

PORTFOLIO

Lujia Zhu

Selected Works 2018-2023

Email: E1168918@u.nus.edu

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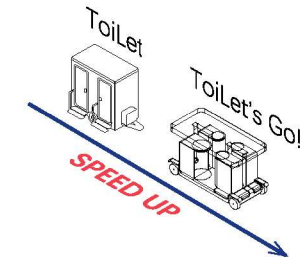
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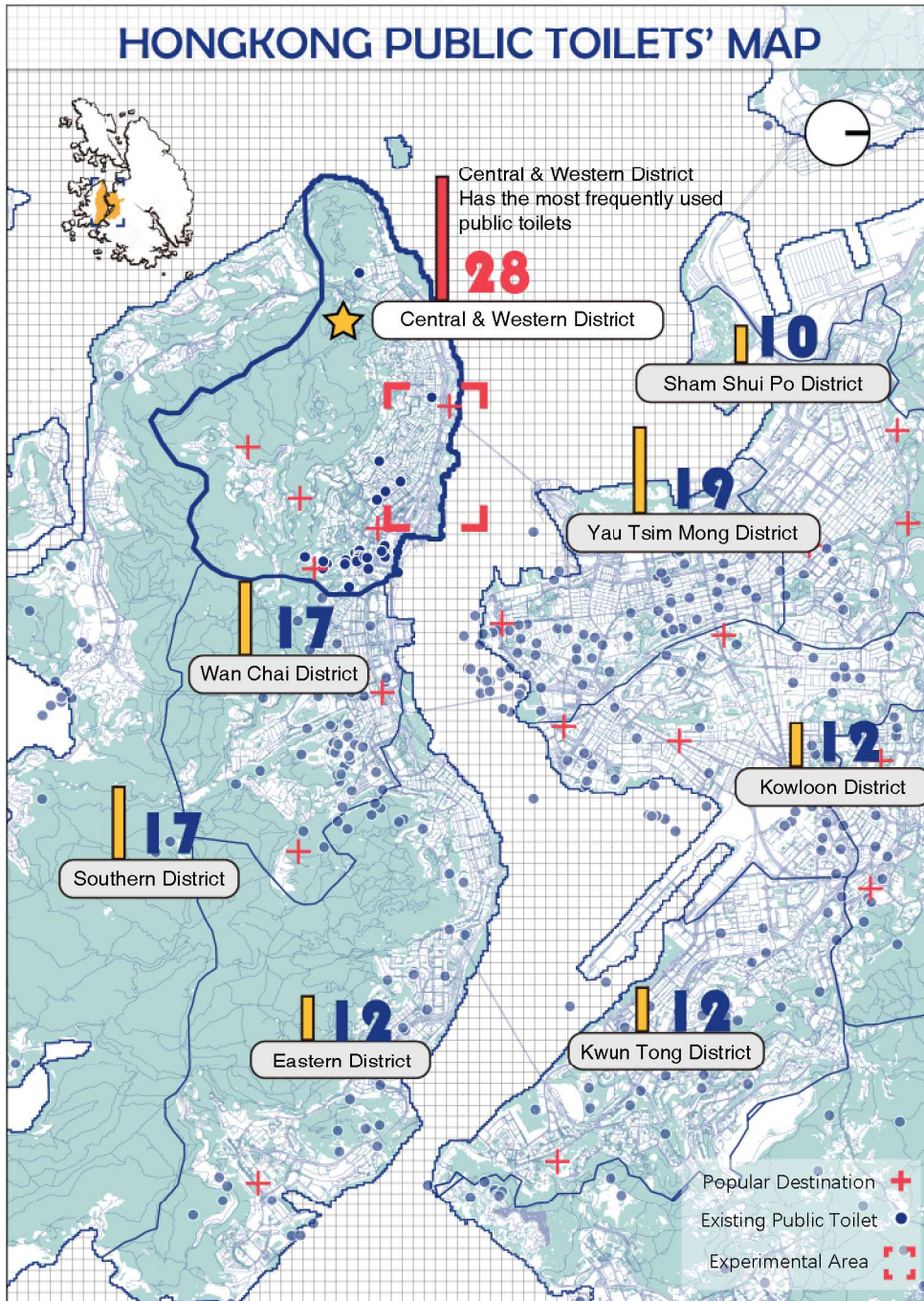
ToiLet's Go!

International Public Toilet Design Competition
Instructor: Xudong Zhu, Jiabin Wei

Contribute to Concept(70%), Design(100%), Modeling & Drawing(100%)

Location: HongKong, China
Autumn. 2022

Hong Kong is an international metropolis with a developed economy and tourism. However, the problem of public toilets has always been a pain. The high price of land makes it difficult to build new public toilets, the scarcity of cleaning manpower makes it difficult to maintain existing public toilets, and the poor environment of public toilets has greatly tarnished Hong Kong's image. In order to keep Hong Kong's public toilets up to pace with urban development. By combining public toilets with driverless vehicles, they can be operated to different places according to needs, and intensive cleaning and maintenance can be carried out. At the same time, combined with green landscape facilities, this public toilet car has also become part of the urban rest space.



ISSUES & PROPOSAL

It'd **COST TOO MUCH** money to repair all the old public toilets

\$76431660!

2003 2010 2019 2024

I wish the public toilet was as **FAR AWAY FROM** my house as possible

EWWW!

HONGKONG DAILY

■ The per capita area of the rest land is less than 1 m² of the region

The newspaper said that the current urban recreation area per person in hong kong is only 2.7 square meters

It's hard to find someplace to rest!

Manual cleaning of these toilets is so **INEFFICIENT !!**

Hiring toilet cleaners is very difficult.

LOW SALARY!

It's really **HARD TO FIND** the toilet when you go out to play

Mami! I want to pee!

Tree + Toilet + Car

ToiLet's Go!

ToiLet's Go Routine

REUSE EXISTING PUBLIC TOILET
Provide water replenishment

RECHARGE SPOT
Provide water replenishment

MAINTENANCE
Repair the cars and replace the dirt boxes

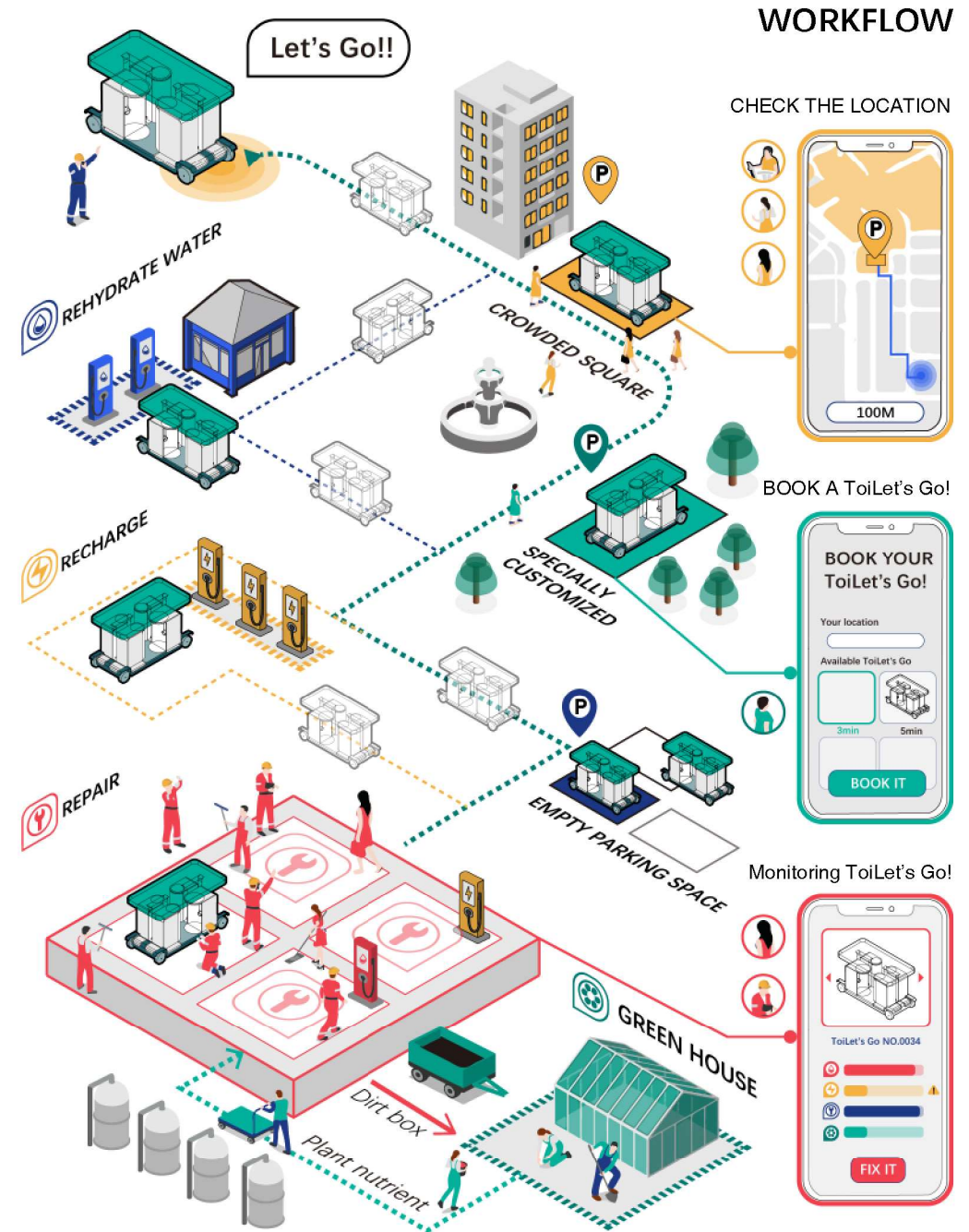
RECHARGE SPOT
Replenish plant nutrient solution and recycle dirt box

Highly usage area

PARKING (Mutil-used)
Areas with a high demand for toilets: Crowned Squares

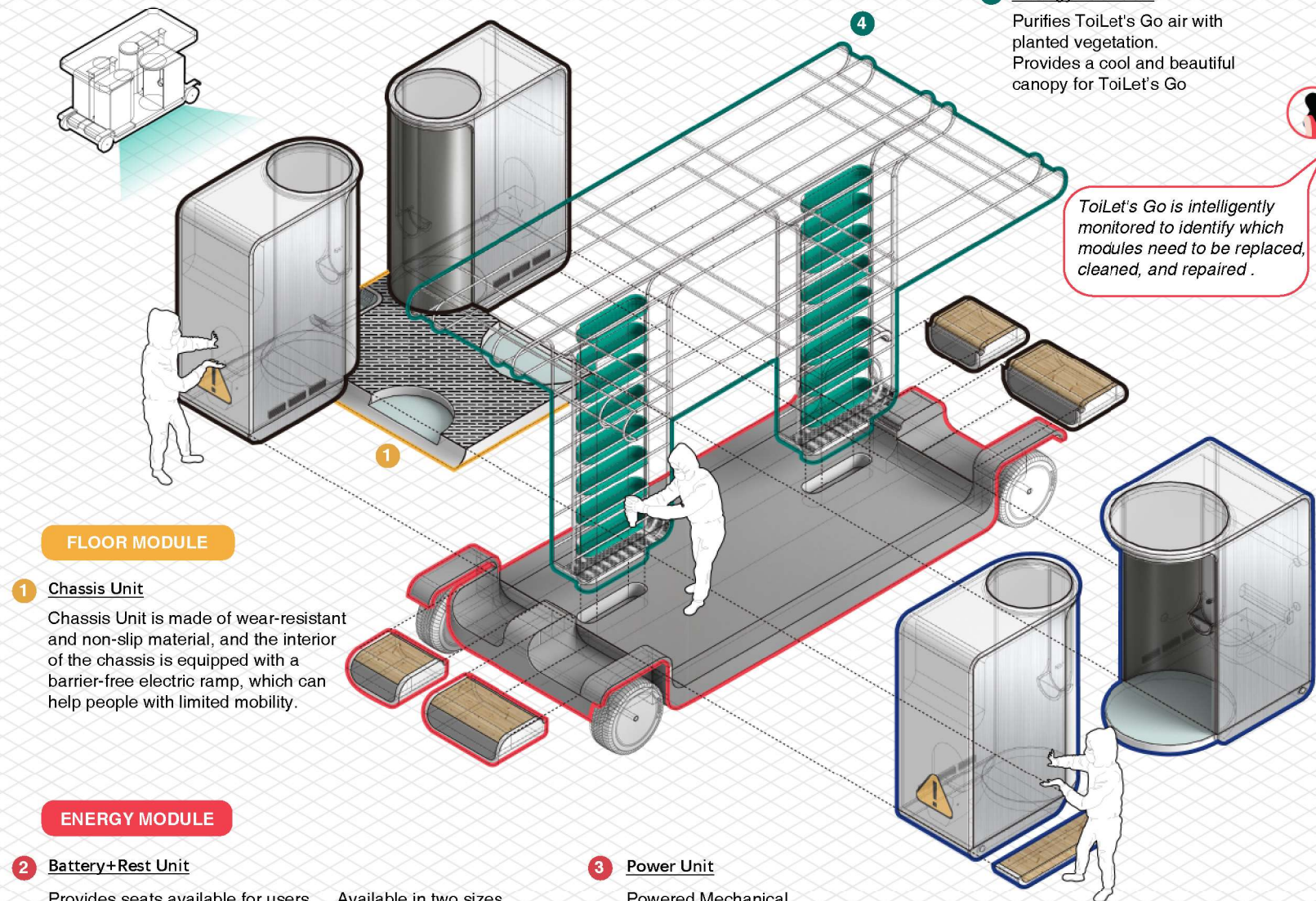
PARKING (Single-used)
Areas with a private demand for toilets: along the street, parking lots, etc.

PARKING (No-used)
Suitable space for parking



THE COMPONENTS

ToiLet's Go CONSISTS OF 4 MODULES
FLOOR MODULE, ENERGY MODULE, ROOF MODULE AND TOILET MODULE



FLOOR MODULE

1 Chassis Unit

Chassis Unit is made of wear-resistant and non-slip material, and the interior of the chassis is equipped with a barrier-free electric ramp, which can help people with limited mobility.

ENERGY MODULE

2 Battery+Rest Unit

Provides seats available for users
Provides storage for car batteries

Available in two sizes
(650mm*600mm*300mm)
(950mm*600mm* 300mm)

3 Power Unit

Powered Mechanical
Components for ToiLet's Go

ROOF MODULE

4 Ecology Roof Unit

Purifies ToiLet's Go air with planted vegetation.
Provides a cool and beautiful canopy for ToiLet's Go

ToiLet's Go is intelligently monitored to identify which modules need to be replaced, cleaned, and repaired .

TOILET MODULE

5 Accessible Toilet Unit

The size is
(1600mm*1200mm*2300mm)
including toilet, sink, vanity mirror, barrier-free facilities
(Suitable for wheelchair)

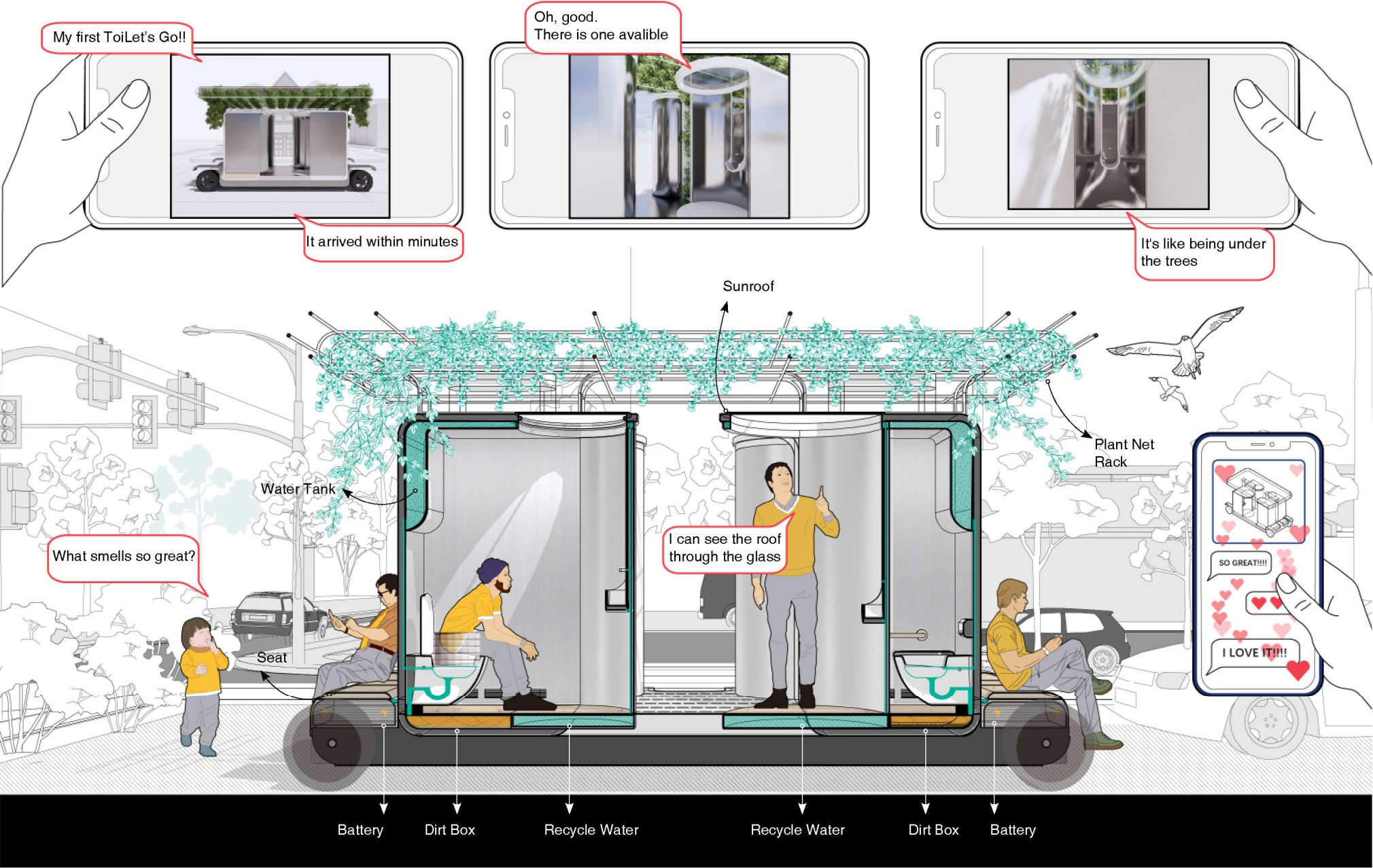
6 Regular Toilet Unit

common toilet module
The size is
(1200mm*900mm*2300mm)
including toilet, sink, vanity mirror

