DECONSTRUCTING THE SUPERBLOCK

Urban transformation of the Superblock in Shenzhen city to shape more livable communities

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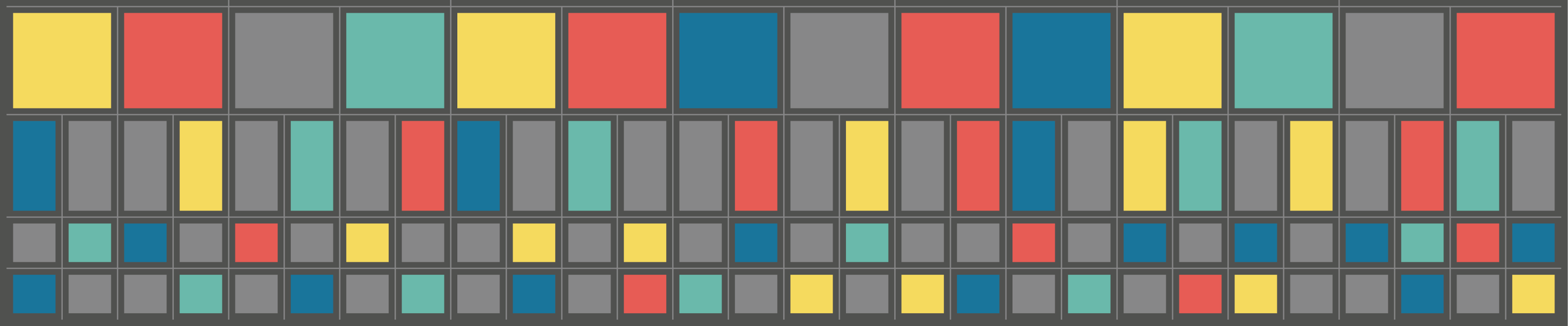


INTRODUCTION

Street in the old town

Street in the new city

Street life has been neglected by urban developers in China’s rapid urbanization.

INTRODUCTION

Beijing

Shanghai

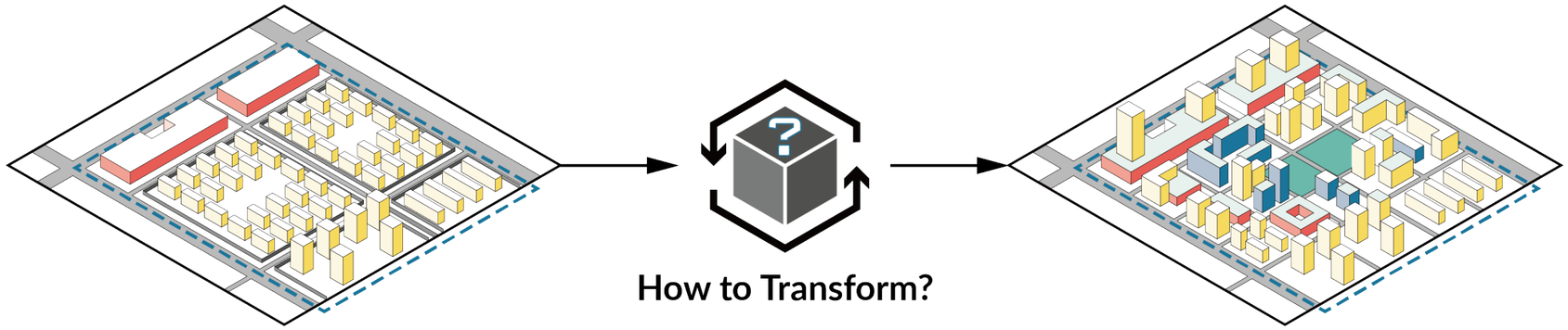
Wuhan

large-scale superblock development is the default solution for accommodated urban growth in most Chinese cities

