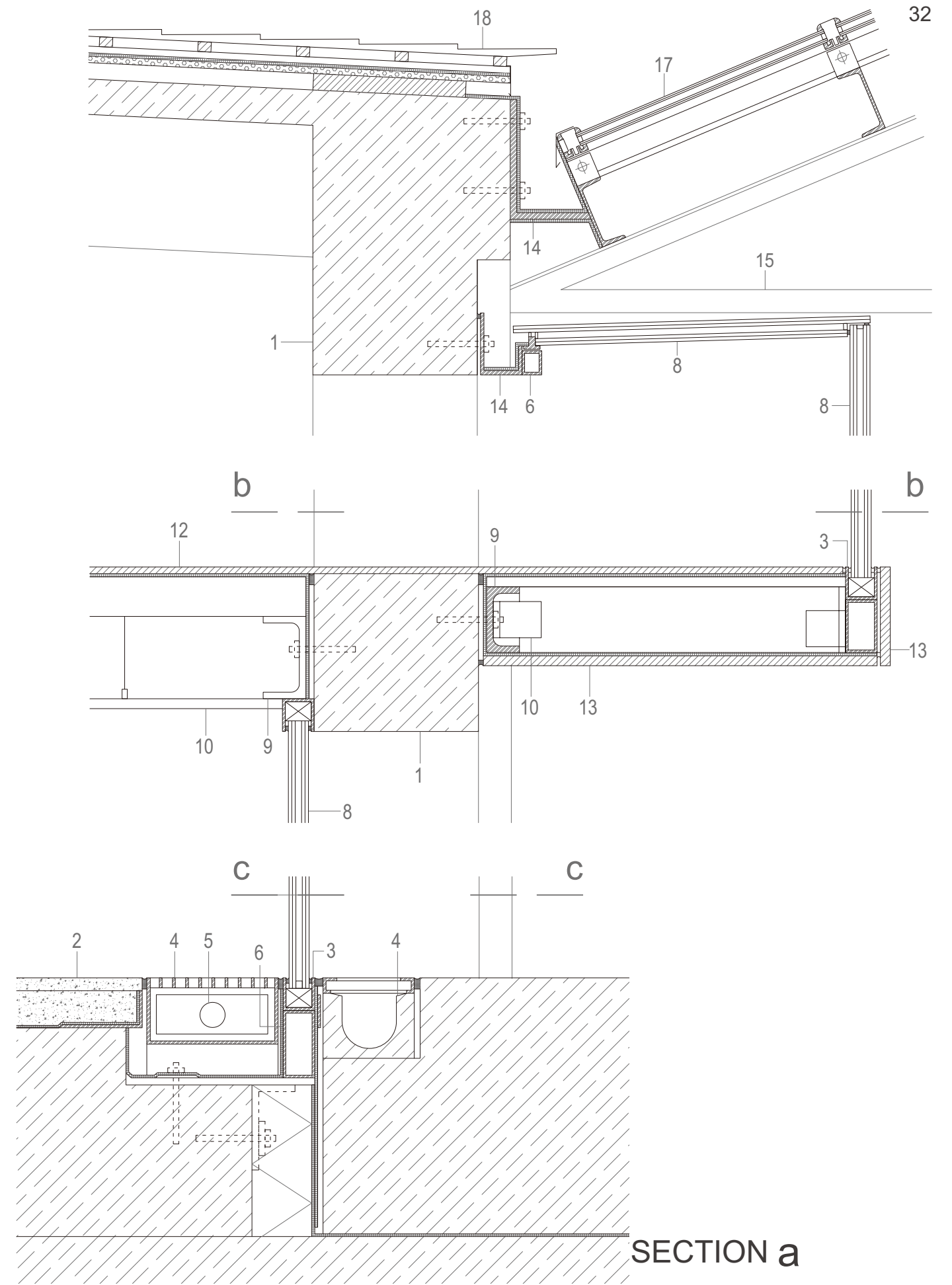


# DESIGN / Details



SECTION C

- |                         |                                |                      |
|-------------------------|--------------------------------|----------------------|
| 1 existing brick wall   | 11 steel angle                 | 18 existing roof     |
| 2 new concrete floor    | 12 wood strips on wood bearers | 19 wood boarding     |
| 3 steel channel section | thermal insulation             | windproof film       |
| 4 steel grating         | construction board             | oriented-stand board |
| 5 convector heater      | 13 wood boarding               | mineral-wool thermal |
| 6 steel RHS             | 14 rainwater drainage          | vapour barrier       |
| 7 drainage channel      | 15 existing roof structure     | oriented-stand board |
| 8 double glazing        | 16 steel beam                  | battens              |
| 9 steel channel         | 17 double glazing              | wood boarding        |
| 10 plaster board        |                                |                      |



SECTION a

## REFERENCES



KONSTEPIDEMIN

Göteborg, Sweden

The konstpidemin is also a working place for artists. But there is no transformaiton or new construction to the existing buildings. They use the buildings instantly which makes the whole project much cheaper. However the konstpidemin seems not so open and attractive to the public. There are not many public spaces and activities so there are not many interactions taking place.



## REFERENCES

# 798

Beijing, China

The 798 art zone is a new art centre in Beijing and the project started in about 2000. There are studios, workshops, galleries, retail shops and some service facilities. Now it is becoming more and more attractive and also it has become a new tourist attraction. So the commerce in the art zone is increasing and the property is changing gradually. For instance the rent is rising all the time and some artists have been not able to afford the high rent and moved to other places.