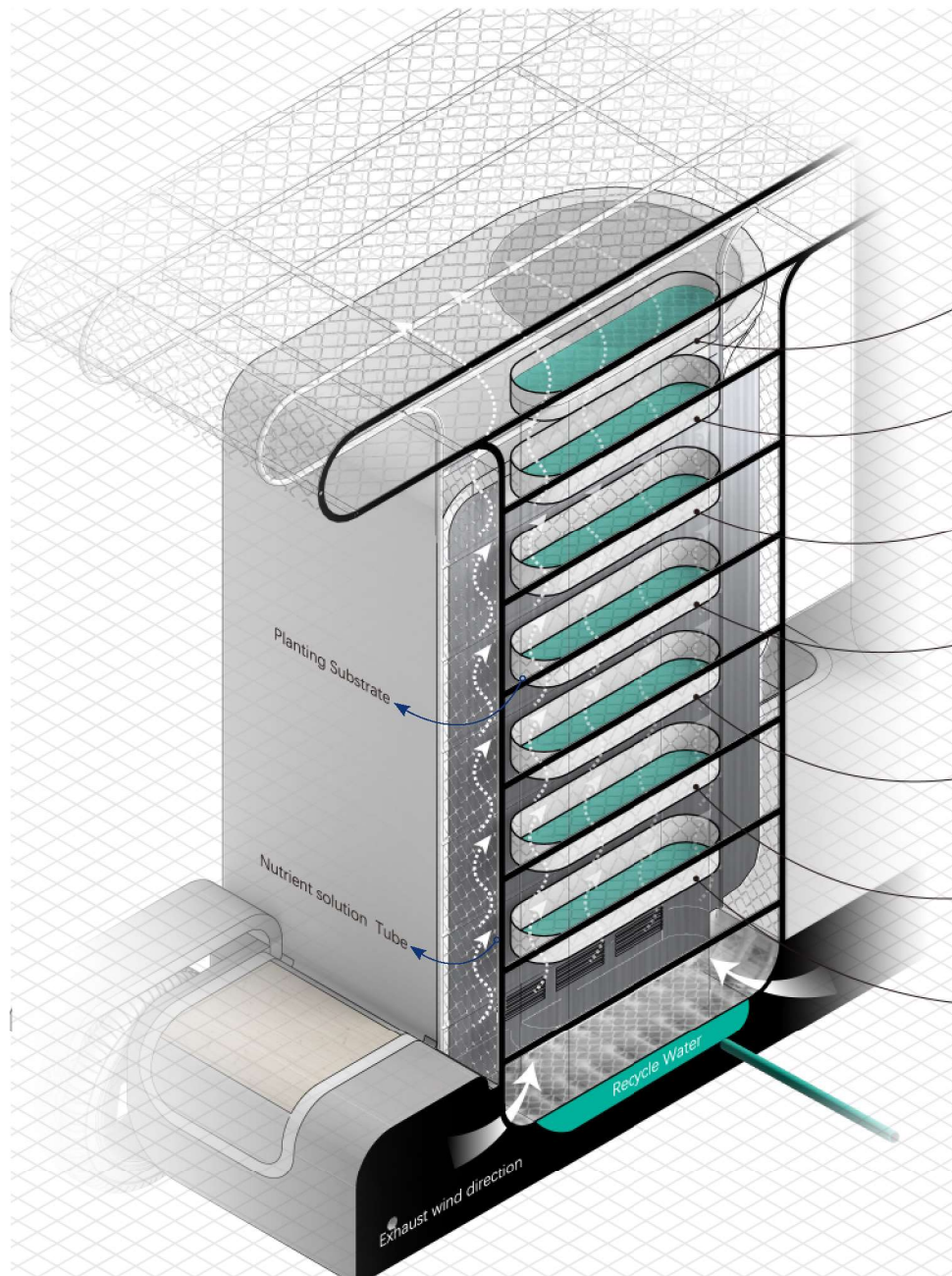
7 Seat Unit

Provide resting seats

USAGE SCENARIO



PURIFICATION SYSTEM



PLANTS DESIGN

1 *Hedera nepalensis*



2 *Adiantum capillus-veneris*



3 *Epipremnum aureum*



4 *Pistacia weinmanniifolia*



5 *Mentha canadensis*



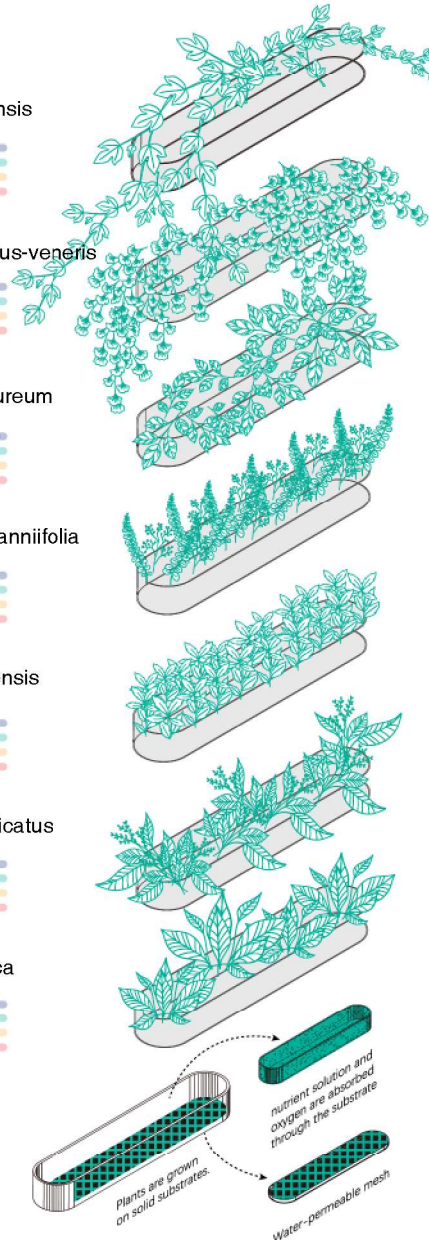
6 *Chloranthus spicatus*



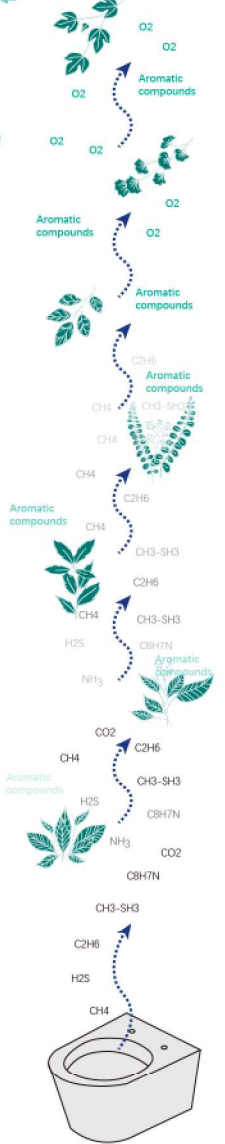
7 *Rohdea japonica*

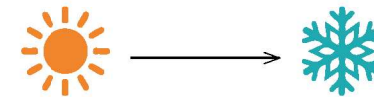
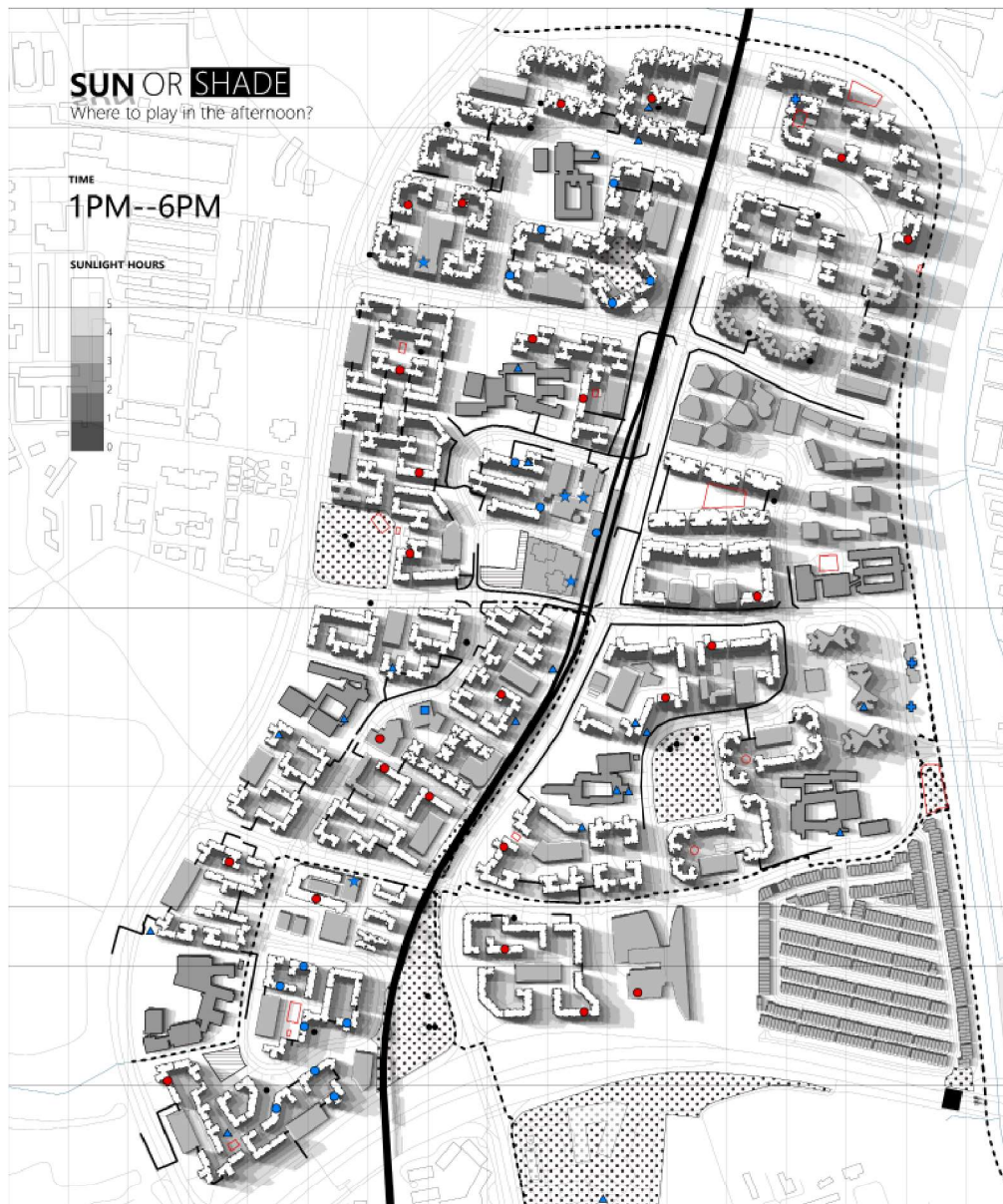


- Purification Ability
- Fragrance
- Aesthetic Value
- Growth Rate



Purification Process





FROM SOLAR TO COOLER

Individual Academic Work
Instructor: Mayura Patil

Location: Choachukang, Singapore
Autumn. 2023

In recent years, the price of electricity has tripled, due to international events, and it is important for Singapore to find a stable energy resource it self. But according to some research, the wind tital , water ,are not that suitable for singapore.

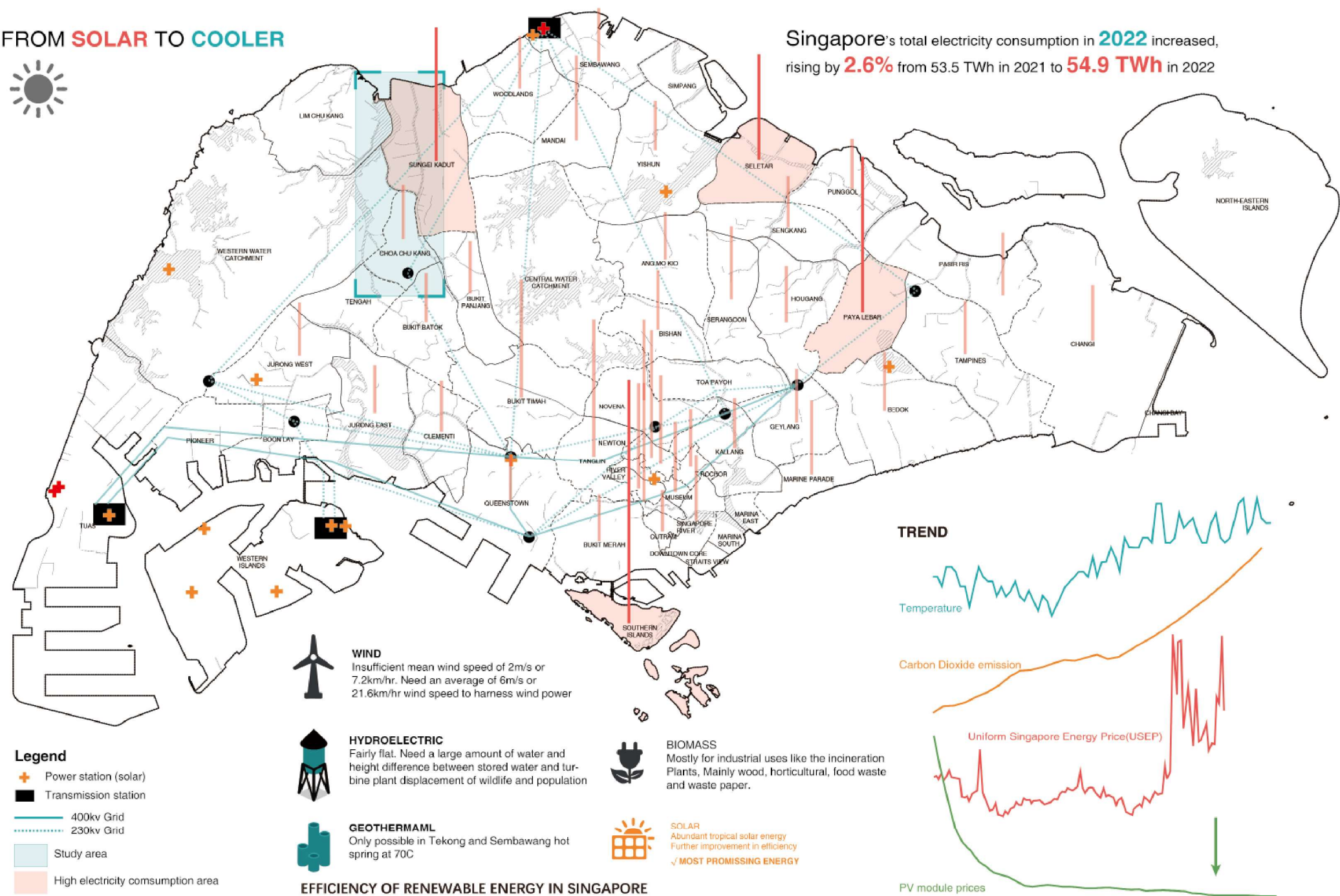
Singapore is a perfect place to develop solar erengy, it gets a lot of sunshine.

Given Singapore's tropical climate with year-round summer, protecting people vulnerable to heat stress is indeed a challenge. This project focuses on future solar energy development to mitigate heat stress among people. It utilizes vacant land within communities as a platform. The project aims to develop a system design that provides financial support and innovative land use strategies.

FROM SOLAR TO COOLER

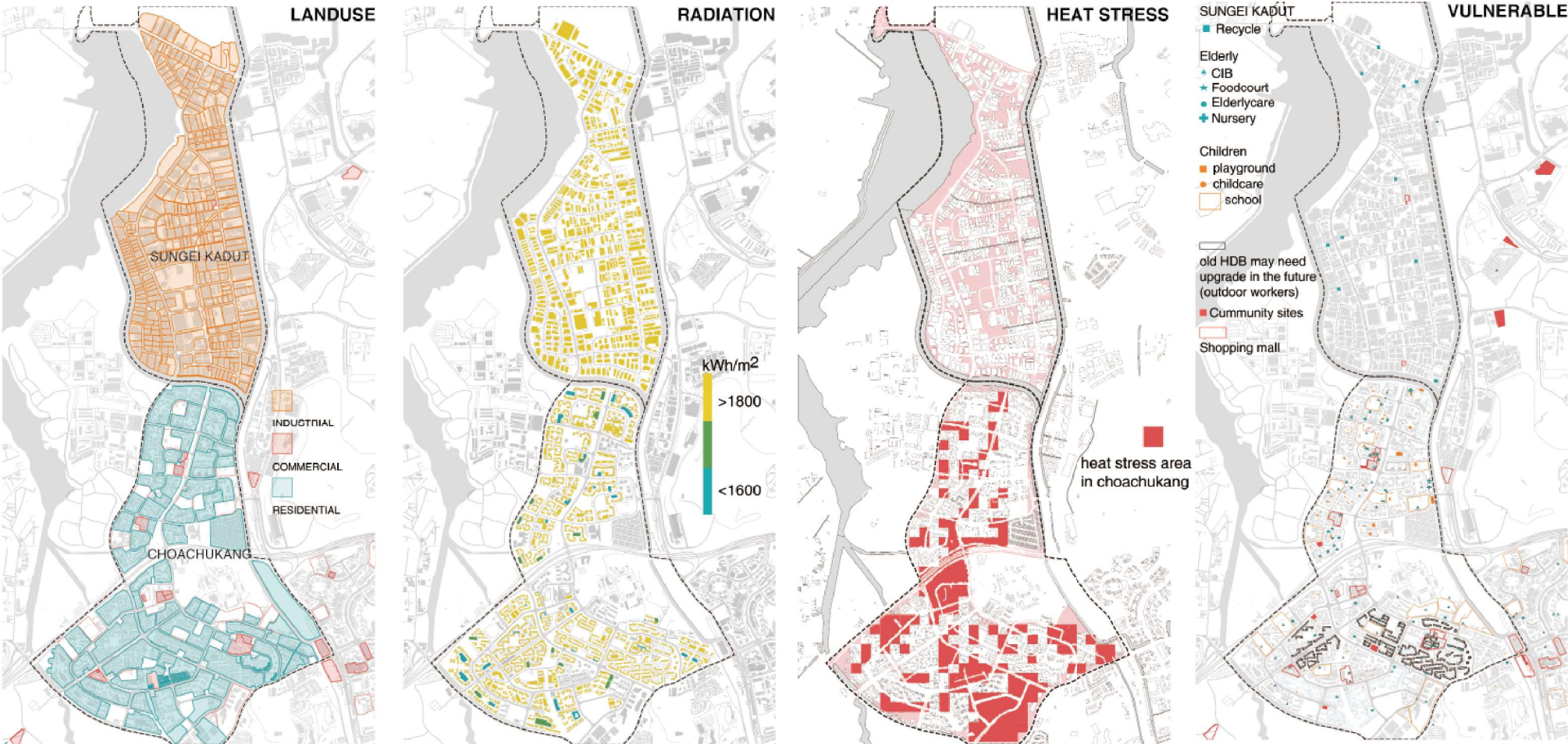


Singapore's total electricity consumption in 2022 increased, rising by 2.6% from 53.5 TWh in 2021 to 54.9 TWh in 2022

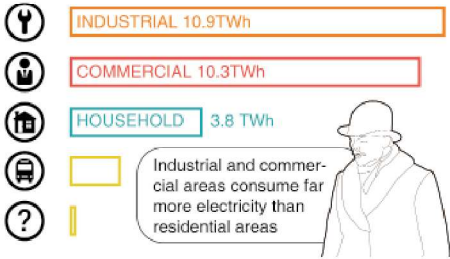


EFFICIENCY OF RENEWABLE ENERGY IN SINGAPORE

SITE ANALYSIS



ELECTRICITY CONSUMPTION BY SECTOR



ELECTRICITY CONSUMPTION BY SECTOR

Solar deployment in Singapore grew significantly over the years, surpassing 1 GWp of solar installed capacity in the first half of 2023. Grid-connected installed capacity increased from 126.0 MWp in 2016 to 1005.7 MWp in the first half of 2023. Singapore is on track to meet 1.5 GWp of solar deployment by 2025, and at least 2 GWp by 2030.

