



01/07/2024  
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4664132

Architecture mentor: Geert Coumans  
Building technology mentor: Claudia van Leest  
Research mentor: Peter Koorstra

# Introduction

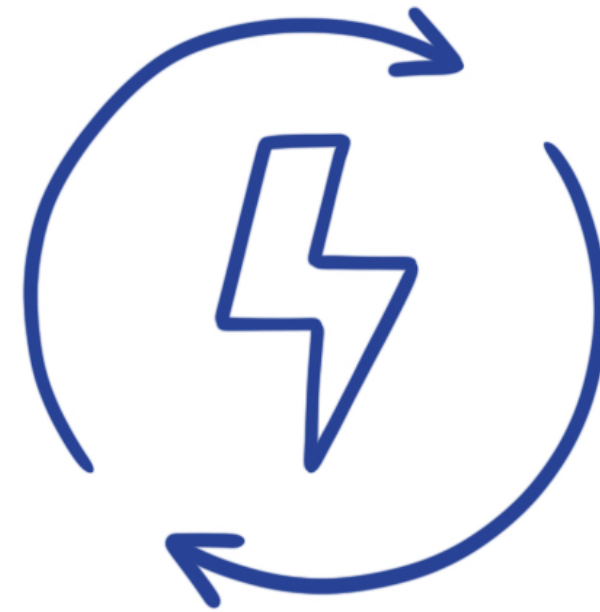


# Studio assignment

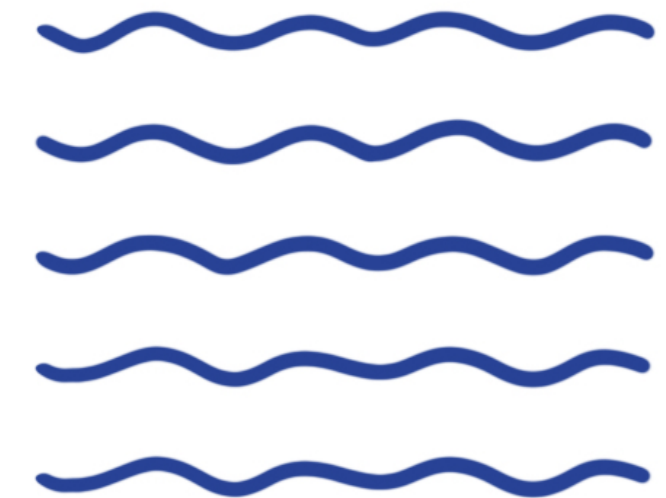
Material



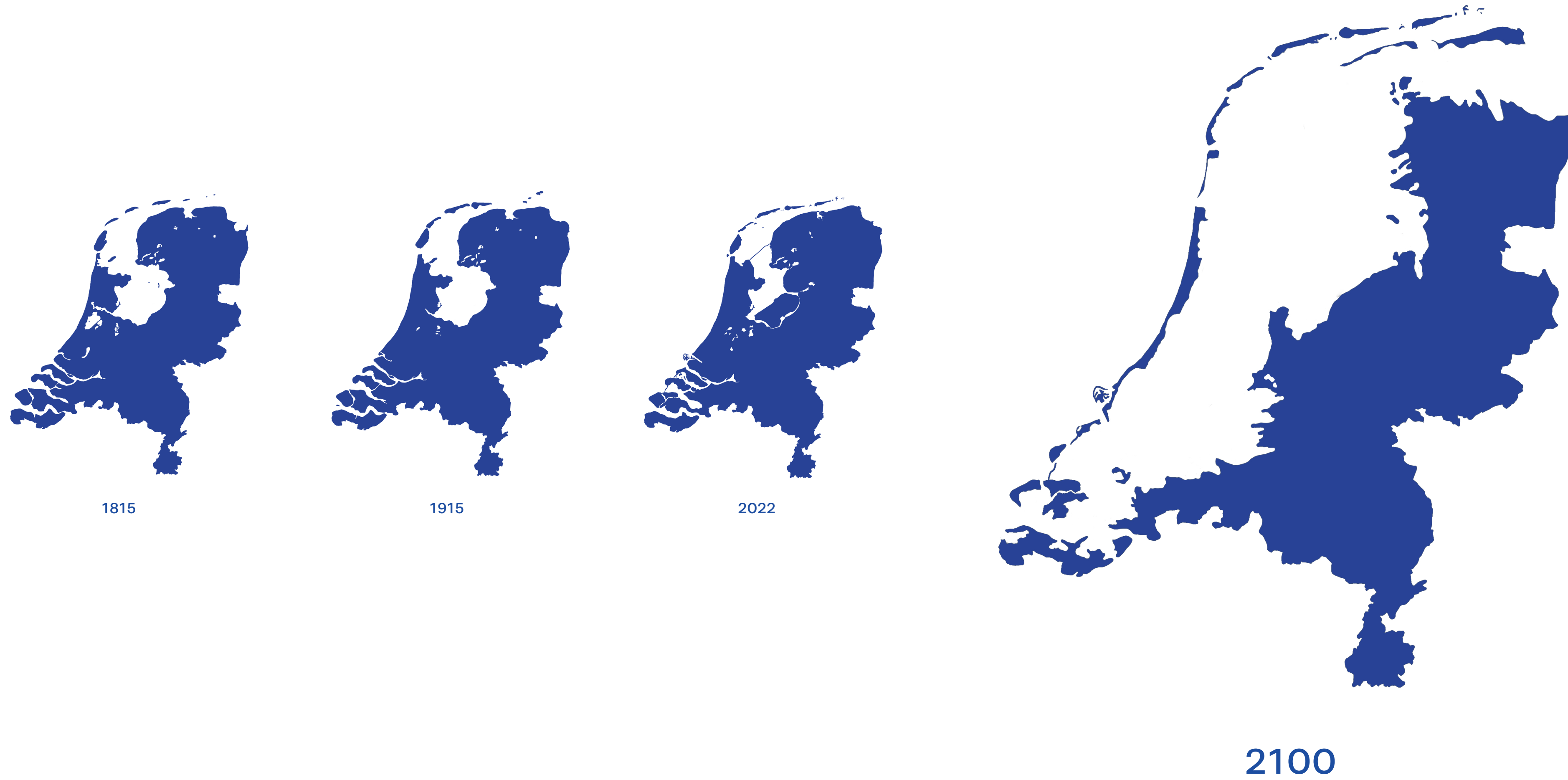
Energy



**Water**



# Land versus water



# Research questions

**How can floating communities contribute to resilient living solutions in areas vulnerable to sea level rise, such as Groningen, The Netherlands?**

- a. What historical factors led the Dutch to inhabit water?
- b. In what ways do the living conditions on floating homes differ from those on traditional land-based dwellings?
- c. What lessons can be learned from existing floating communities within the Netherlands?
- d. What sustainable materials and construction methods are suitable for floating structures in a sea-level rise context?
- e. What factors contribute to Groningen's vulnerability to sea-level rise and make it an evident candidate for developing future resilience against rising sea levels?



# Interviews



Houseboat 1  
Photo: by author



Houseboat 2  
Photo: by author



Houseboat 3  
Photo: by author



Cargo ship (house)boat  
Photo: by author



Sailing (house)boat  
Photo: by author



# Case-study analysis



Analysis Usbaanpad  
Photo: by author



Analysis Steigereiland  
Photo: by author

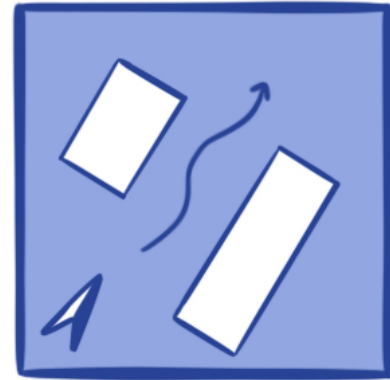


Analysis Schoonschip  
Photo: by author

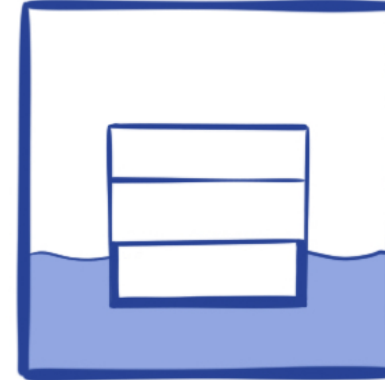


# Results

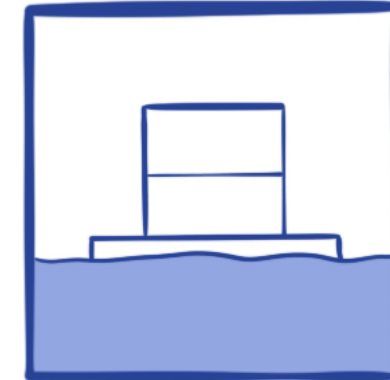
Technical  
aspects



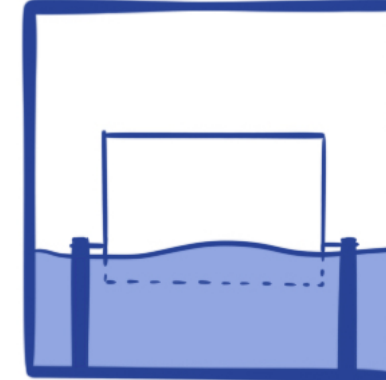
Wind direction



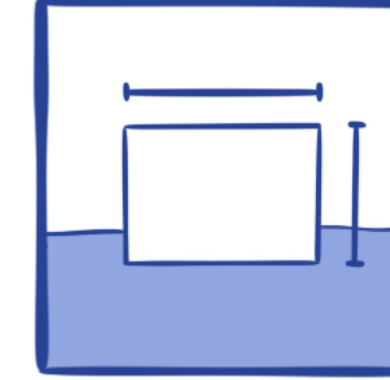
Construction



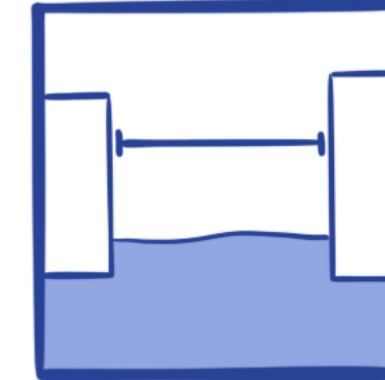
Platforms



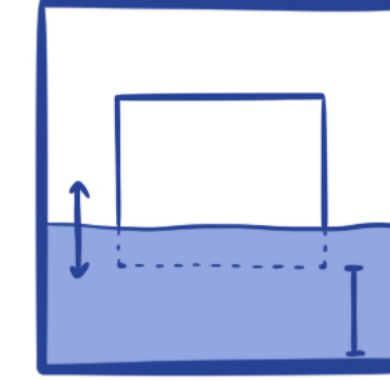
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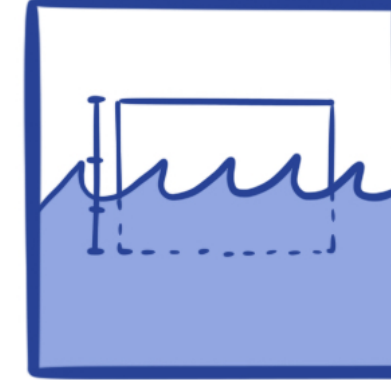
Dimensions



Distance



Adaptability



Waves

# Results

## Technical aspects



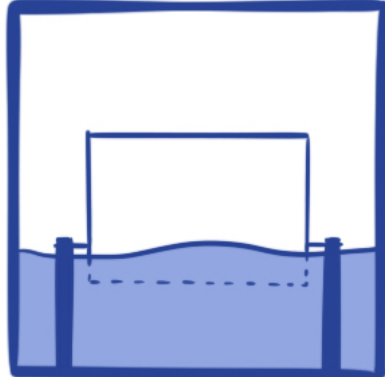
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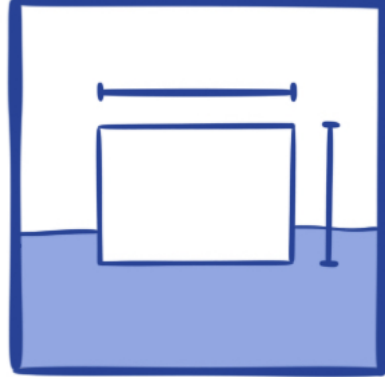
Construction



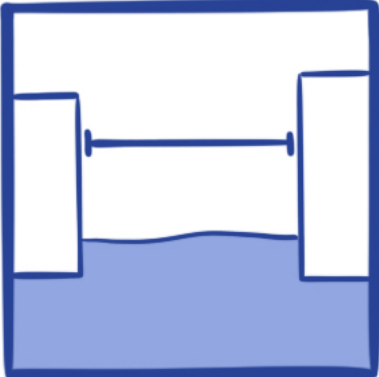
Platforms



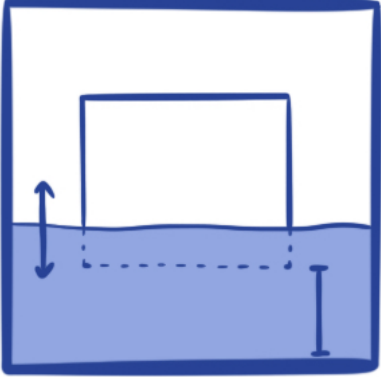
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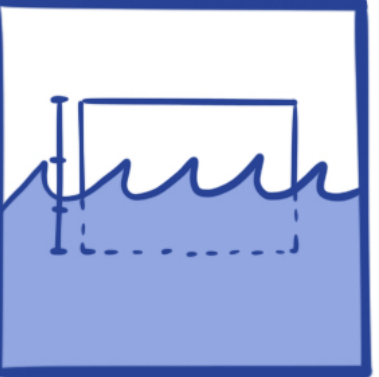
Dimensions