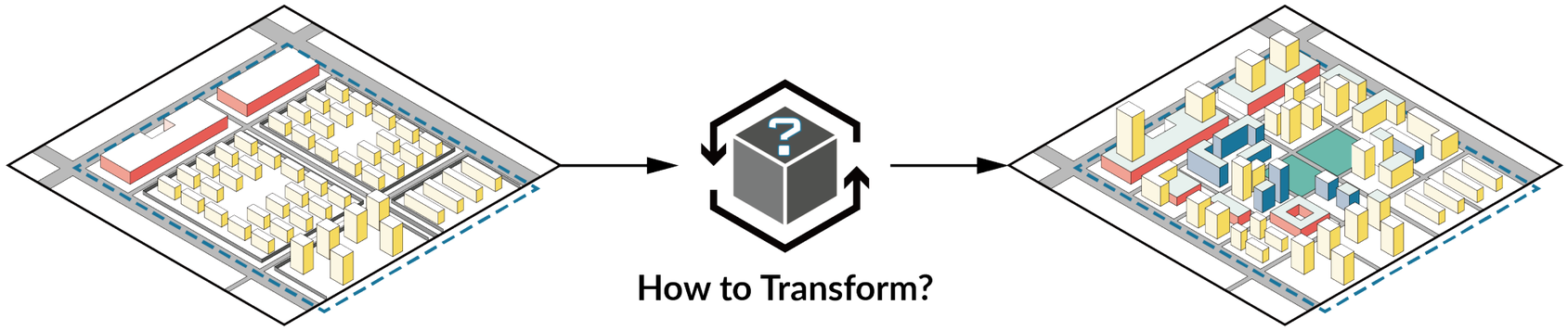
INTRODUCTION

Urban regeneration will become a new normal,
and it can be an opportunity for the transformation of the existing superblock