SUNGEI KADUT	CHOACHUKANG
FEE:440,840,000\$	FEE:364,440,024\$
ROOF:1102099m2	ROOF:778718m2
PRODUCE: 277.7Gwh/YR	PRODUCE: 235Gwh/YR

VULNERABLE GROUPS

INFANTS AND CHILDREN

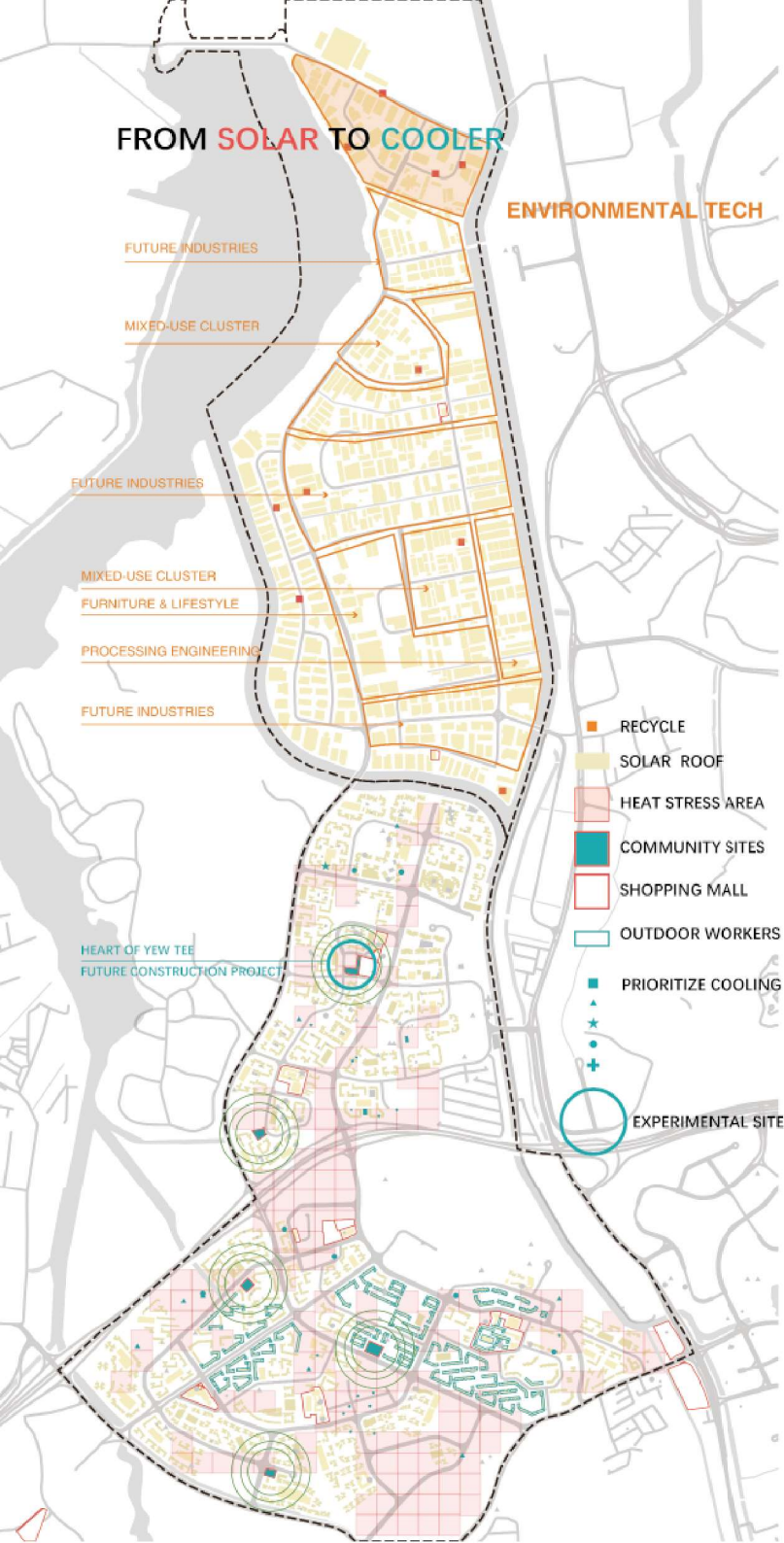
OUTDOOR WORKERS

OLDER ADULTS

Older adults do not adjust as well as young people to sudden changes in temperature. They are more likely to have a chronic medical condition that changes normal body responses to heat. They are more likely to take prescription medicines that affect the body's ability to control its temperature or sweat.

FROM SOLAR TO COOLER

ENVIRONMENTAL TECH

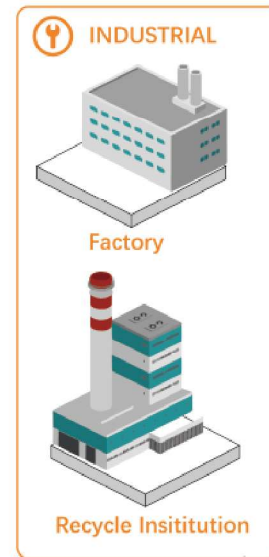


SOCIAL FRAMEWORK OF STAKEHOLDERS

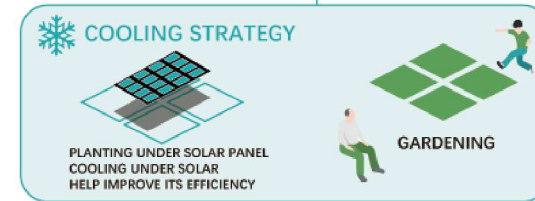
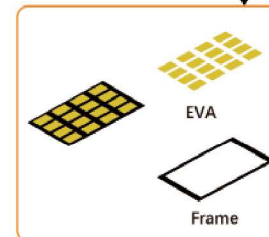
STAGE 1 INVESTMENT



STAGE 2 TRANSACTION



STAGE 3 RECYCLE



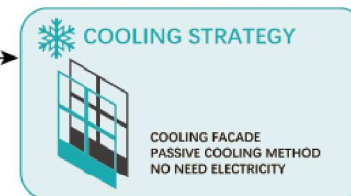
EXTRA ENERGY

GAIN MONEY

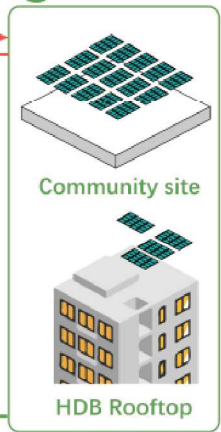
USED SOLAR PANEL



TECHNOLOGY SUPPORT



RESIDENTIAL



Outdoor workers



Heat stress area

Elderly Kids

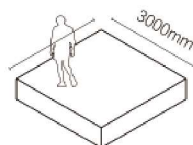


Popular site in afternoon

BENEFIT COMMUNITY

Module design is based on the size of the solar panel. There are mainly four basic units.

Four structures with different functions can be formed through different combinations
SOLAR COOLING PANEL
GARDENING SET
SHELTER(CONSTRUCTION/COMMUNITY)
FACADE(AIR COOLING/ DUST ABSORB)



SOLAR PANEL

Suitable for all ages

MOBILE PLANTER

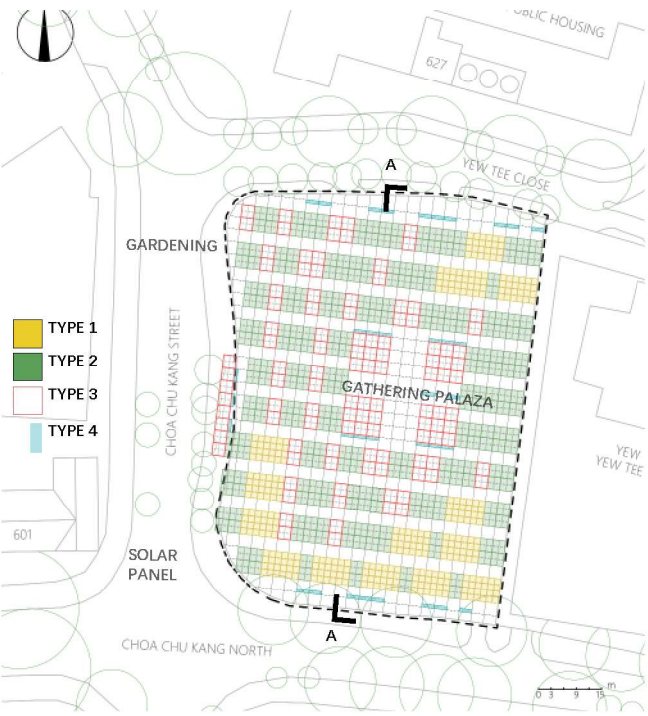
VERTICAL FACADE

A 3D perspective drawing of a cube. The top edge of the front face is labeled with a dimension line and the text "3000mm".

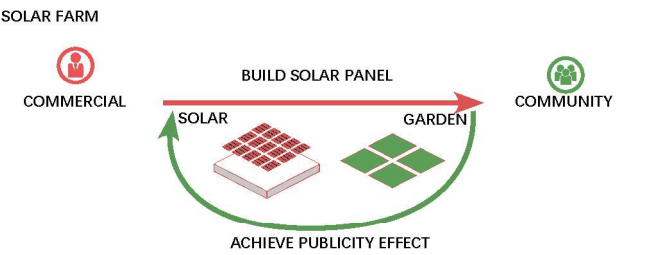
BASIC FRAME

11

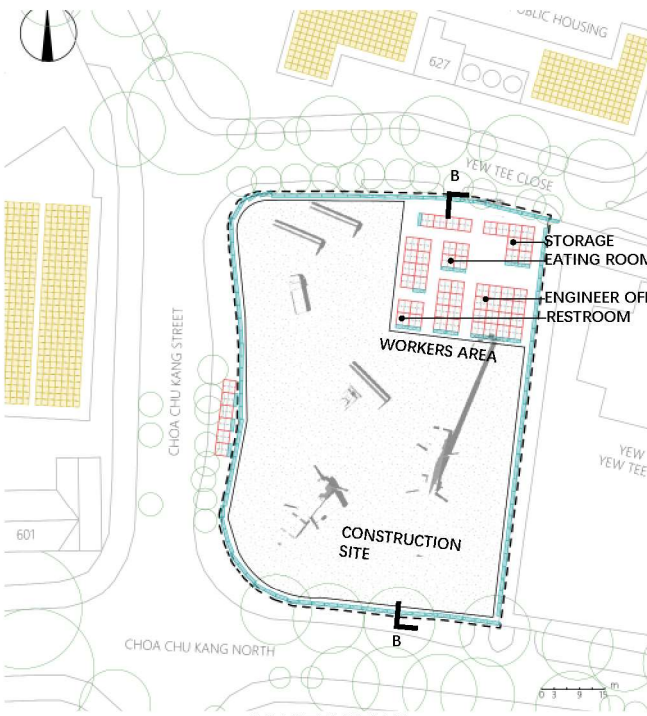
STAGE



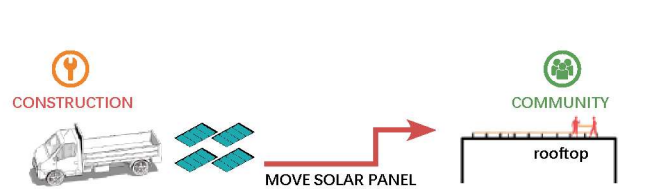
STAGE 1
SOLAR FARM



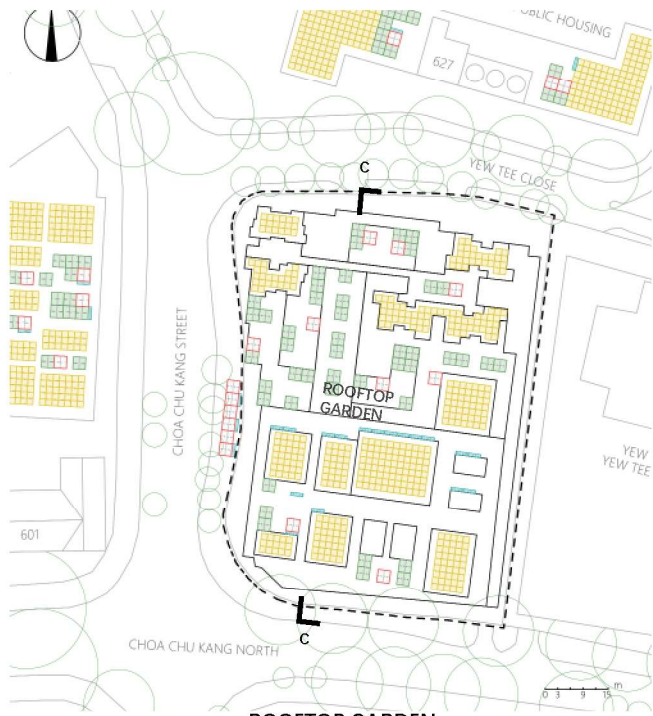
In Stage 1, solar panels and planting ponds are arranged on the vacant land. The planting ponds not only attract people but also help cool down the solar panels, thereby increasing their energy conversion efficiency. The energy collected during this stage is used to offset the installation costs as well as other maintenance expenses.



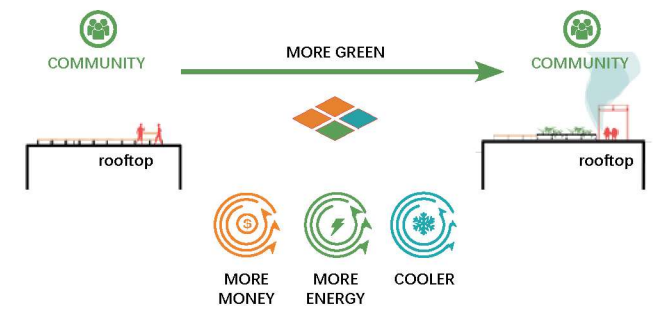
STAGE 2
CONSTRUCTION



In Stage 2, when the vacant land has new construction plans, the solar panels and flower ponds can be relocated to suitable rooftops of surrounding HDB buildings, providing energy for the surrounding HDBs and rooftop gardens. At the same time, some modules can remain on the construction site, providing infrastructure for worker operations.

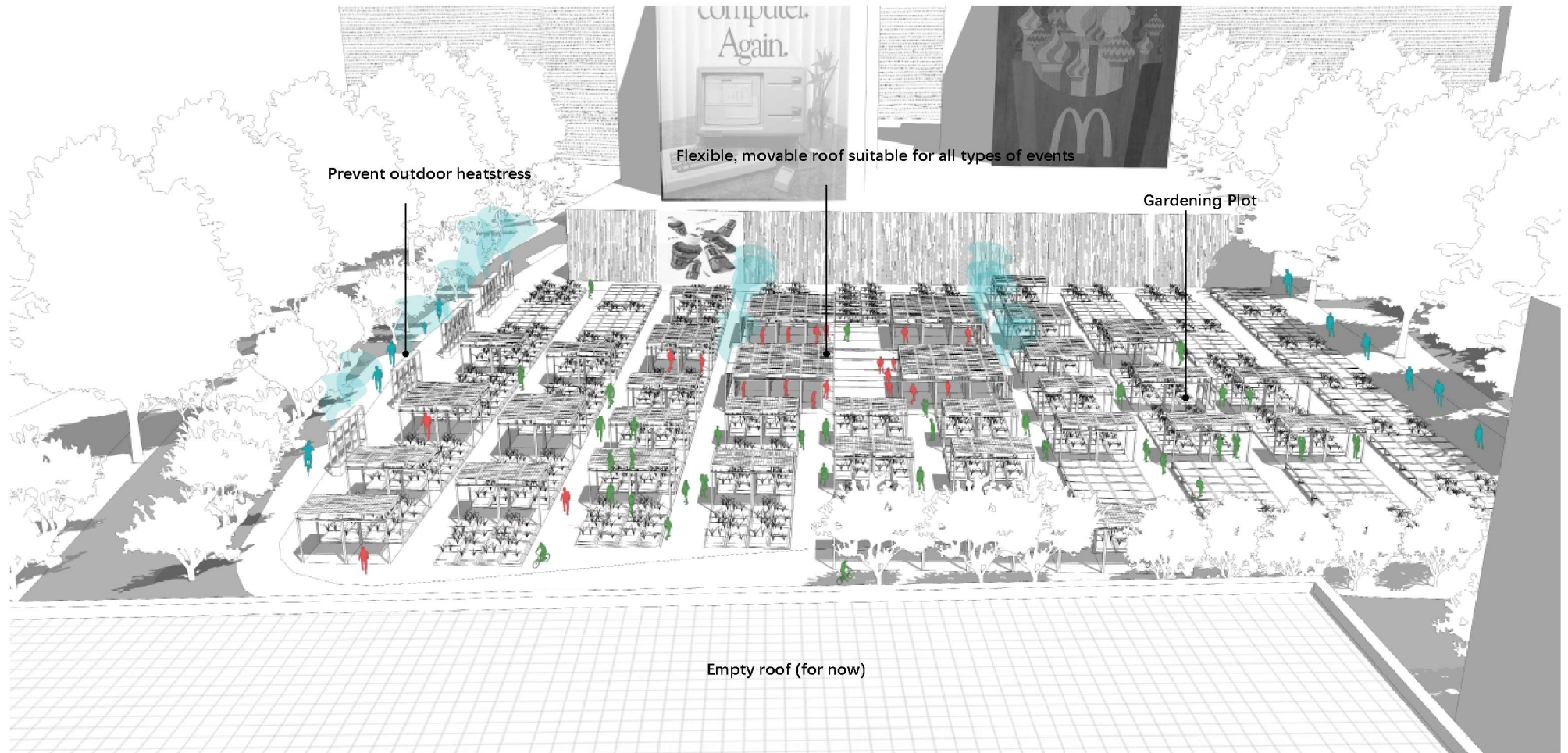


STAGE 3
ROOFTOP GARDEN



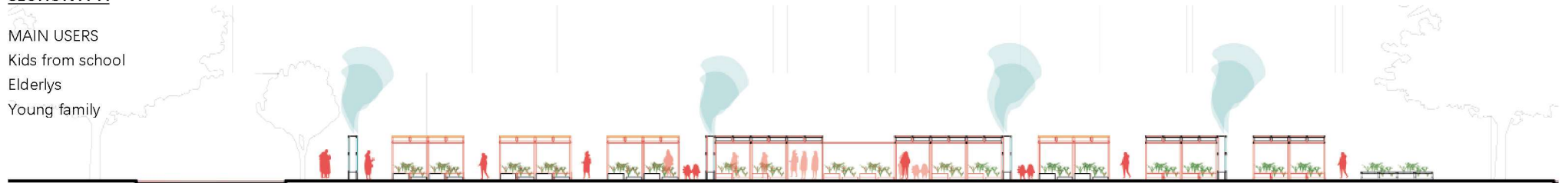
In Stage 3, the accumulated electrical energy converted from solar power can be sold. More building rooftops can be equipped with planting ponds, solar panels, and cooling modules.