Distance



Adaptability



Waves

## Community



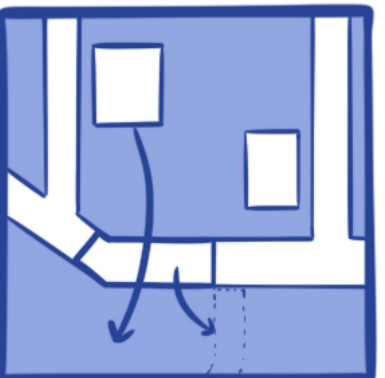
Configuration



Positioning



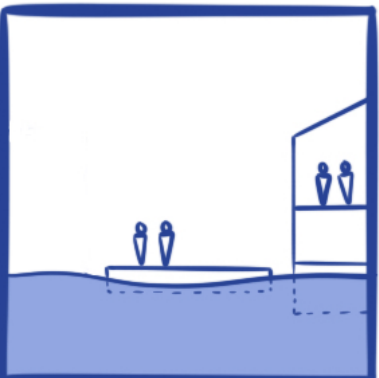
Docks lay-out



Flexible docks



Urban landscape



Meeting places



Shared facilities



Swimming



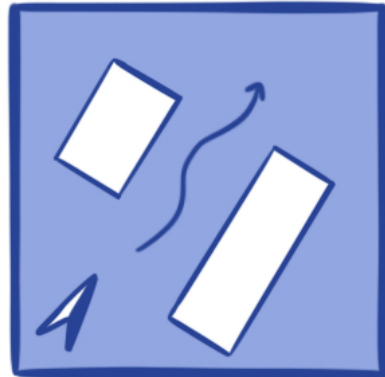
Boat mooring



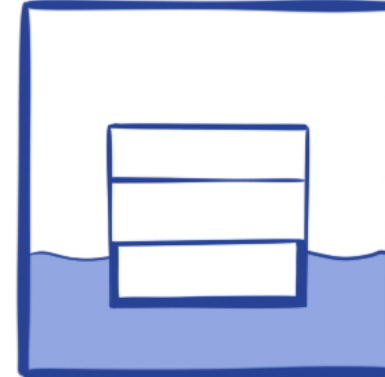
Wide docks

# Results

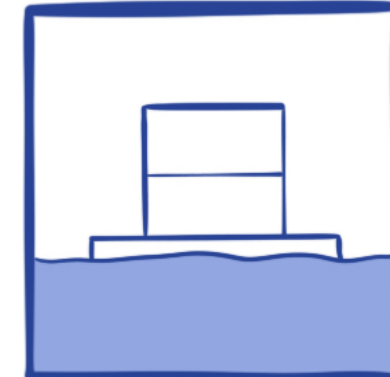
## Technical aspects



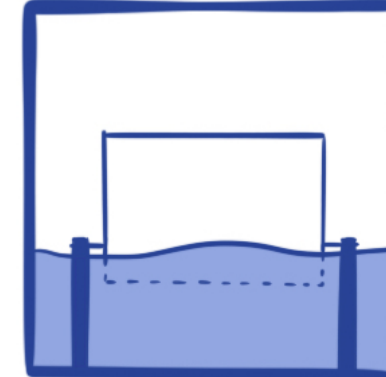
Wind direction



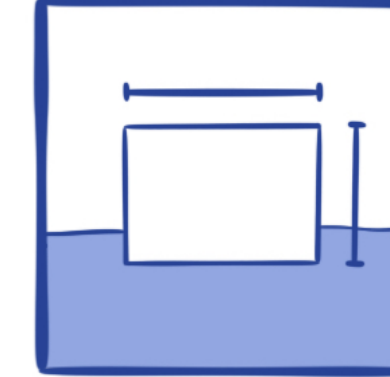
Construction



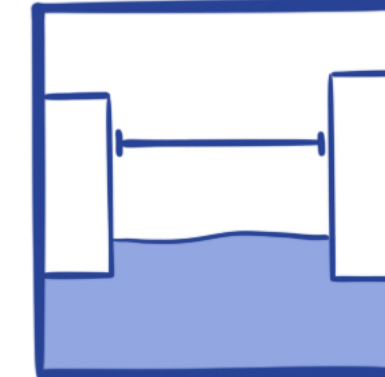
Platforms



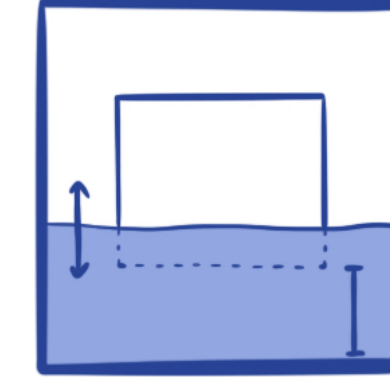
Attachment



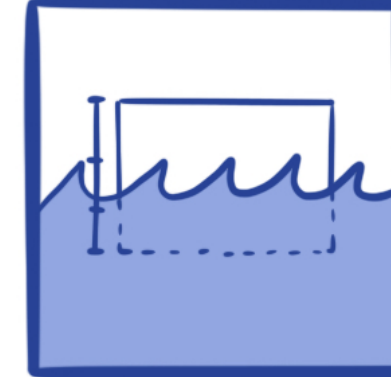
Dimensions



Distance



Adaptability

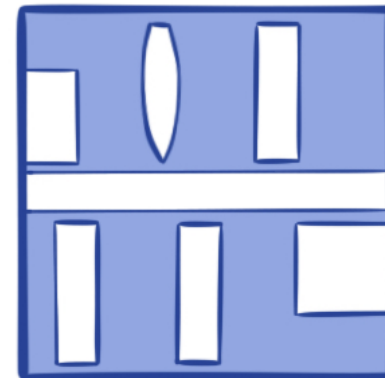


Waves

## Community



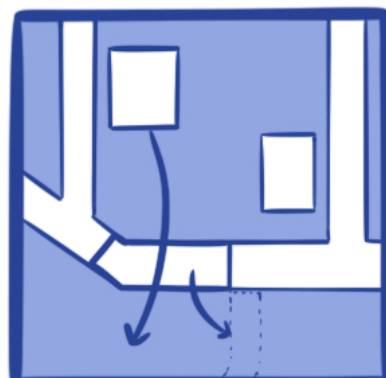
Configuration



Positioning



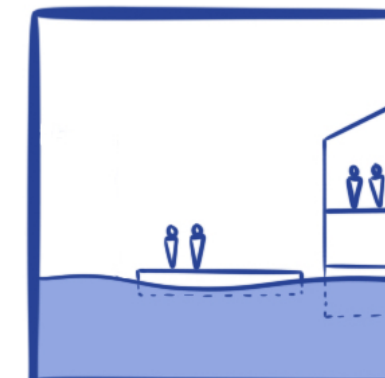
Docks lay-out



Flexible docks



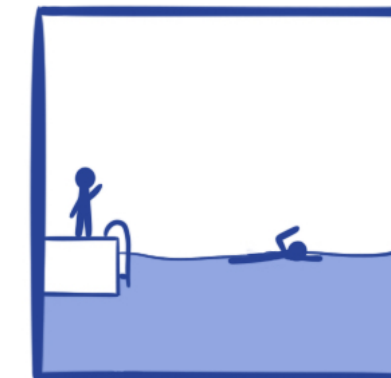
Urban landscape



Meeting places



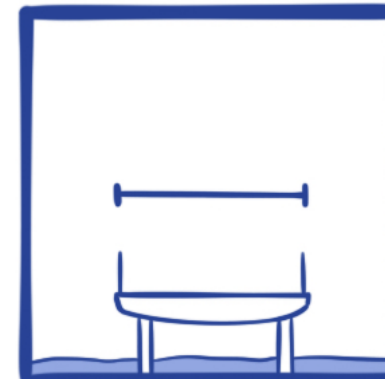
Shared facilities



Swimming

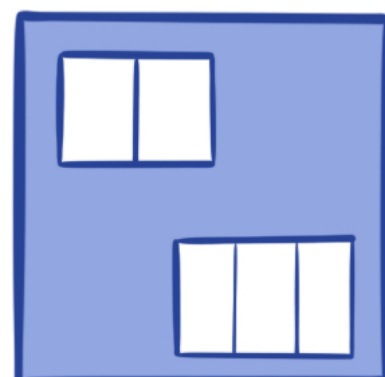


Boat mooring

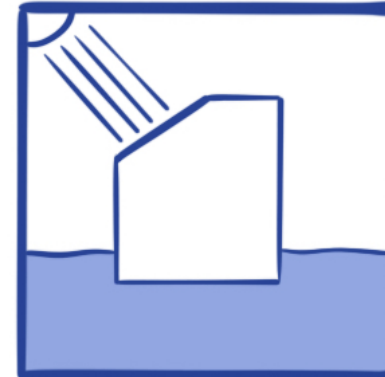


Wide docks

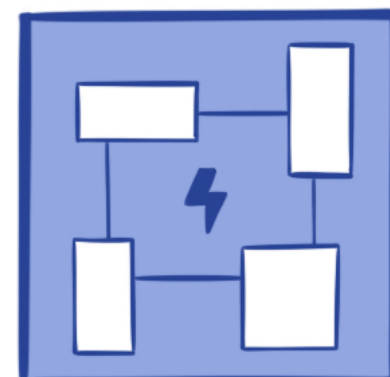
## Energy



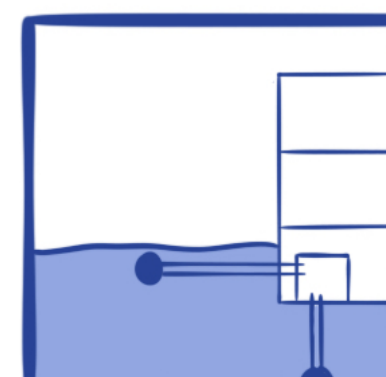
Shared buildings



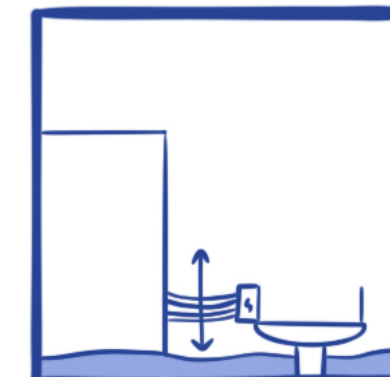
Solar panels



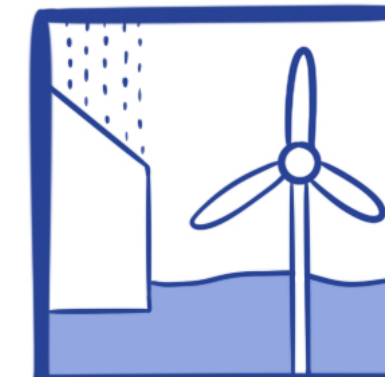
Smart-grid



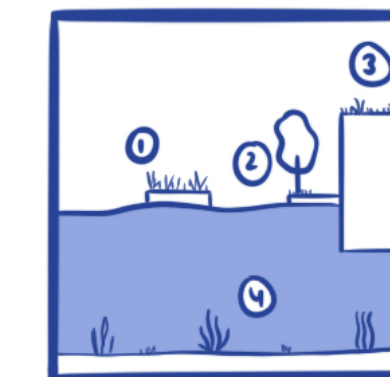
Heat exchange system



Flexible connections



Water and energy



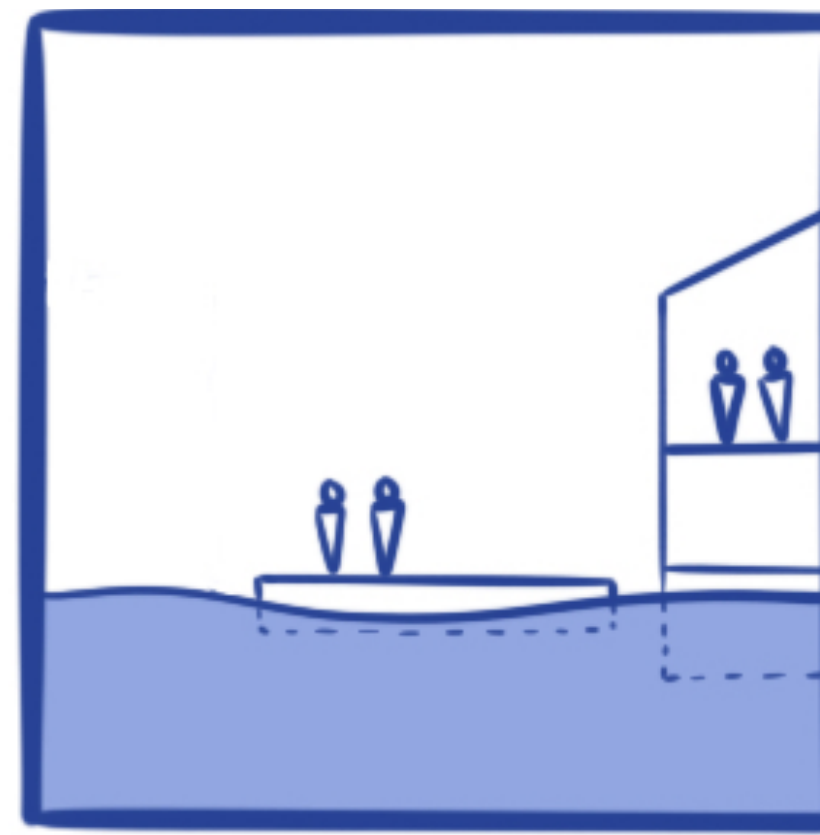
Ecology



# Inspiration for the design



Shared facilities



Meeting places

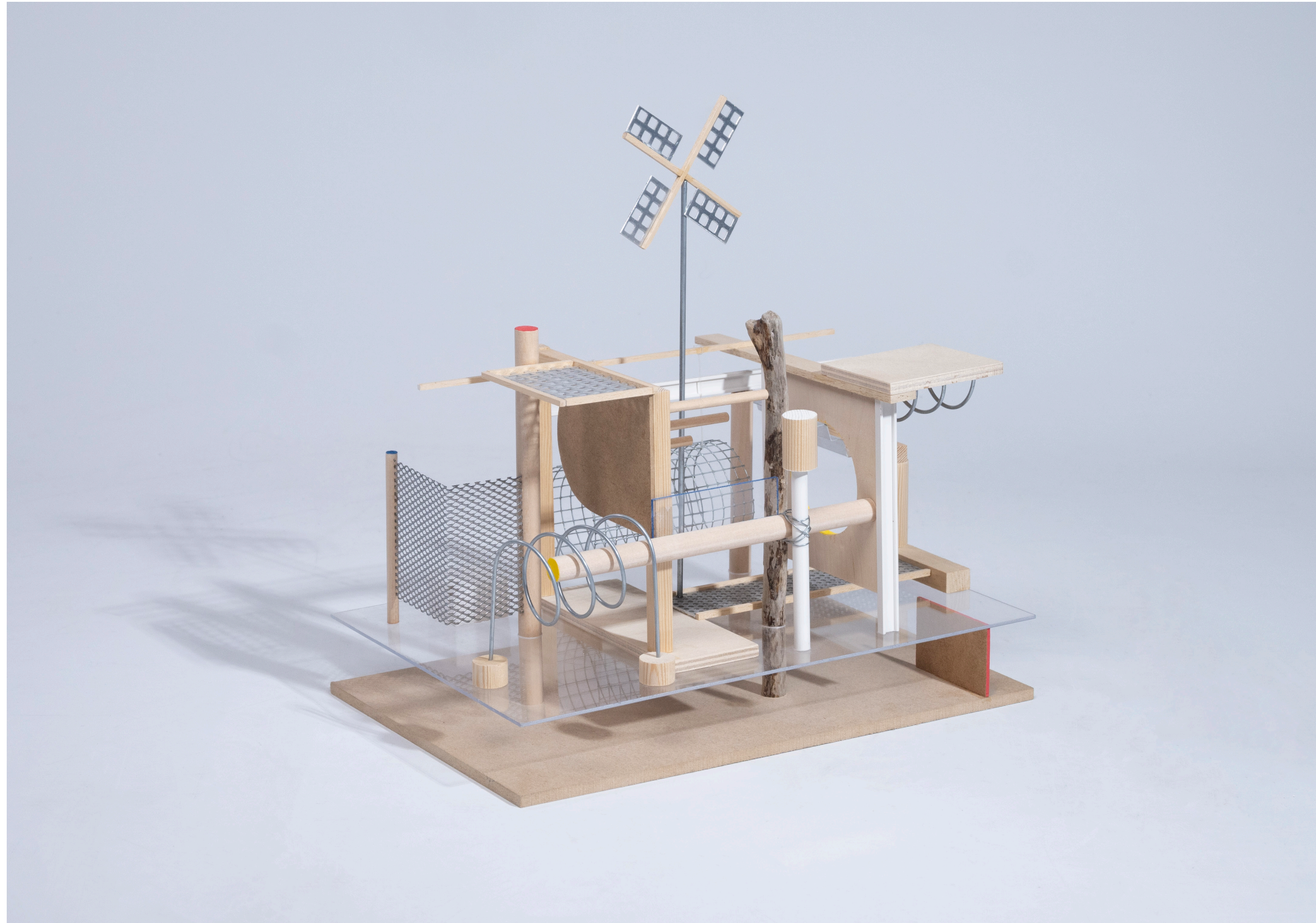


Urban landscape

# Design



# Aim



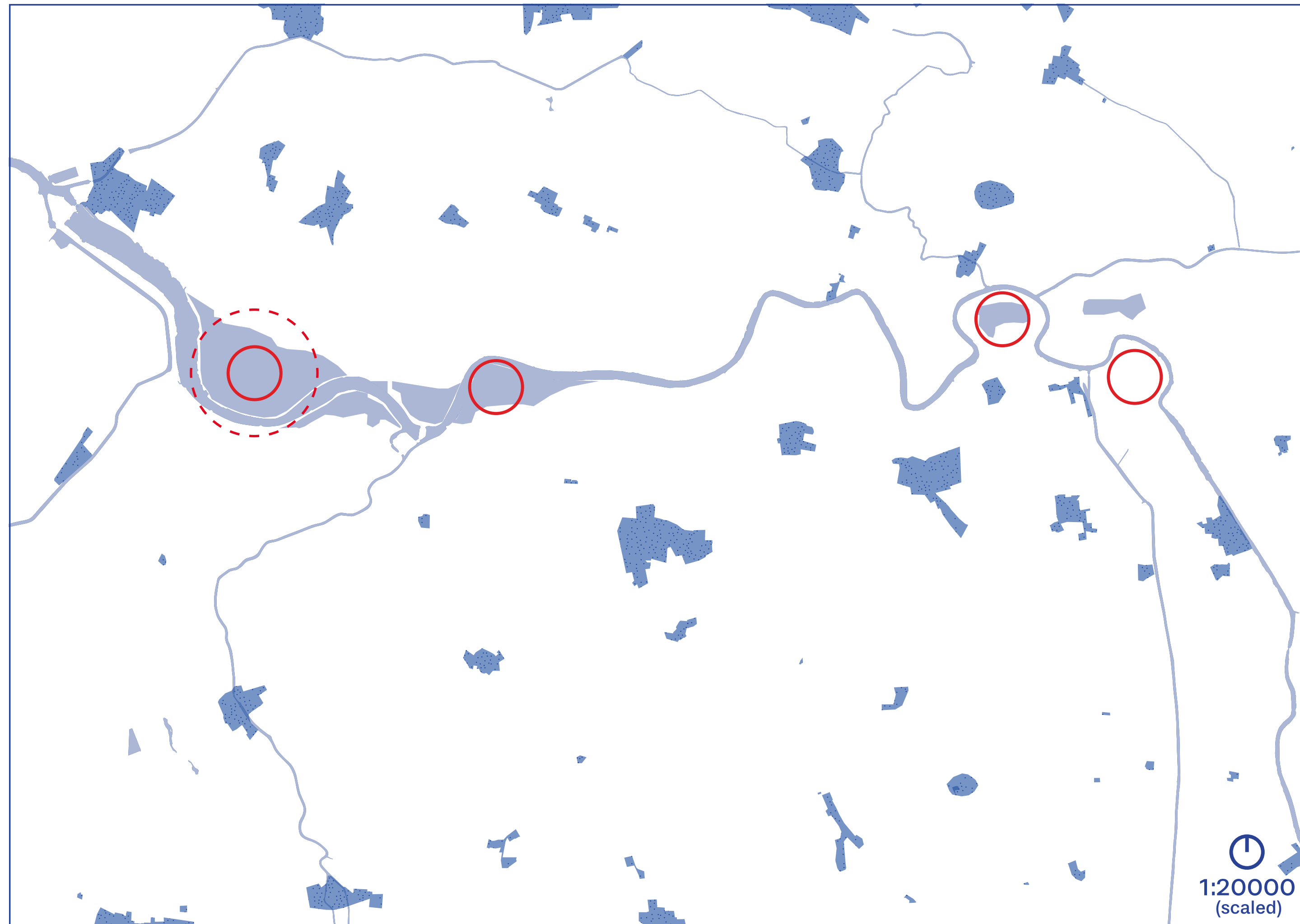


# Groningen



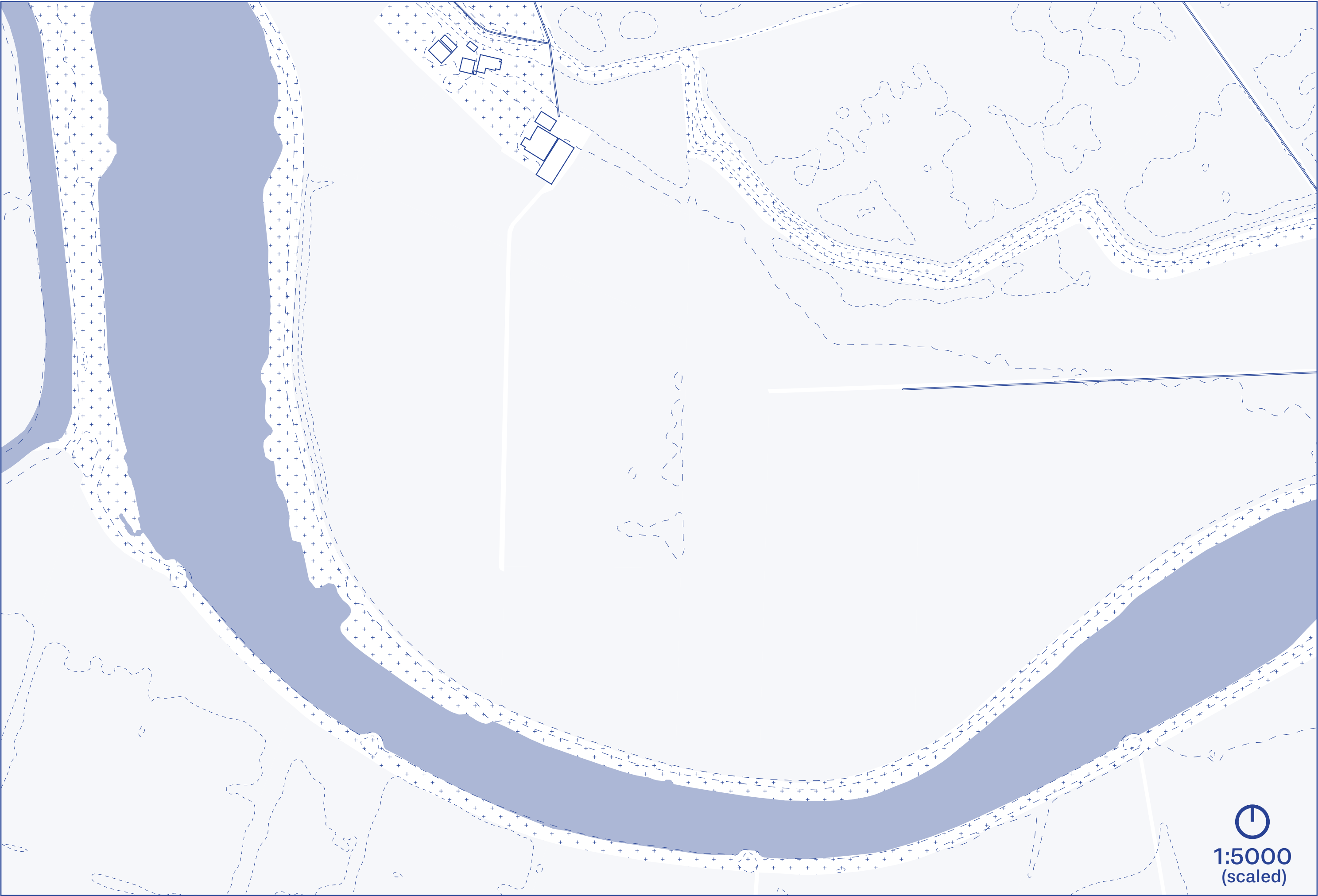
Current

# Groningen



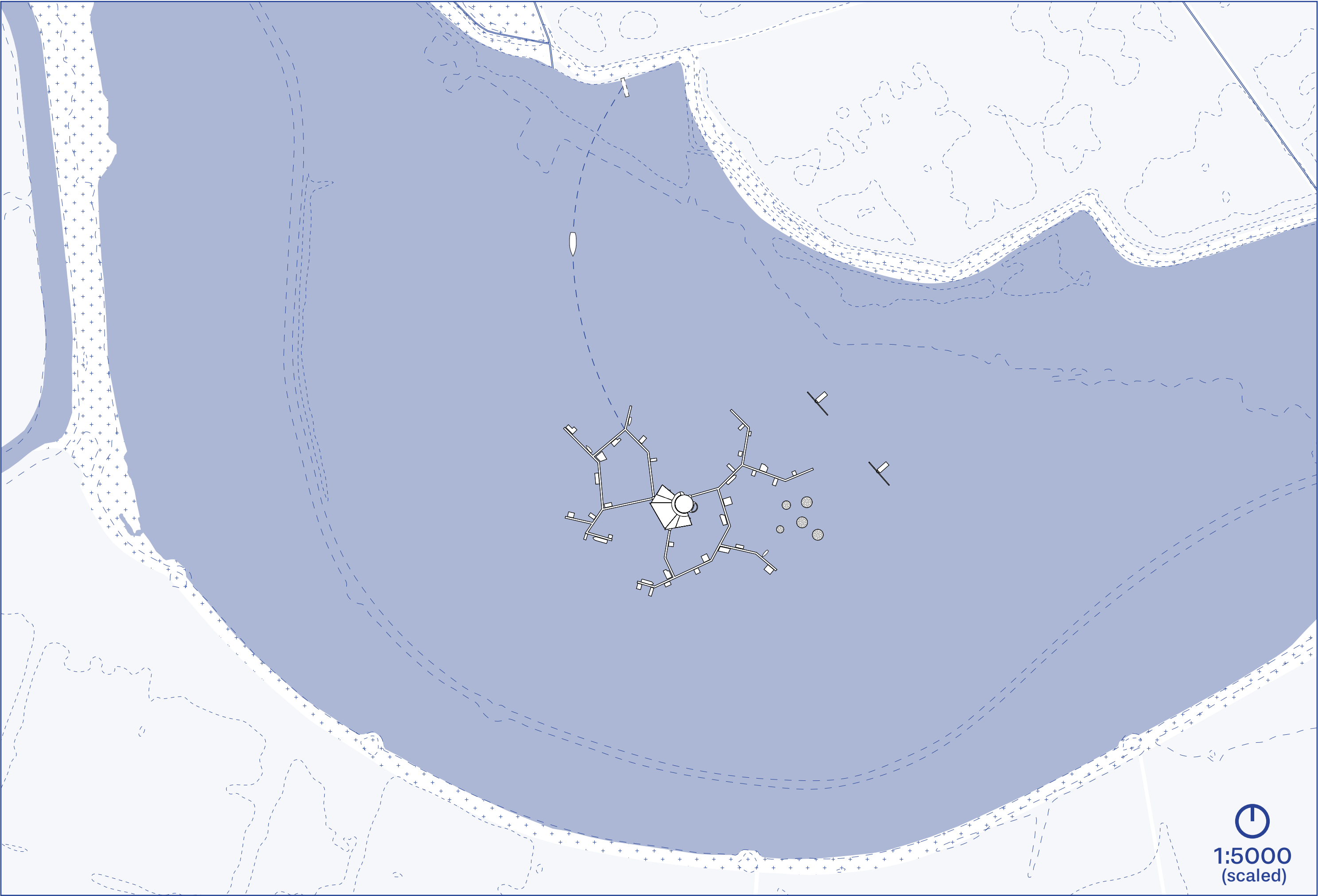
Future

# Site



Current

# Site



Future



# Arrival





# Design principles



Community cohesion  
across generations



Creativity and play



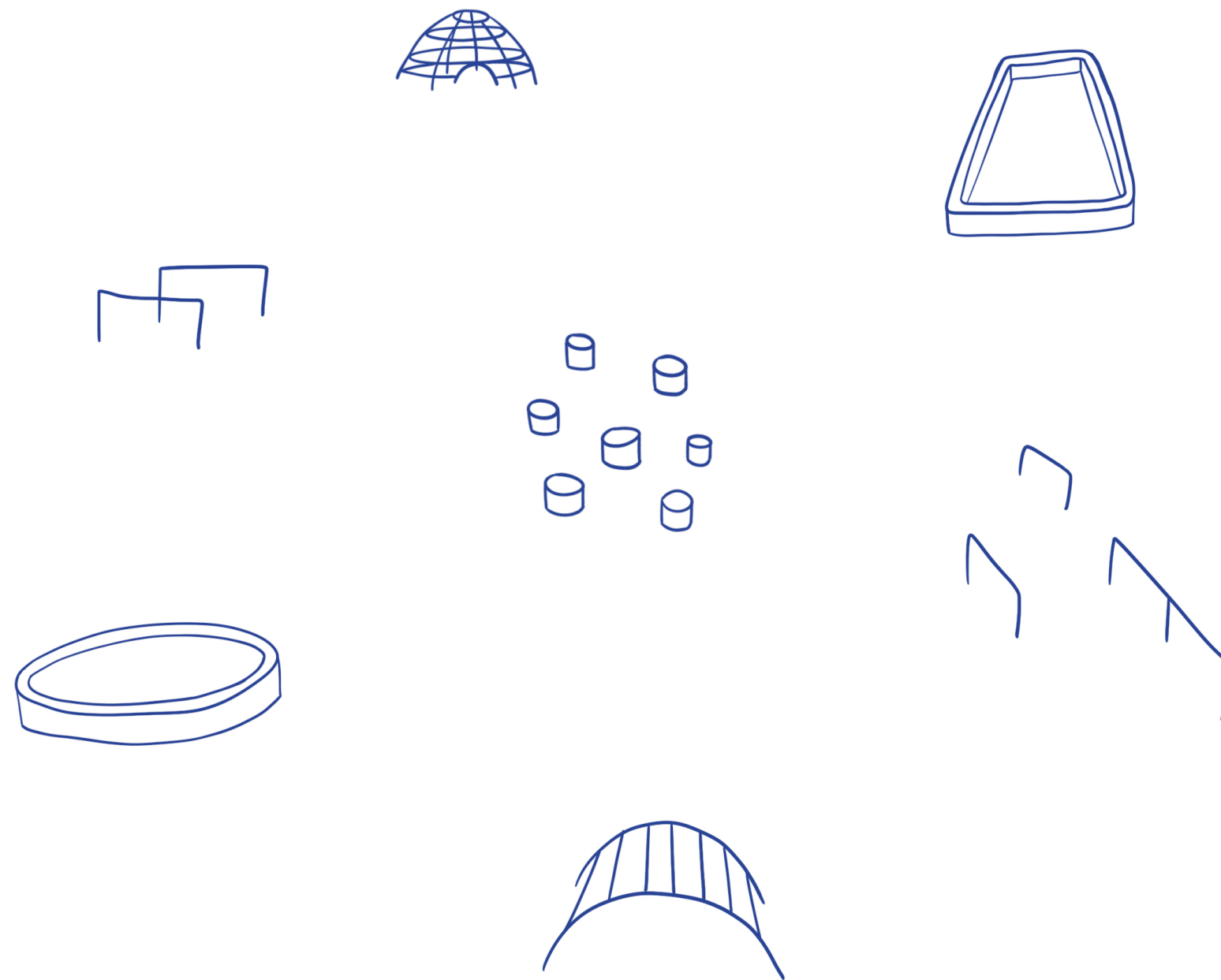
Technical innovations



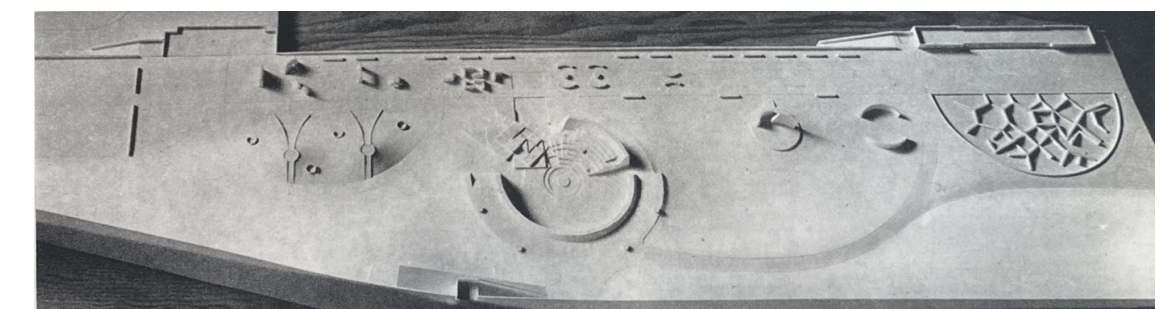
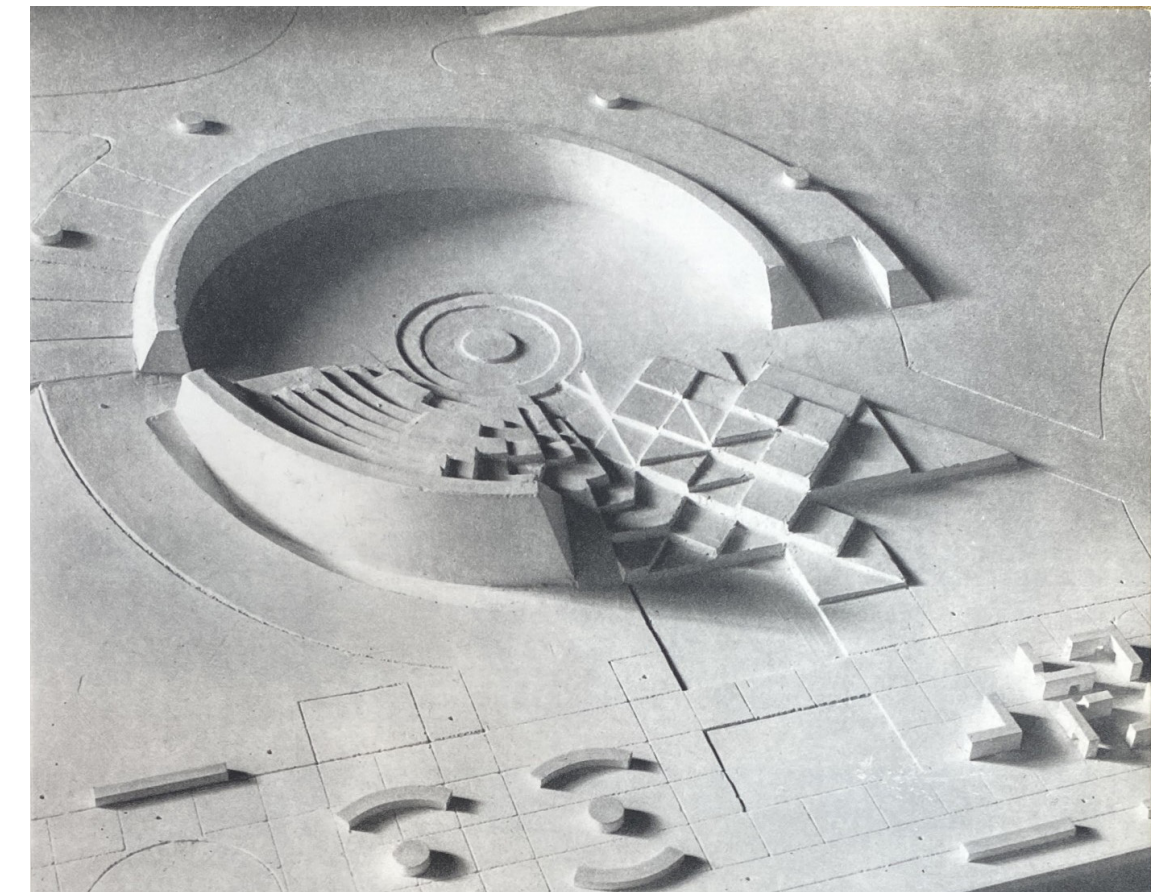
# Inspiration



Mobiel ladderlabyrinth, Constant Nieuwenhuijs, 1967  
Nieuwenhuijs, C., Stamps, L., Stokvis, W. and Koolhaas, R. (2016). *New Babylon. Aan ons de vrijheid*(1st ed.). Hannibal.



Analysis Aldo van Eyck playgrounds  
Own illustration



Isamu Noguchi, 1961  
Noguchi, I. (1967). *A Sculptor's World*(1st ed.). Thames and Hudson.



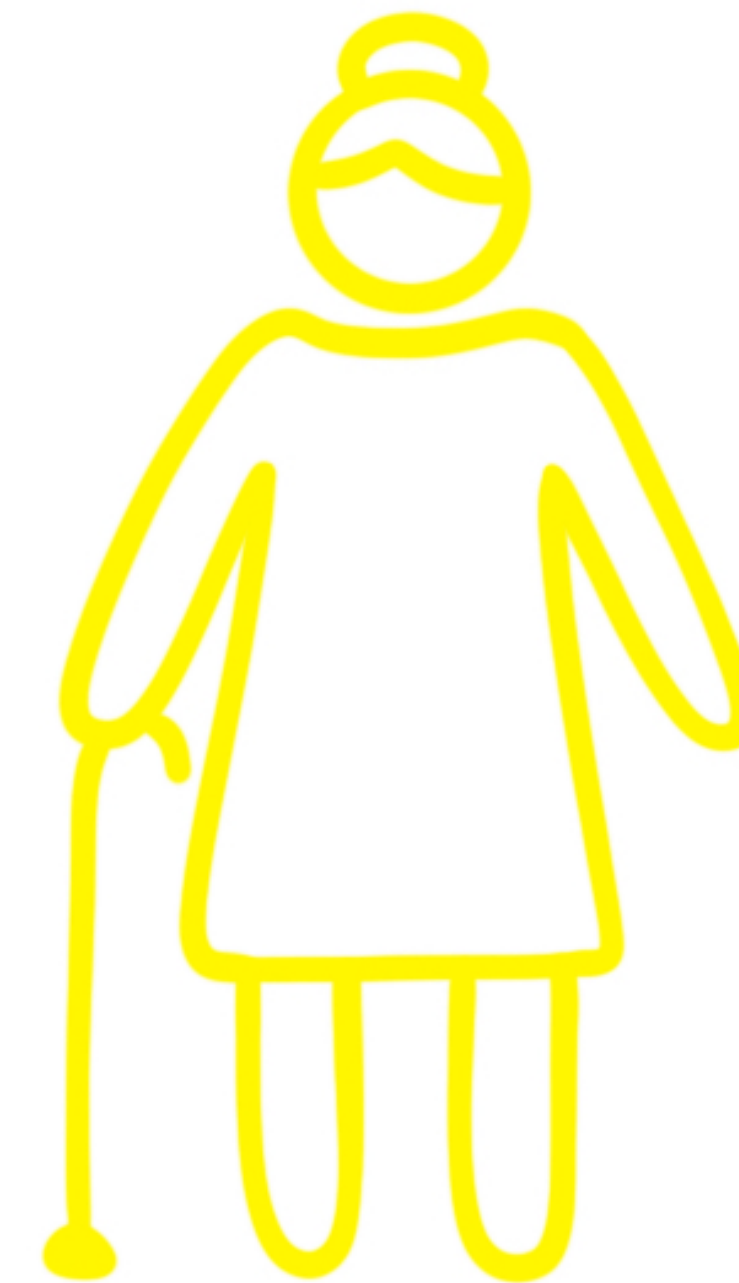
# Community approach



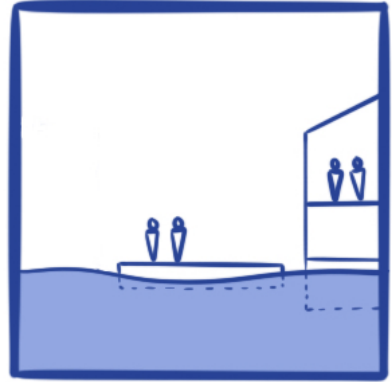
Children



Adults



Elderly



Meeting places

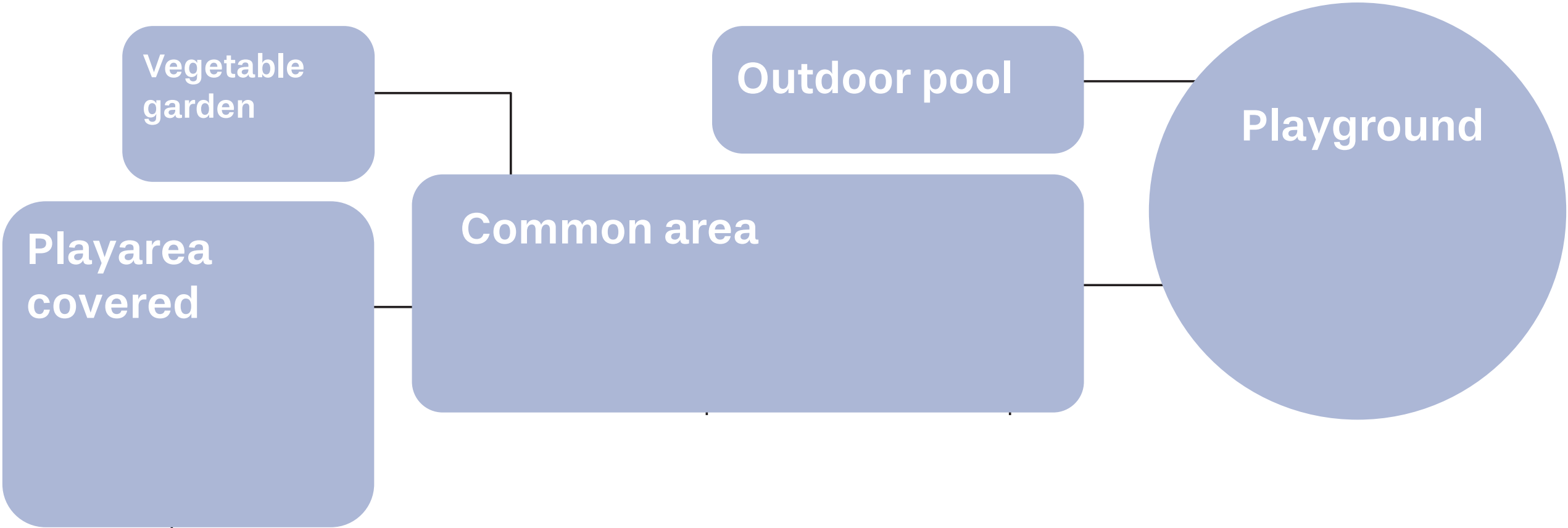


Shared facilities



Swimming

# Program

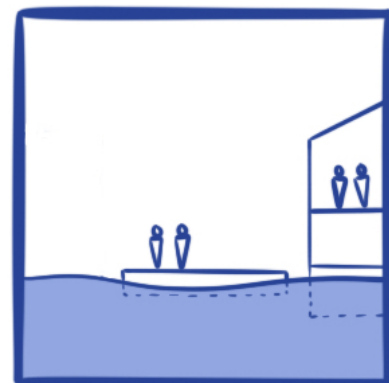


Community cohesion



Creativity and play

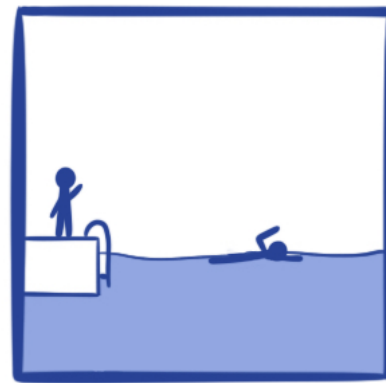
- Outside
- School
- Community
- Staff



Meeting places



Shared facilities



Swimming

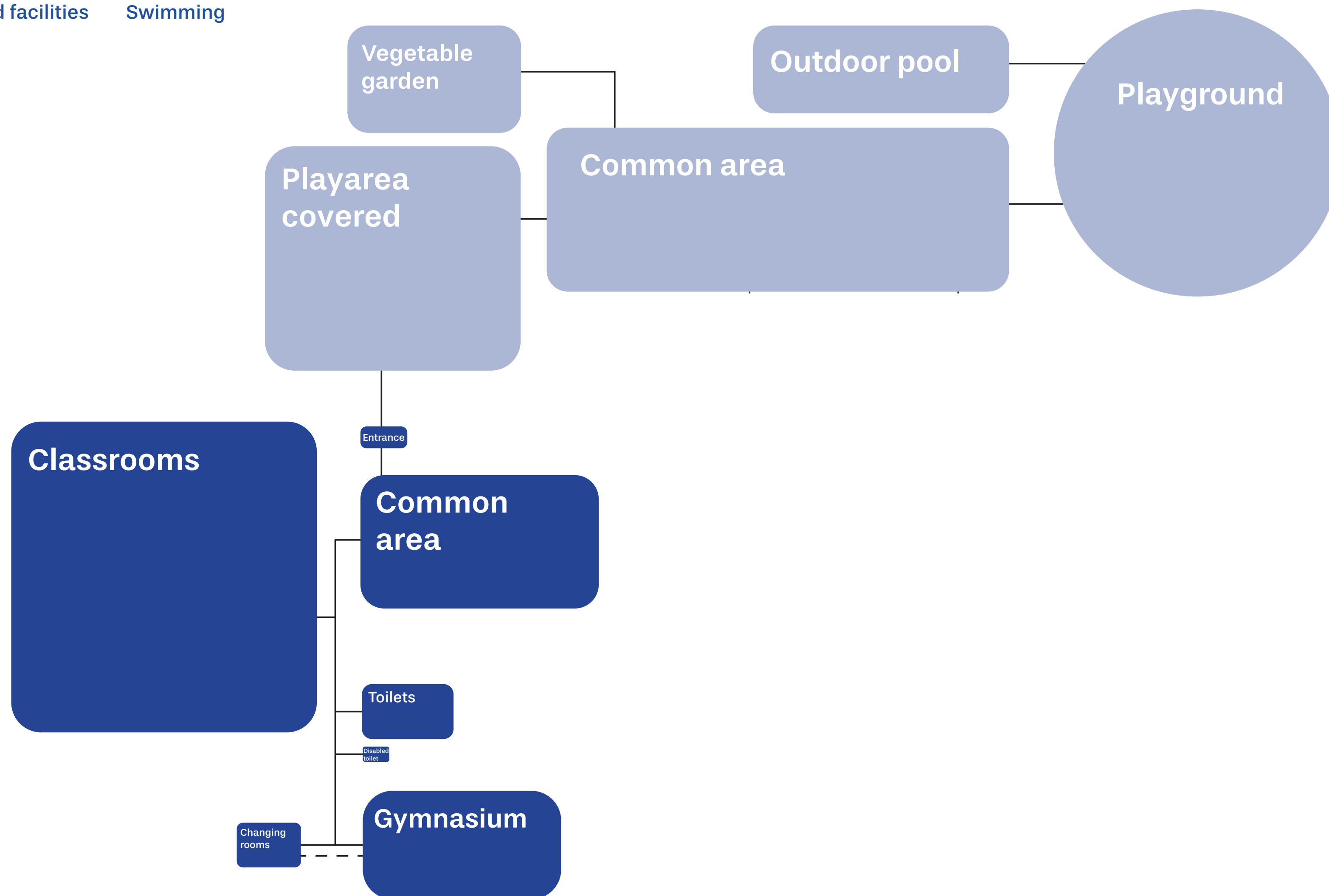
# Program



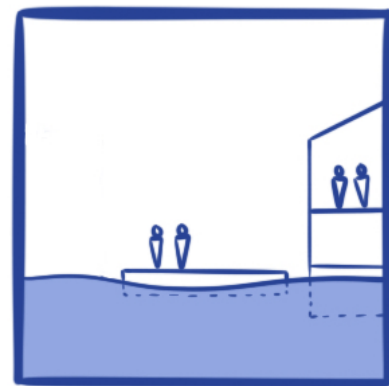
Community cohesion



Creativity and play



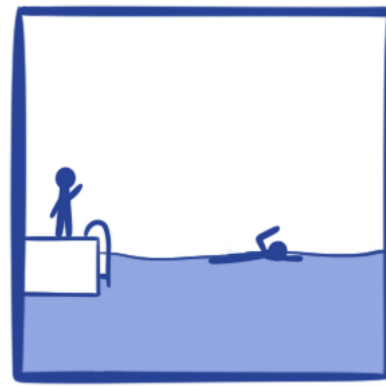
- Outside
- School
- Community
- Staff



Meeting places



Shared facilities



Swimming

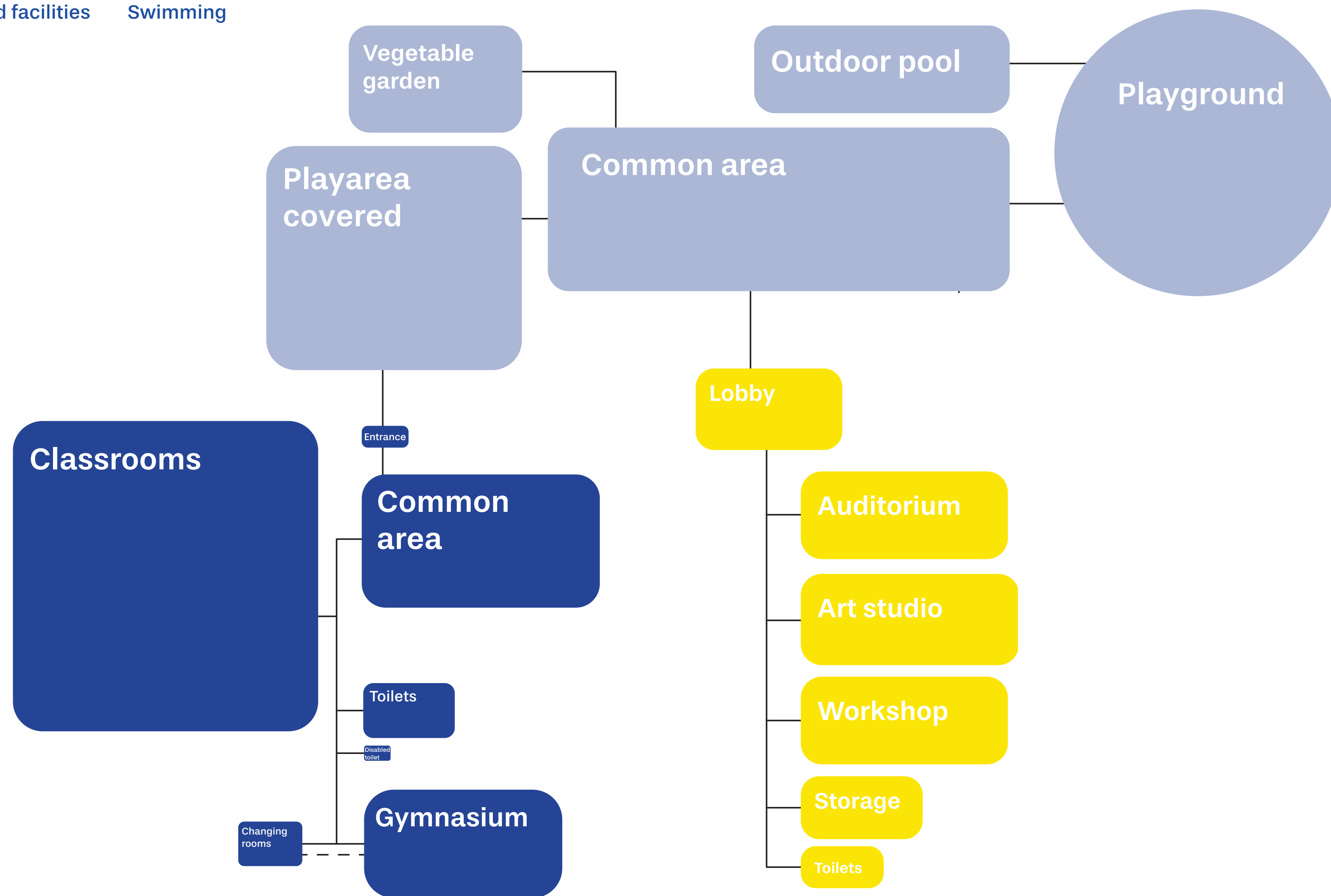
# Program



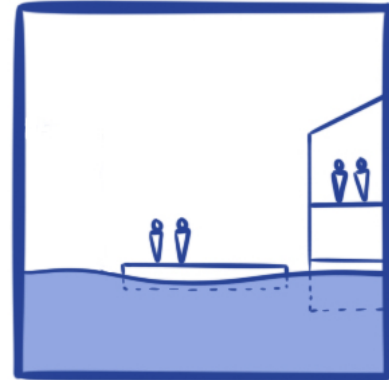
Community cohesion



Creativity and play



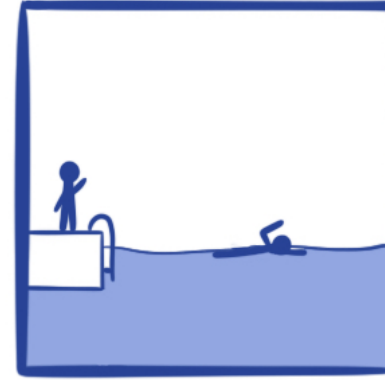
- Outside
- School
- Community
- Staff



Meeting places



Shared facilities

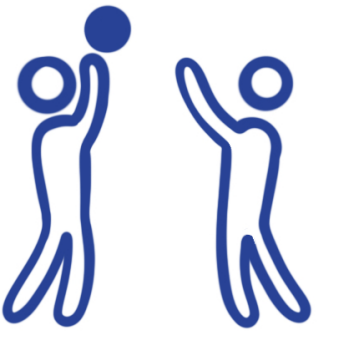


Swimming

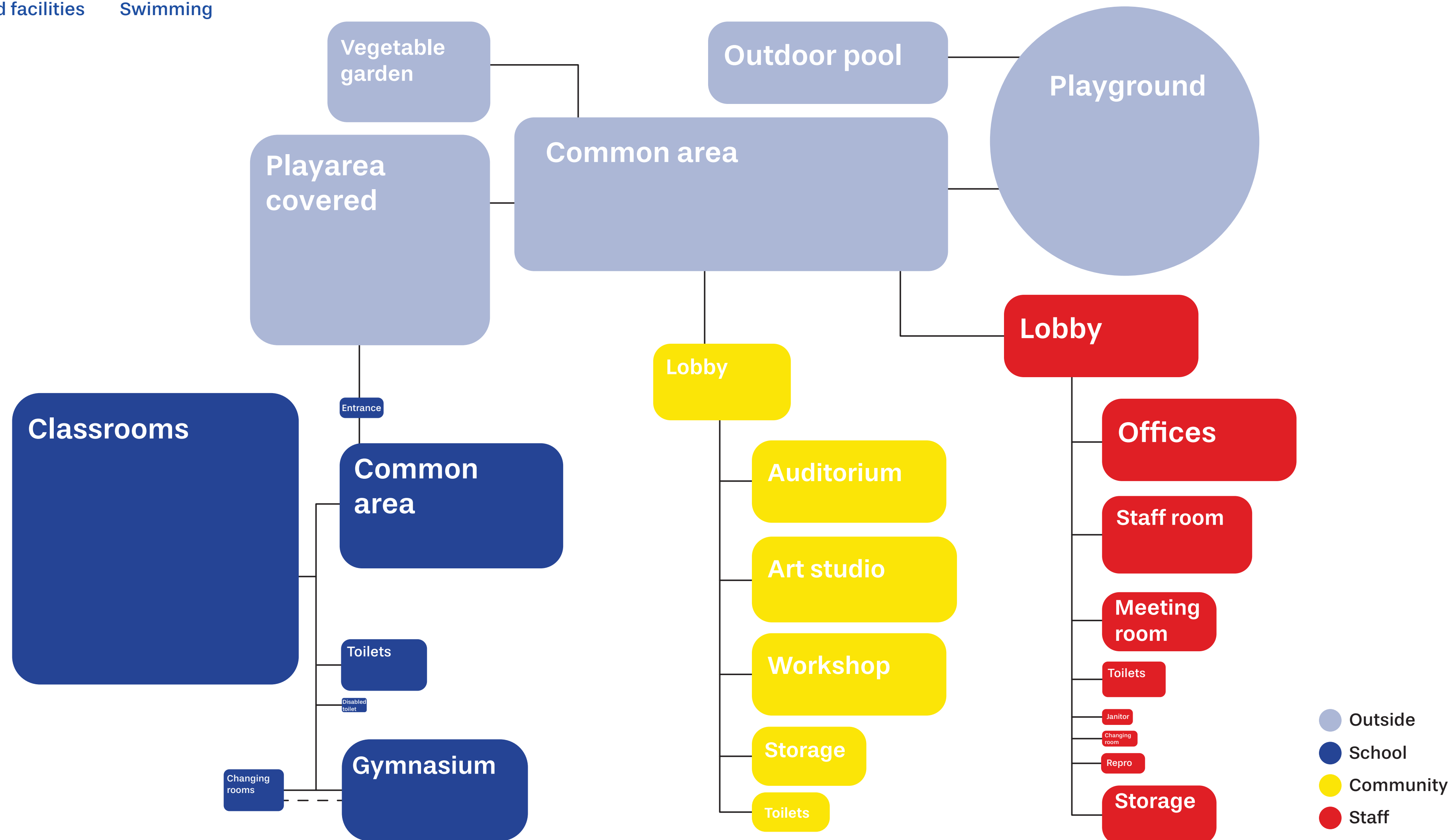
# Program



Community cohesion

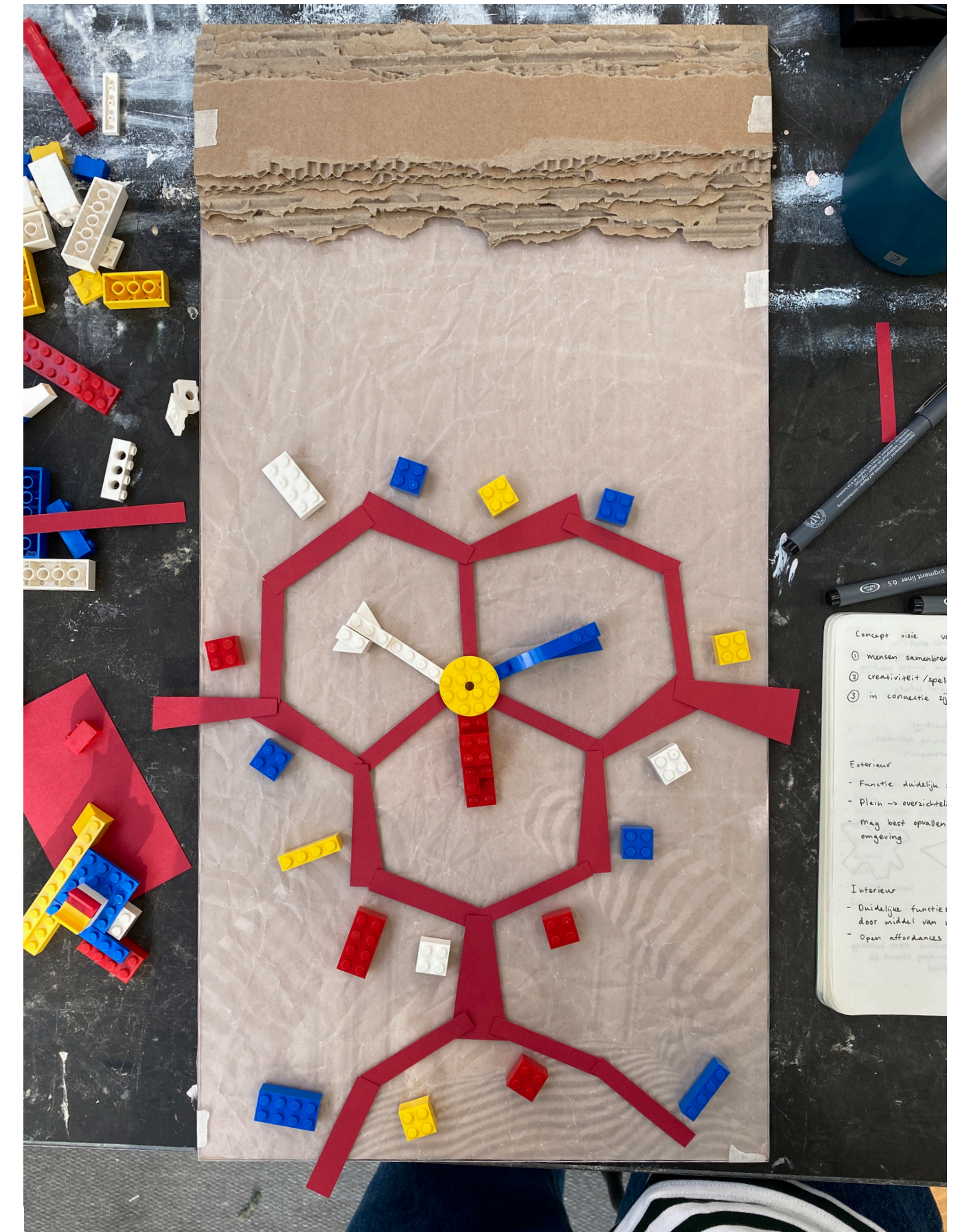
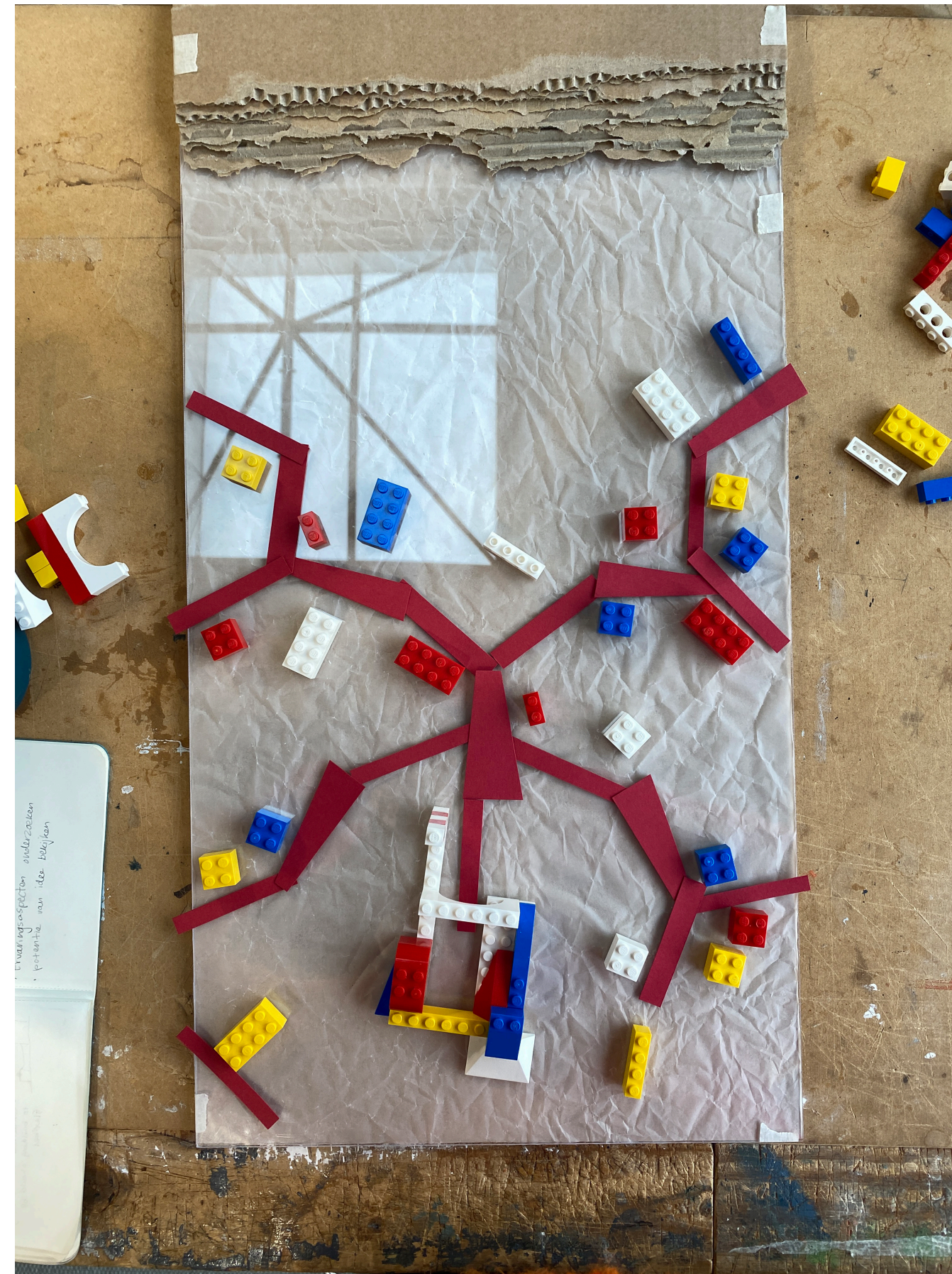
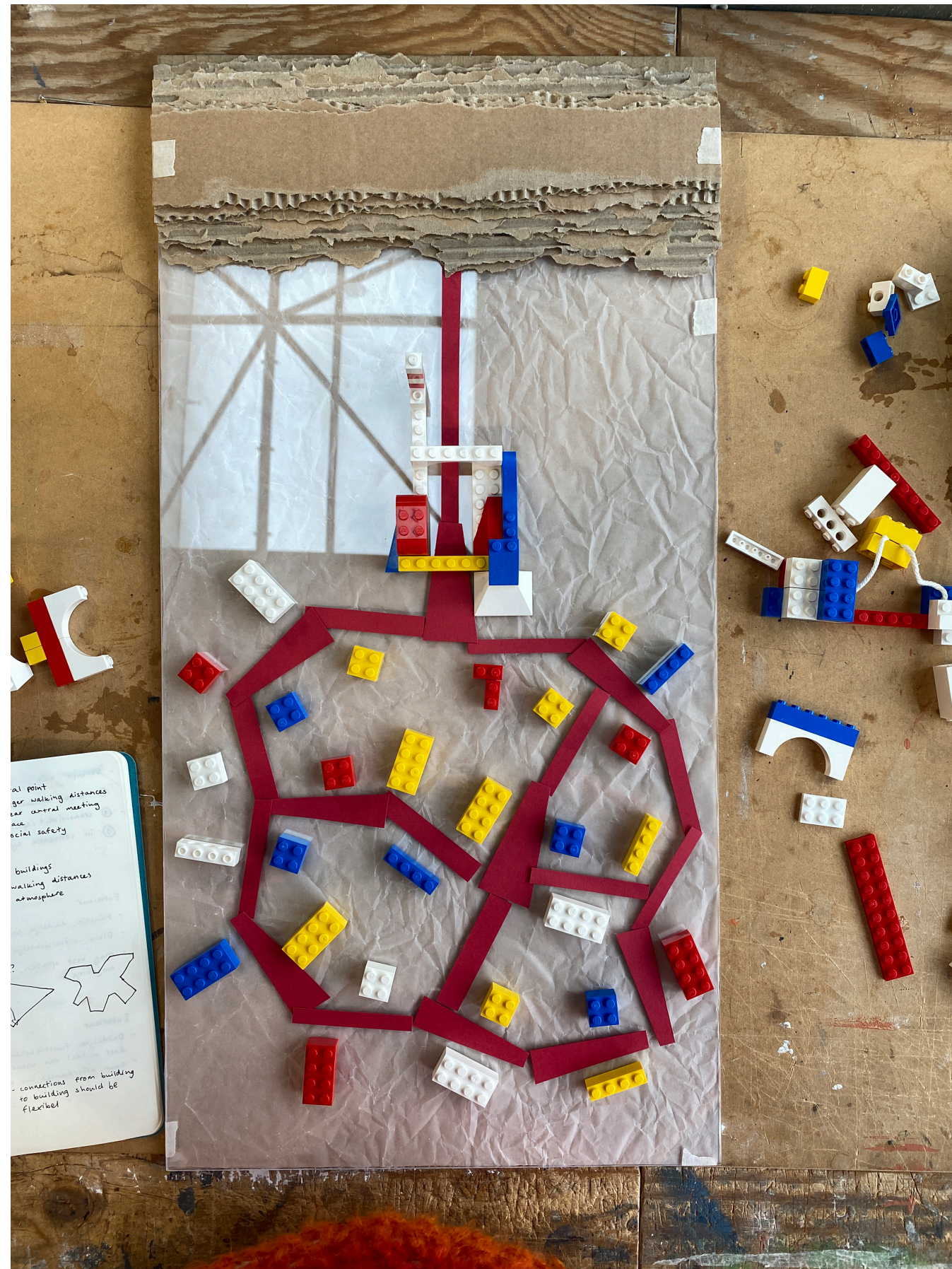


Creativity and play



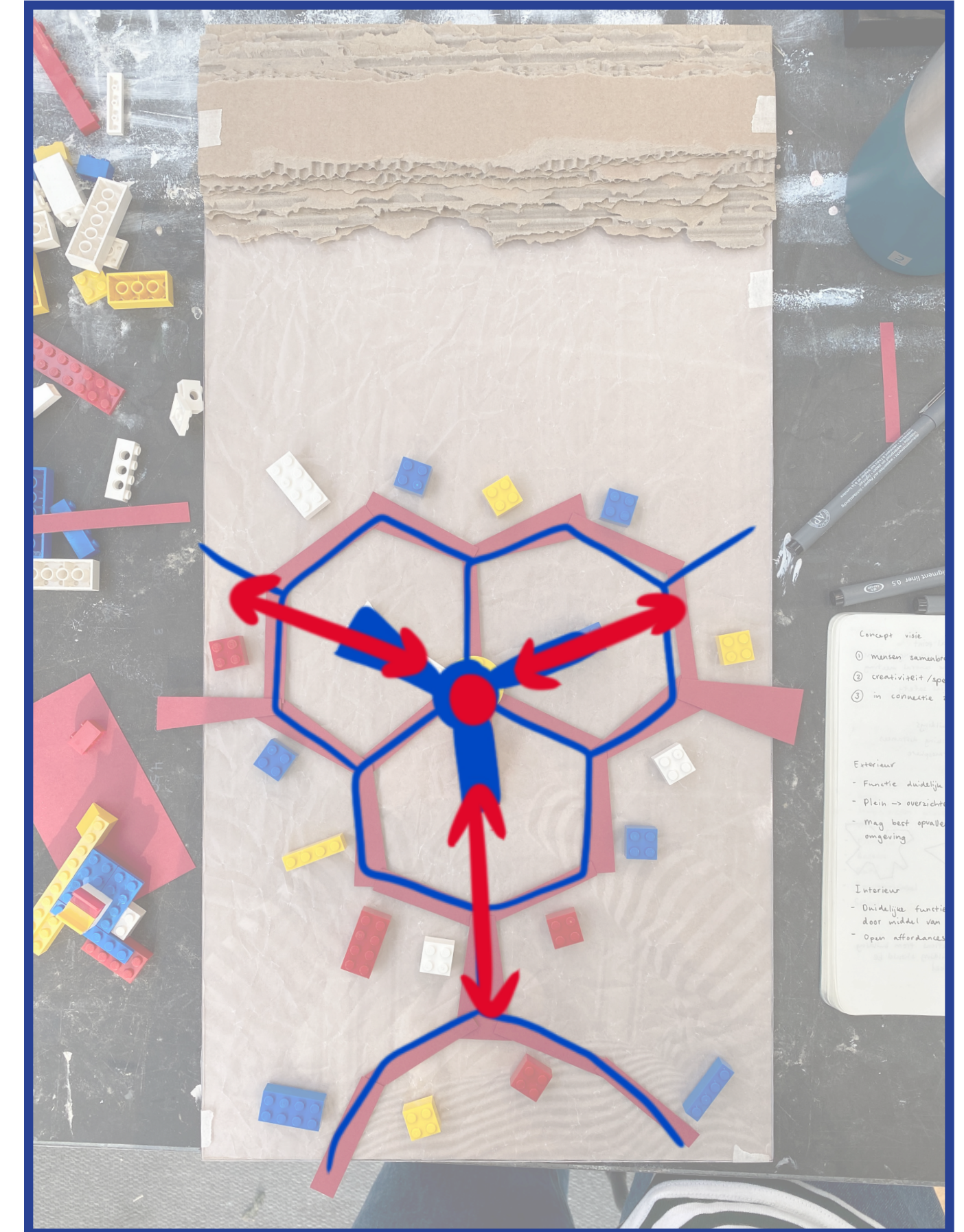
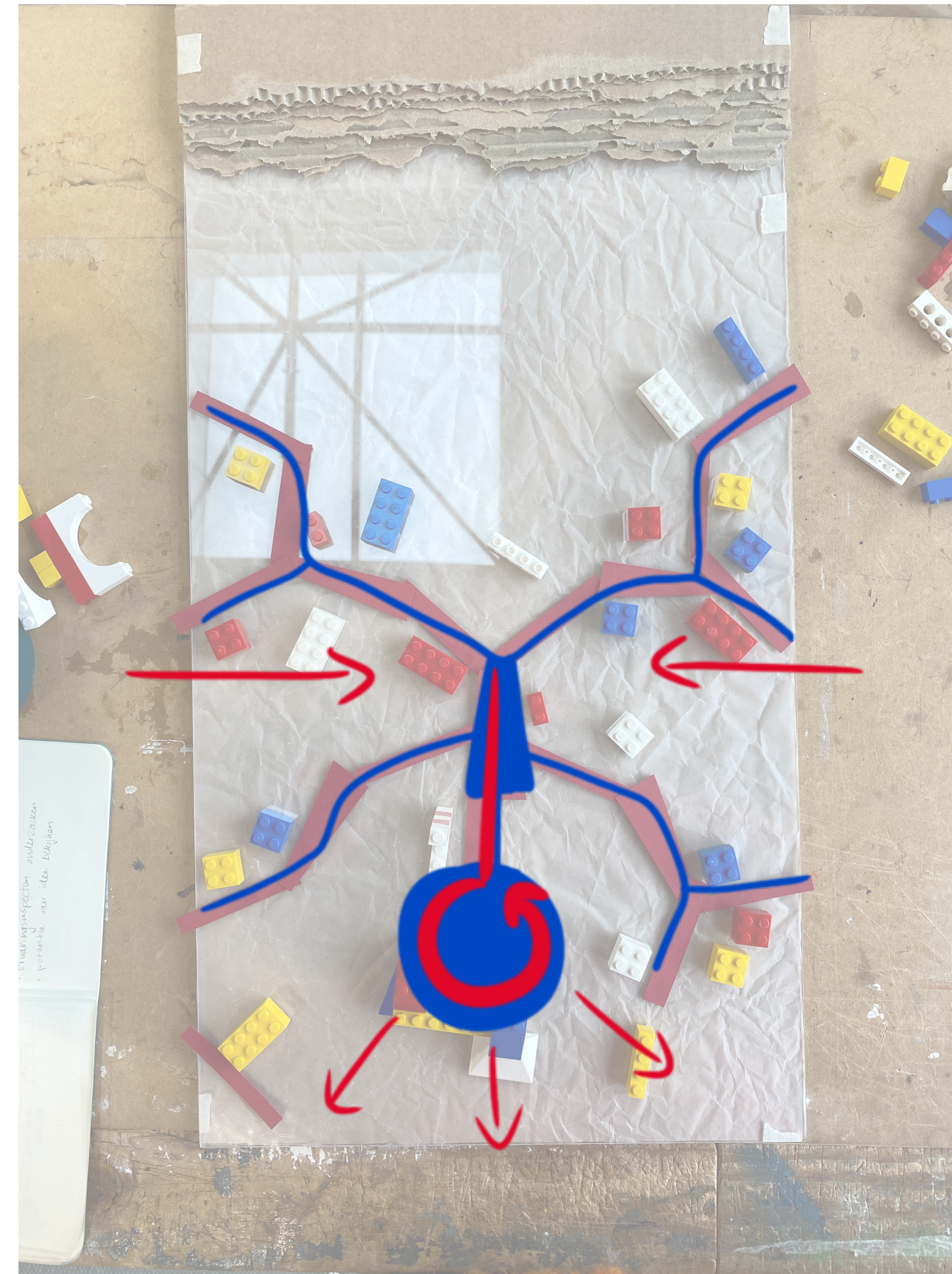
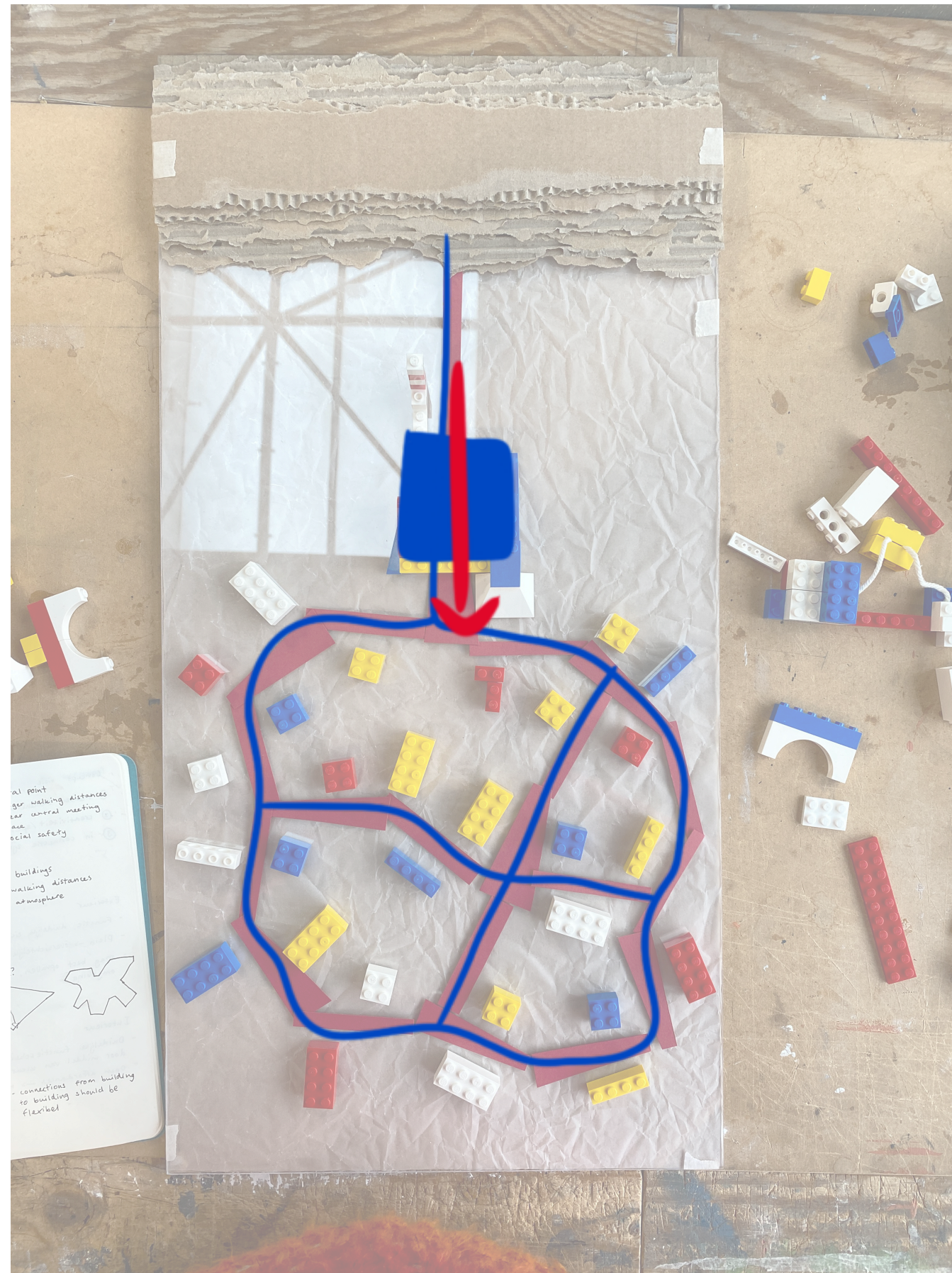


# Positioning the building





# Positioning the building



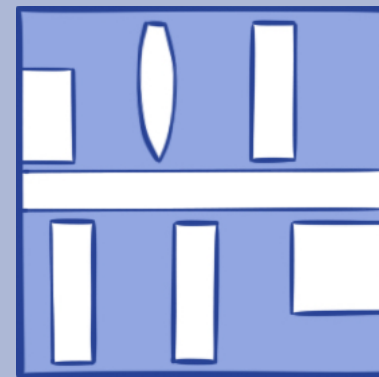




Urban landscape



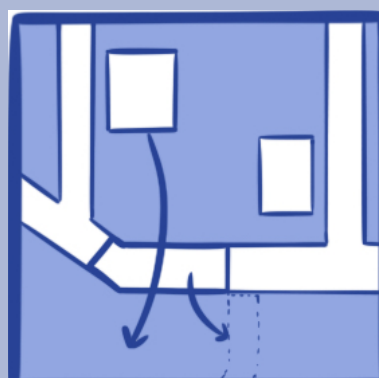
Configuration



Positioning



Docks lay-out

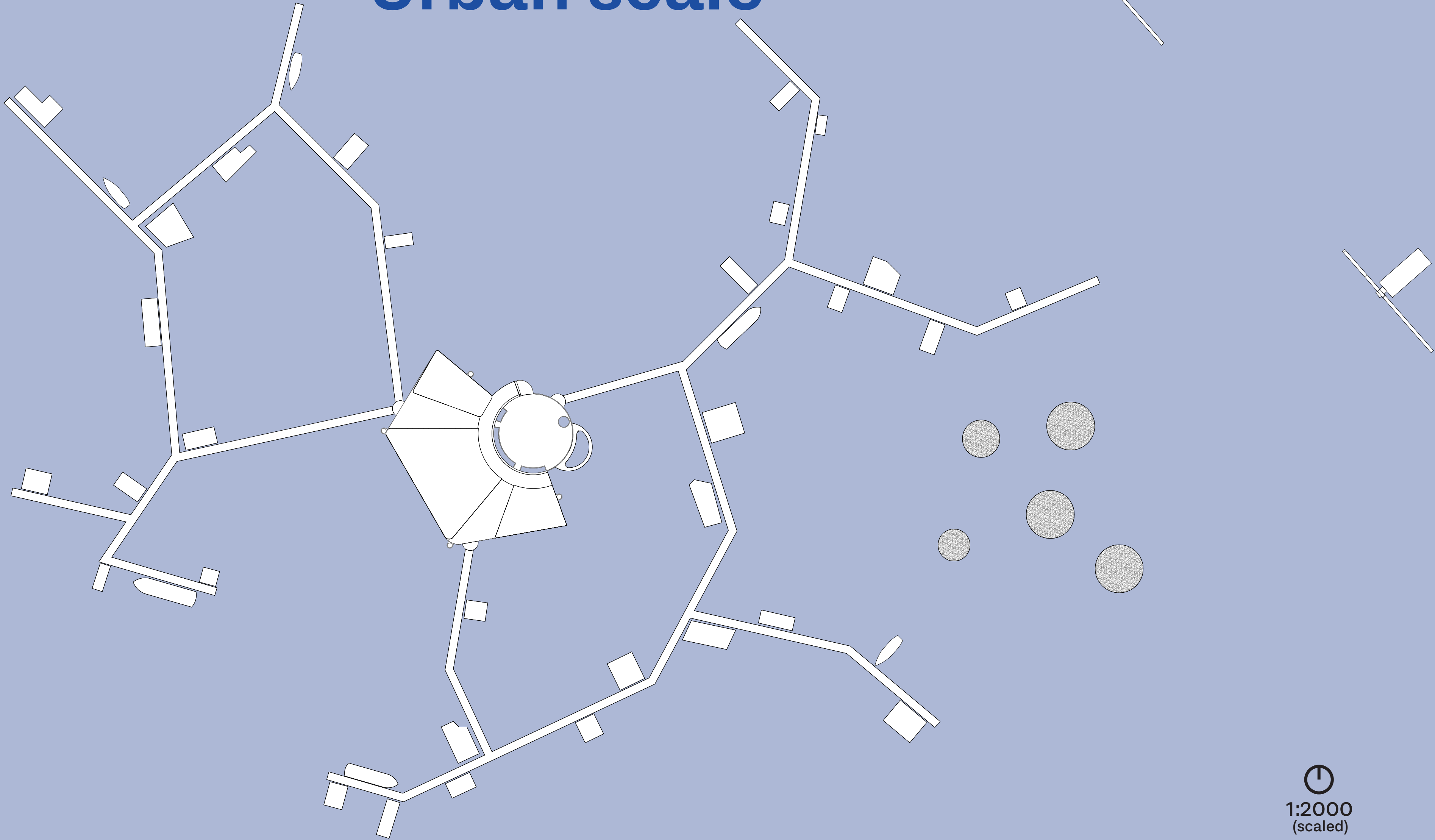


Flexible docks



Wide docks

# Urban scale



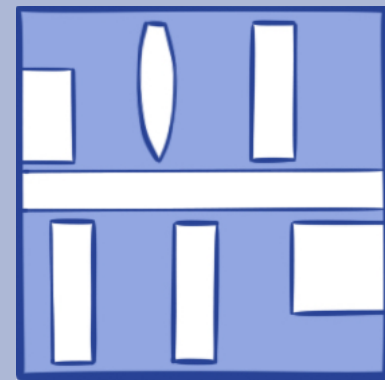
1:2000  
(scaled)