STAGE 1 SOLAR FARM

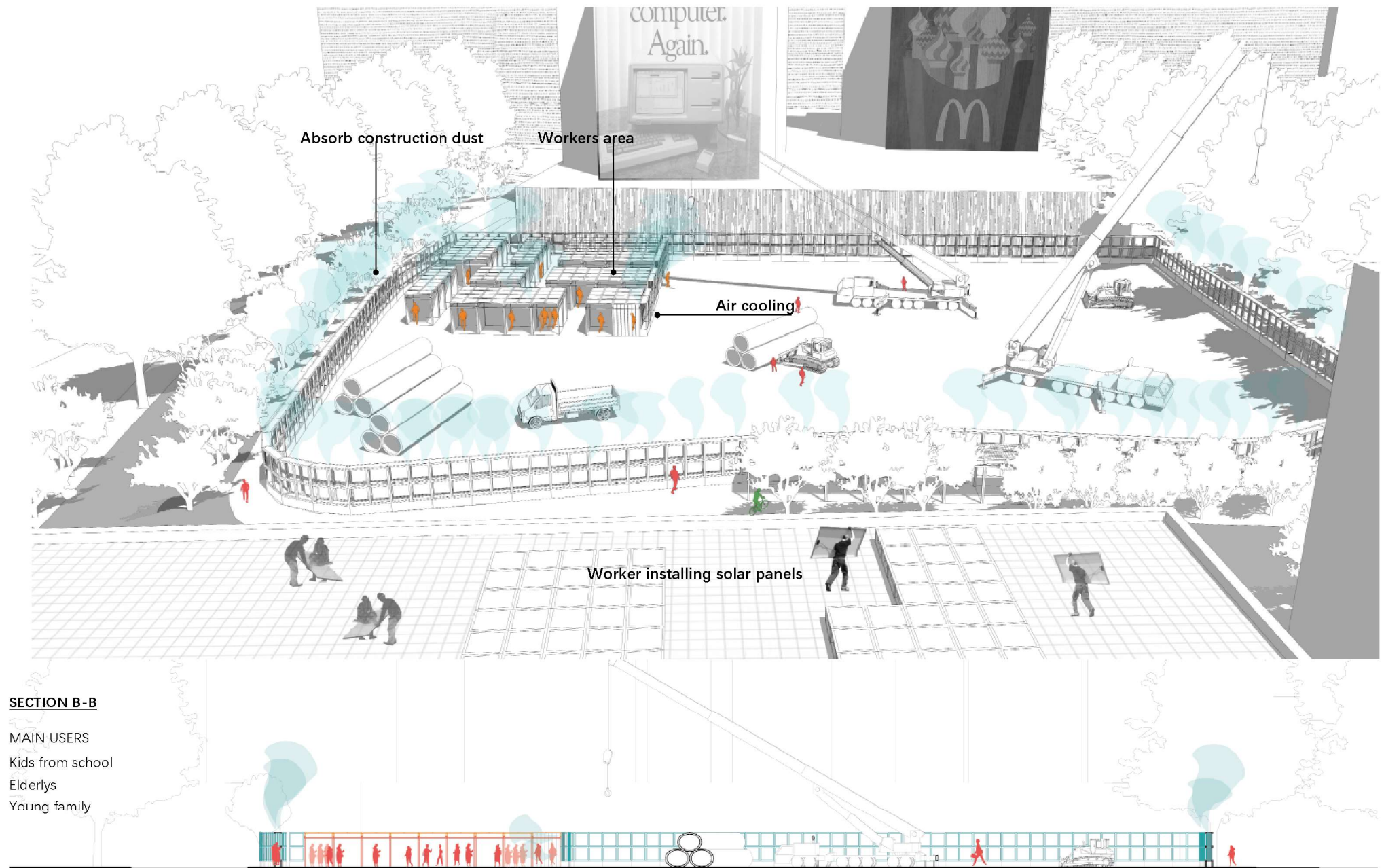


SECTION A-A

MAIN USERS
Kids from school
Elderlys
Young family



STAGE 2 CONSTRUCTION



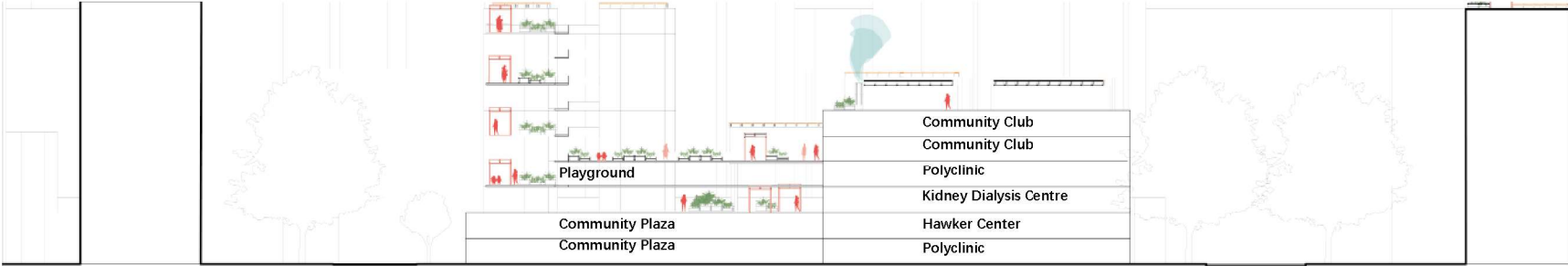
STAGE 3 ROOFTOP GARDEN

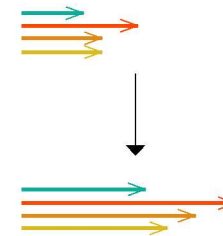
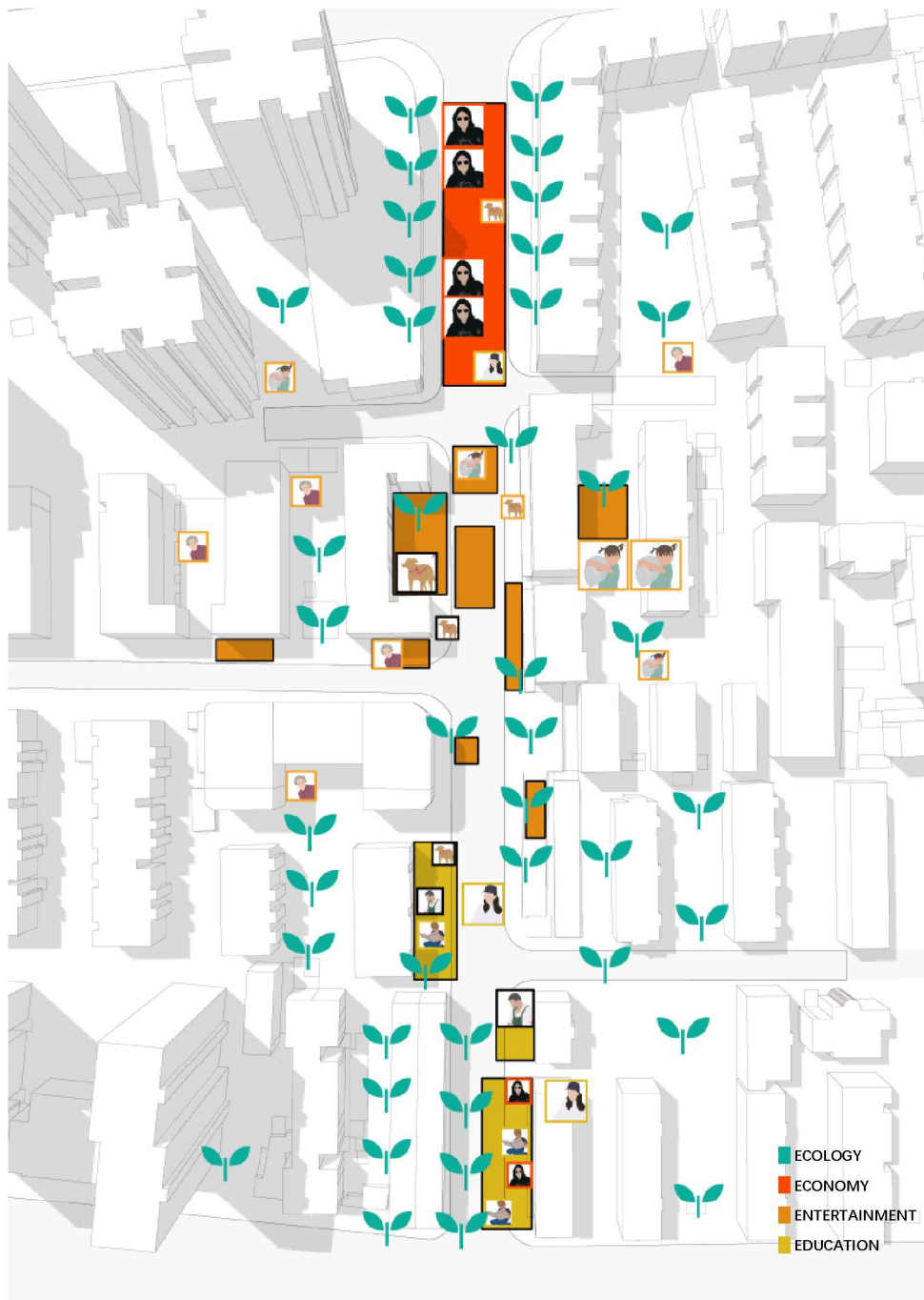


SECTION C-C

MAIN USERS

All residents near by





The STREEET

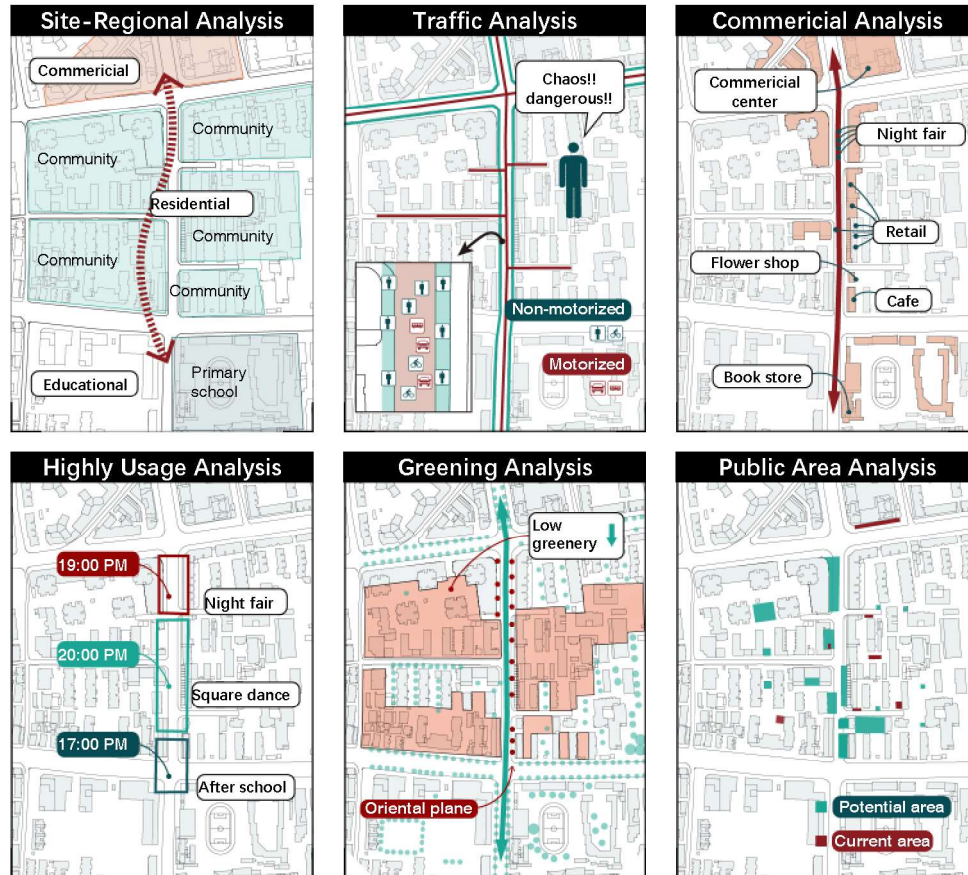
Southeast University Design Studio
Individual Academic Work

Instructor: Jun Tang
Email: juntseu@163.com

Location: Nanjing, China
Spring, 2021

The city is developing rapidly and has invested a lot of money to build new areas. Only pay attention to its economic benefits, but ignore the construction of some old towns. Dashiqiao Street is an old street in Nanjing, this street has many activities in a day, and the types of activities will change over time. However, there was no suitable venue for these events, and the street environment was very negative. In order to meet the needs of the people on the site. Four different types of basic modules are placed on Dashiqiao Street to meet the needs of nearby residents for entertainment, commercial sales, and nature education. It can also be changed according to the time and is suitable for various types of activities.

SITE ANALYSIS



Characteristics of site

ECOLOGY



The site is lack of greenery and has a poor ecological environment

ECONOMY



The site is close to the business area, has various commercial activities

ENTERTAINMENT



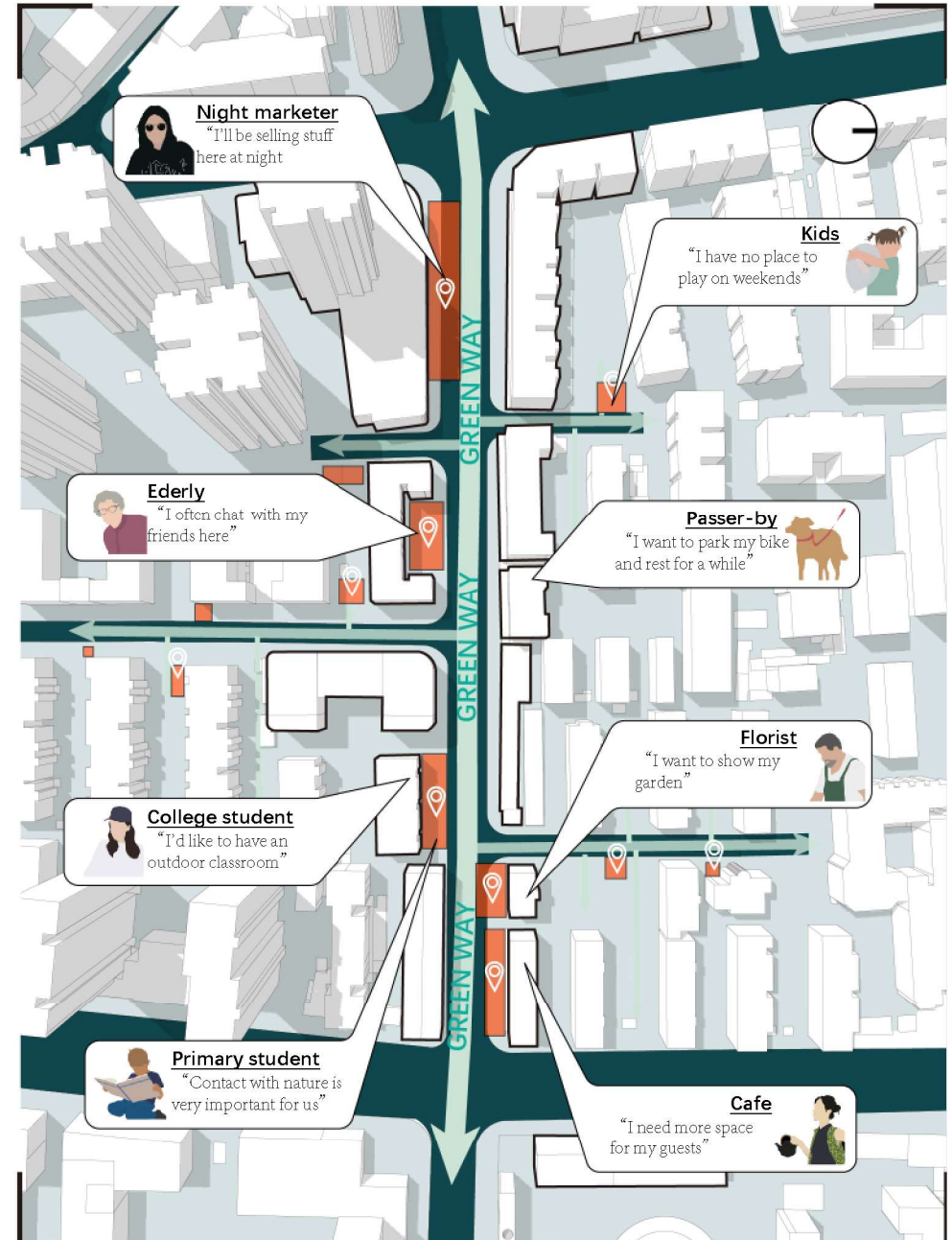
The site has many residents, but lacks entertainment space