Urban landscape



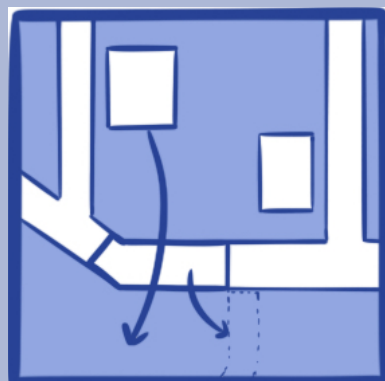
Configuration



Positioning



Docks lay-out

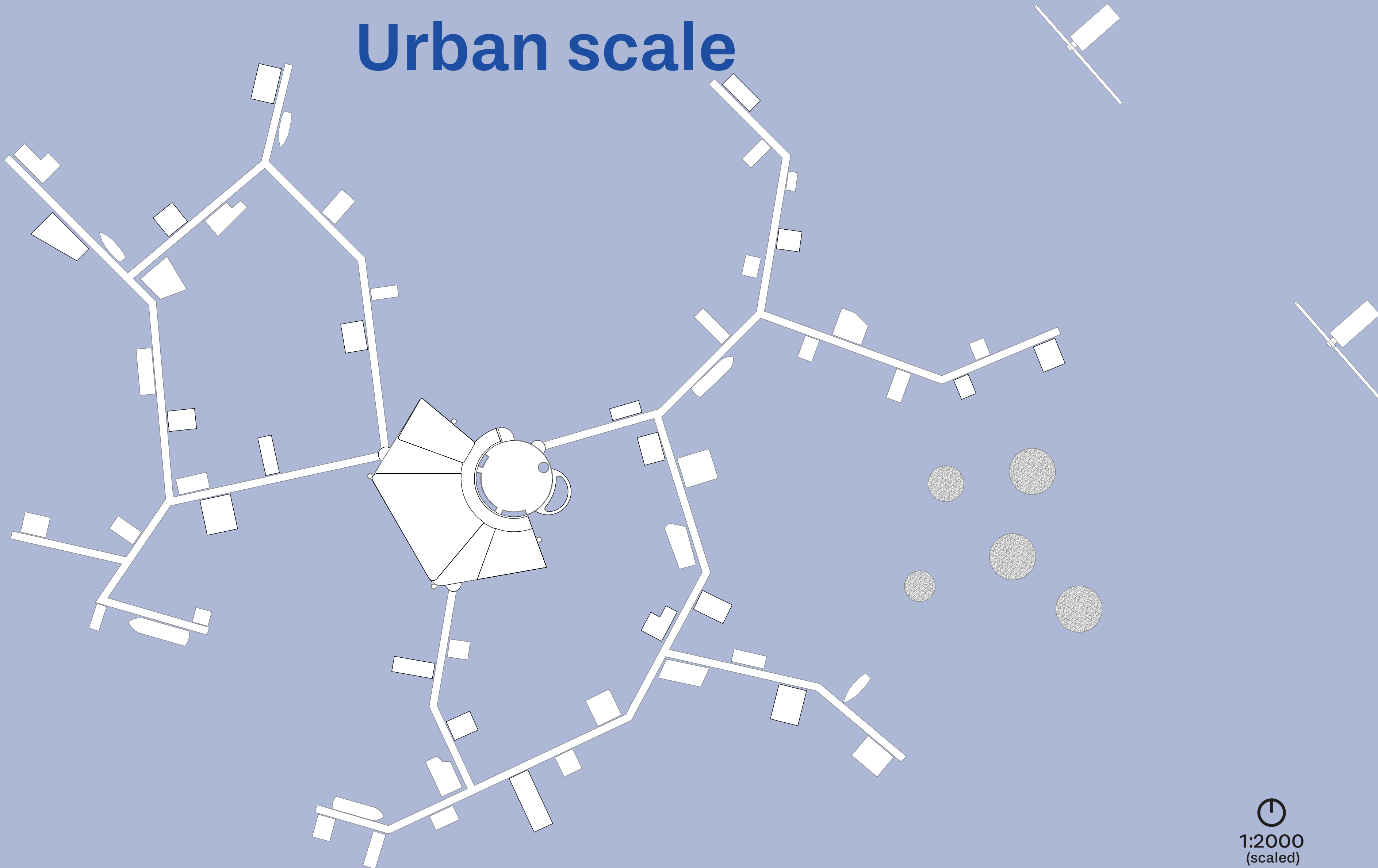


Flexible docks



Wide docks

# Urban scale



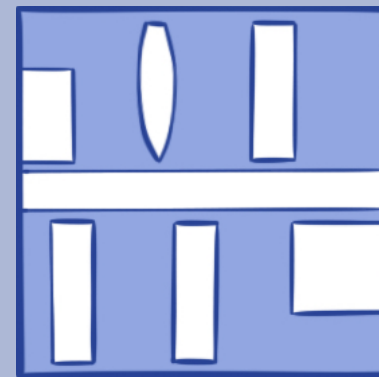
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(scaled)



Urban landscape



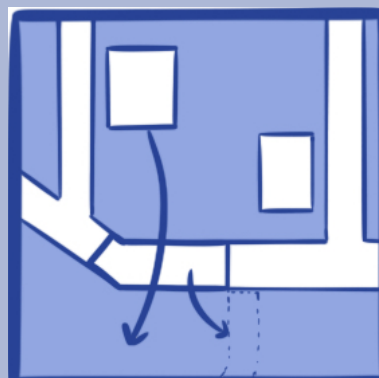
Configuration



Positioning



Docks lay-out

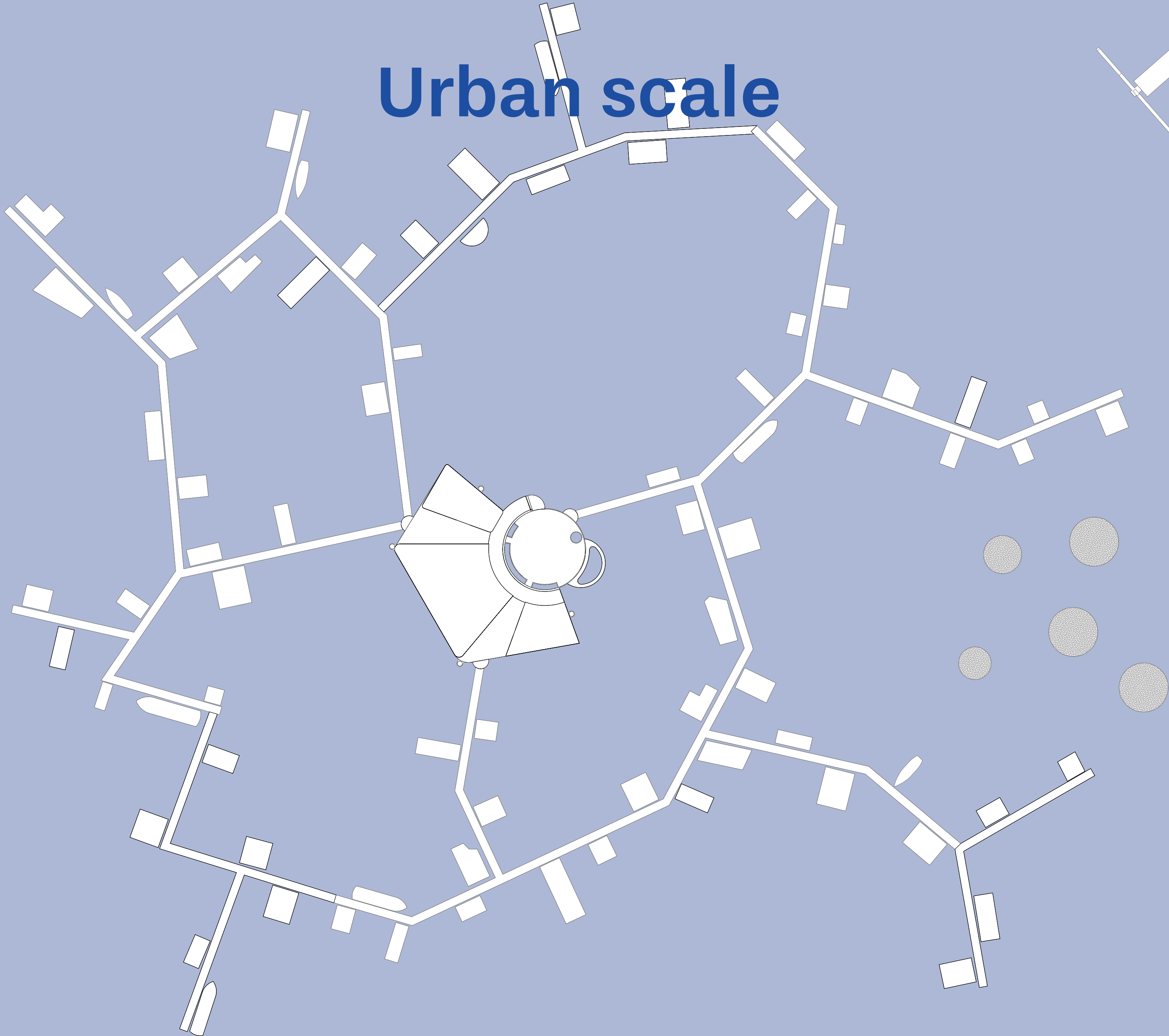


Flexible docks



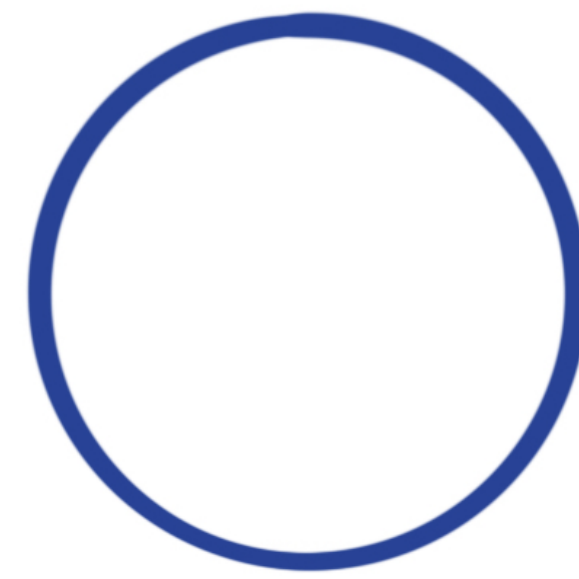
Wide docks

# Urban scale



1:2000  
(scaled)

# Design concept



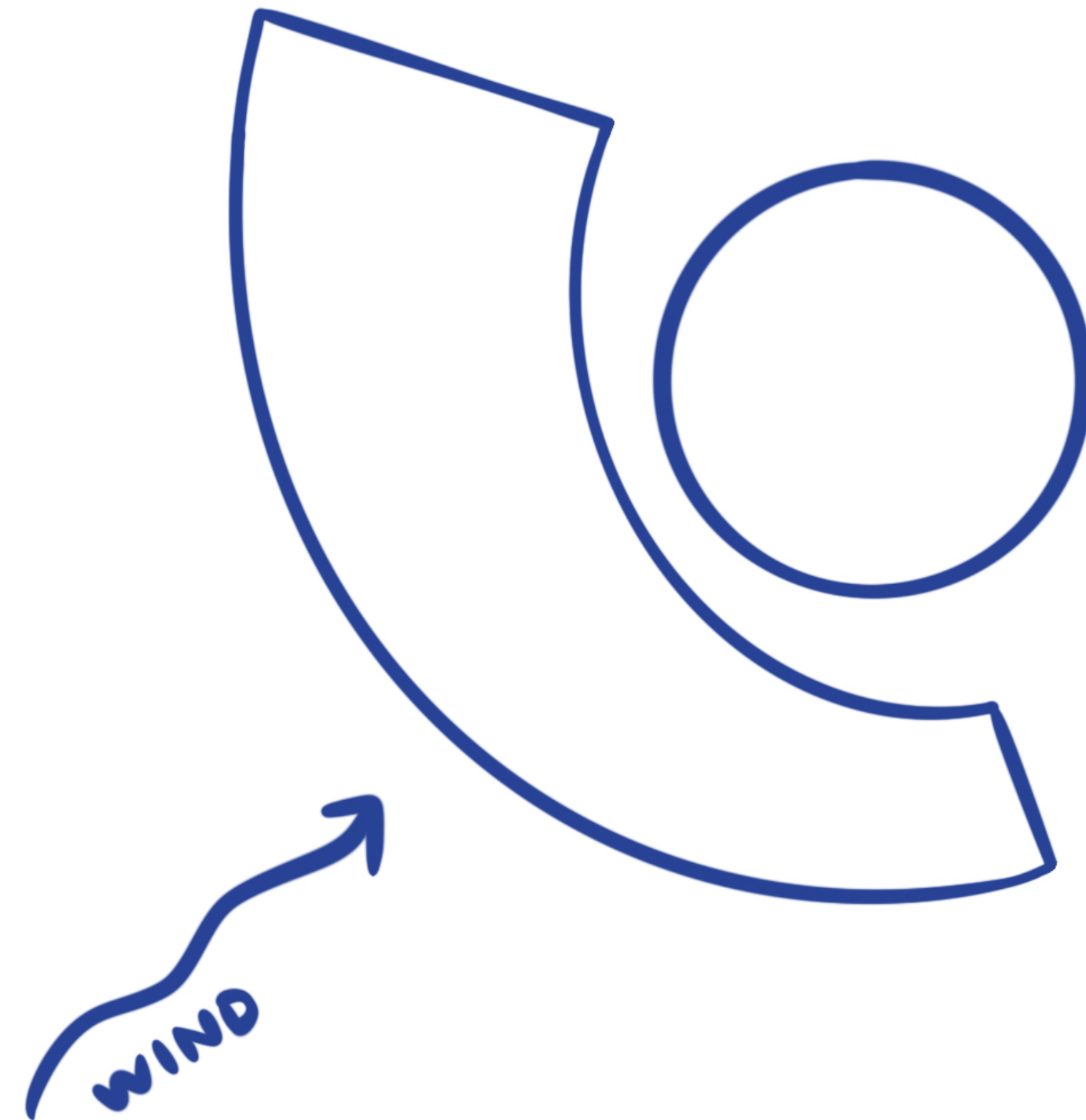


Wind direction

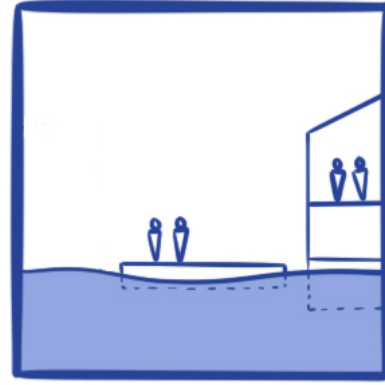
# Design concept



Technical innovations







Meeting places

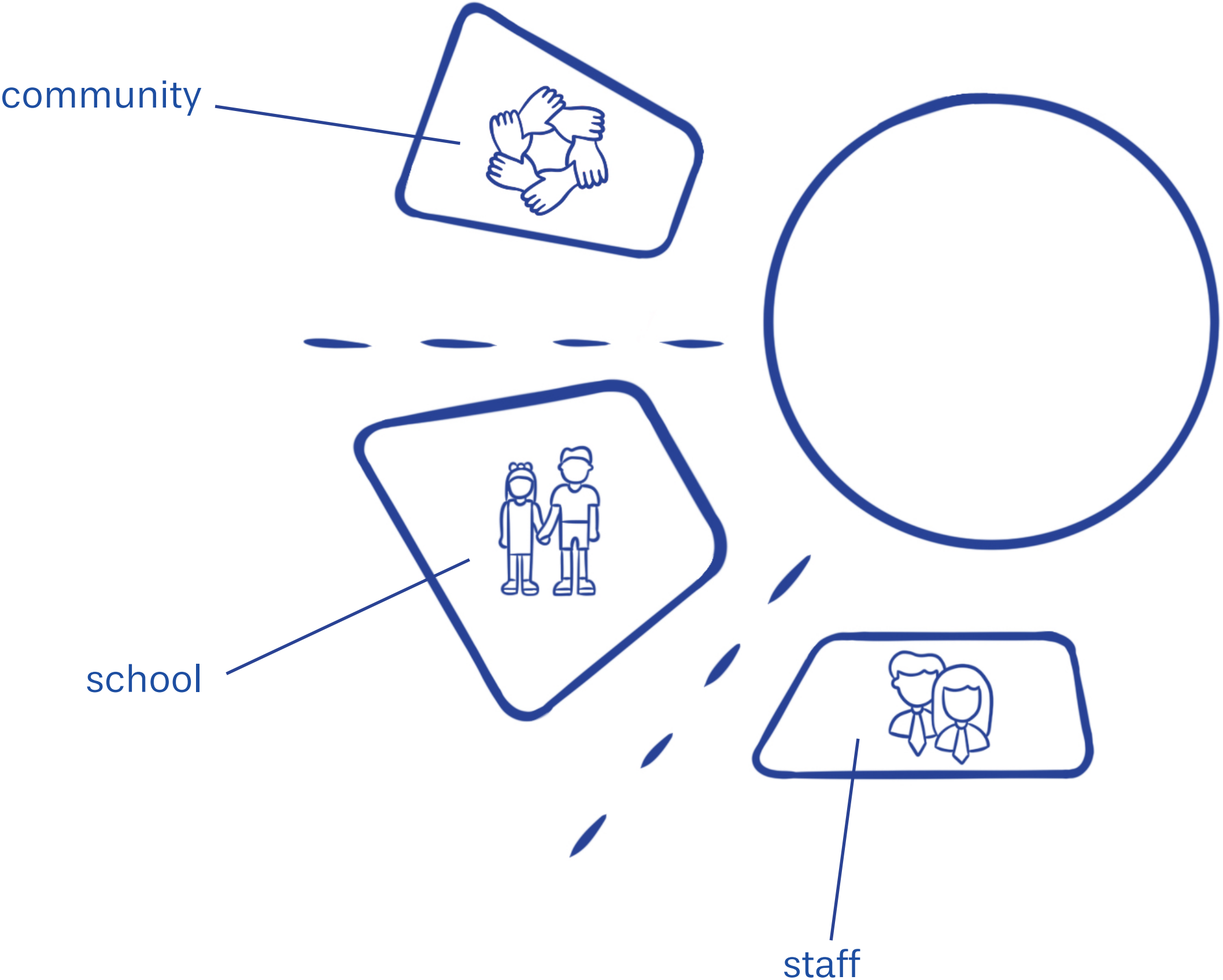


Shared facilities

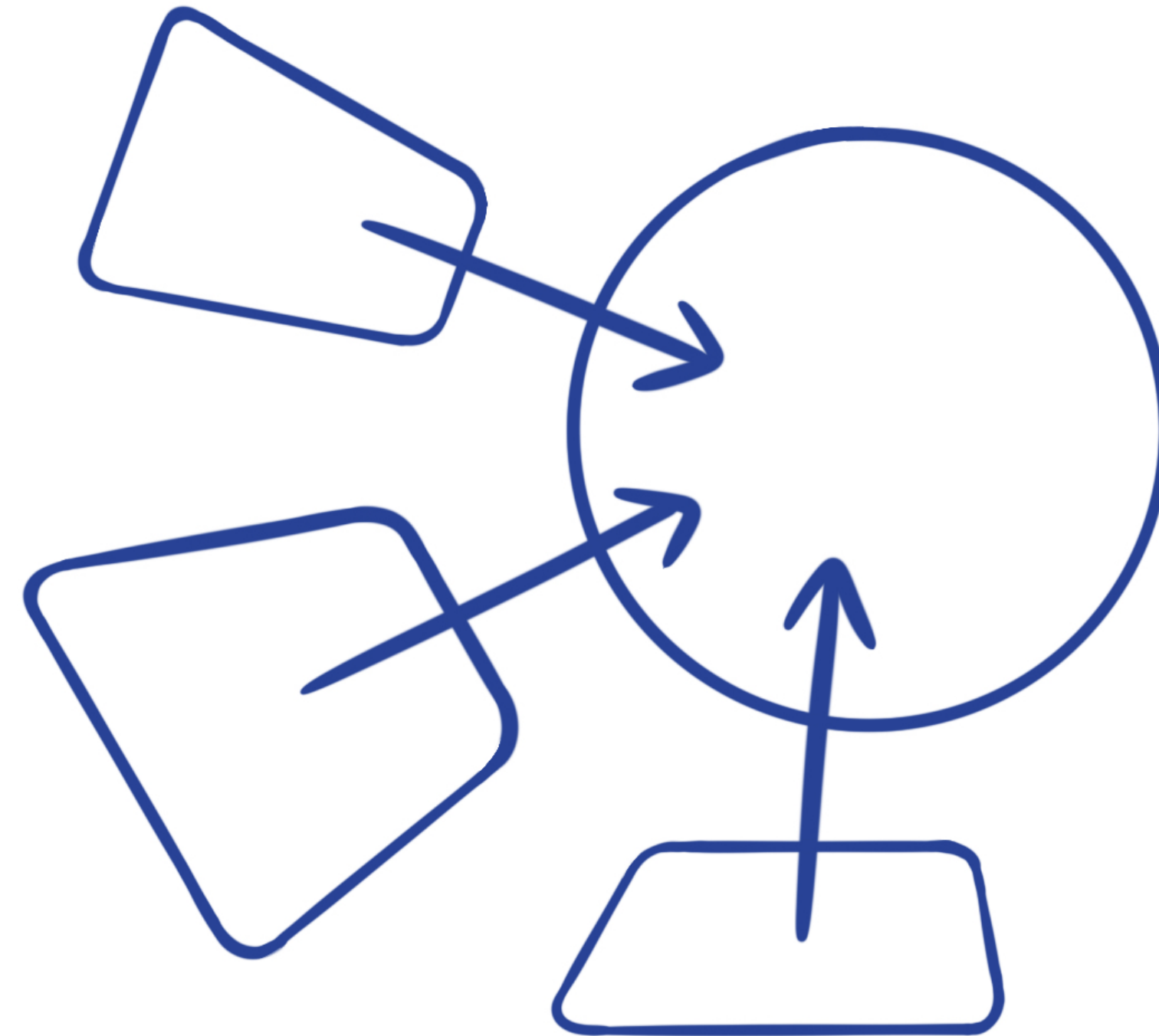
# Design concept



Community cohesion

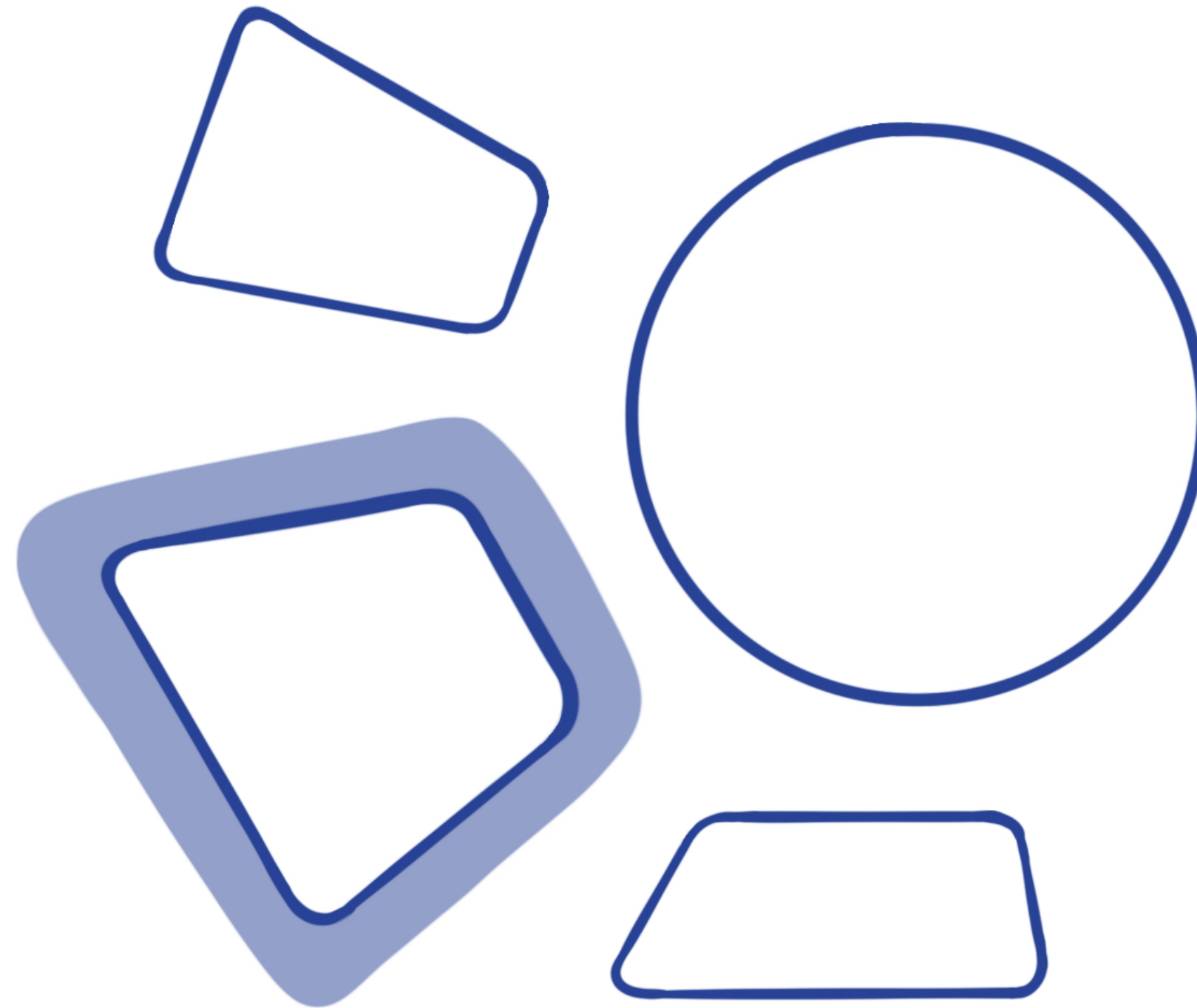


# Design concept





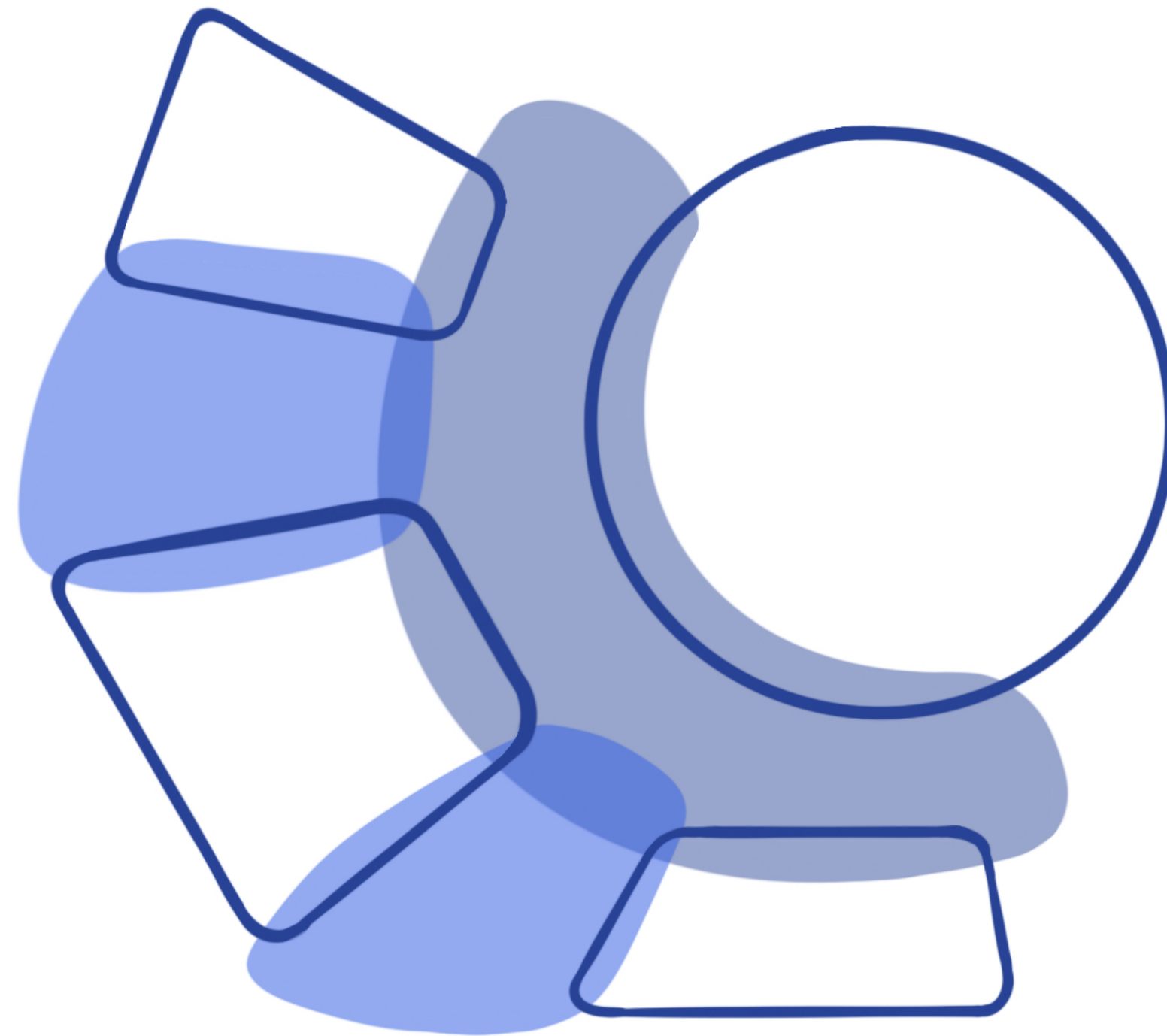
# Design concept



# Design concept

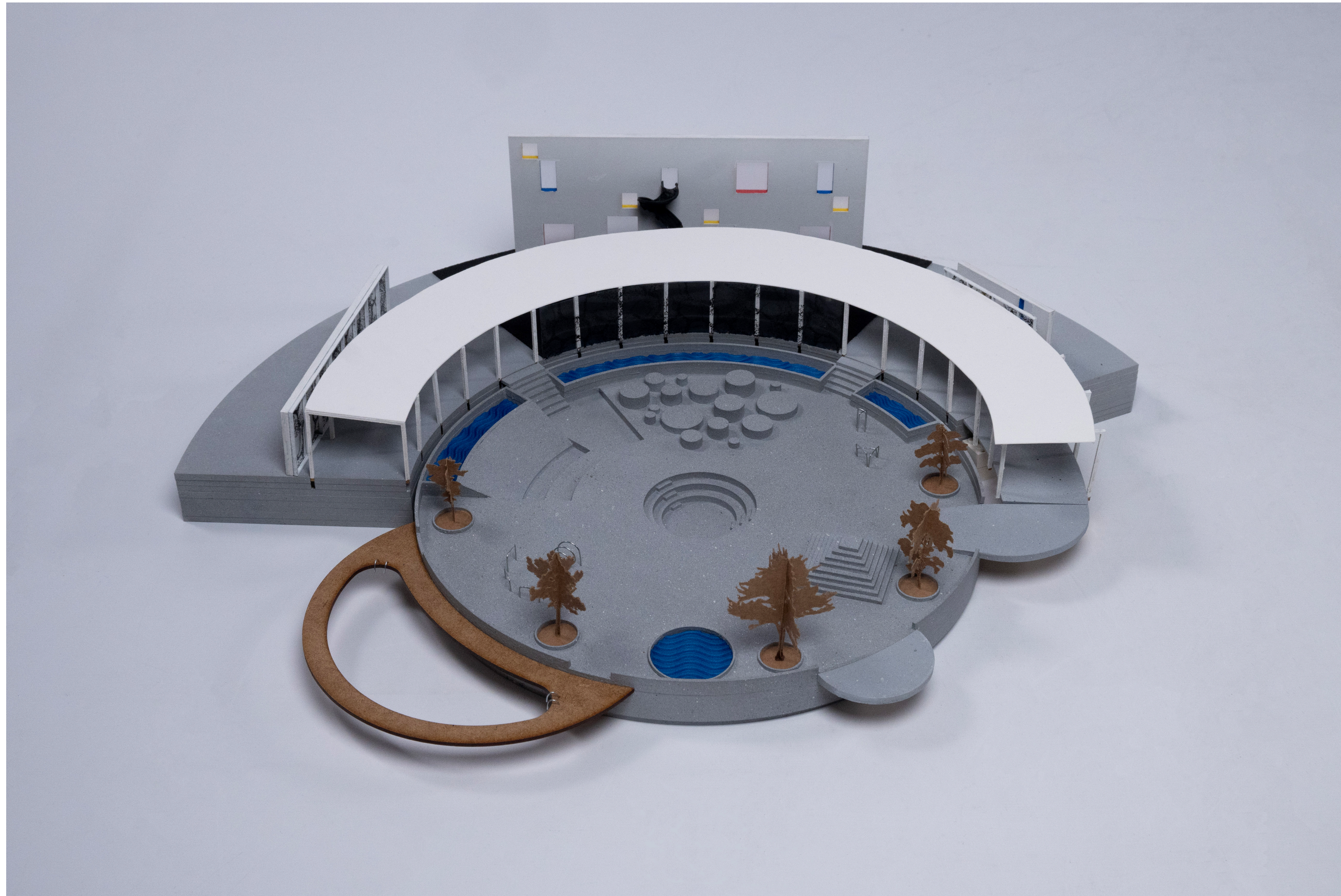


Community cohesion





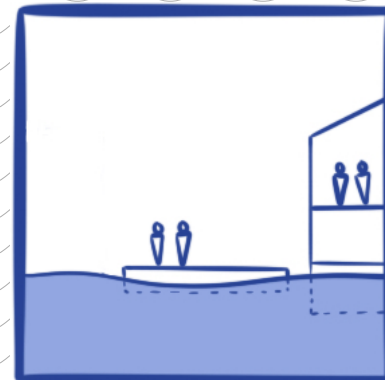
# Design



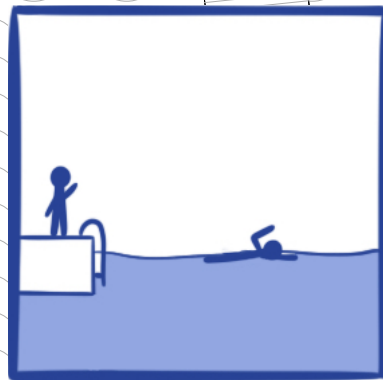




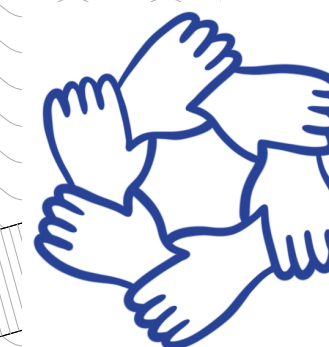
Shared facilities



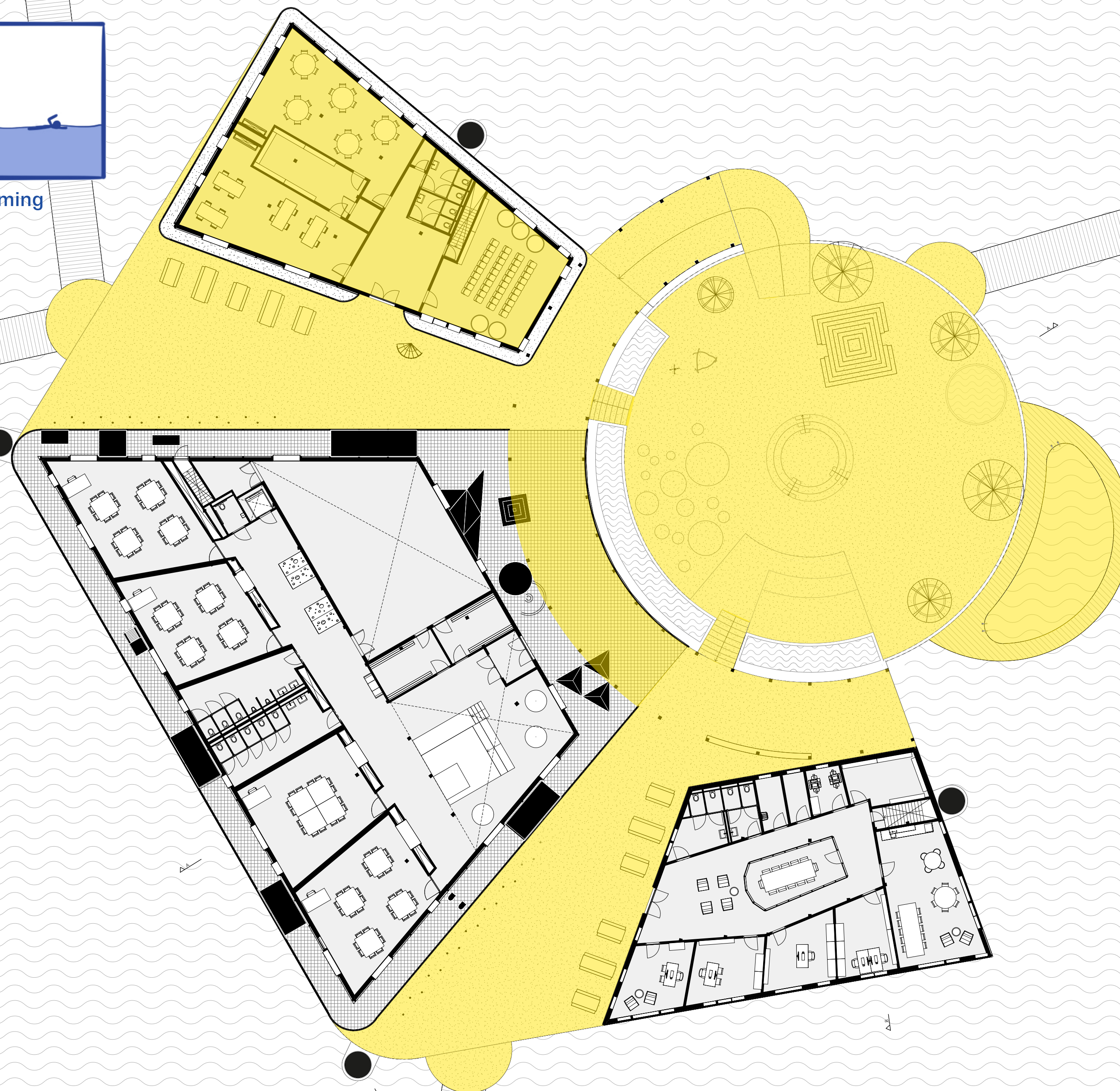
Meeting places



Swimming



Community cohesion



0  
1:200  
(scaled)



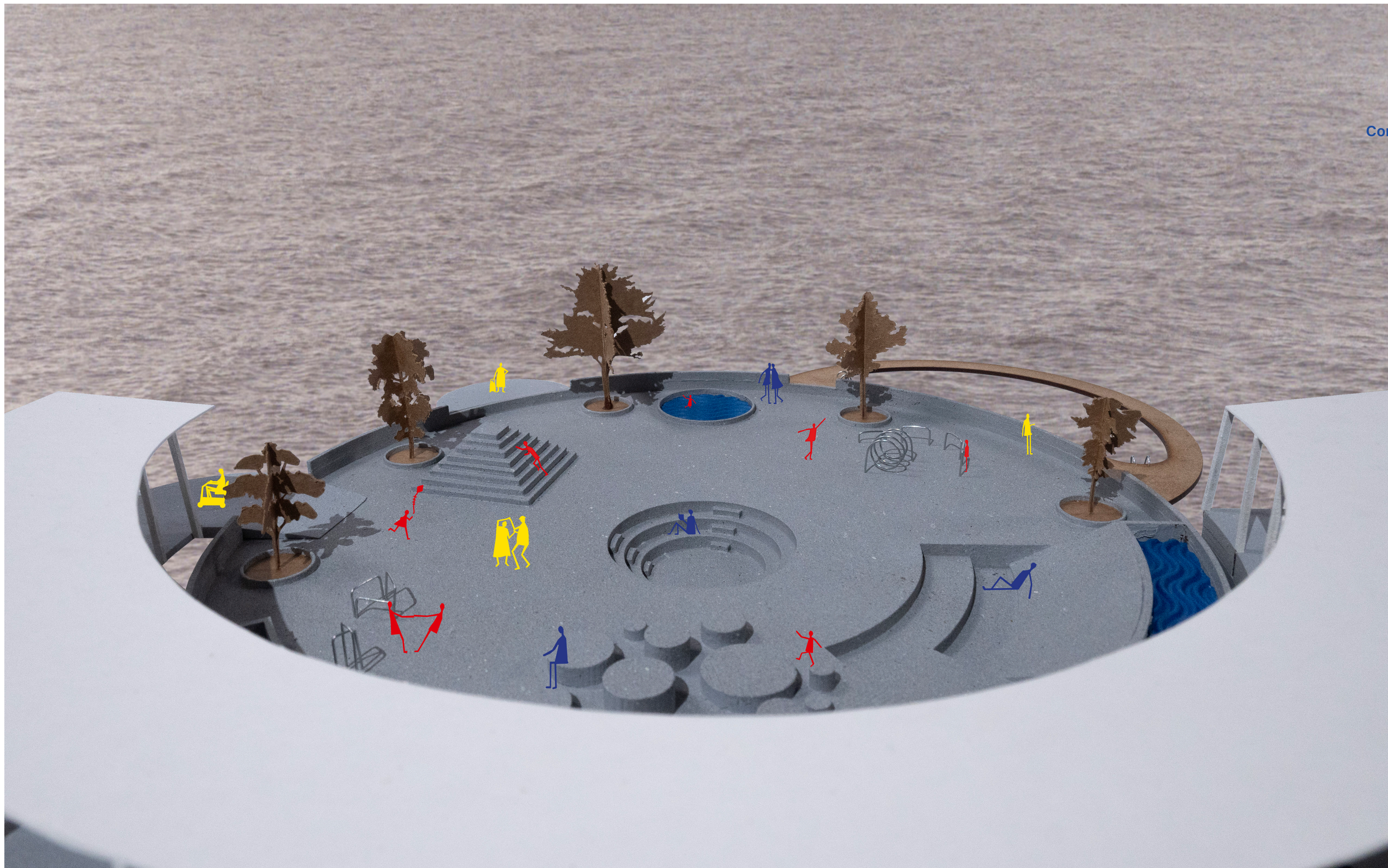


Community cohesion





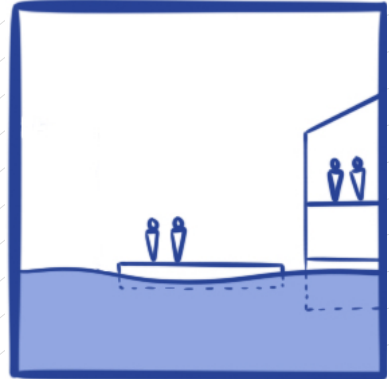
Community cohesion







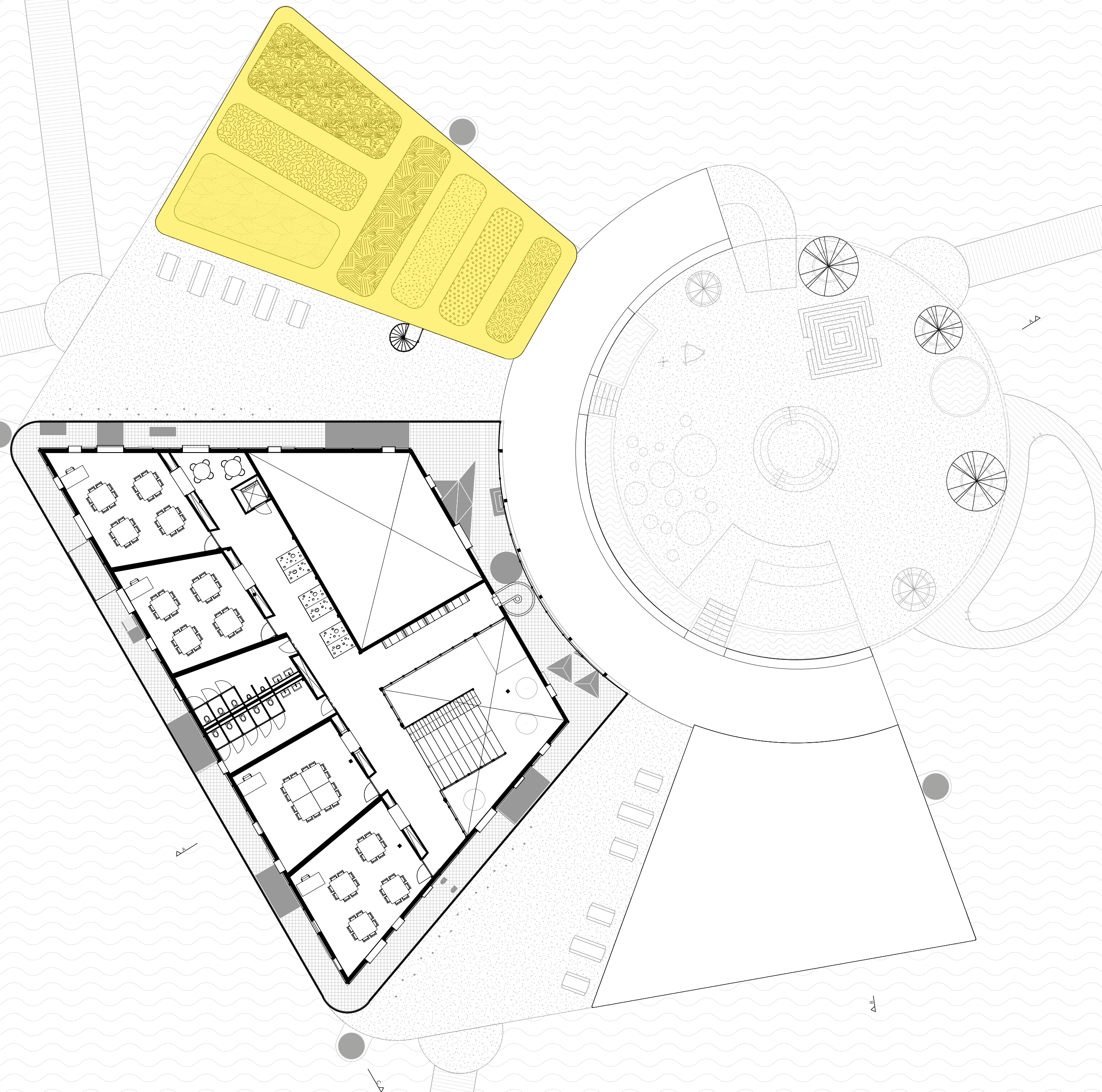
Shared facilities



Meeting places



Community cohesion

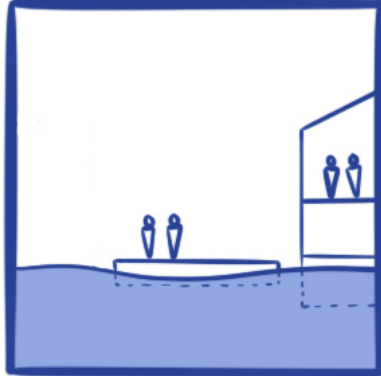


⌚  
**+1**  
1:200  
(scaled)





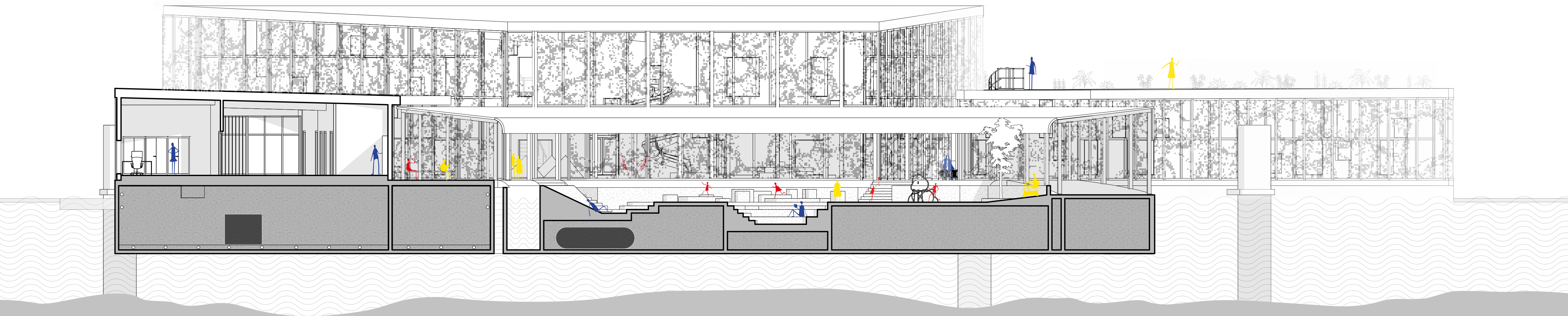
Shared facilities



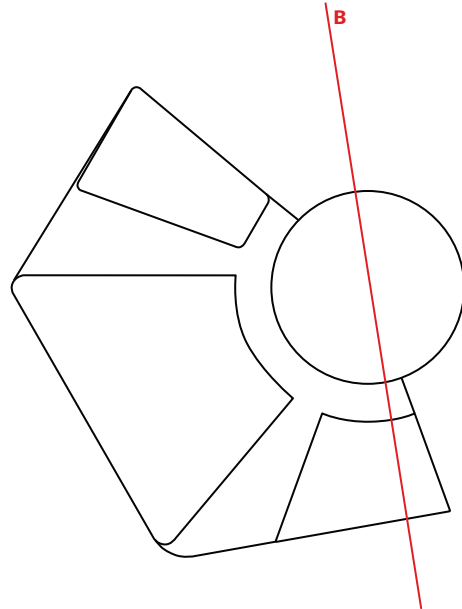
Meeting places



Community cohesion



Section B  
1:200  
(scaled)

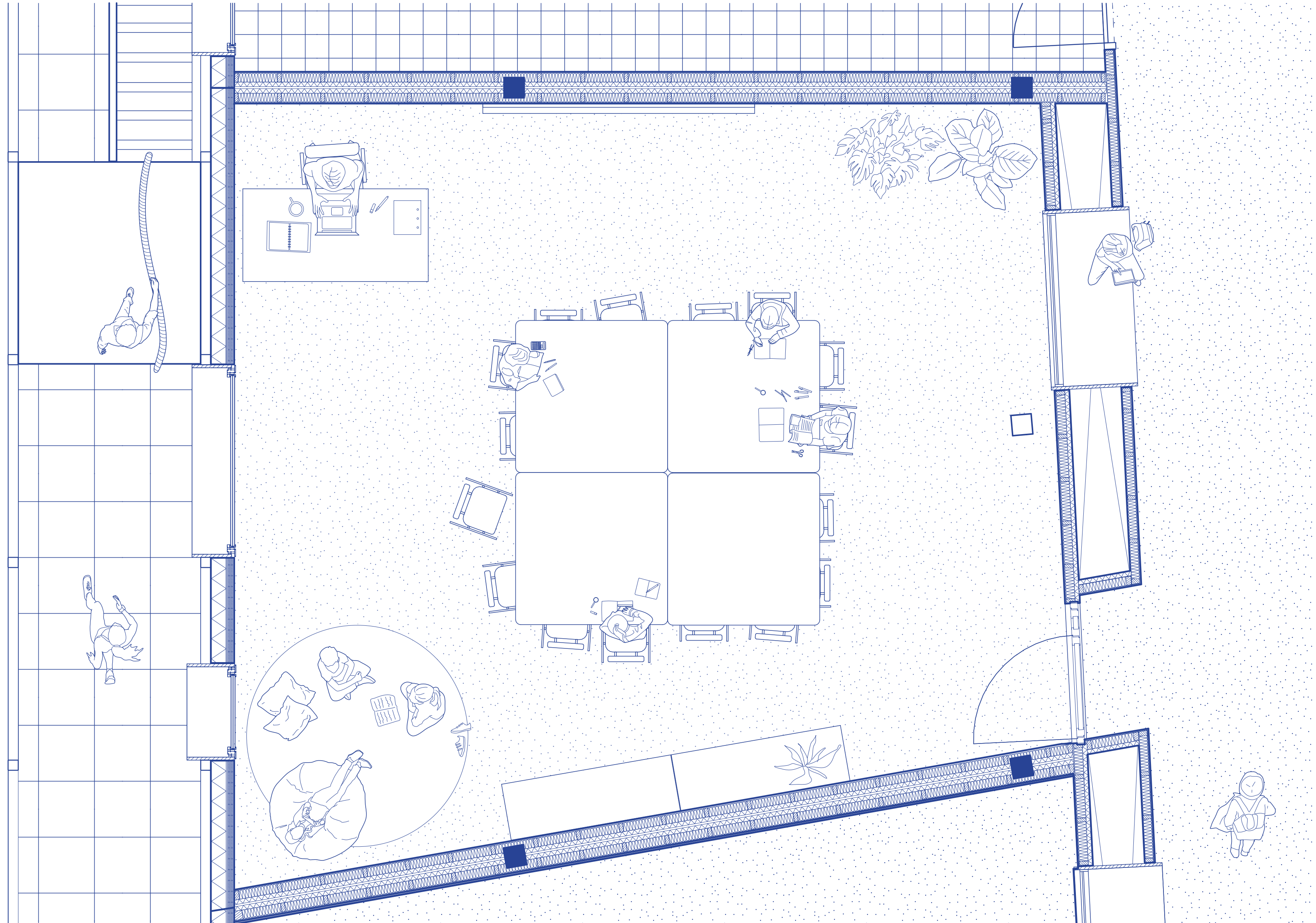






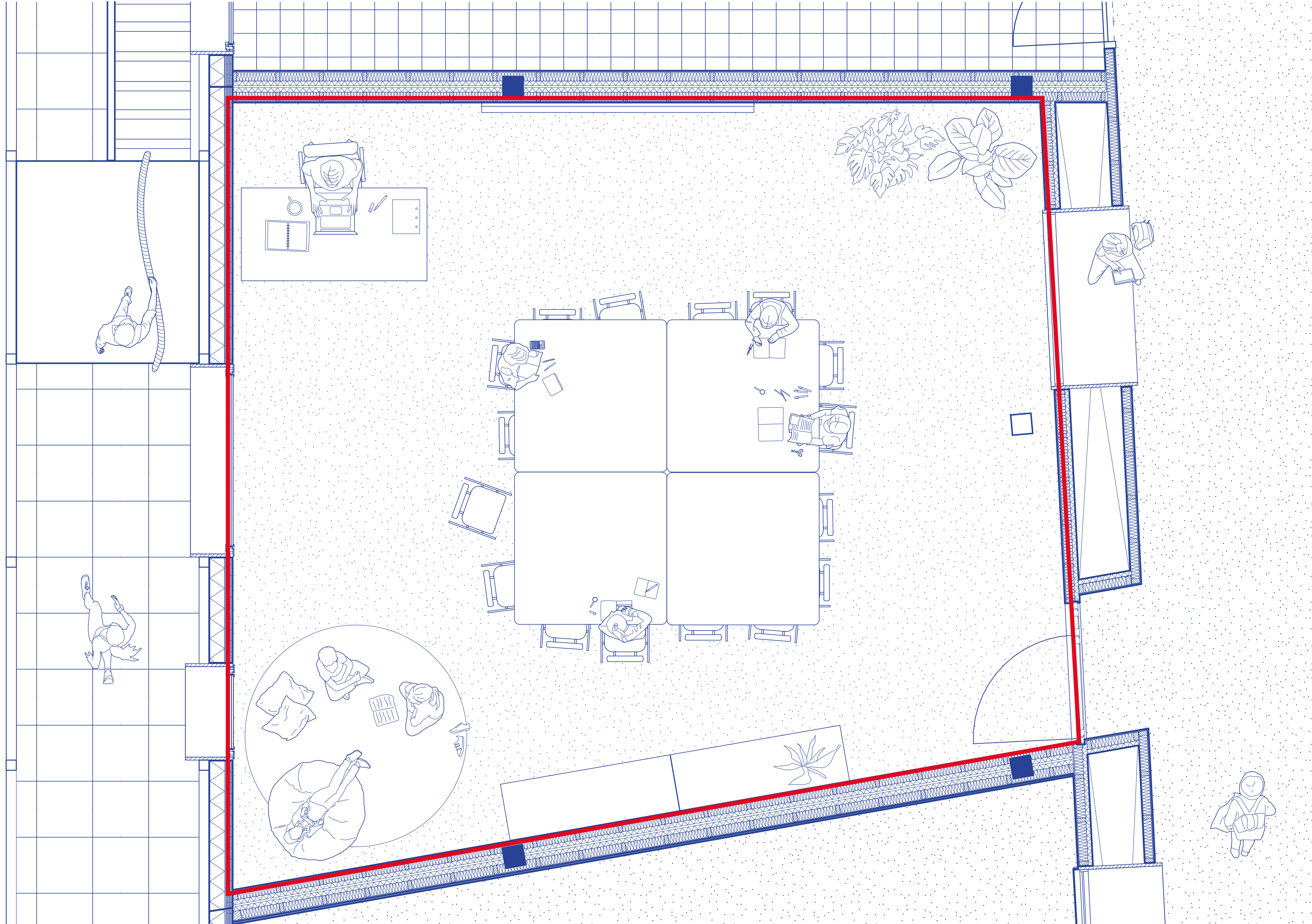
0  
1:200  
(scaled)



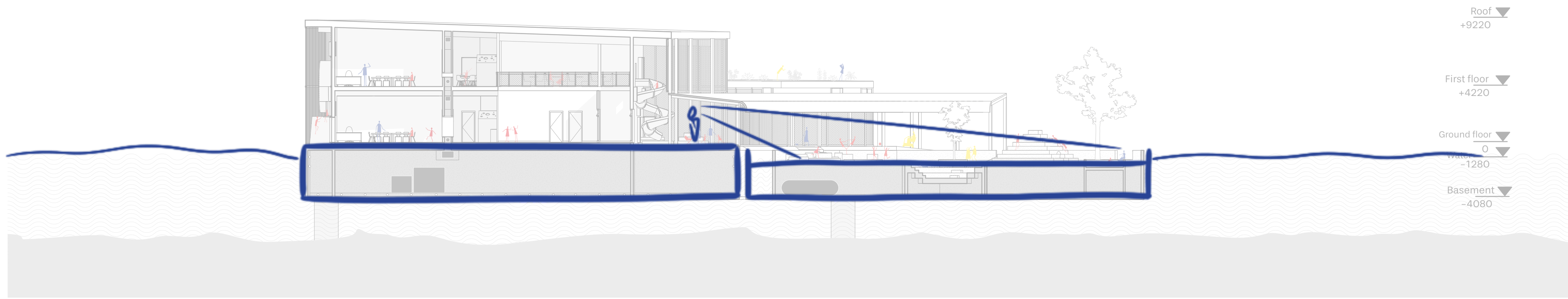


1:50  
(scaled)

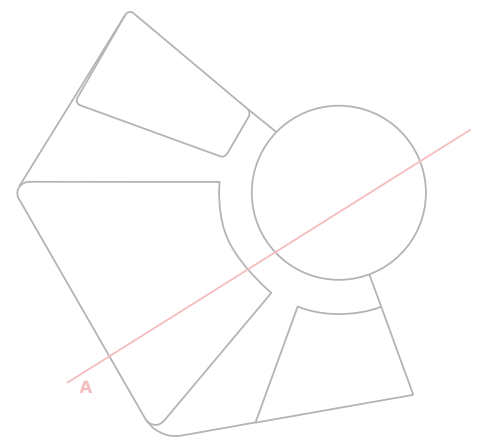








Section a  
1:200  
(scaled)



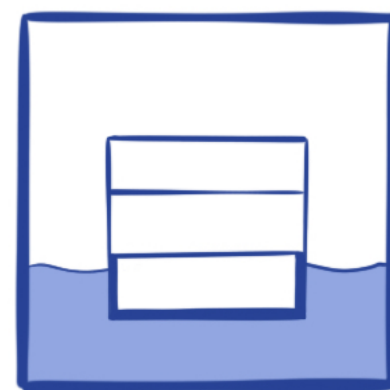










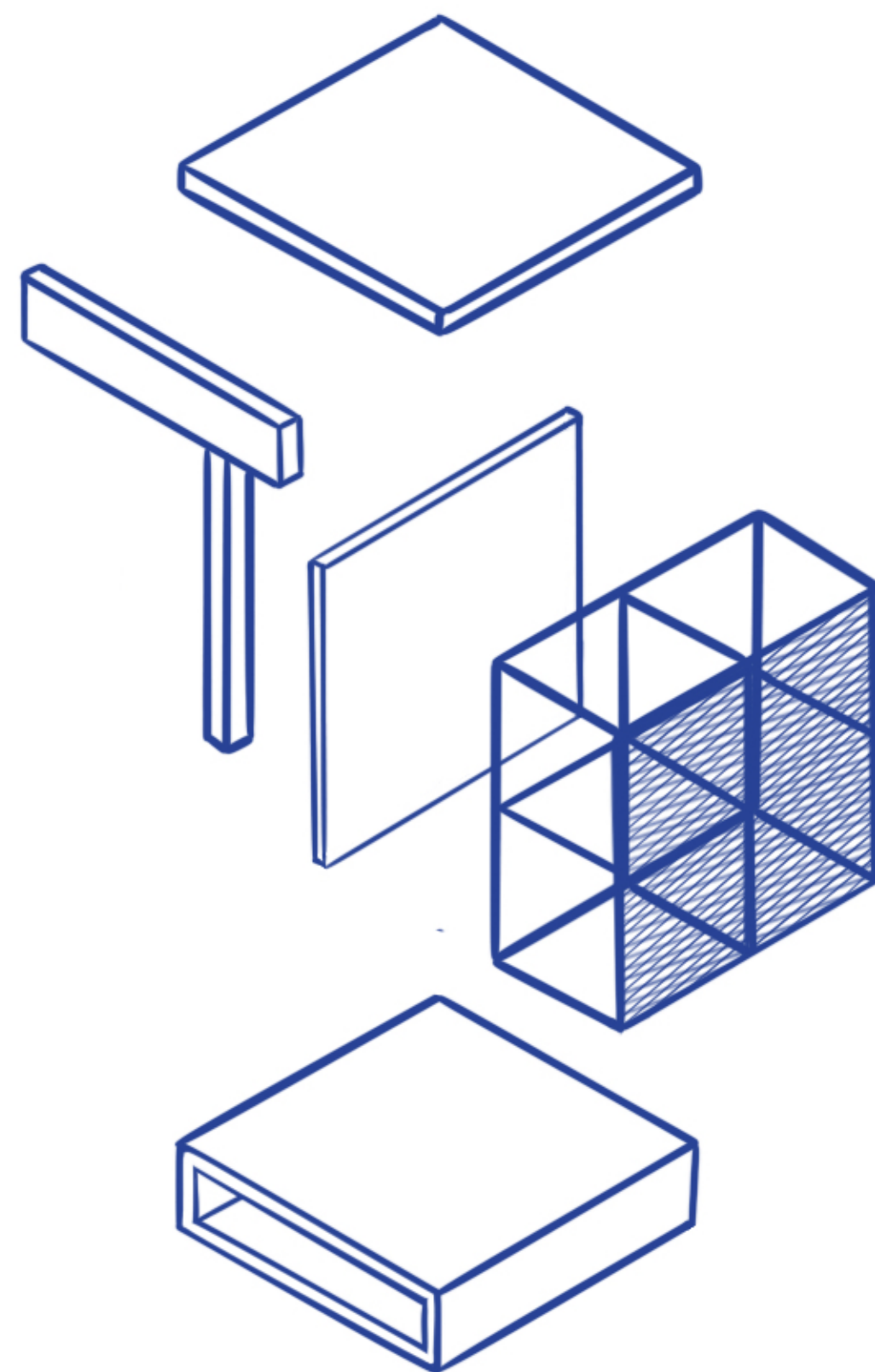


Construction

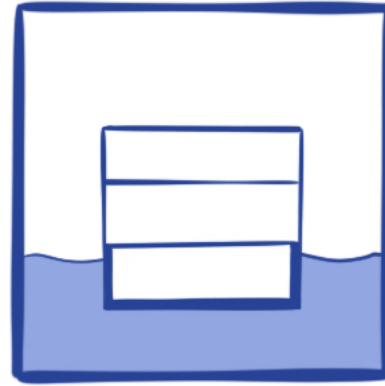
# Construction principle



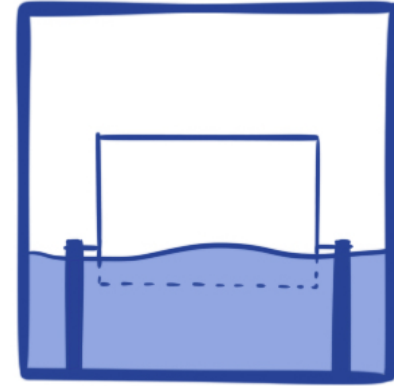
Technical innovations



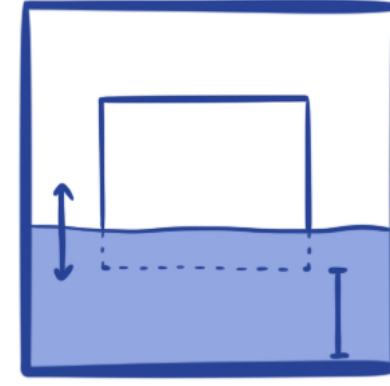




Construction



Attachment

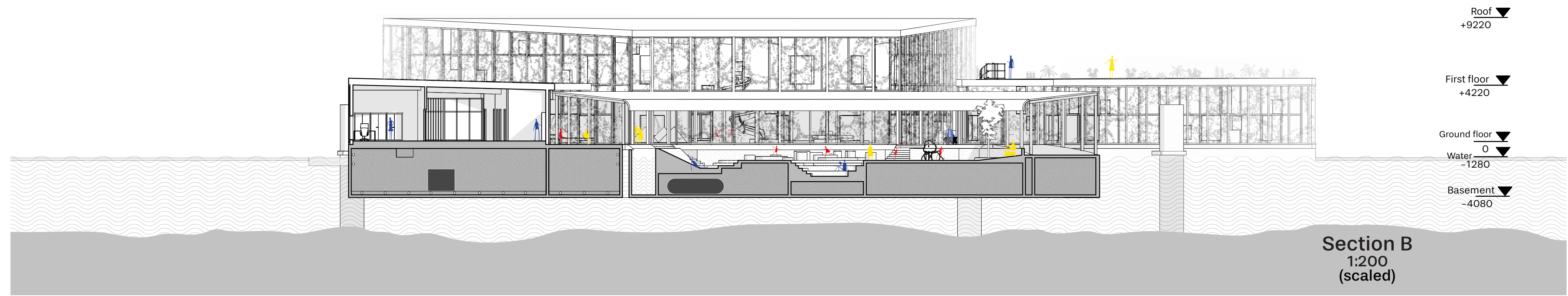
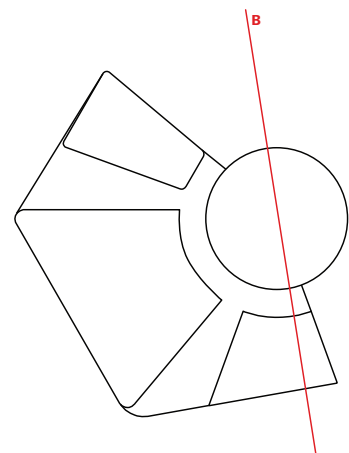
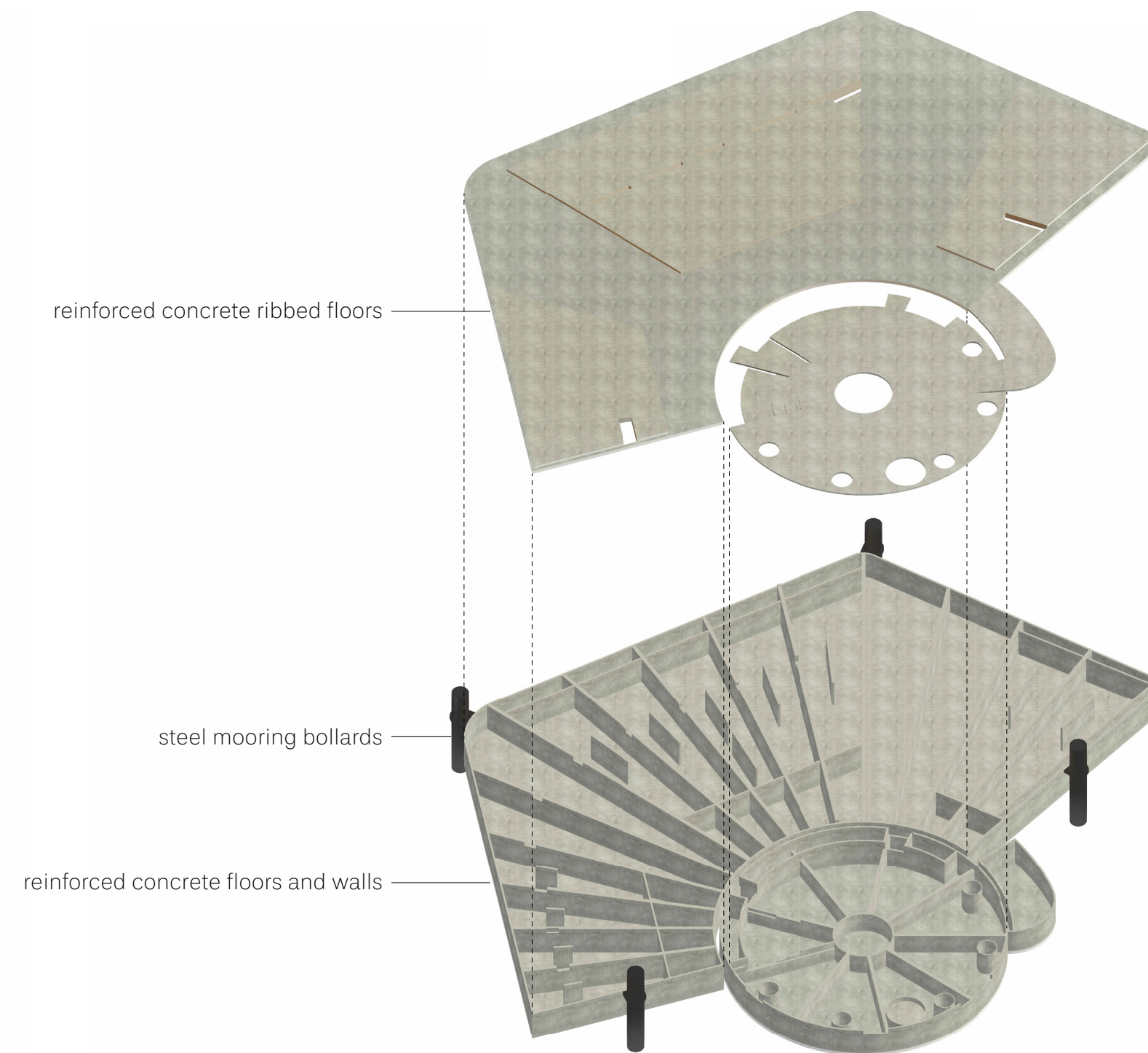