EDUCATION

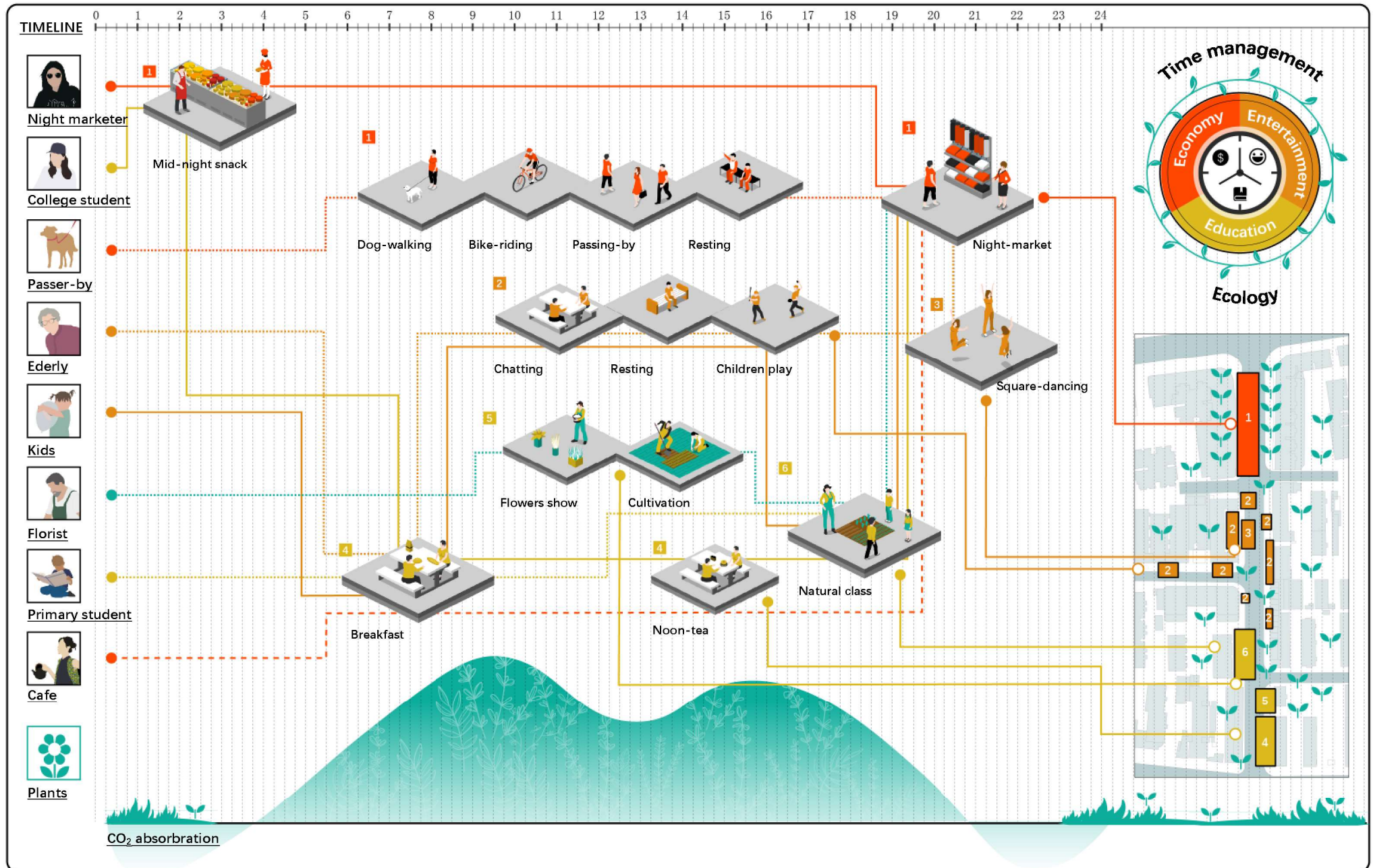


The site is close to the school and lacks outdoor teaching space

PARTI DIADRAM



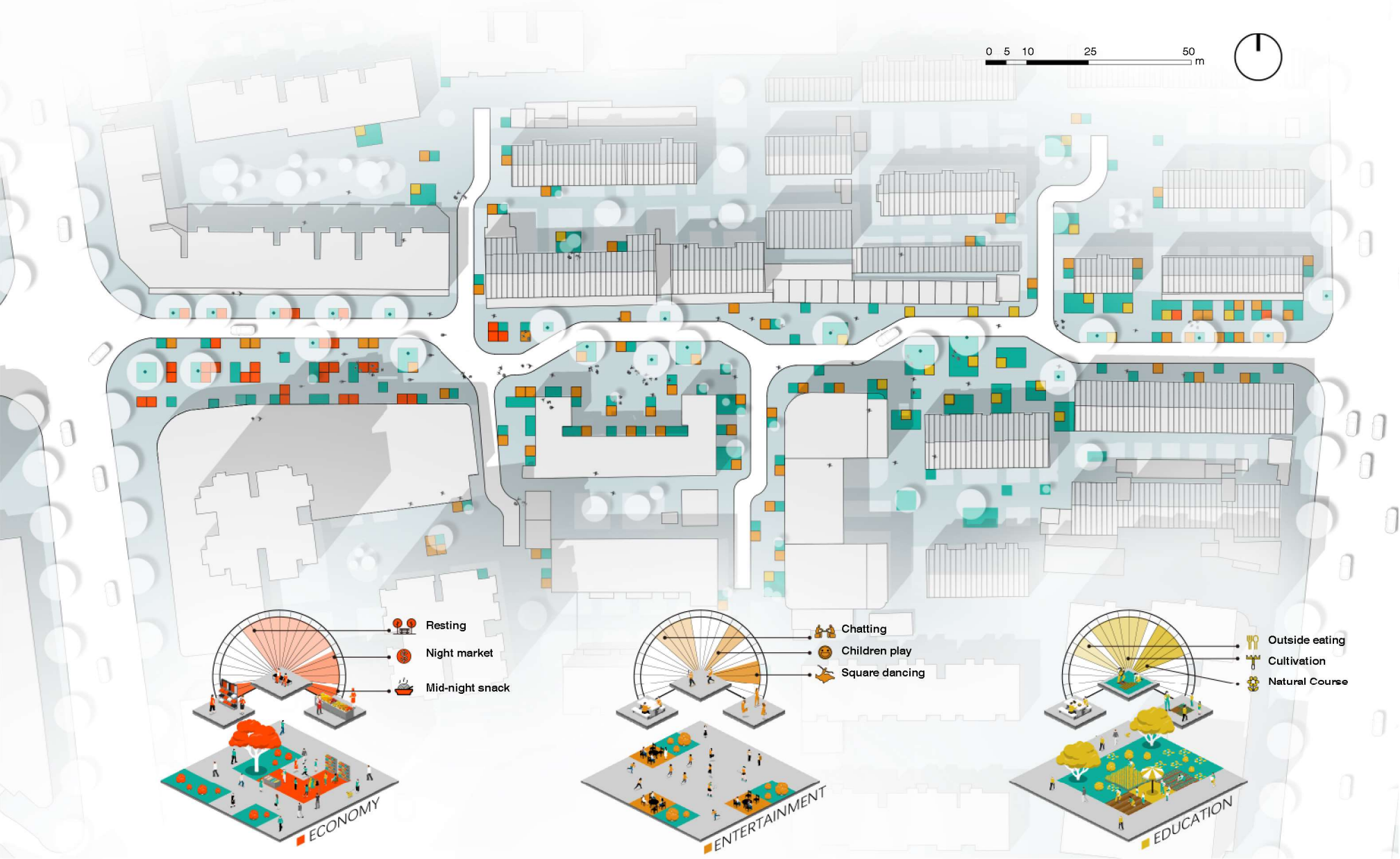
TIME MANAGEMENT



MASTER PLAN

Based on the 2.4m*2.4m units for the layout of the master plan
The units can be divided into 4 types: **ECOLOGY**, **ECONOMY**, **ENTERTAINMENT**, **EDUCATION**.

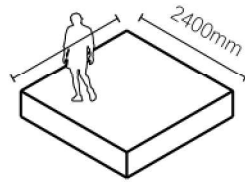
ECOLOGY **ECONOMY** **ENTERTAINMENT** **EDUCATION**



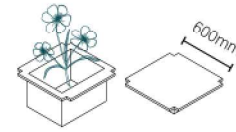
BASIC MODULE

Based on three types of basic unit
There can be an economic unit, an education unit, a
entertainment unit, and five ecological units

Among them, the economic unit, the education unit and the
entertainment unit can change with the time of day.
The ecology units can change by seasons.

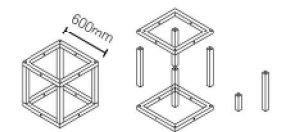


UNIT 1



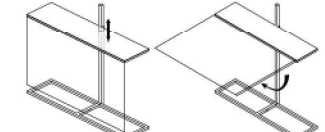
Flowerpot Desktop

UNIT 2



Framework

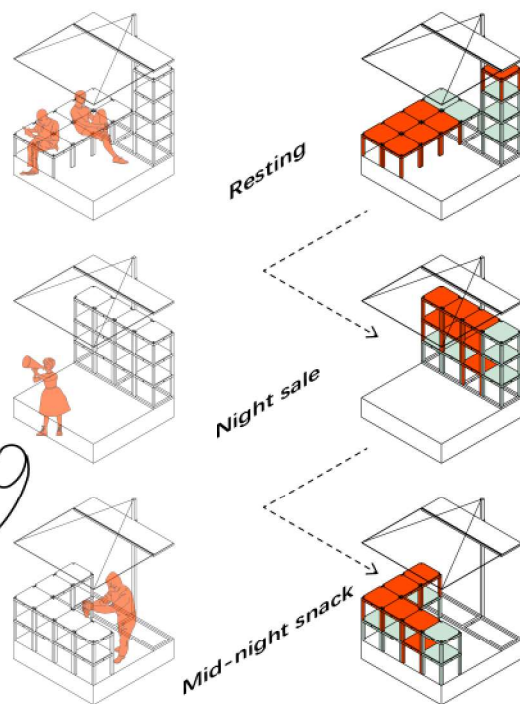
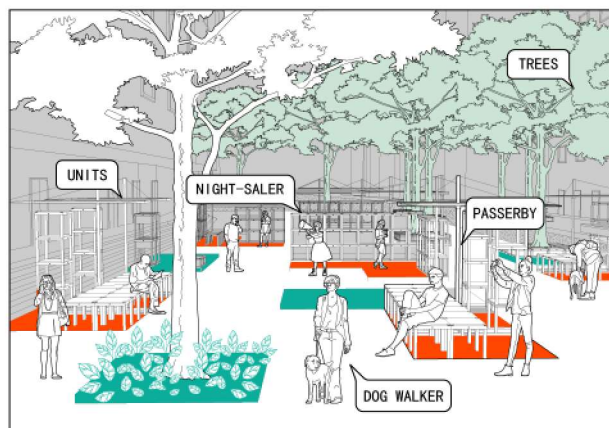
UNIT 3



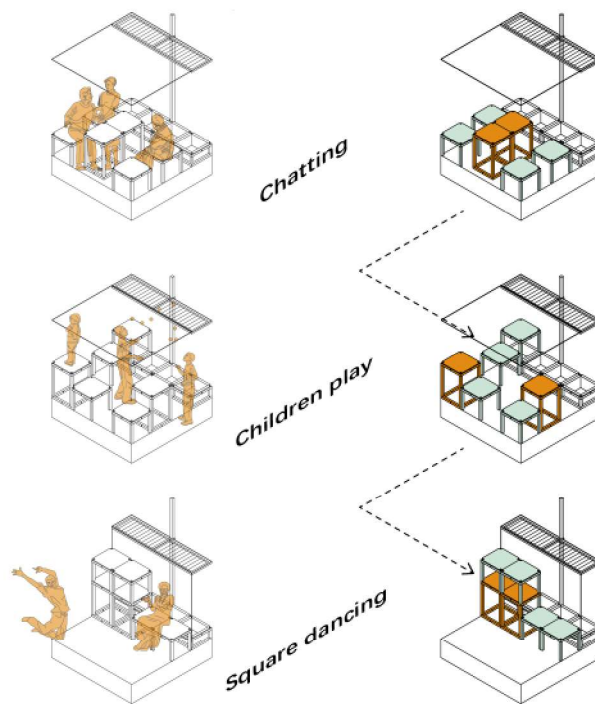
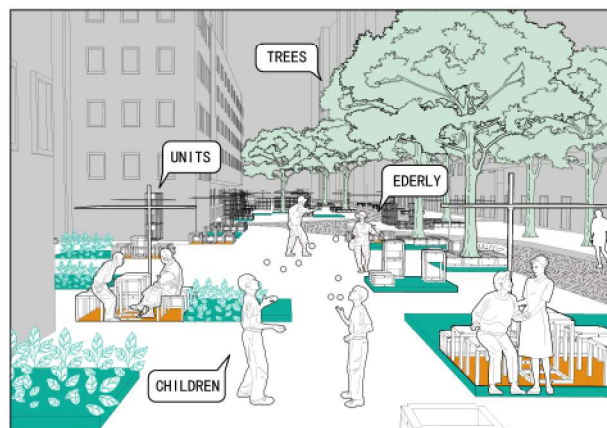
Sunshade

ECONOMY	ENTERTAINMENT	EDUCATION	ECOLOGY	ECOLOGY	ECOLOGY

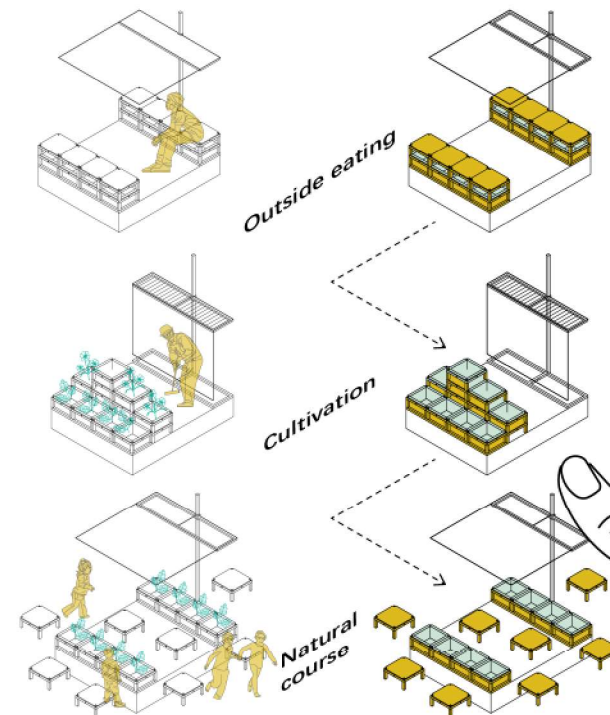
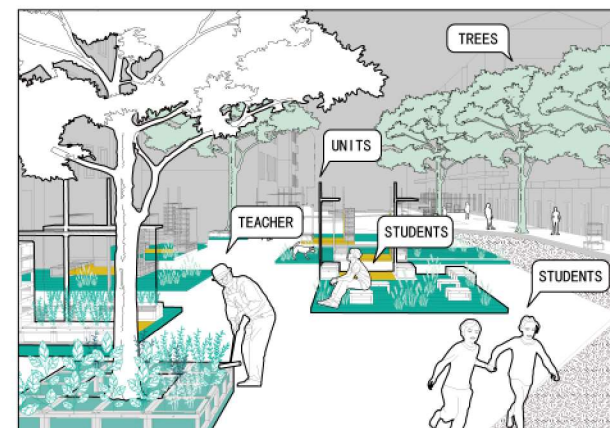
ECONOMY