Adaptability

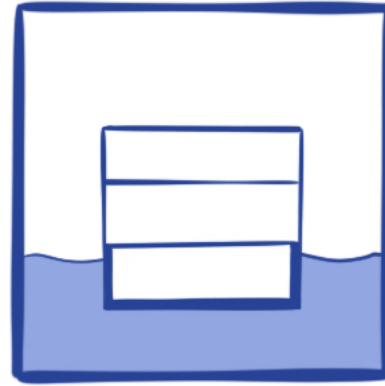
# Construction



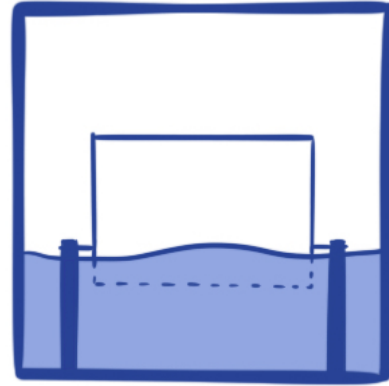
Technical innovations



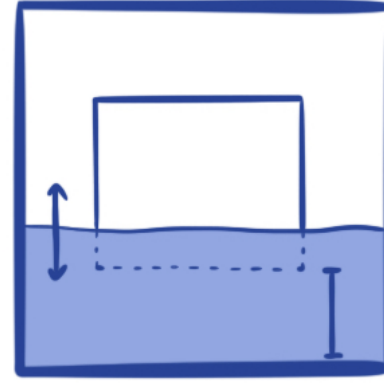




Construction



Attachment

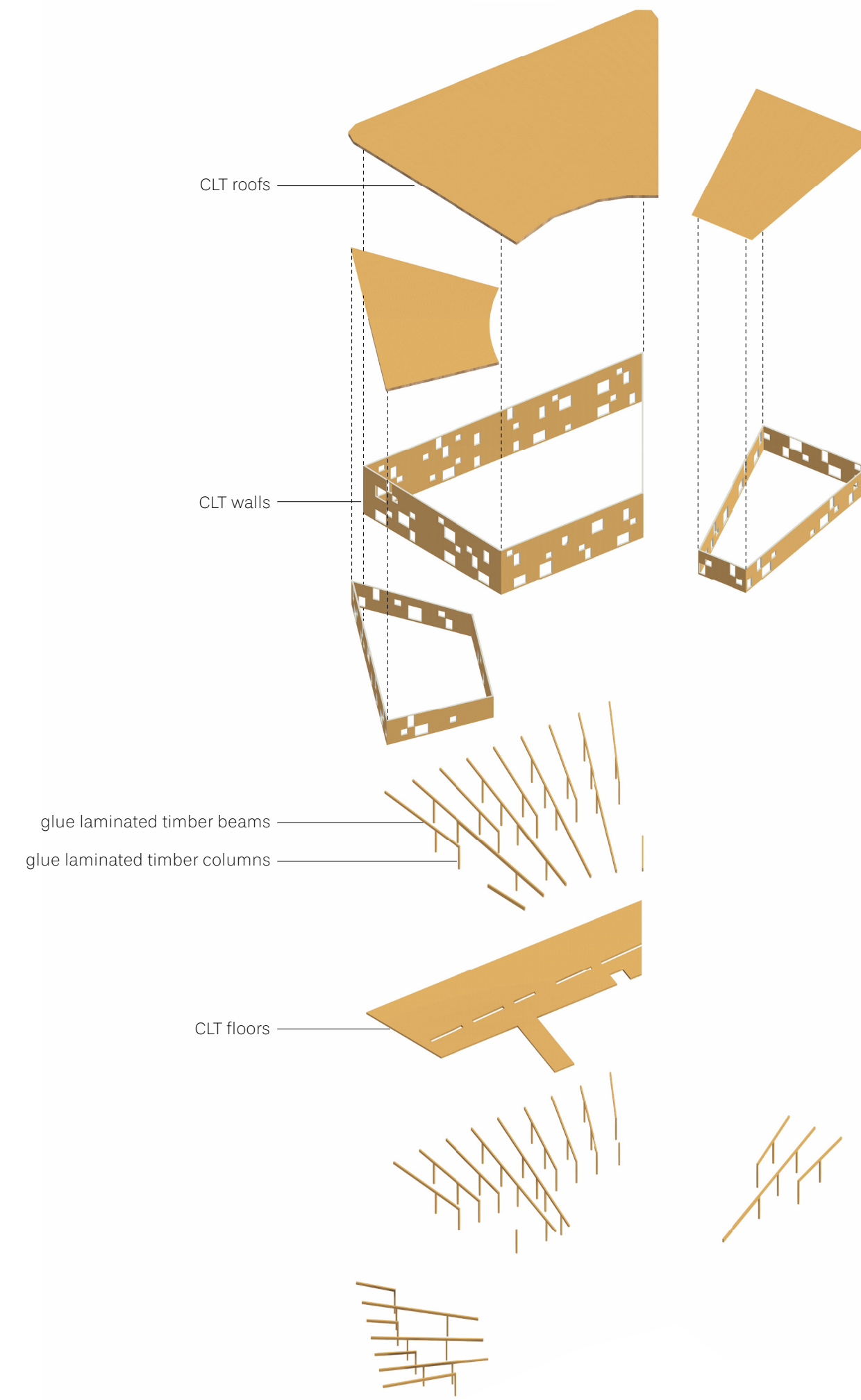


Adaptability

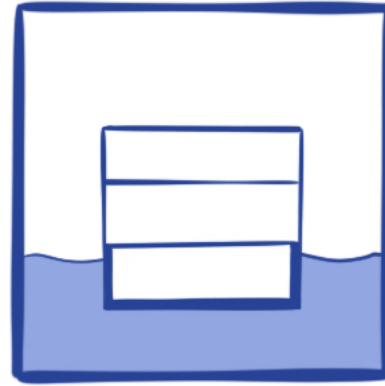
# Construction



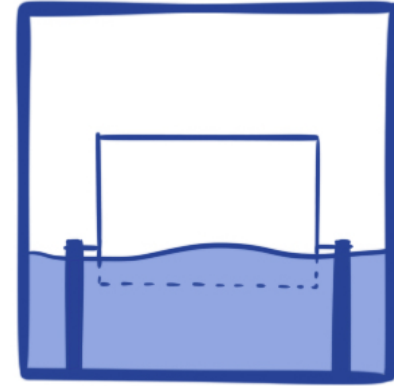
Technical innovations



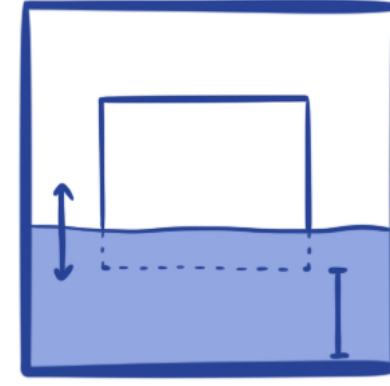




Construction



Attachment

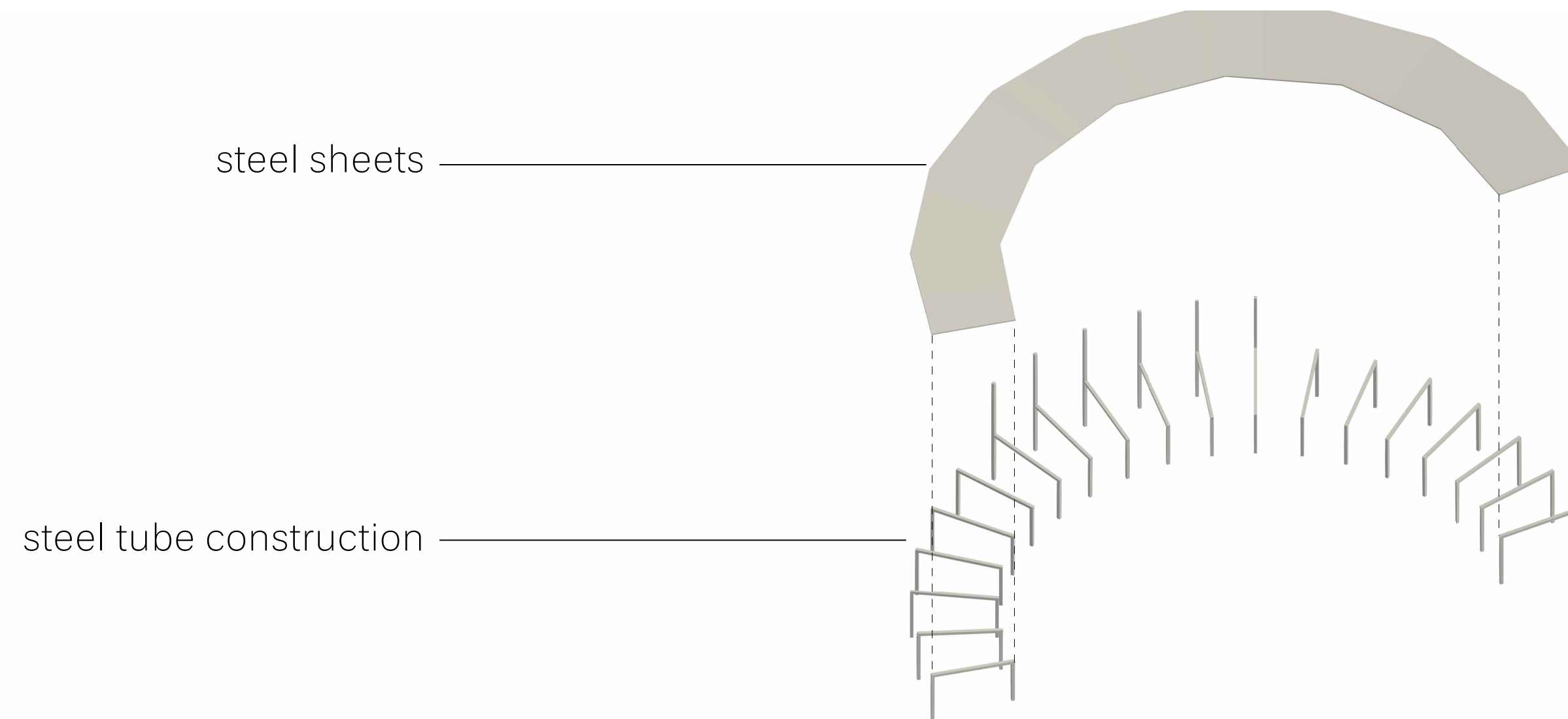


Adaptability

# Construction

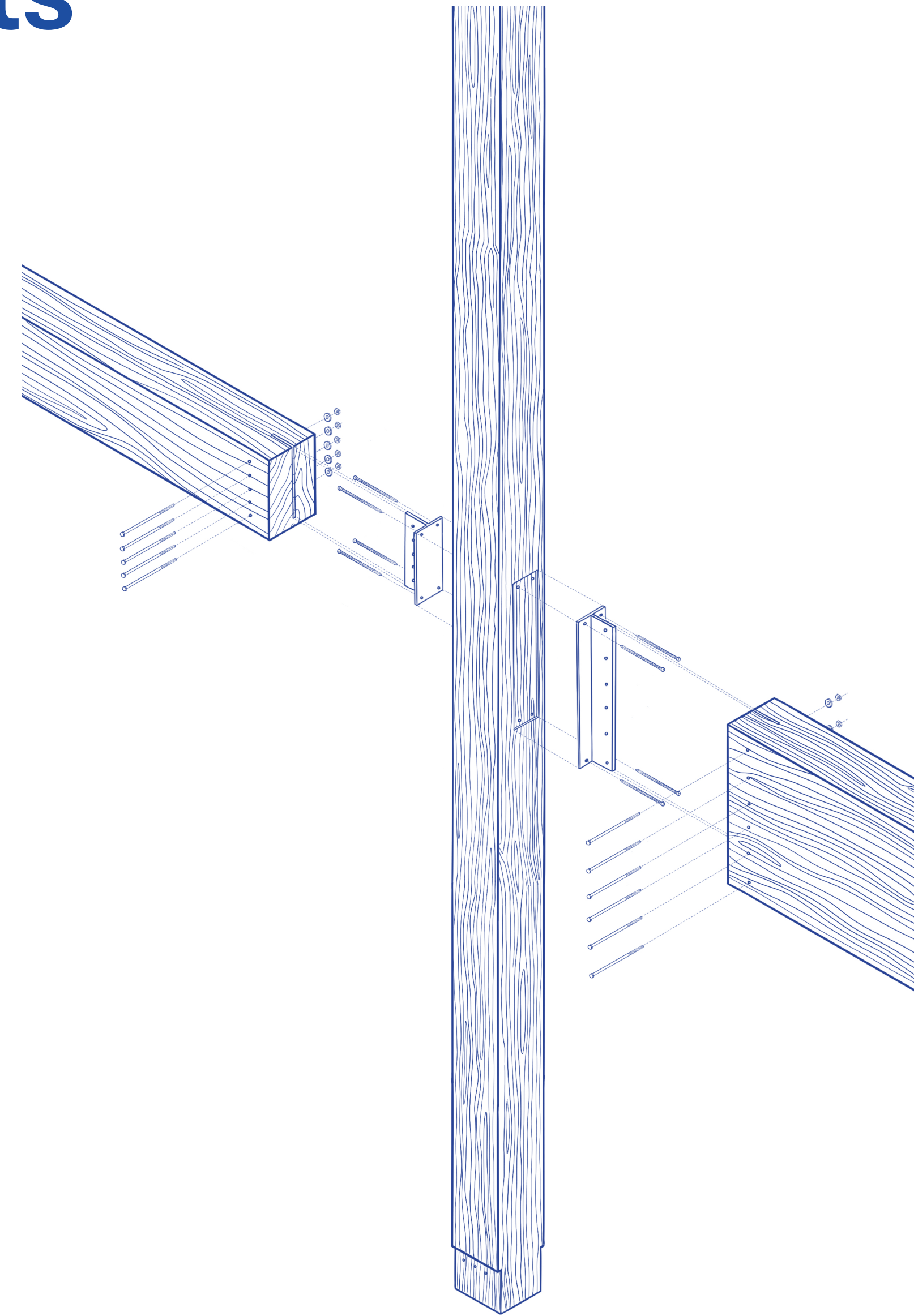
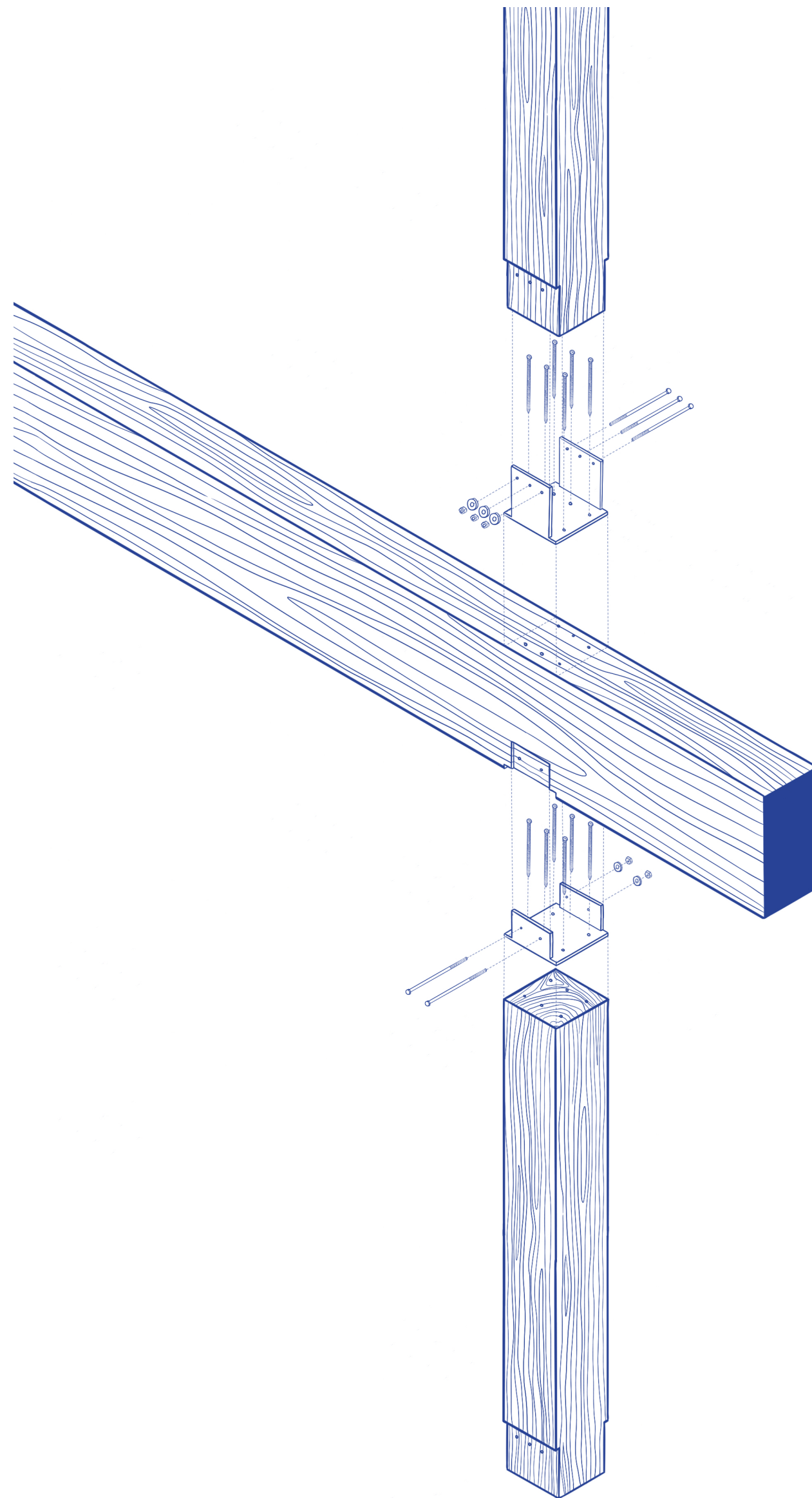


Technical innovations

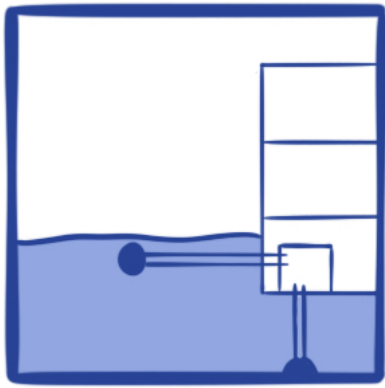




# Joints



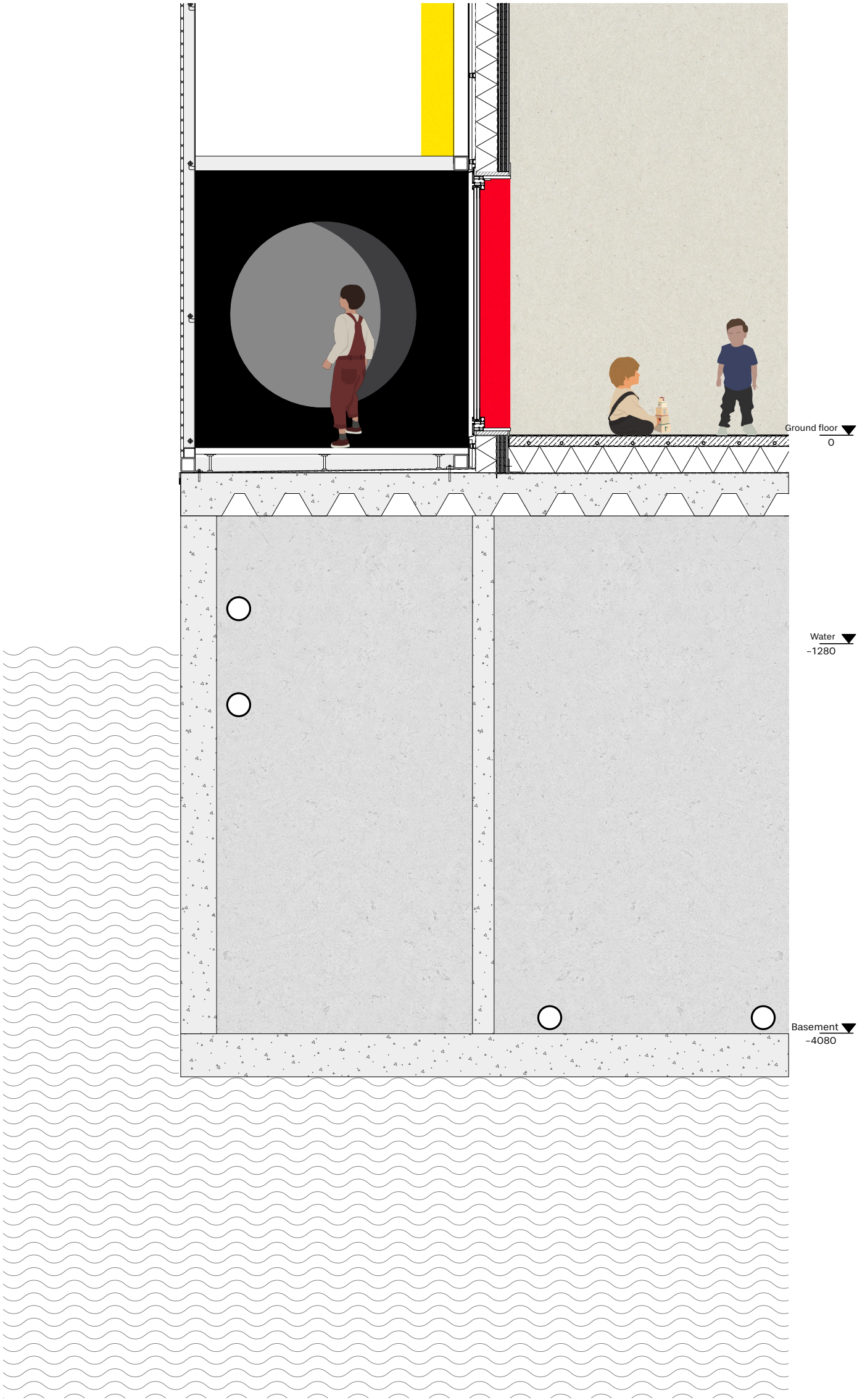
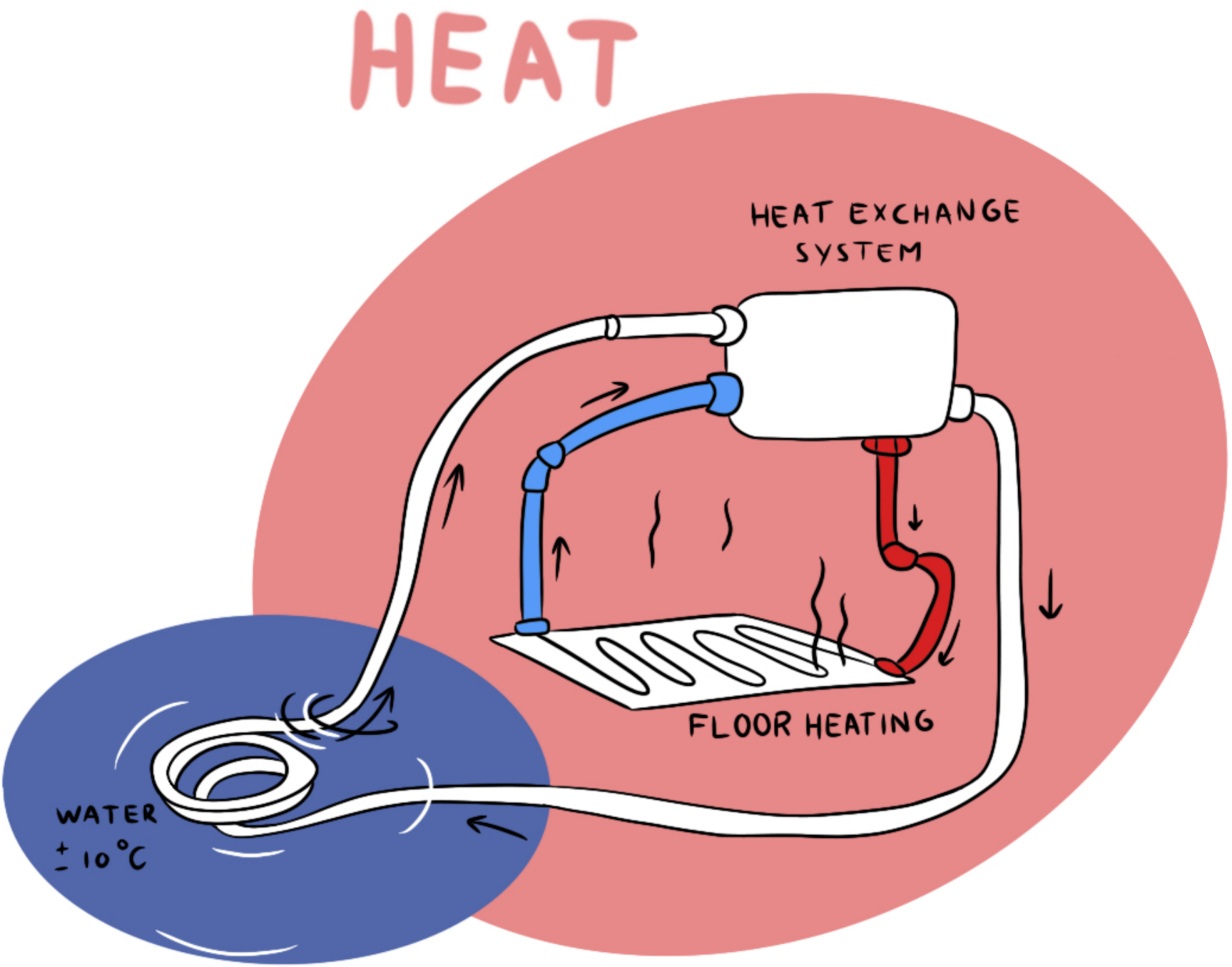




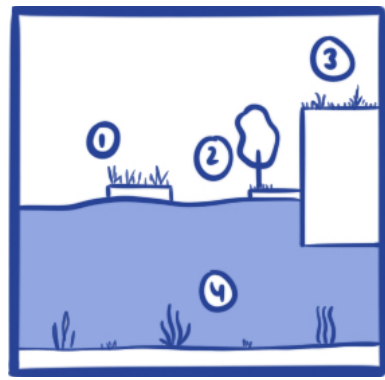
Heat exchange system



Technical innovations







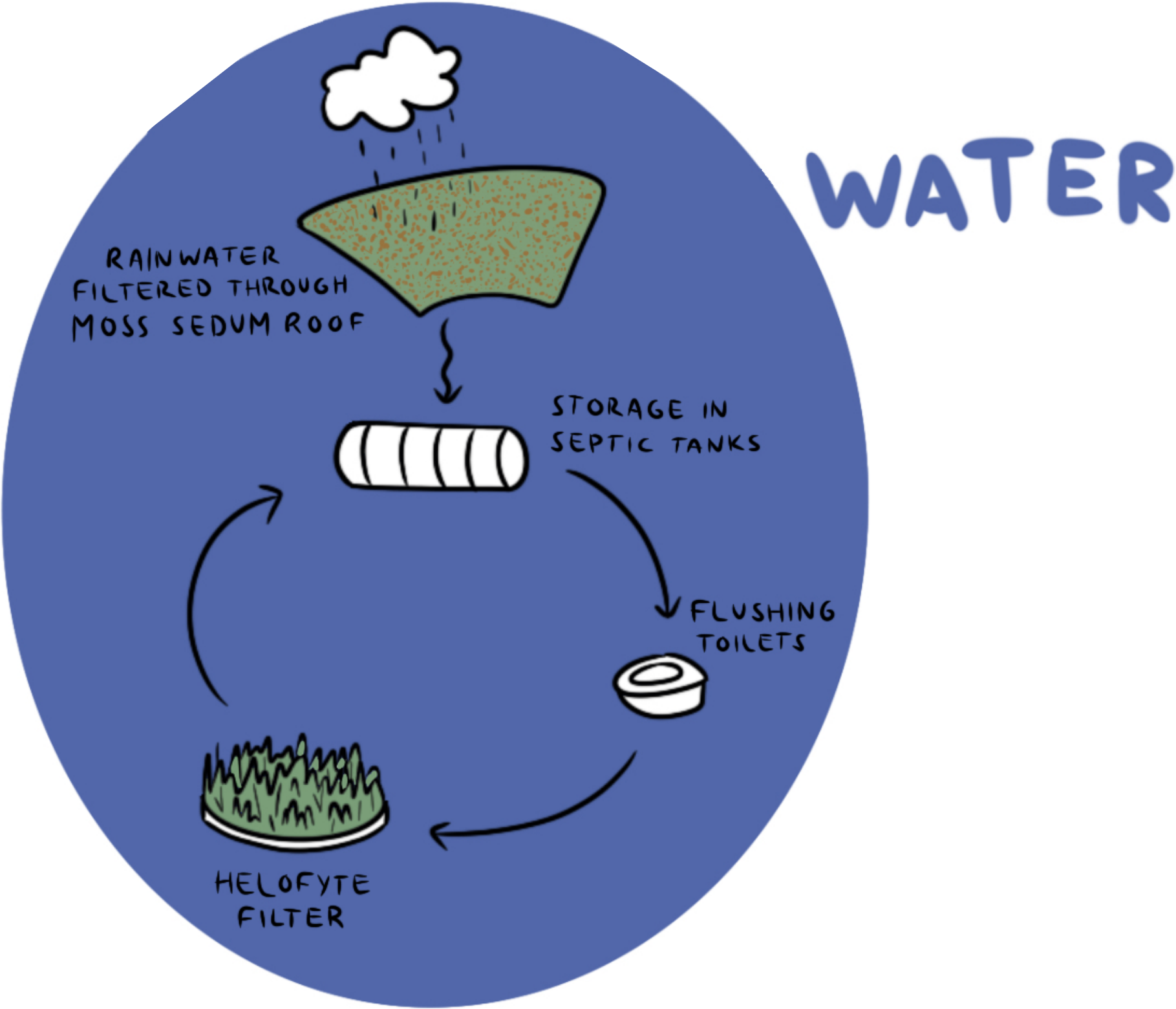
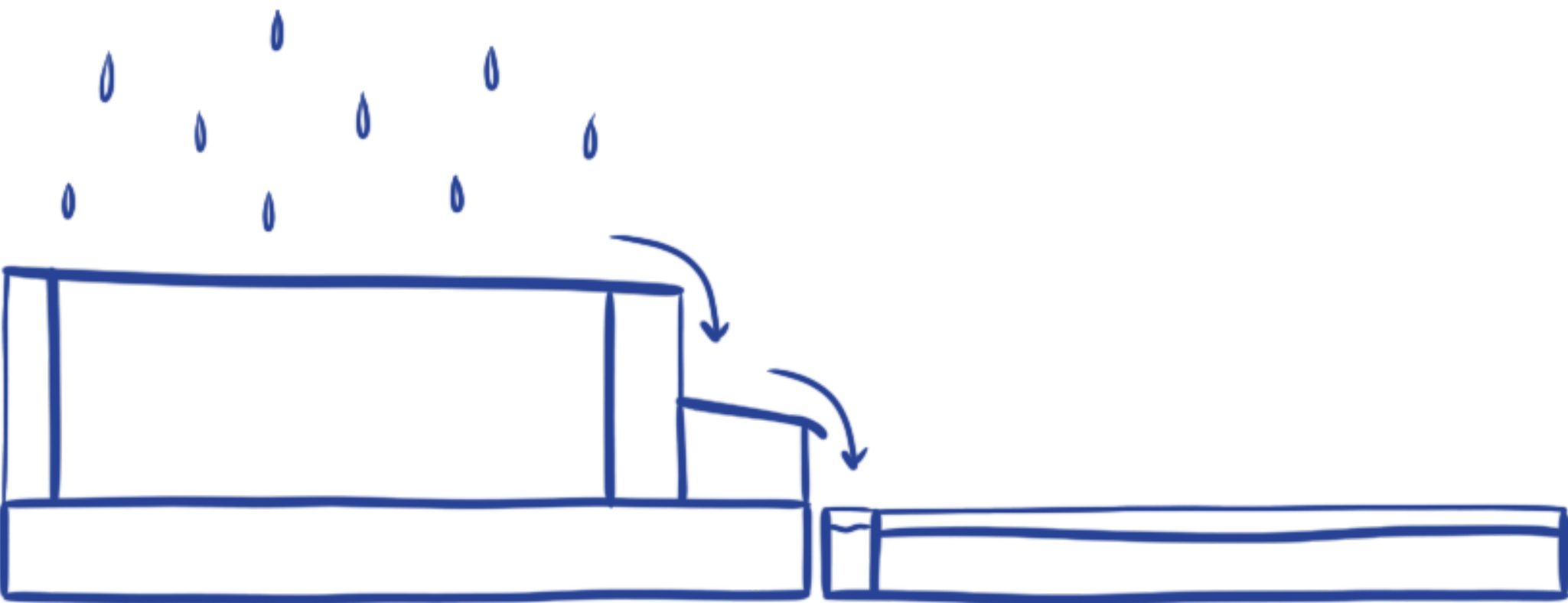
Ecology