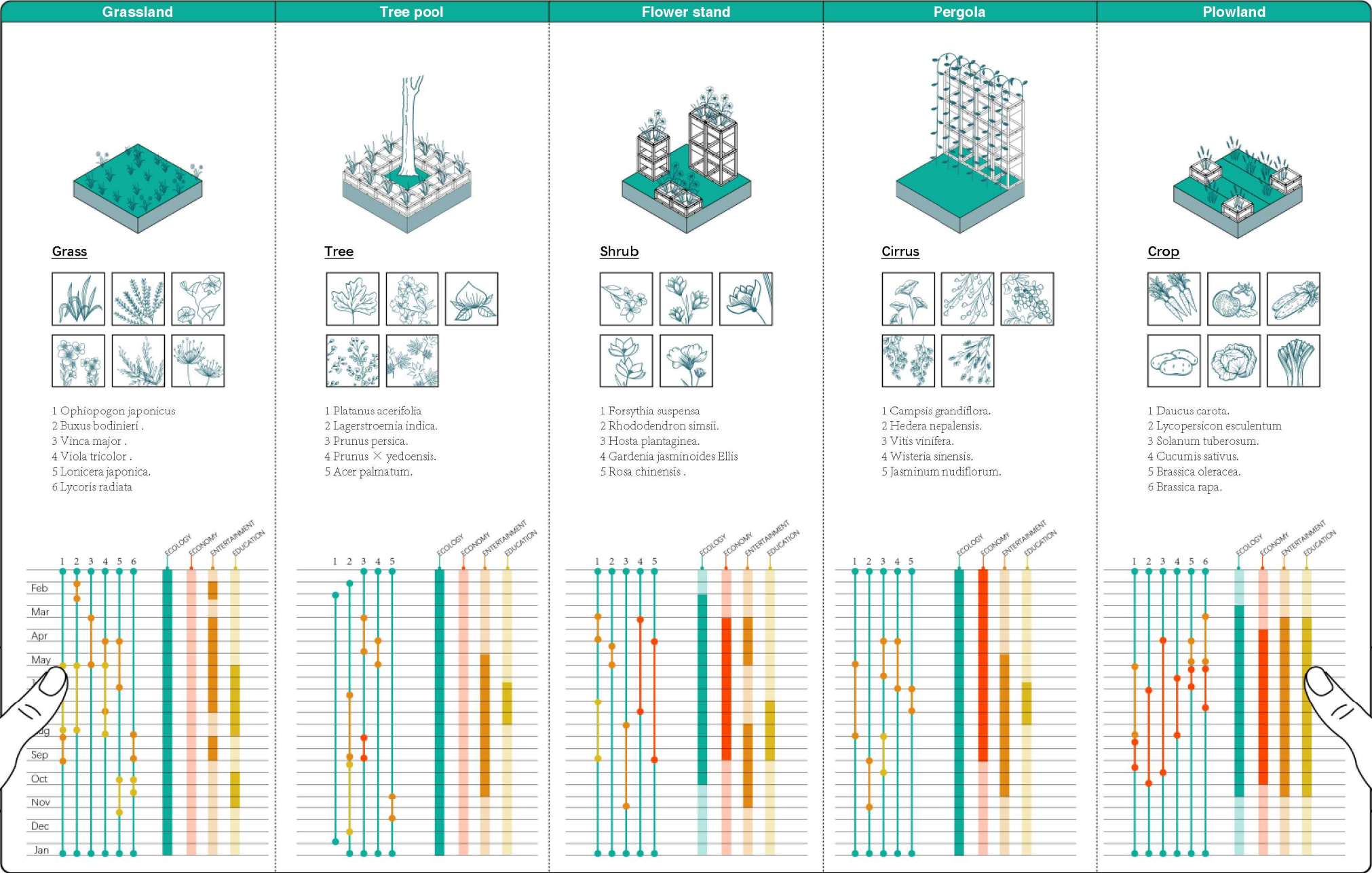


ENTERTAINMENT



EDUCATION



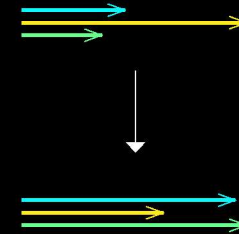
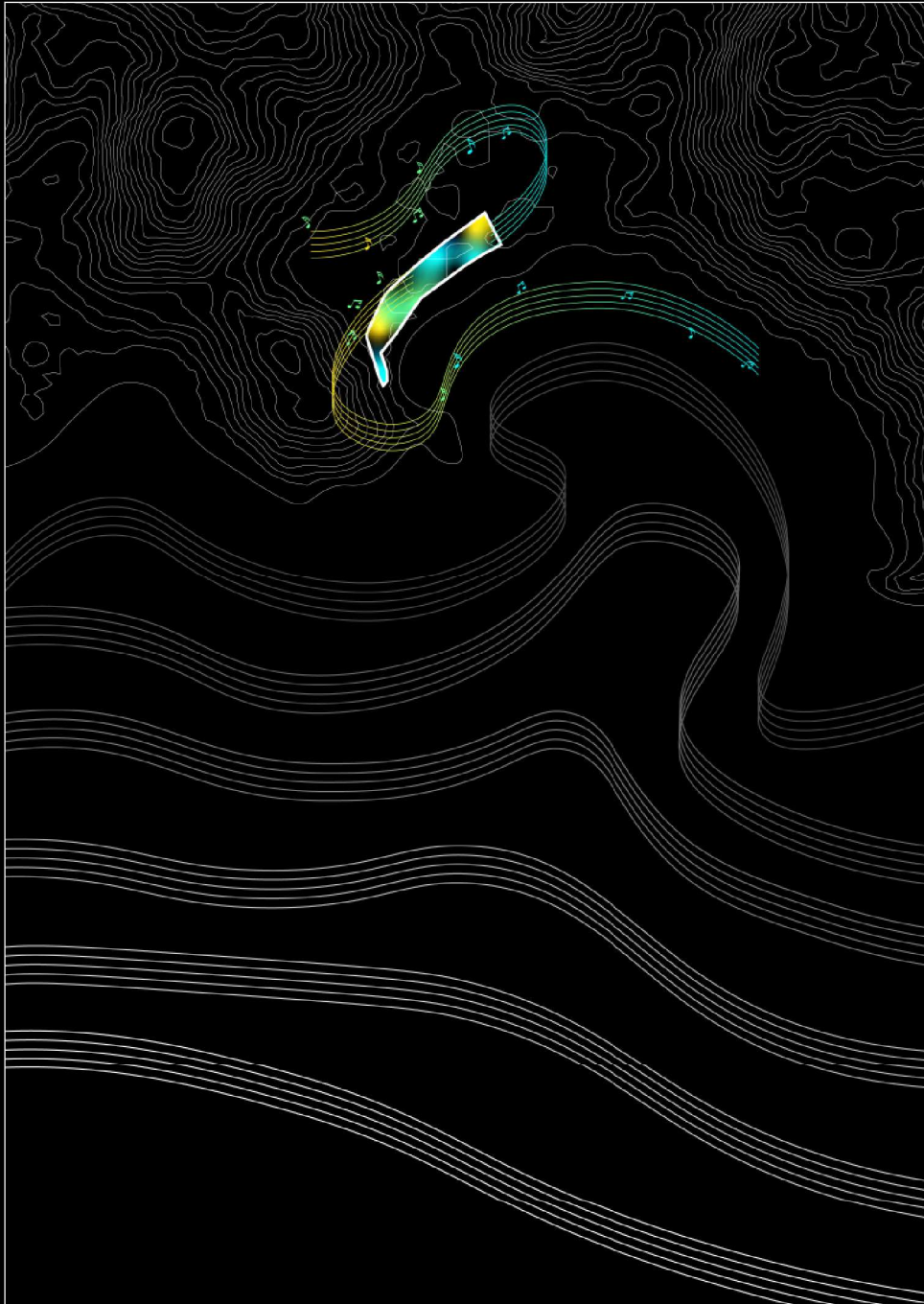


THE STREET



■ ECOLOGY
■ ECONOMY
■ ENTERTAINMENT
■ EDUCATION

From day to night
 Sellers, students, elderly, kids.....
 selling, playing, resting, communicating, studying.....
 everyone can enjoy their life



The Symphony

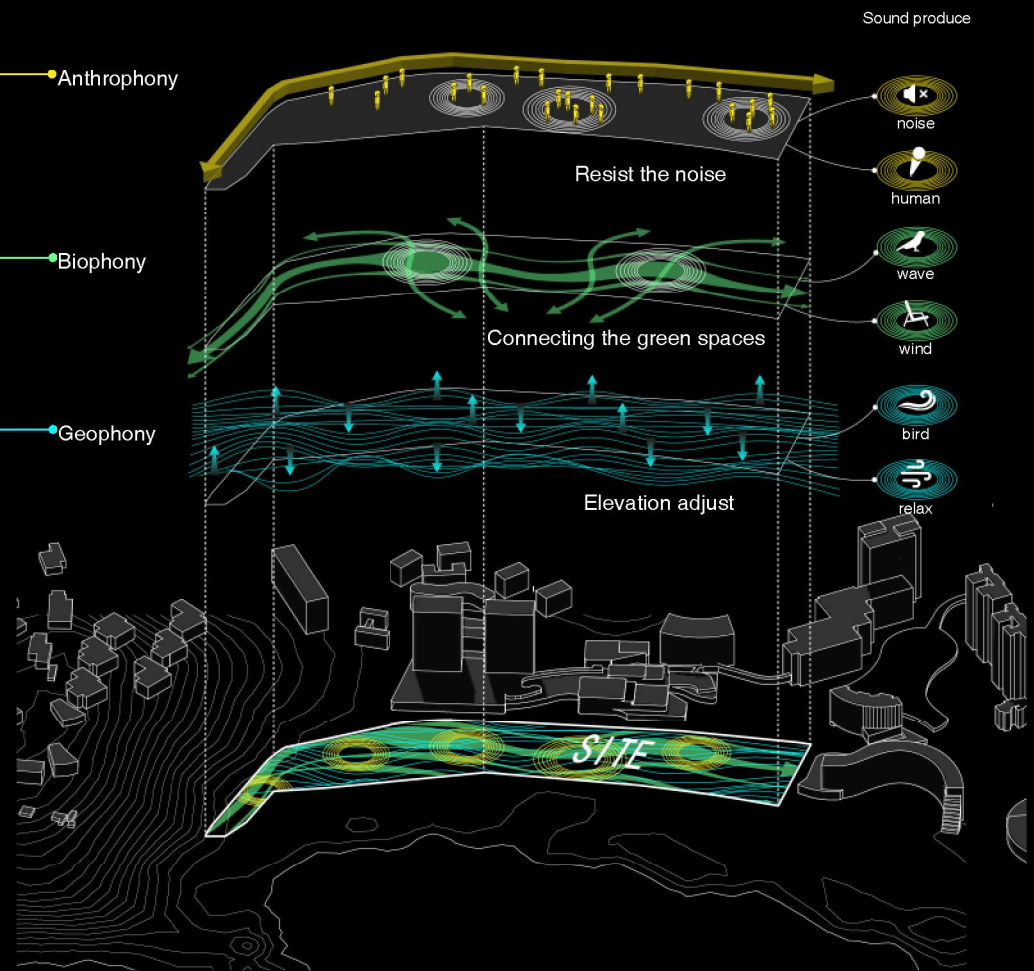
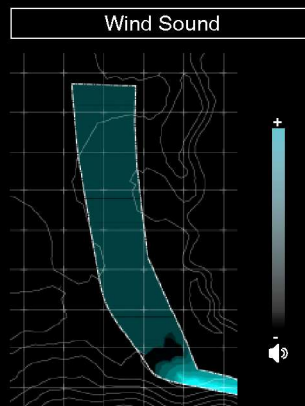
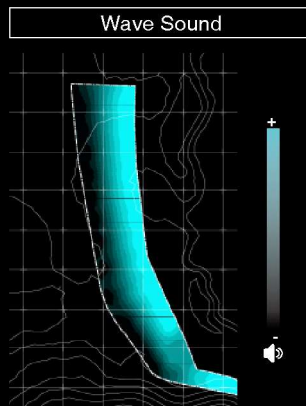
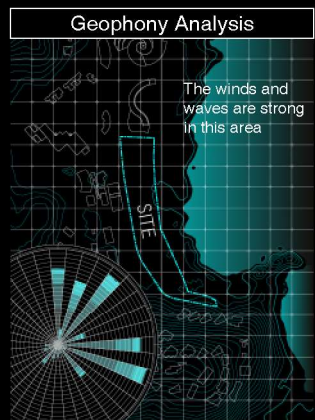
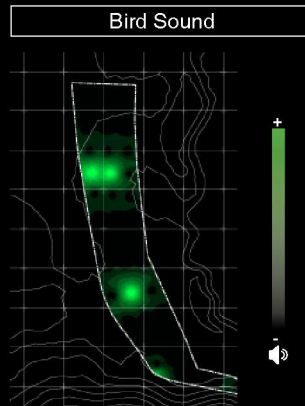
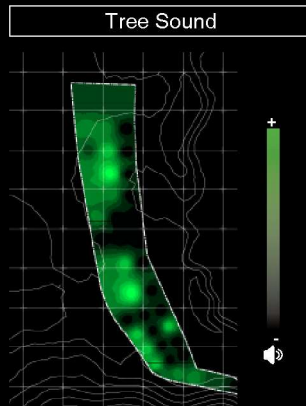
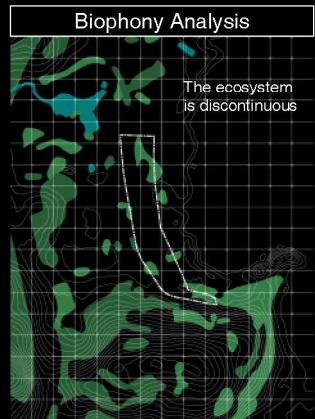
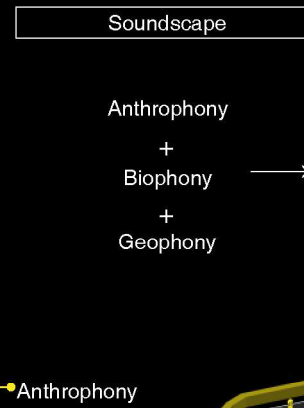
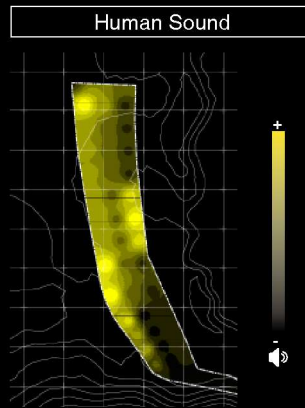
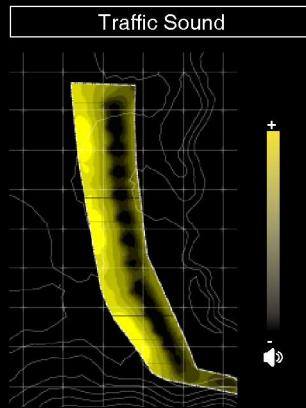
Southeast University Design Studio
Group Work with Ziyi Mao
Contribute to Concept(50%),Design(50%)Modeling(30%)& Drawing(80%)

Instructor: Xiaojun Wang
Email: wangxj@seu.edu.cn

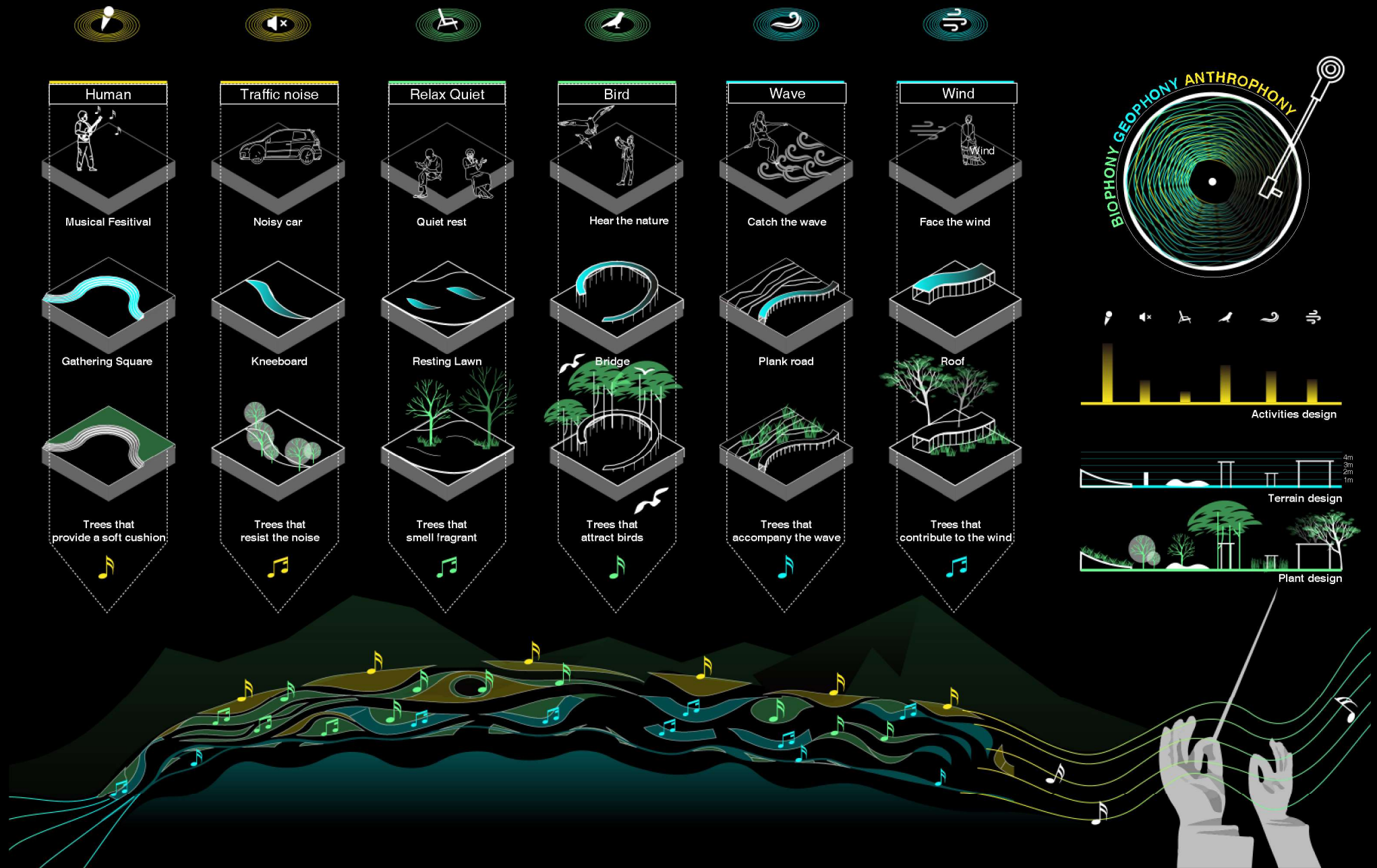
Location: Shenzhen, China
Autumn. 2021

Xiaomeisha Seaside Park, located in Shenzhen, is deeply disturbed by the noise caused by the surrounding highways and commercial centers. The site is also located at the junction of mountains and seas. How human activities, ecological landscapes, and their special geographical location blend harmoniously with each other is a problem that we need to solve. The project starts with the analysis of different voices in the site, through terrain design, planting design, and related activity design. We try to reduce the negative effects of noise, human sound, and at the same time increase the perception of wave sound, wind sound, bird sound, relaxing sound in the venue.

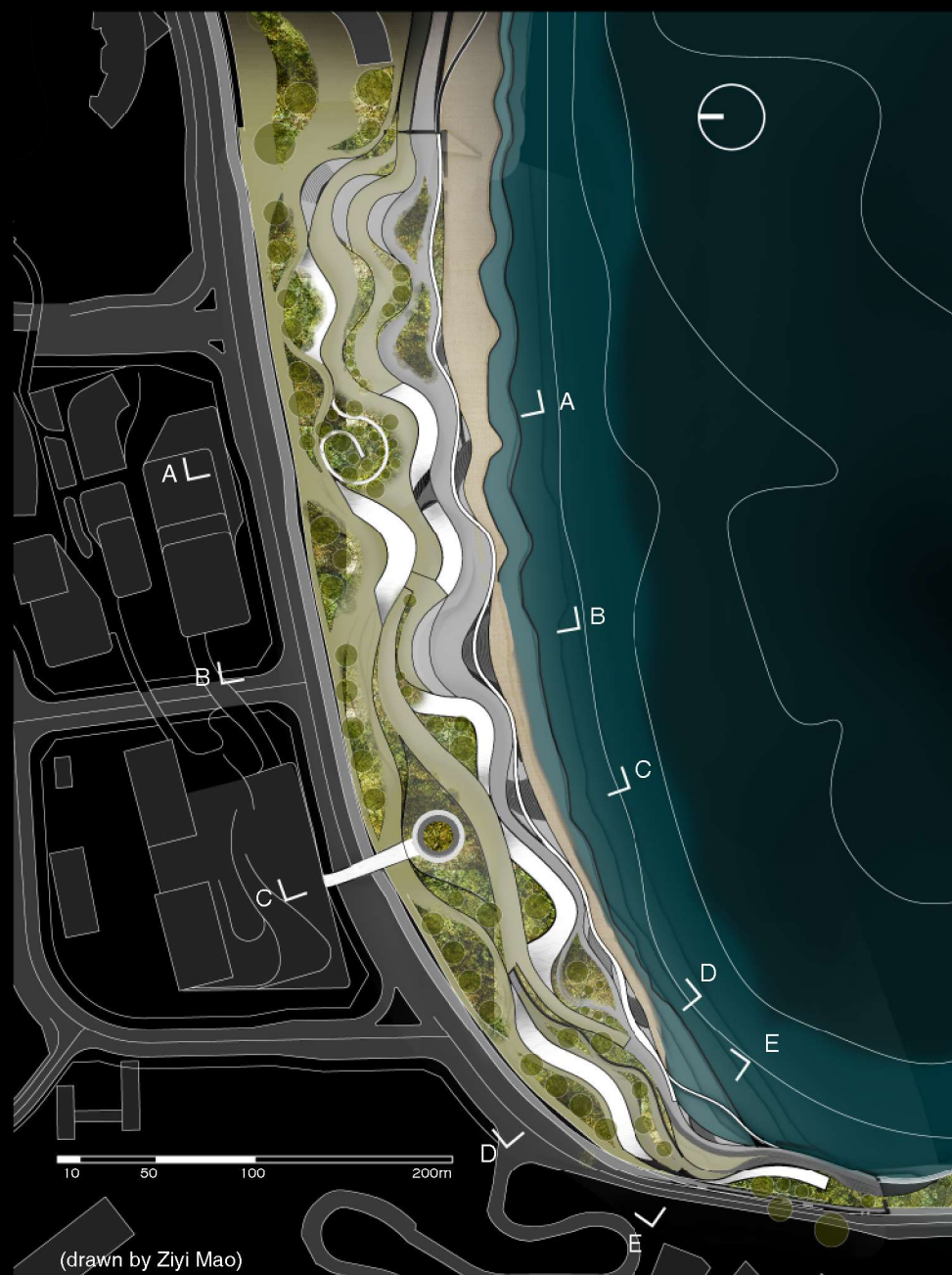
SITE ANALYSIS

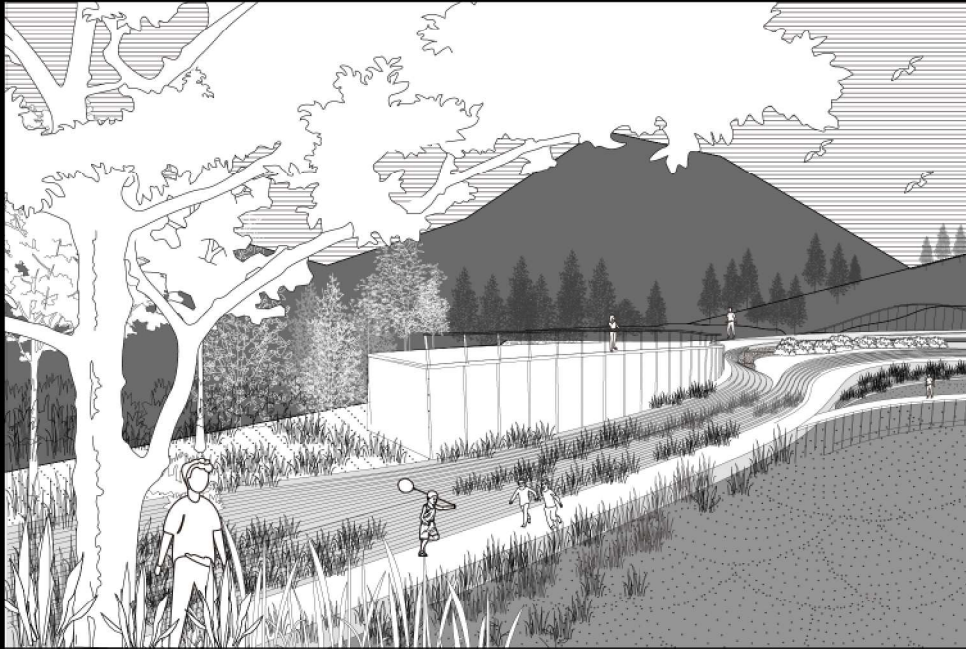


STRATEGY



PLAN & SECTION

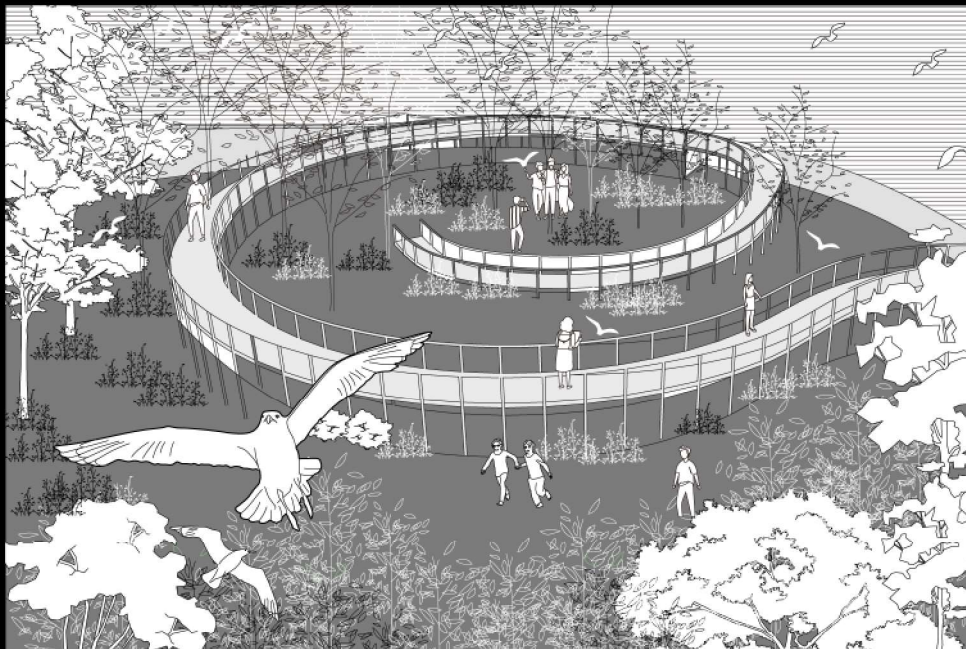




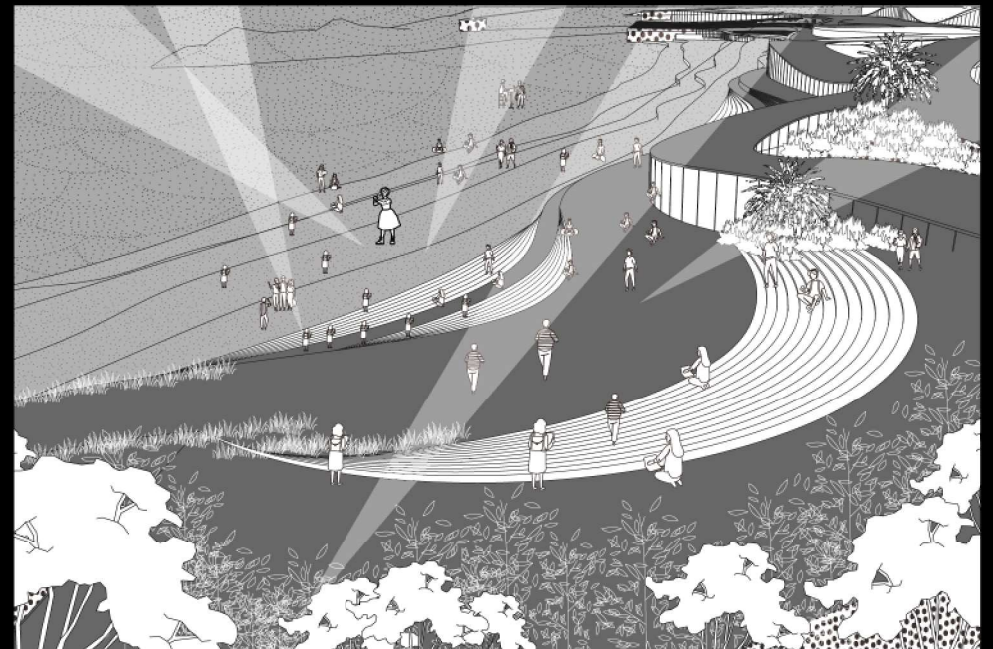
Feel the wind



Catch the wave



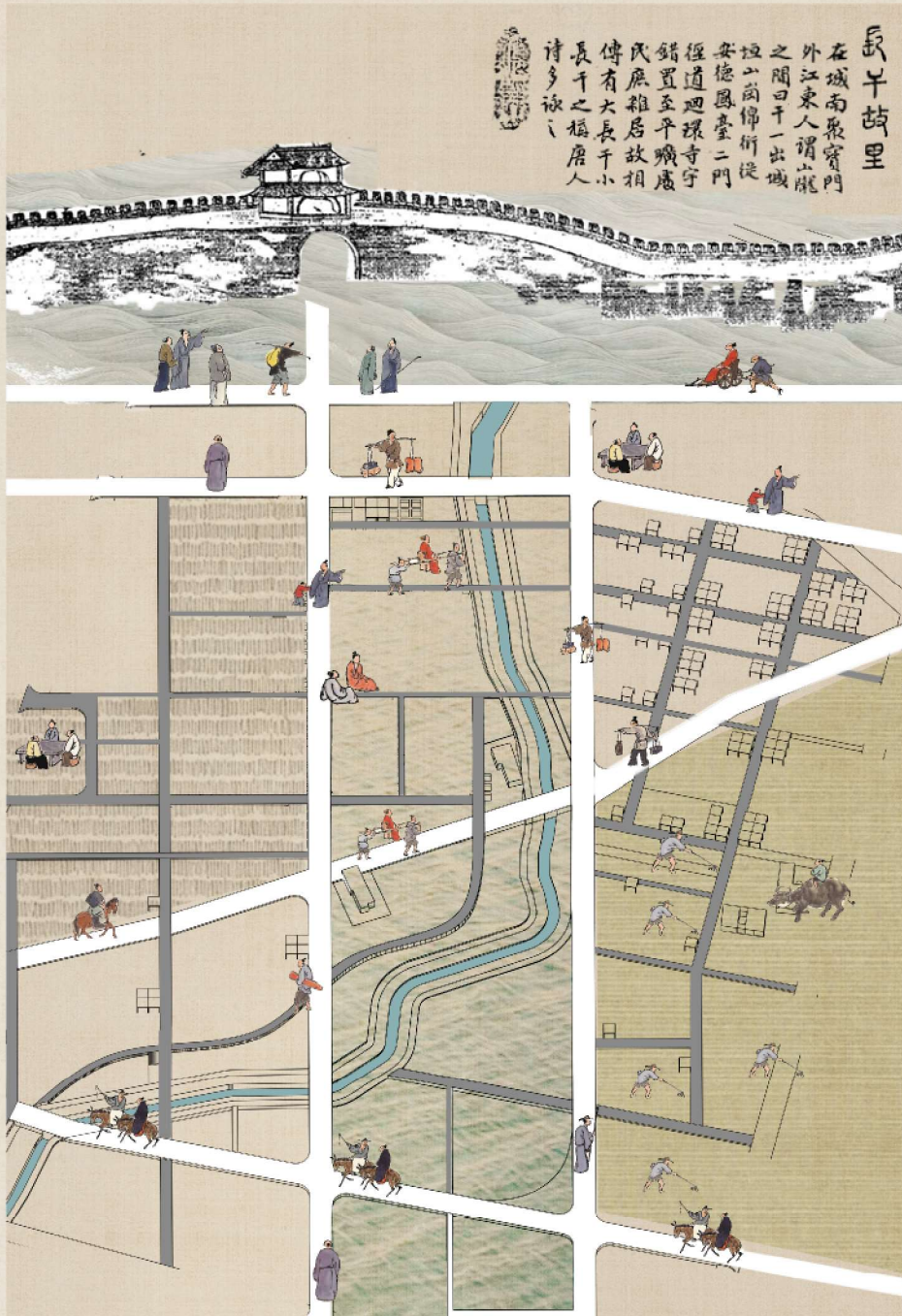
Hear the nature



Sing a song
28



Thank you for listening



POLDER+++

Southeast University Design Studio
Individual Academic Work

Instructor: Chuanfei Yu, Xue Li
Email: yuchuanfei@seu.edu.cn

Location: Nanjing, China
Spring, 2021

The Yuecheng ruins in Nanjing West Street were recently discovered. During the archaeological excavation, the vegetation in other areas of the site was severely damaged. There used to be a very important river on the site, but due to historical reasons and poor management, the river water became black and smelly. At the same time, this site is located on a very important historical central axis of Nanjing city, with a large flow of tourists, residents and people. To deal with the issues of archaeology, rivers, human activities that arise on the site. This design utilizes the concept of polders. Allocate resources reasonably. The important archaeological area needs to be waterproofed, and the banks of the river need to be restored ecologically. At the same time, various interesting activities are inserted in it.

SITE ANALYSIS

One of the most significant archaeological discoveries in Nanjing

NANJING



Basic grid

*Digging in the direction of the north-south axis

Historical site



*Trial trench
Trial trench is the term of archeology, is the basic operating unit of archaeological excavation. The general area is 5*5 square meters



The River

Qinhuai River

Bare land

Poor ecological environment
Urban wastewater



Resident

"Except for the archaeological staff, it was empty inside"



"Because the place is completely closed off, it's a long detour through it"

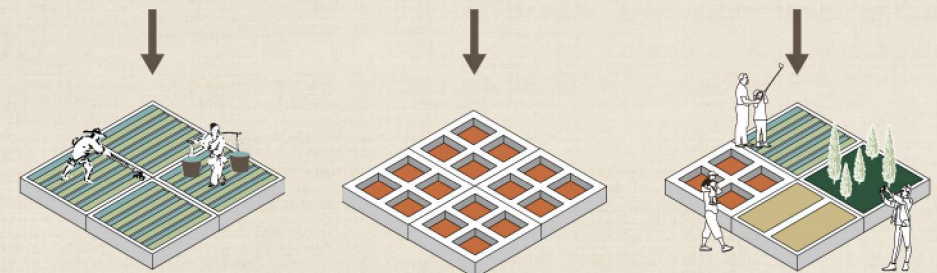
Legend

- City Central axis
- Residential entrance
- South jade belt River
- Expressway
- City park
- Historic site
- Community

0 200 400 1000 2000 m

Strategy

Before	Present	Proposal
Uncoverd	Be excavated	Be shown
Domestic water	Polluted water	Clean water
Arable land	Desolated land	Park



Polder



A polder is a low-lying tract of land that forms an artificial hydrological entity