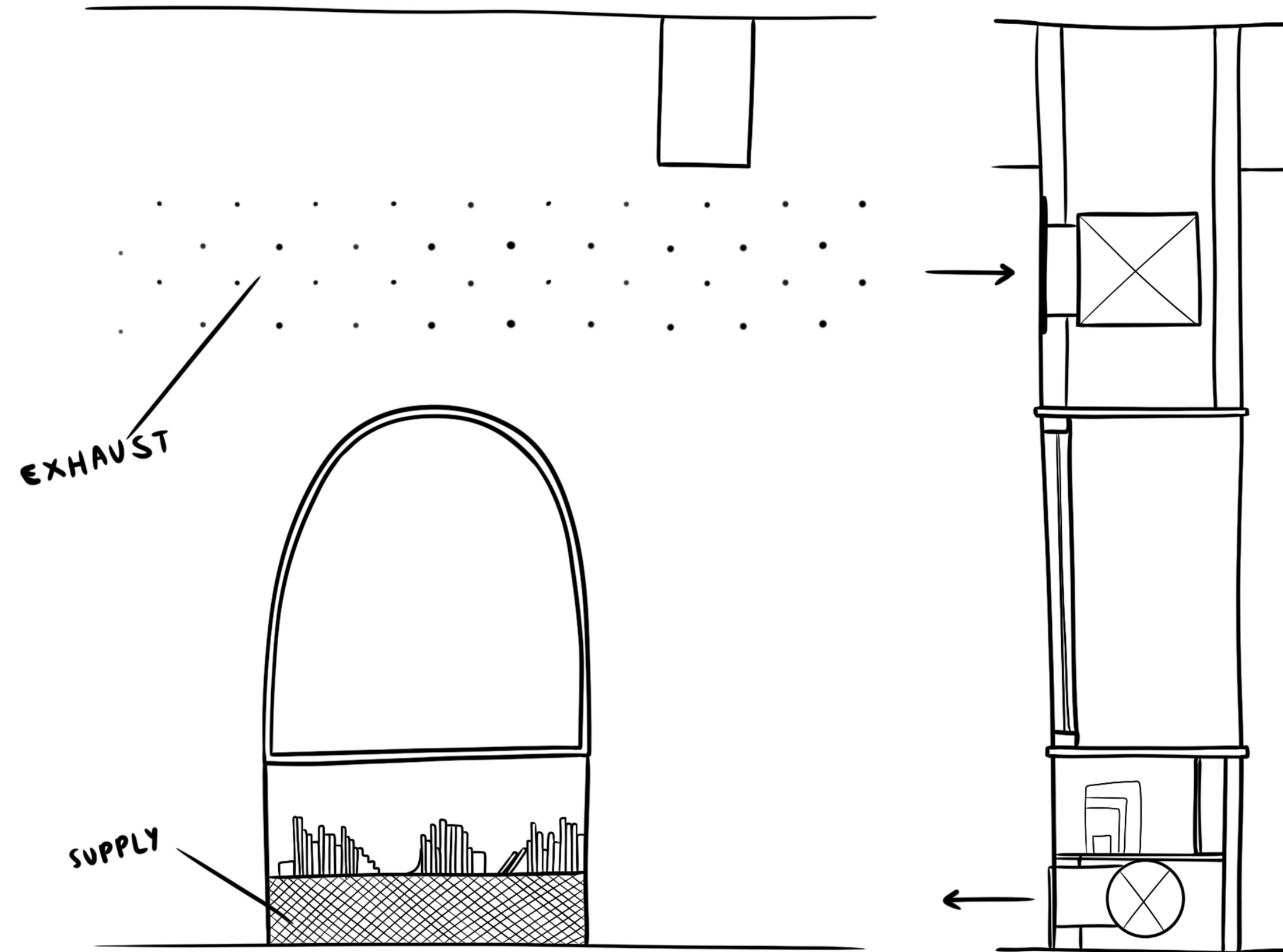
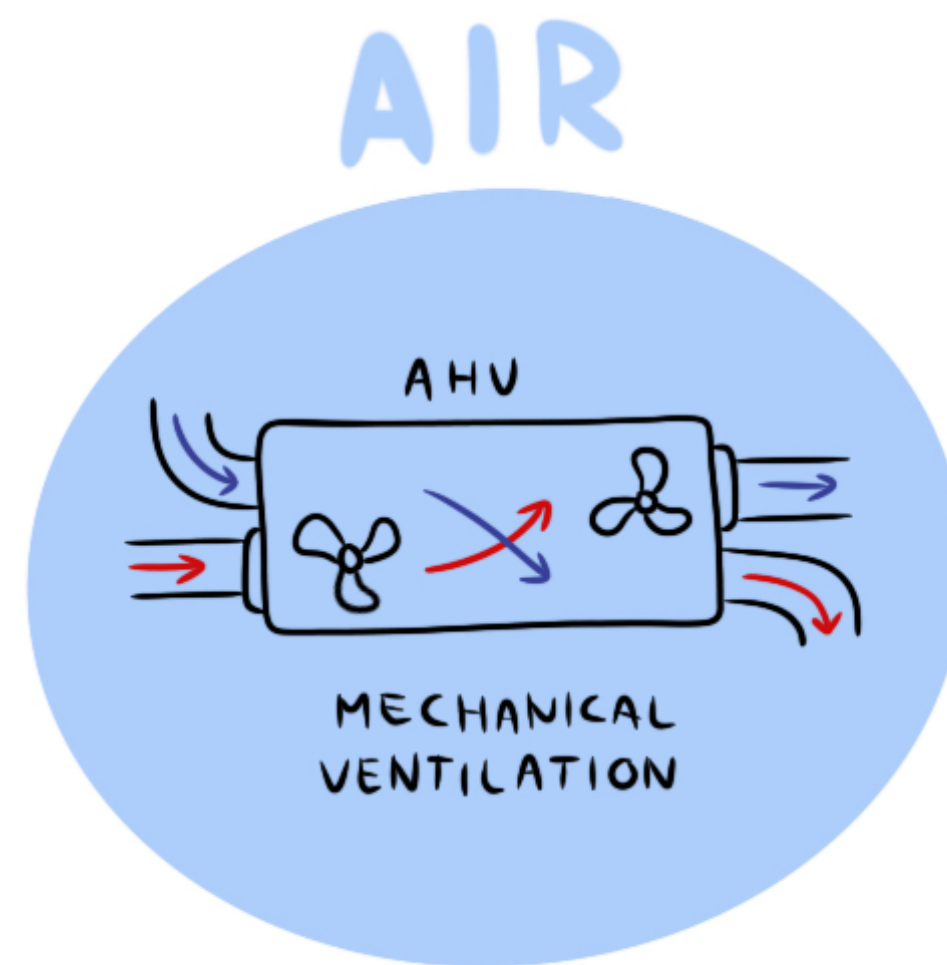
Water and energy



Technical innovations







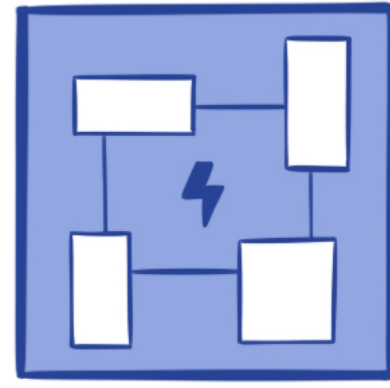








Water and energy

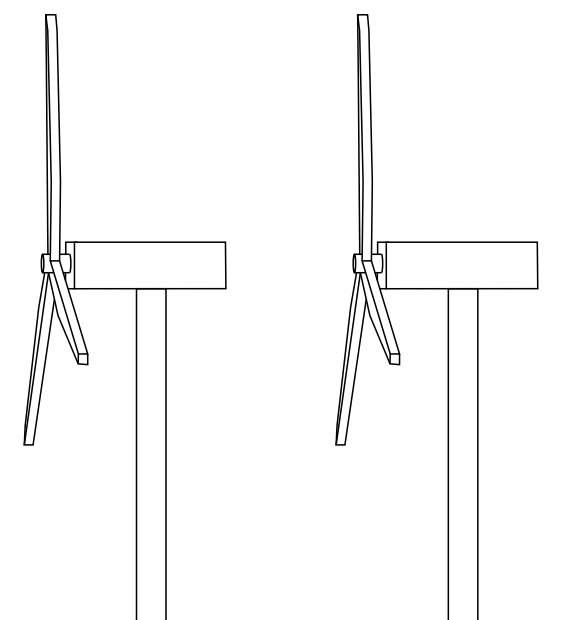
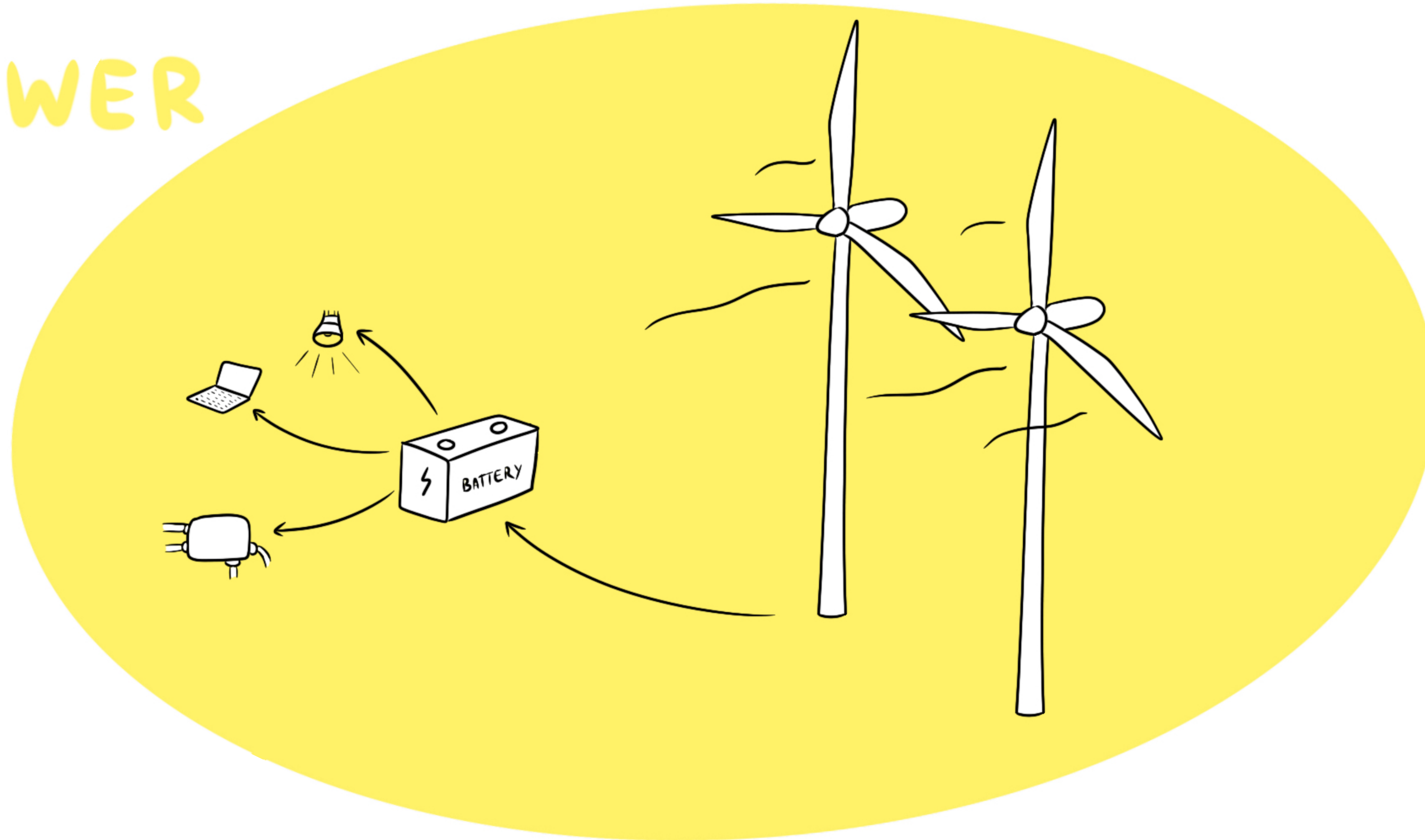


Smart-grid



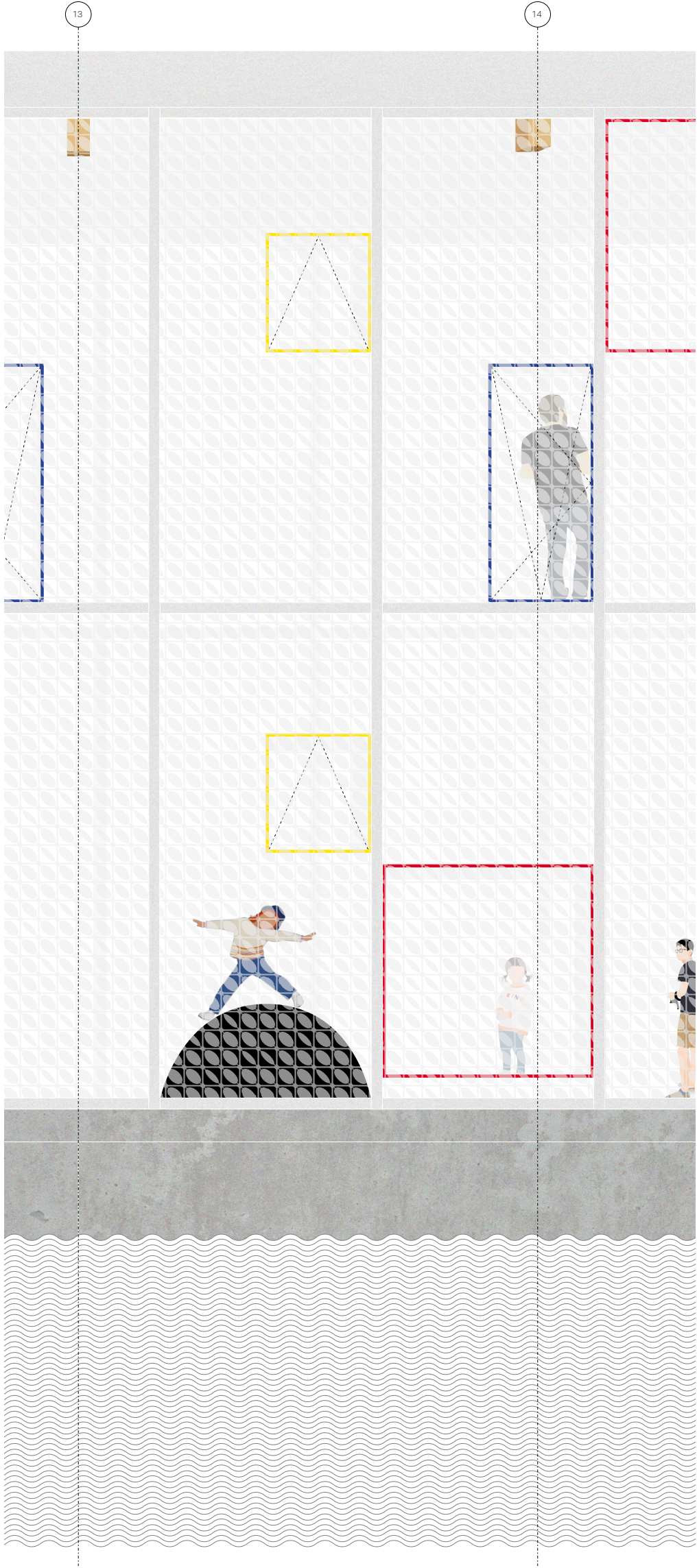
Technical innovations

# POWER



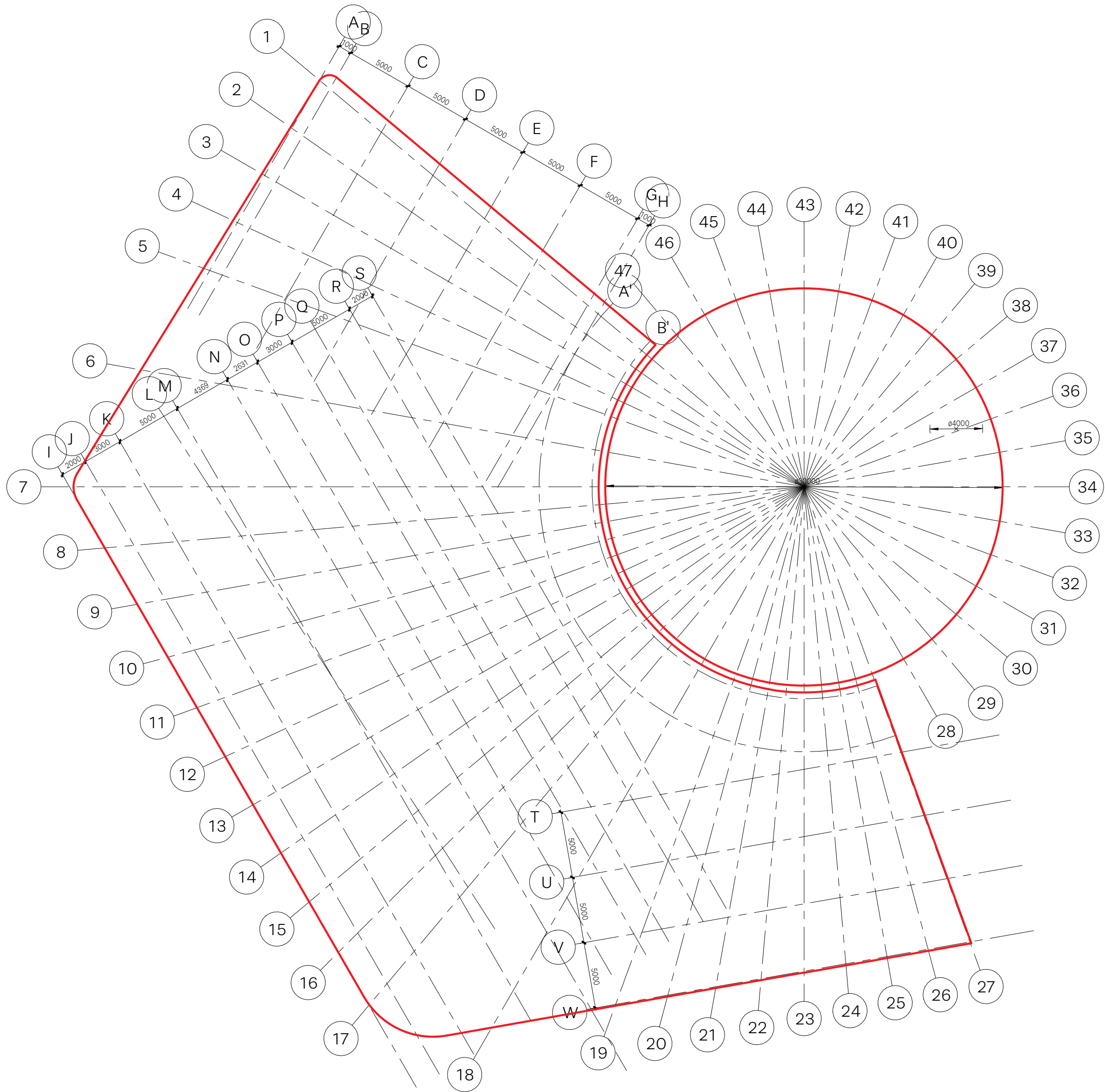
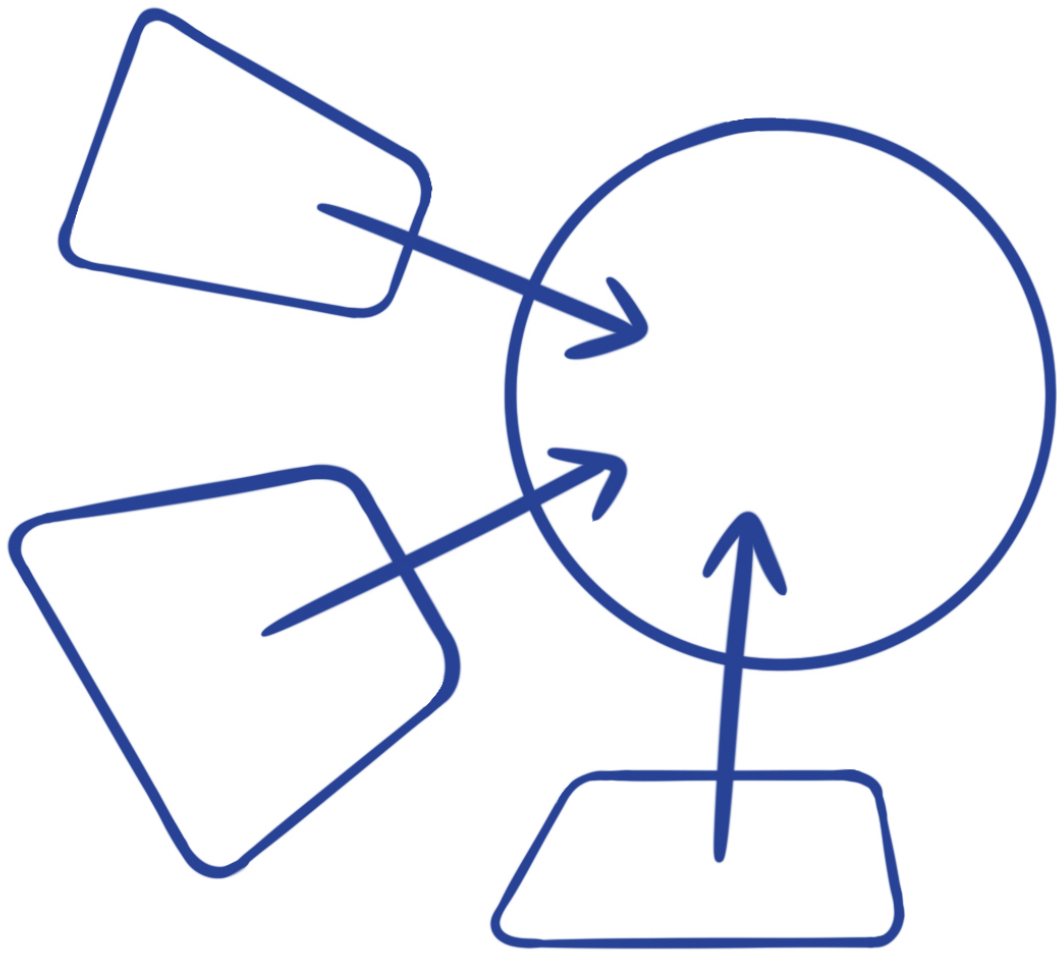


# Grids





# Grids



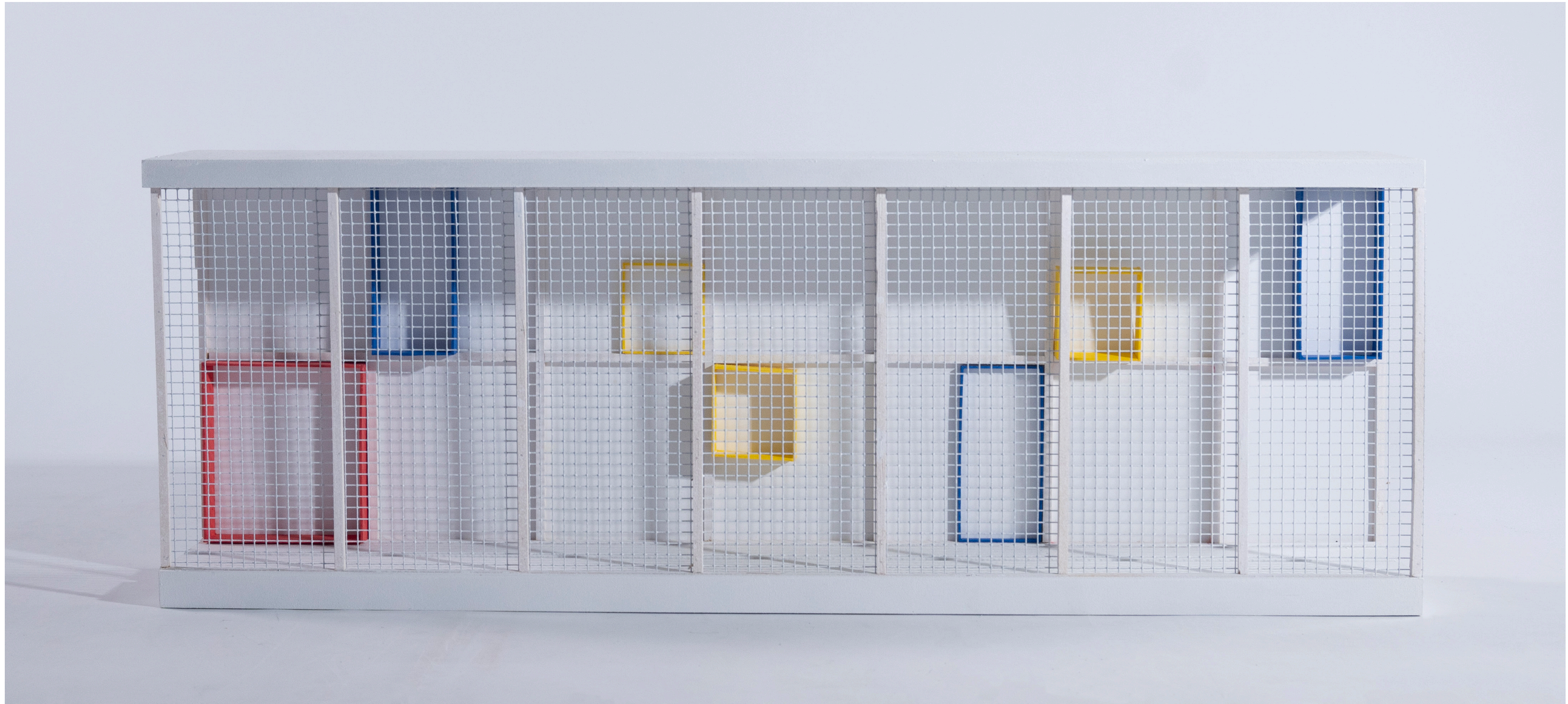


# Facade grid





# Facade grid



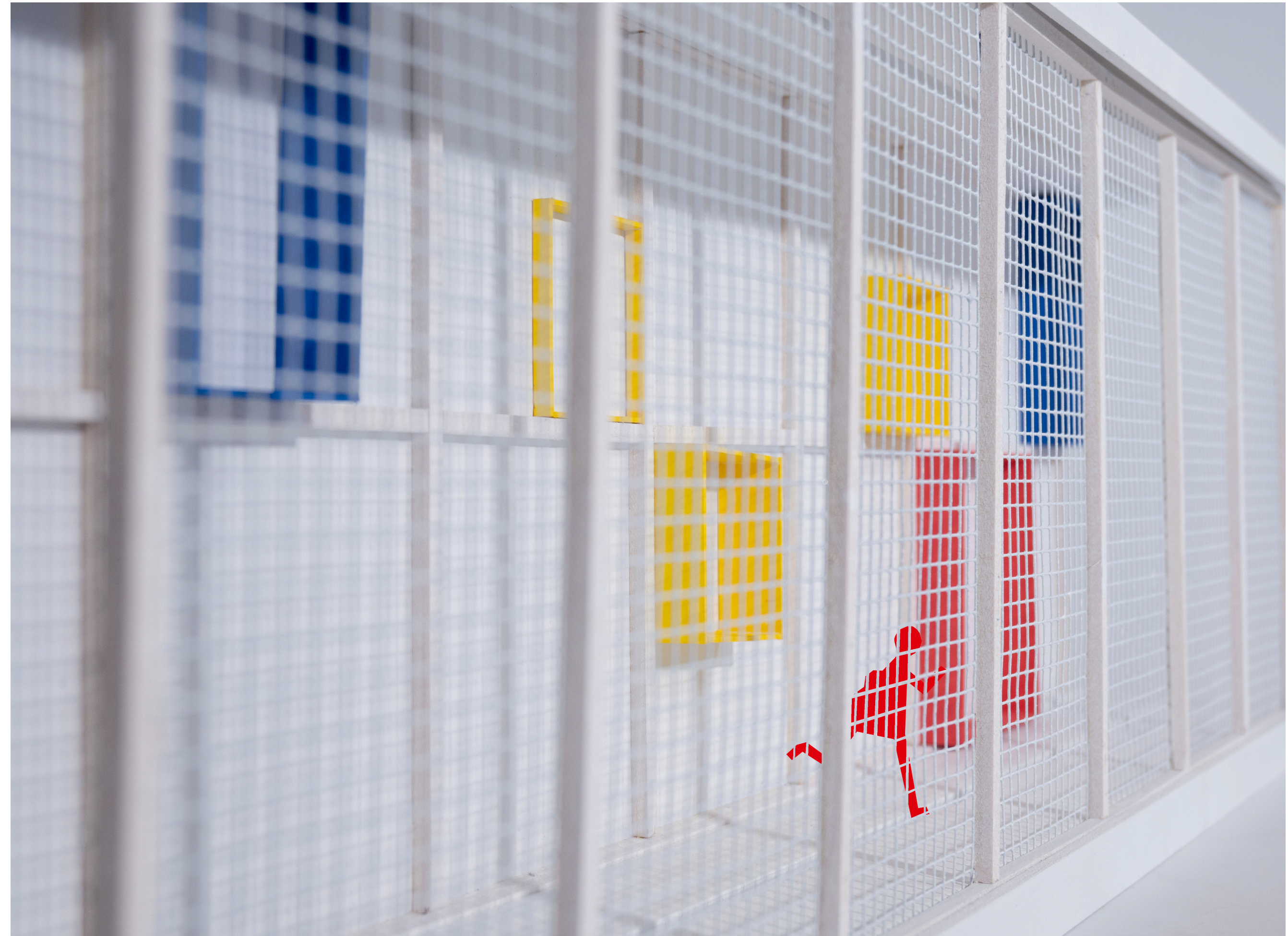


# Facade grid





# Double facade



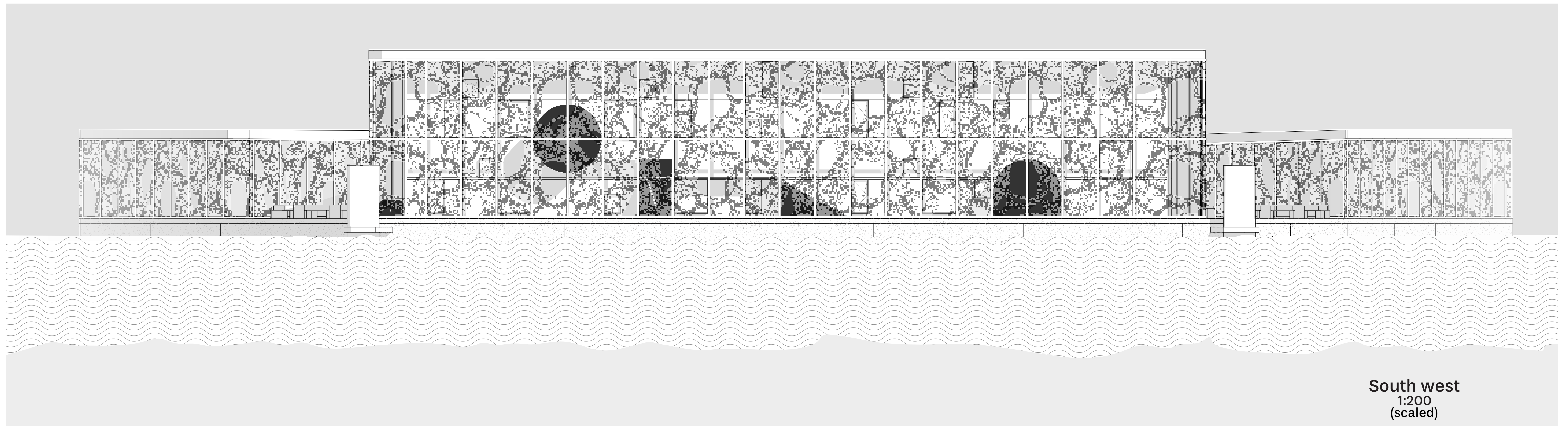


# Material facade





# Play elements in facade



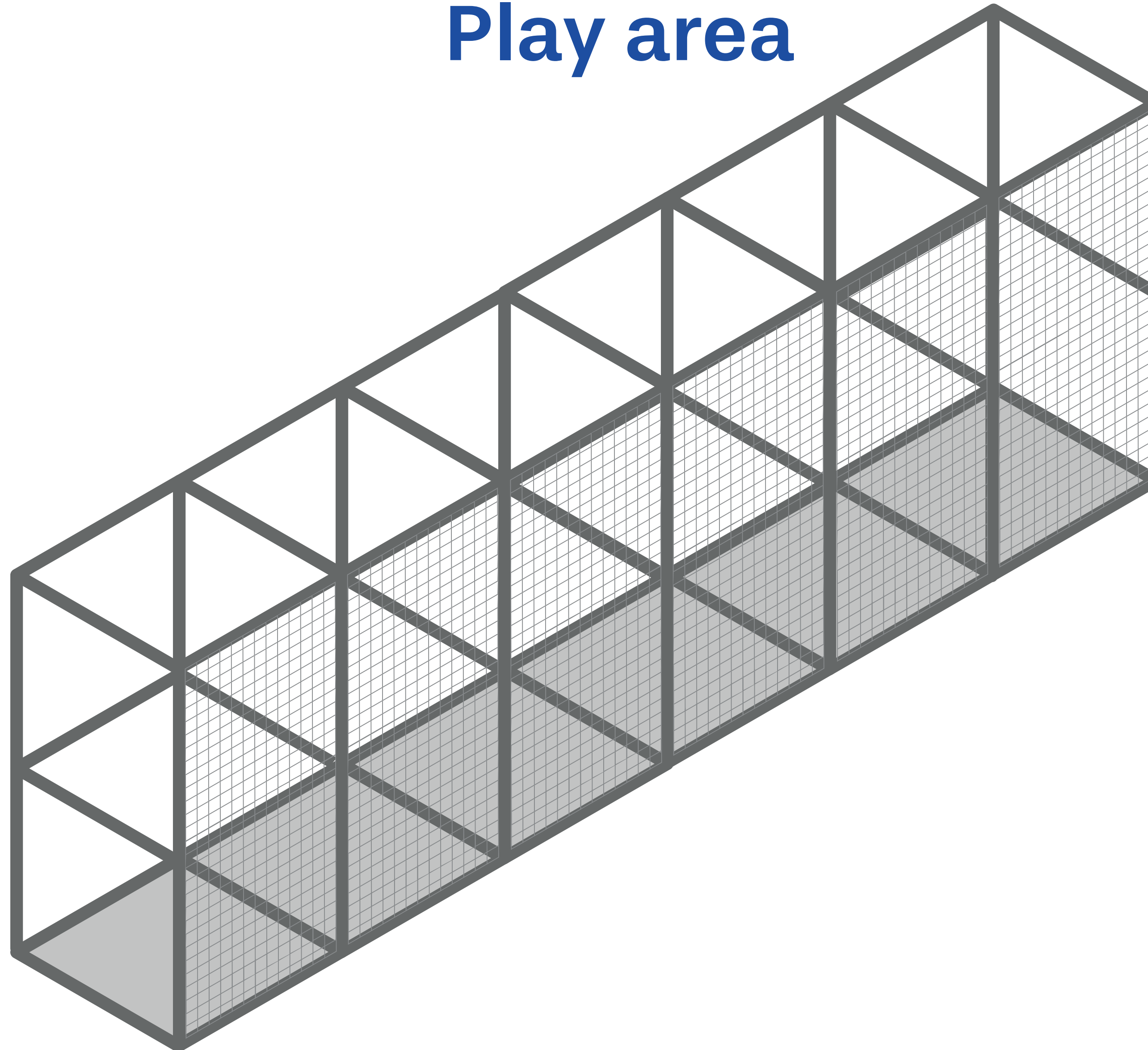




0  
1:200  
(scaled)