Trail trench



Located at intervals across a site leaving the rest untouched
Need waterproofing

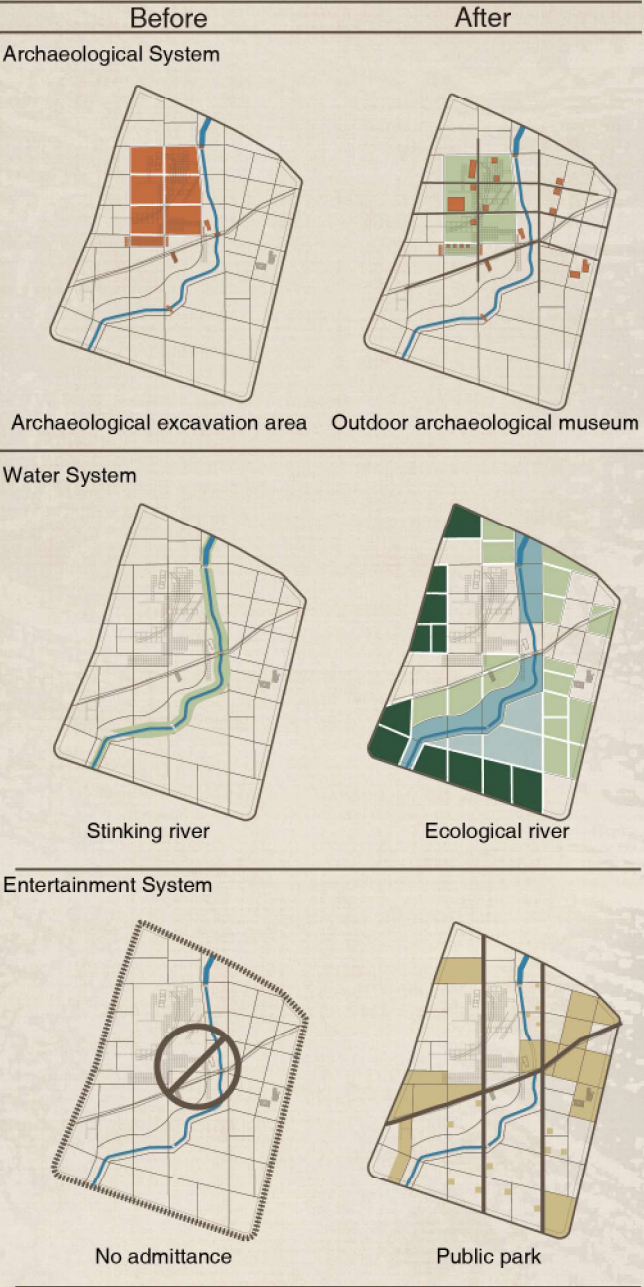
Polder+++



Manage water resources-re-store ecology
create recreation space

Historical Ecological Residential

MASTER PLAN



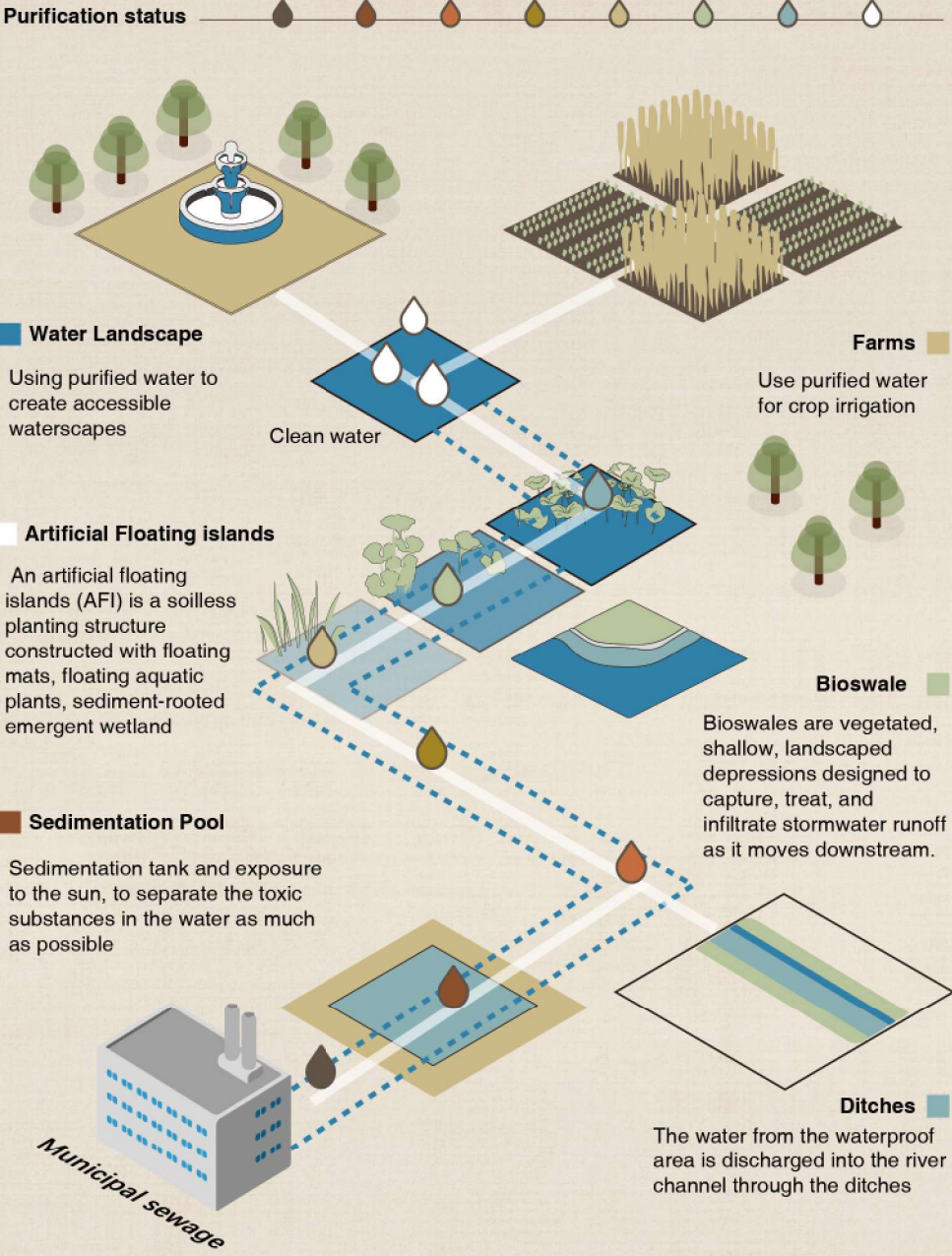
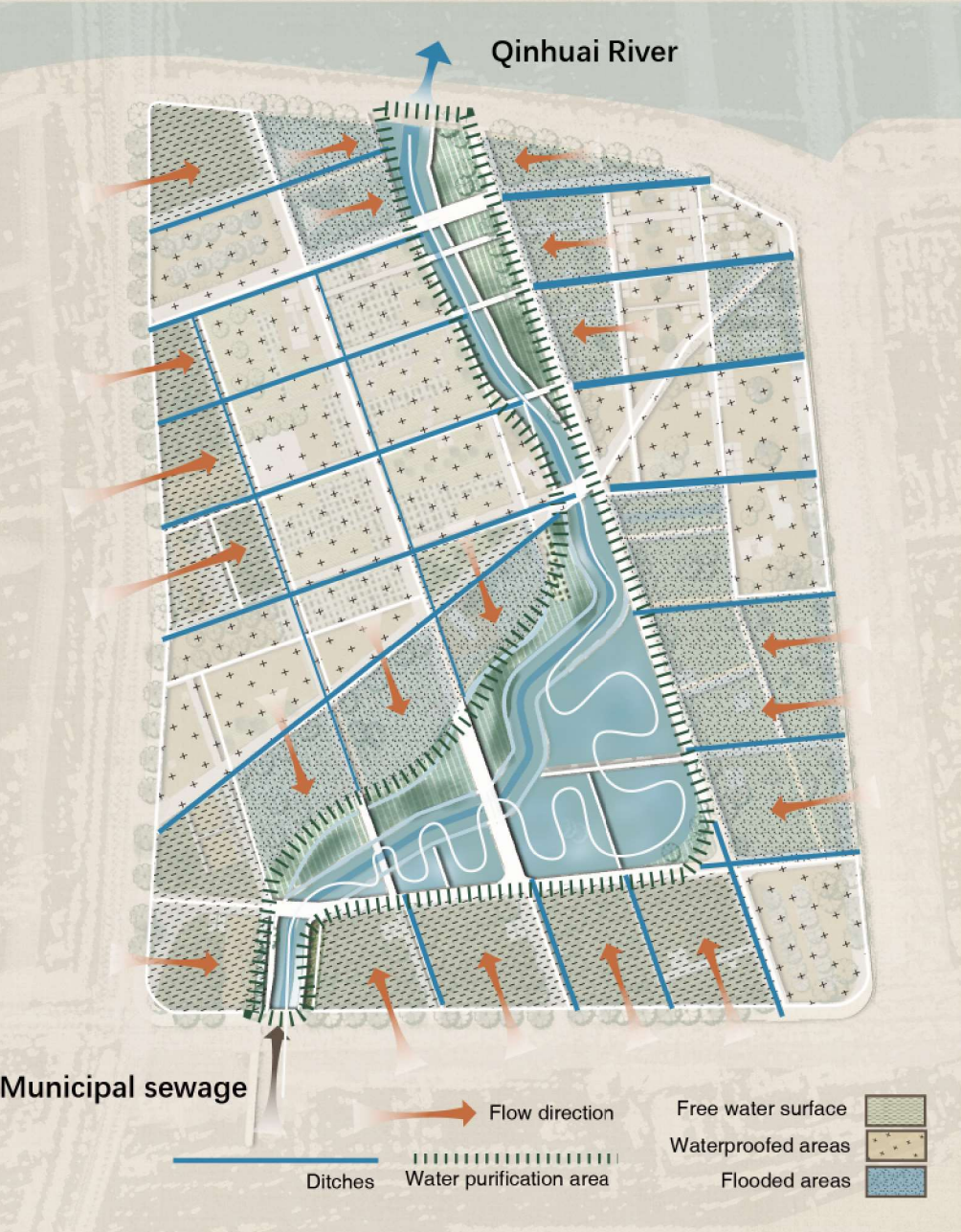
- 1 Service center
- 2 Cultural and creative shop
- 3 archives center
- 4 Archaeological quarters
- 5 Archaeological experience area
- 6 Yuecheng Exhibition Hall
- 7 Historic spot

- 1 pole-fishing platform
- 2 Picnic lawn
- 3 Viewing step
- 4 Urban agricultural garden
- 5 Greenland Music Theatre
- 6 Ecological restoration lake
- 7 Waterfront walk

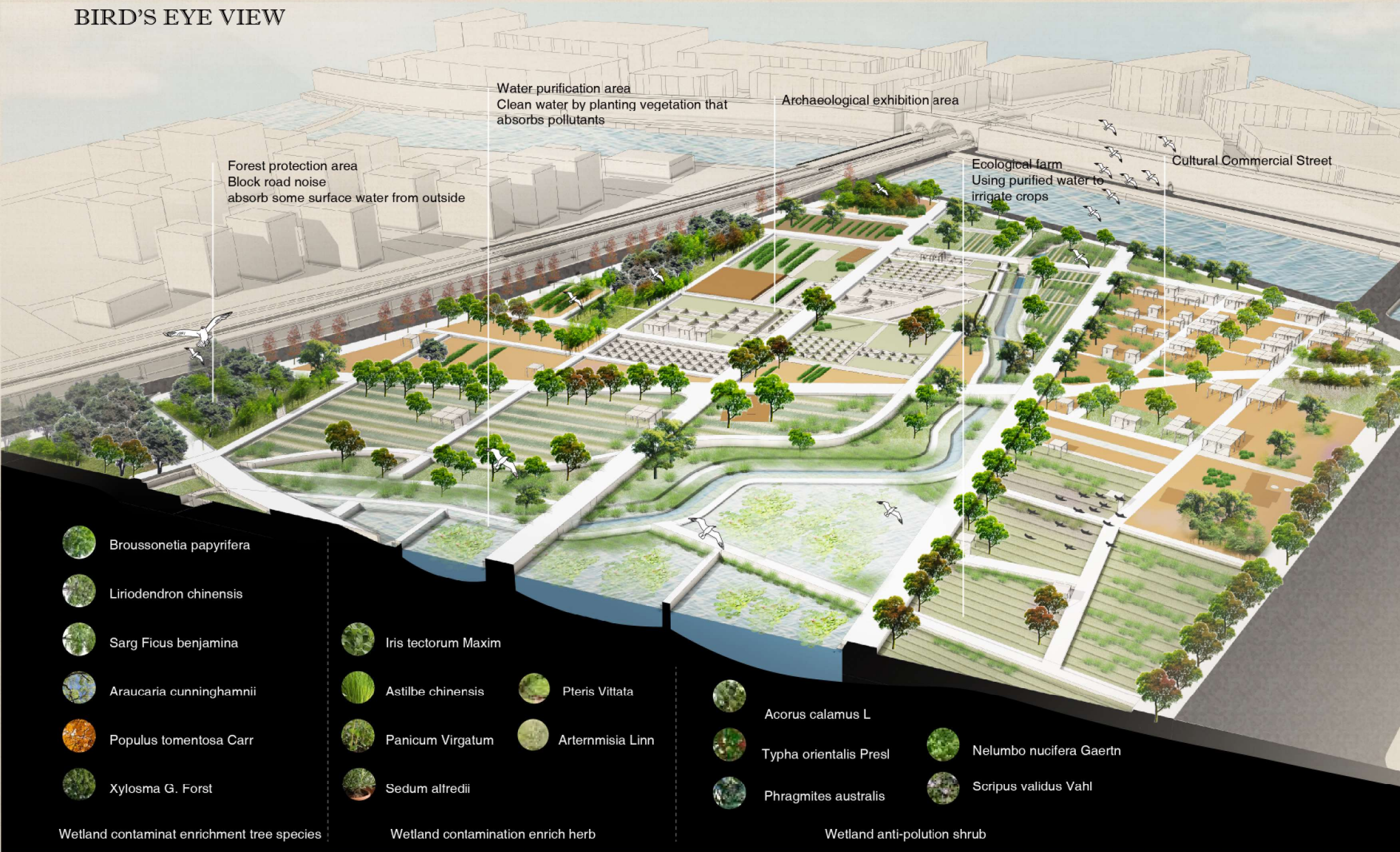
- 1 Hoop Park
- 2 Children's playground
- 3 Farmer's market
- 4 City square
- 5 Parking lot



WATER SYSTEM



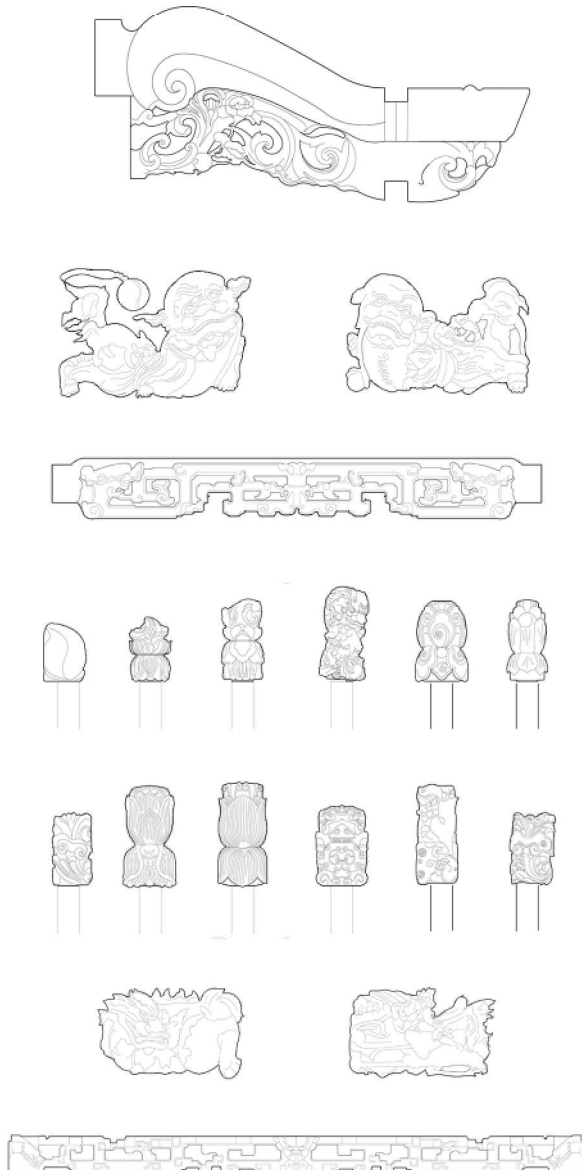
BIRD'S EYE VIEW



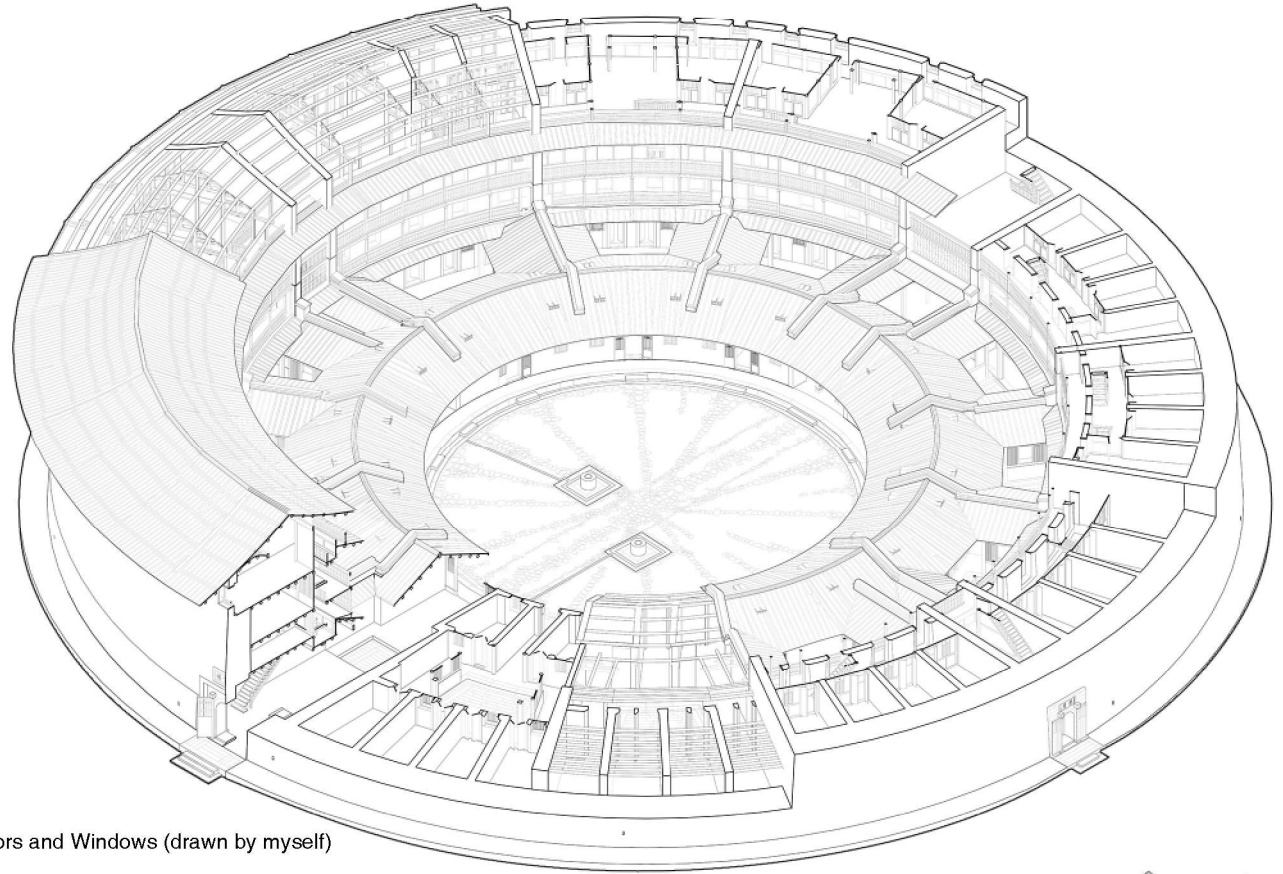
OTHER WORK

SURVEYING AND MAPPING OF WORLD CULTURAL HERITAGE- FuJian TuLou (GRUOP WORK)

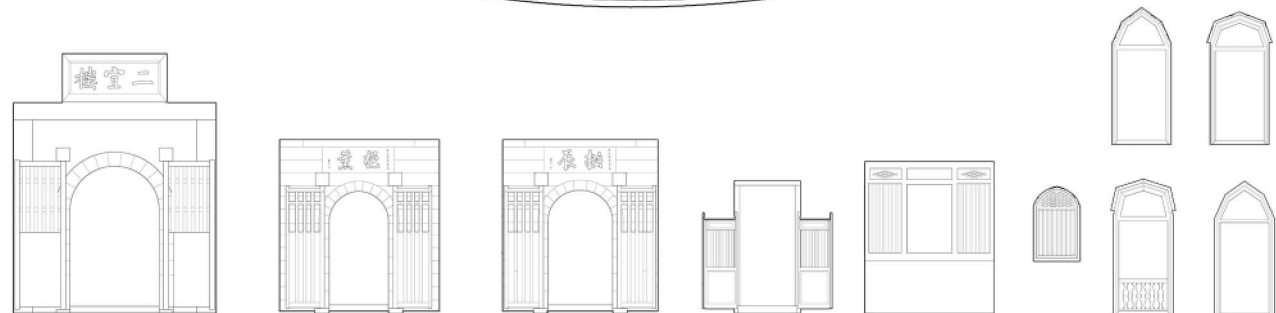
Traditional Chinese carving(drawn by teammate)



Tulou sectional axonometric drawing(drawn by myself)



Doors and Windows (drawn by myself)



OTHER WORK

WOOD WORKSHOP, 2019 (INDIVIDUAL WORK)



The main connection method is dovetail tenon
Make a lamp that simulates the changes of the moon

RECREATED CLASSIC WORKS



Girl with a pearl earring
1665 | 2020



The Lacemaker
???? | 2020

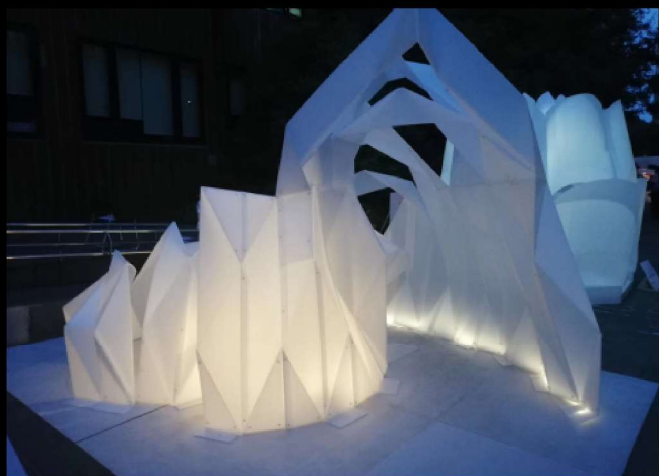
Recreating Vermeer's paintings with photos(Appearance: me and my mother)

OTHER WORK

REAL CONSTRUCTION PROJECT



The 3rd Solar Decathlon, 2021 (GROUP WORK)



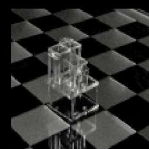
Tongji Construction Festival, 2019 (GROUP WORK)

CHESS MAKING (GROUP WORK)

Revivalism and Reformation



KING



Church of Sainte-Genevieve

QUEEN



Brandenburg Gate

ROOK



Palace of Westminster

BISHOP



Basilique du Sacré-Cœur

KNIGHT



Opéra de Paris

PAWN



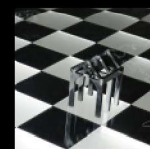
The Crystal Palace



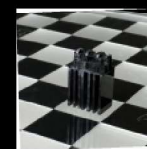
The Eiffel Tower



Pillar



Palais Des Machines



Église Saint-Jean-de-Montmartre



Home Insurance building



Frame