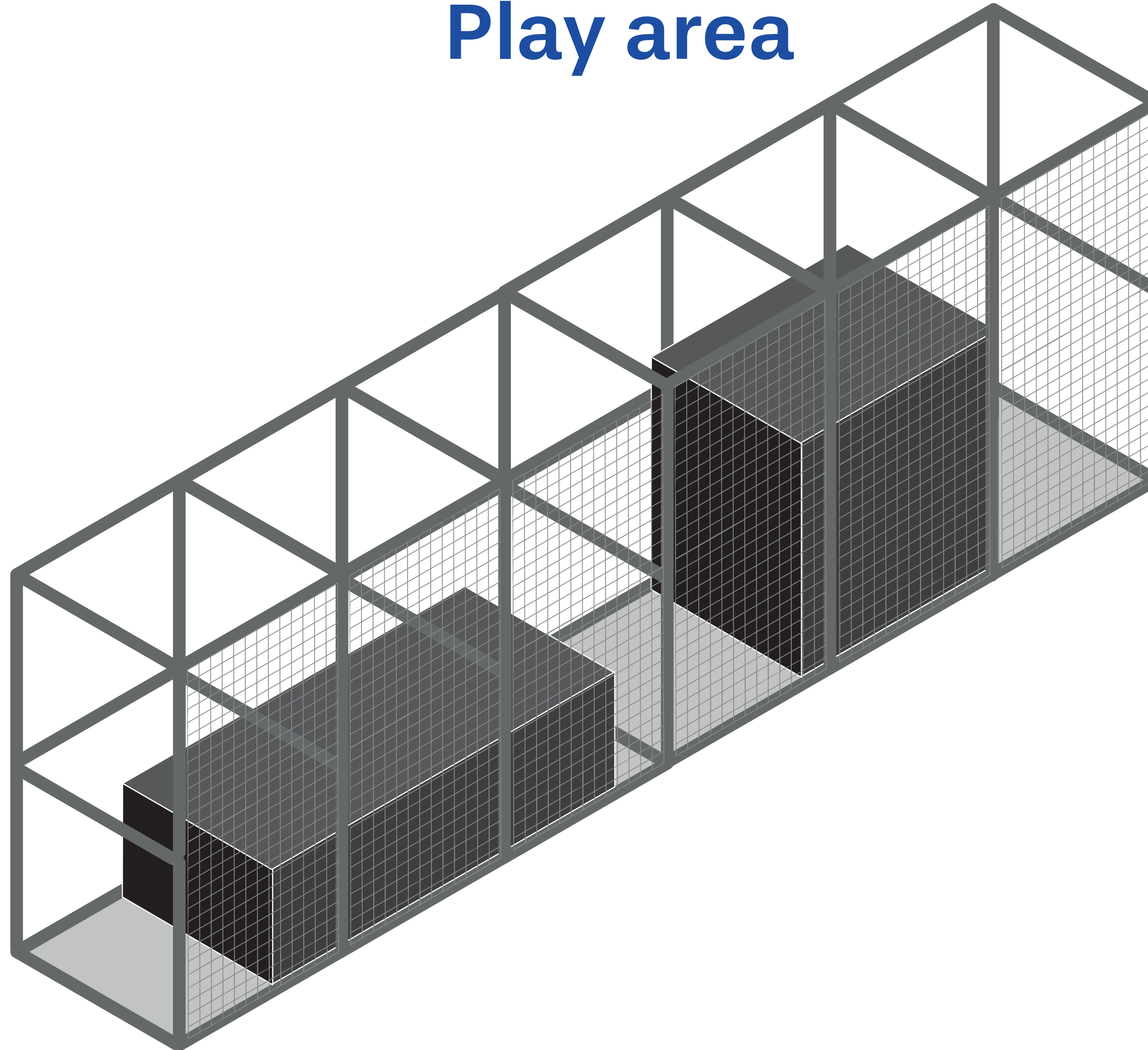


# Play area



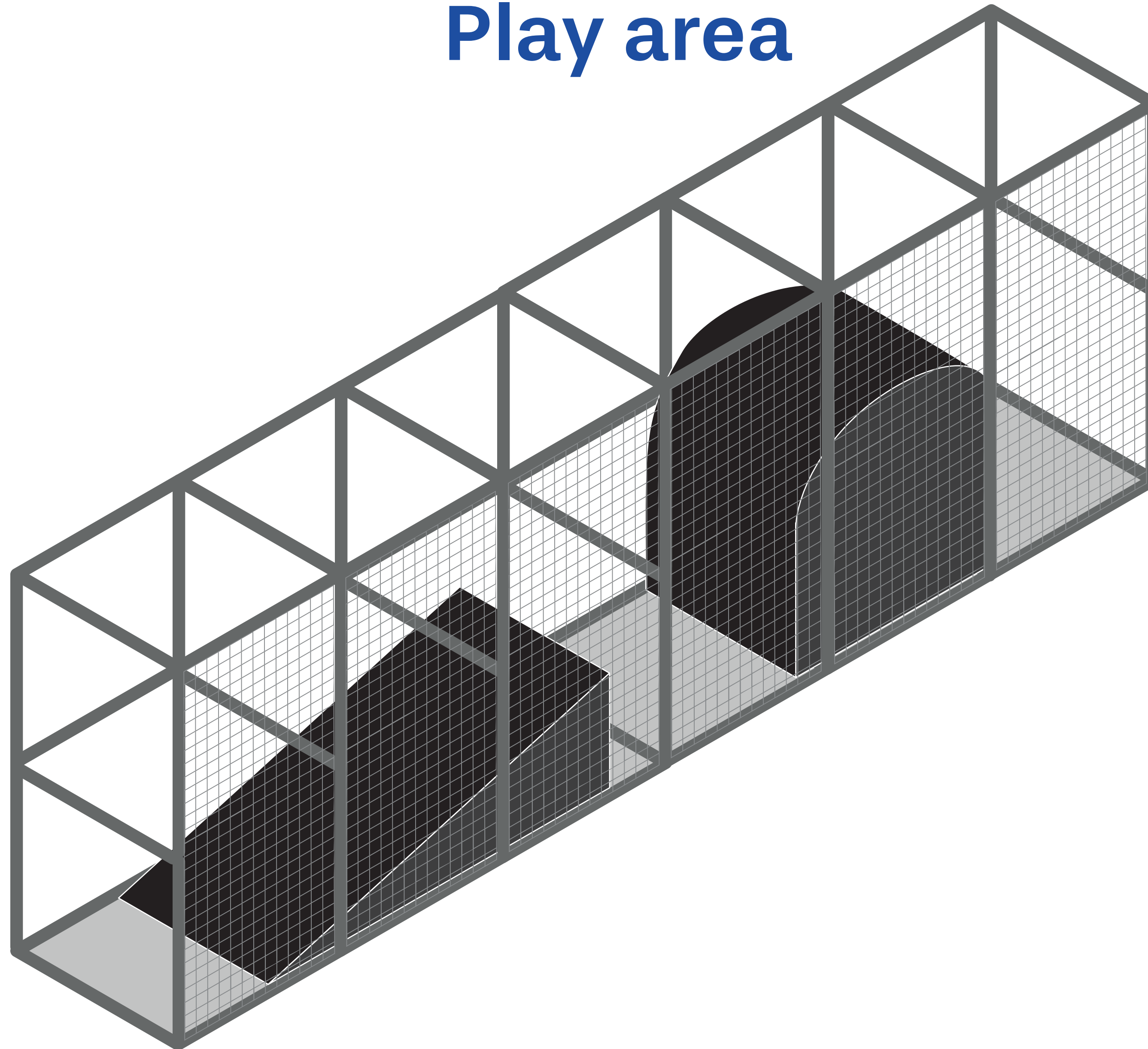


# Play area



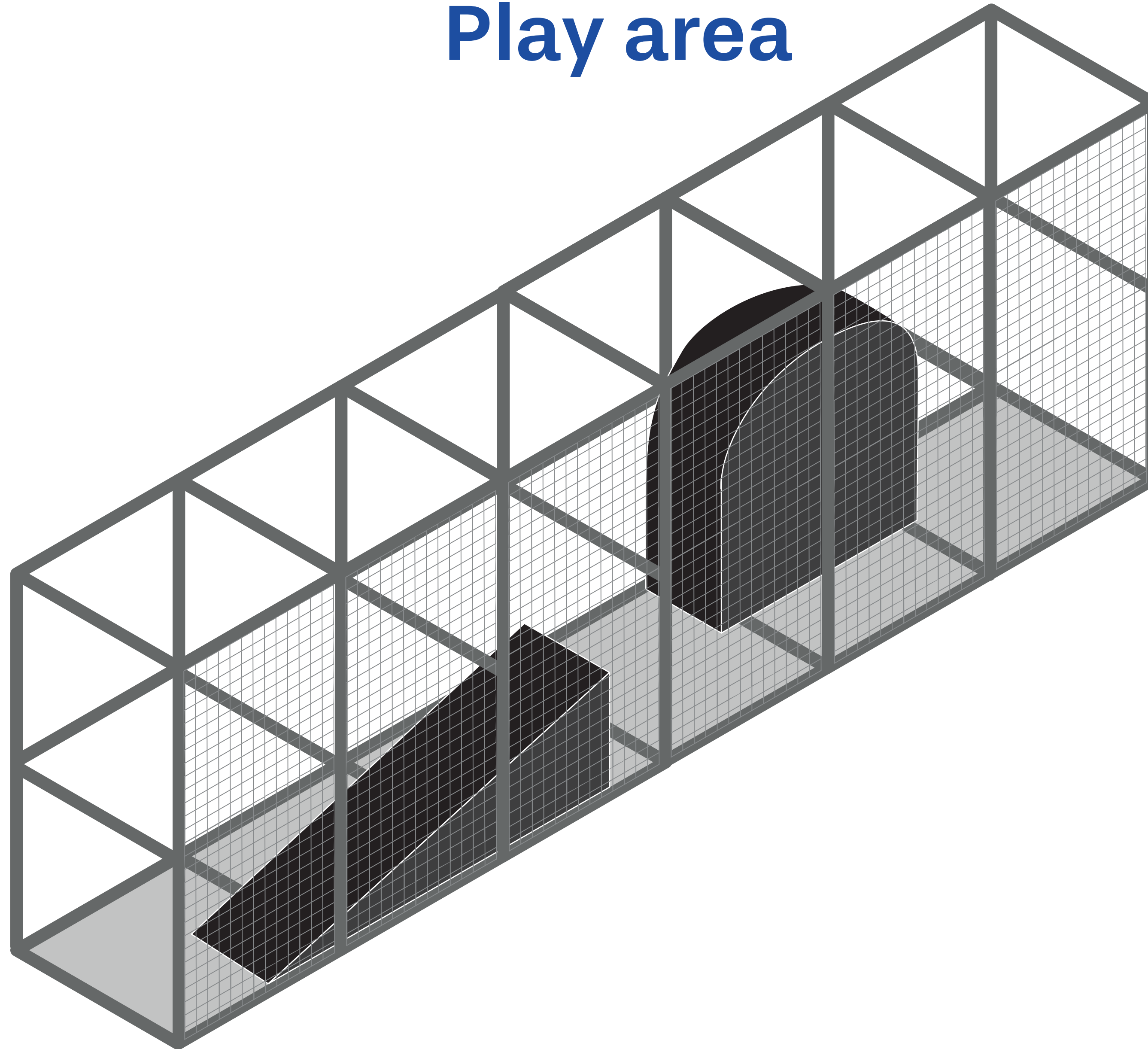


# Play area



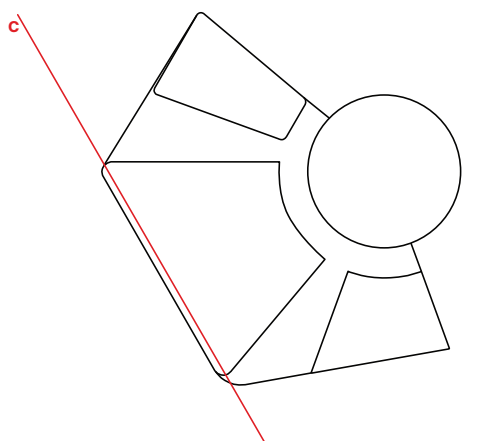
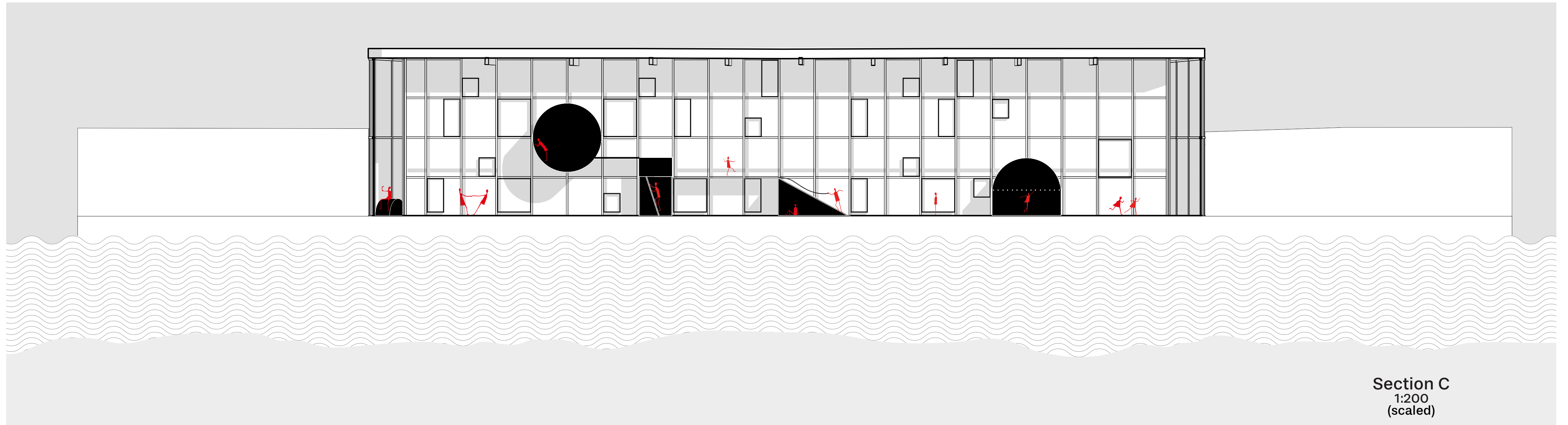


# Play area



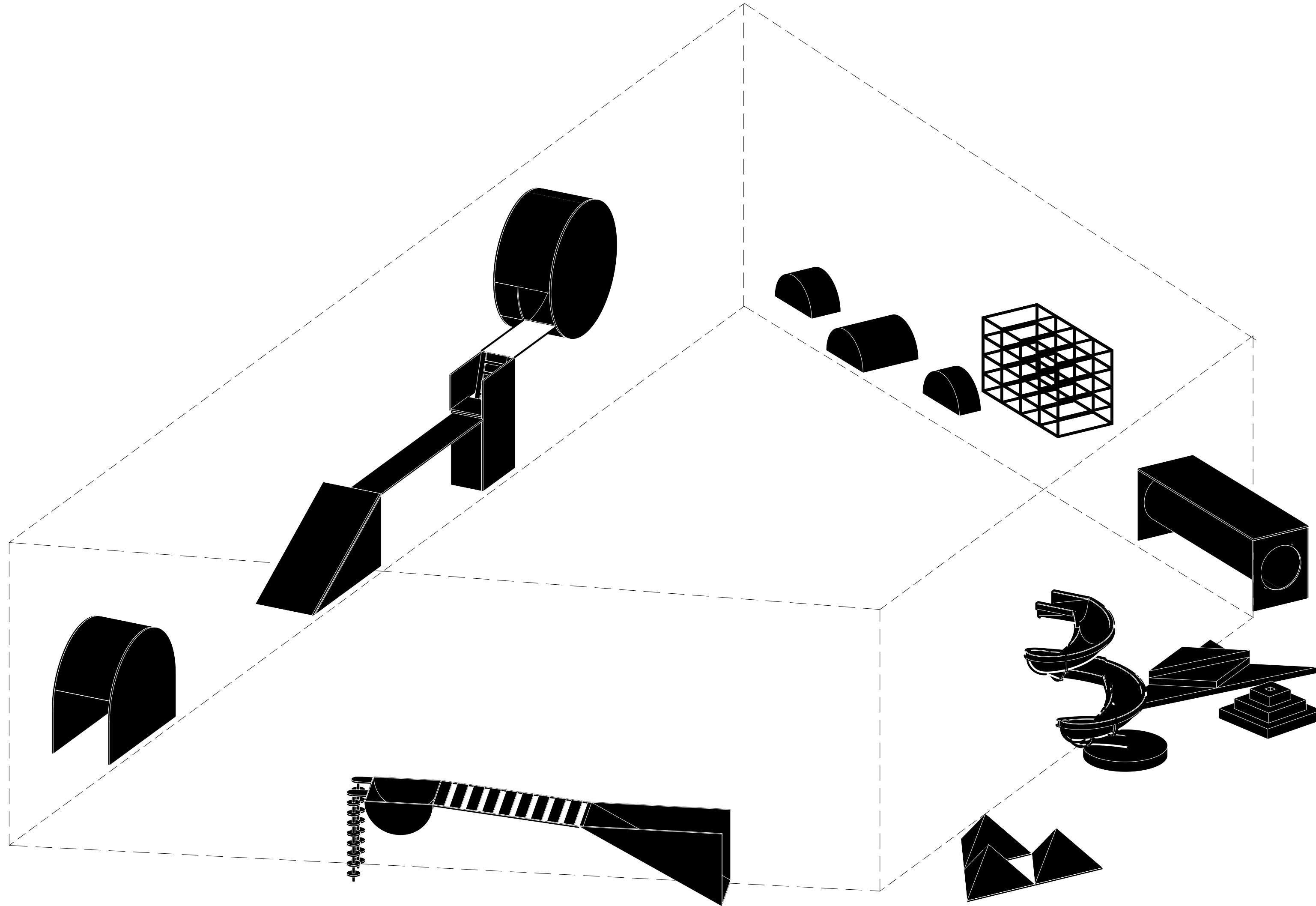


# Interactions with play elements

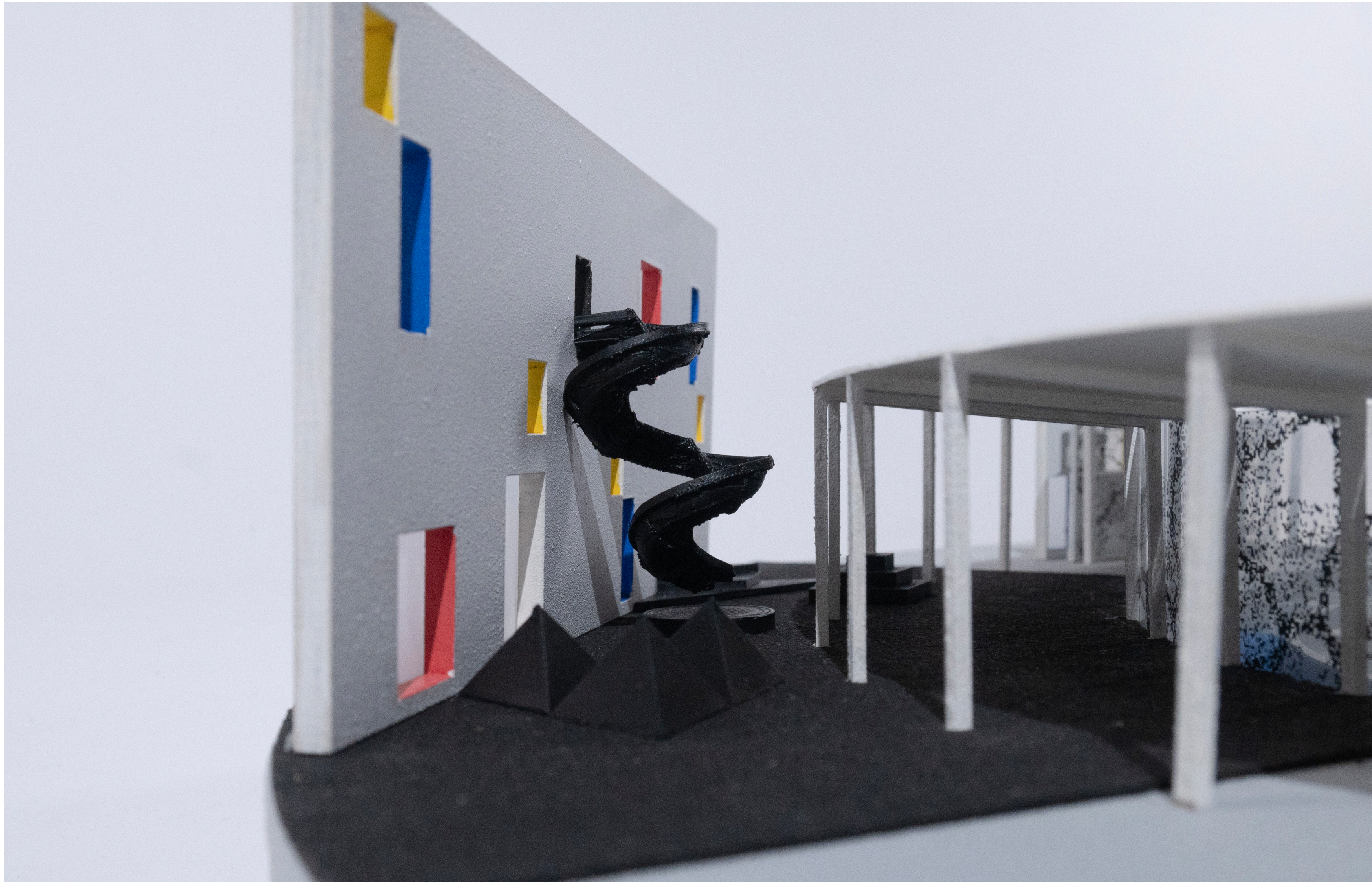




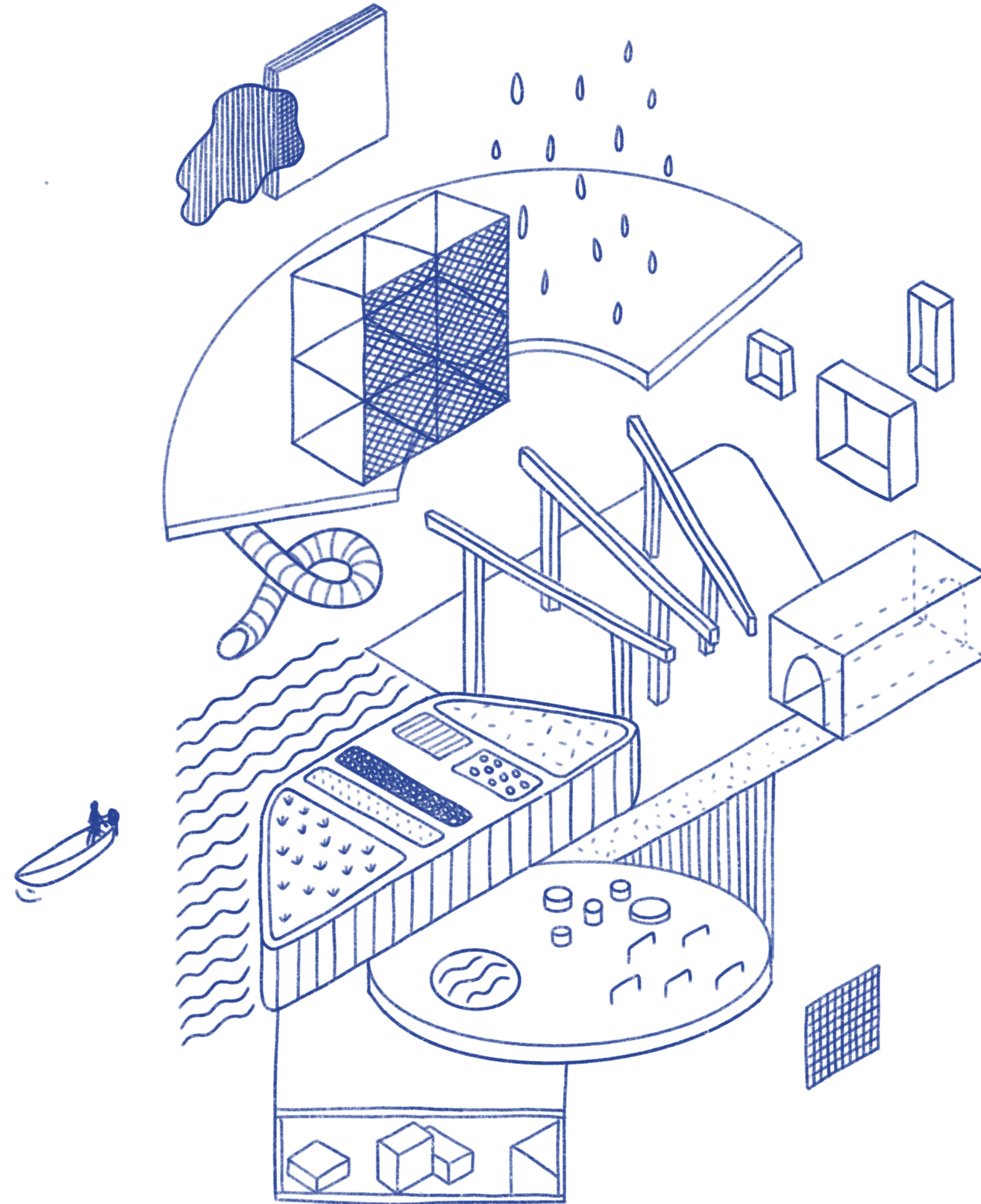
# Play elements







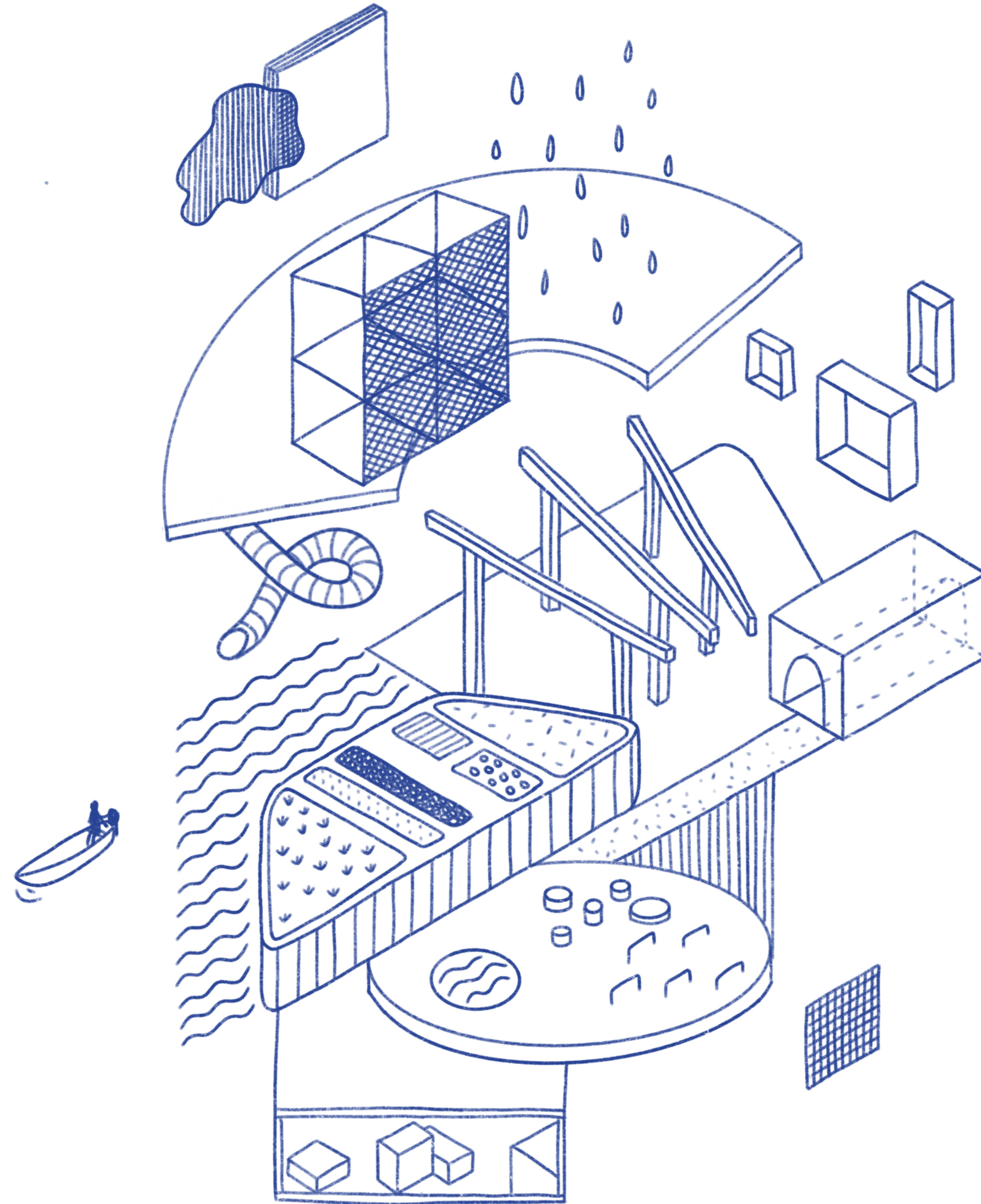






# Waterwise

Building a community with  
knowledge on water



Marinde Reijman