RESEARCH OUTLINE



RESEARCH OUTLINE



Recognition

Definition

Existing Problem

Forming reason

contextualization

Shenzhen

Test Site

Analysis

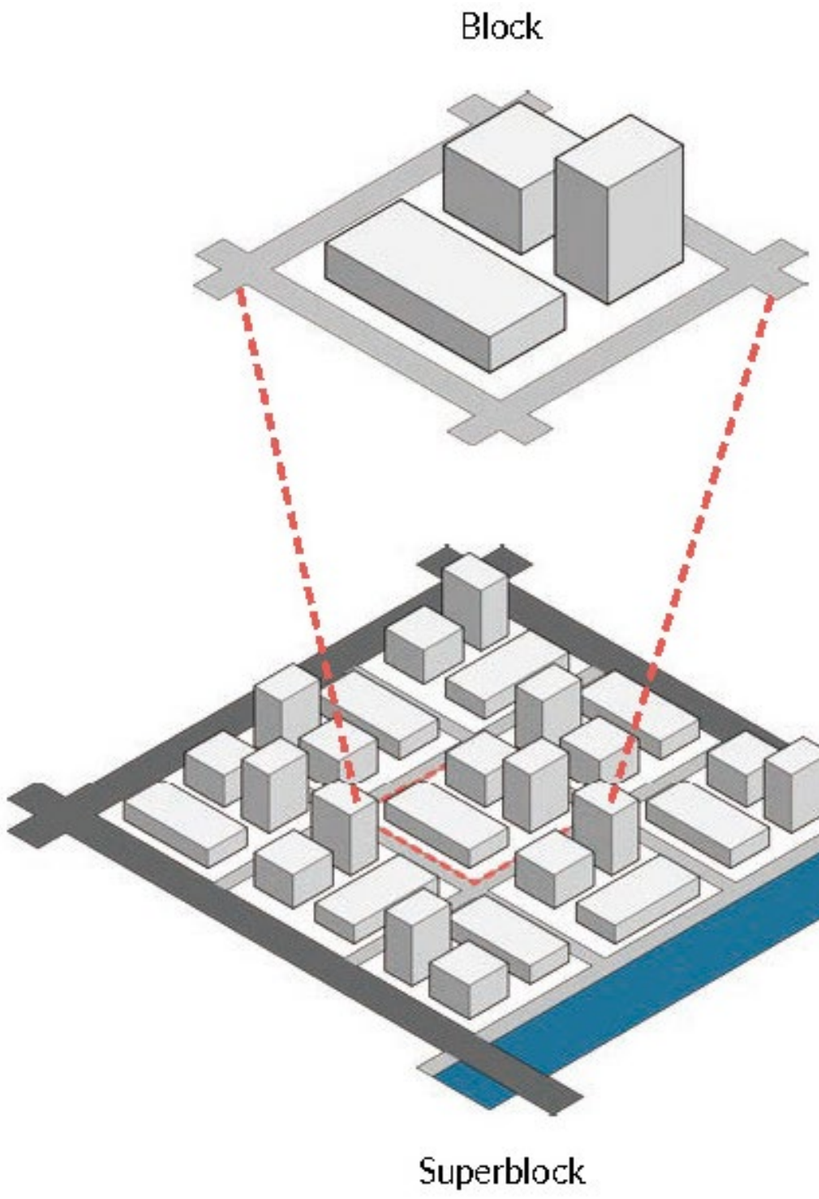
Network
&
Activities

Regeneration
Mechanism

Design Solution

Reflection

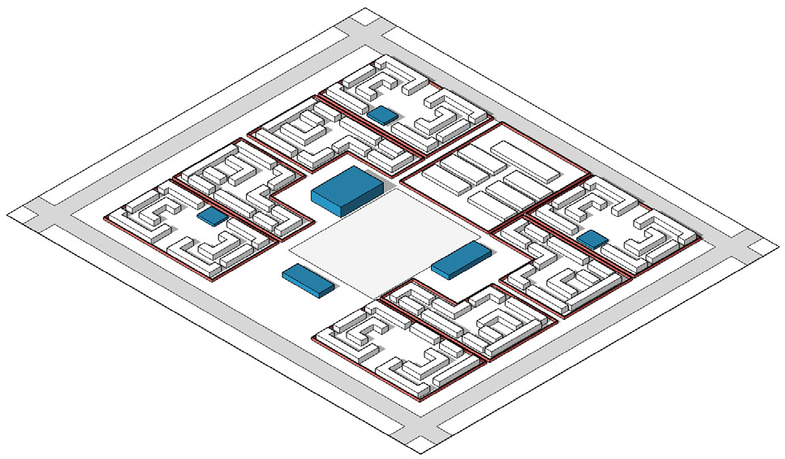
DEFINITION



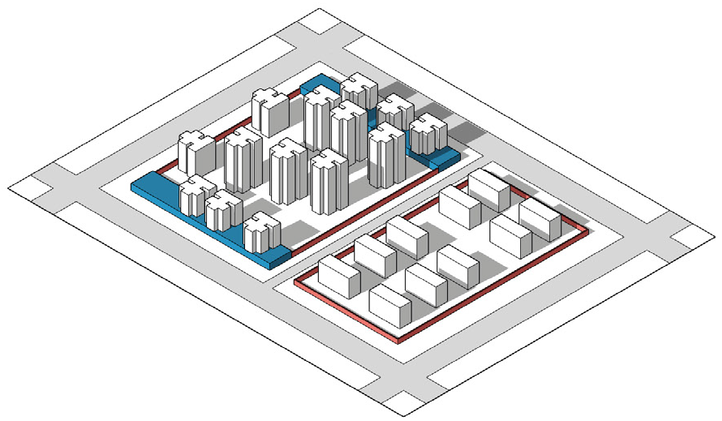
A block can be defined as a land surrounded by roads or streets and capable of accommodating a certain number of buildings.

a superblock can be defined as an area bounded by arterial roads or the distinct physical boundary like water body, and containing more than one subblock.

CHINESE SUPERBLOCK



Dan Wei



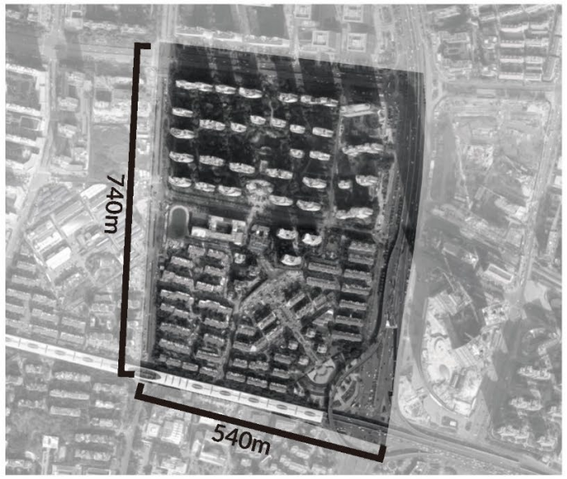
Xiao Qu

Many superblocks in China are used only for residential purposes, and a superblock often consists of one or several gated settlements.

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

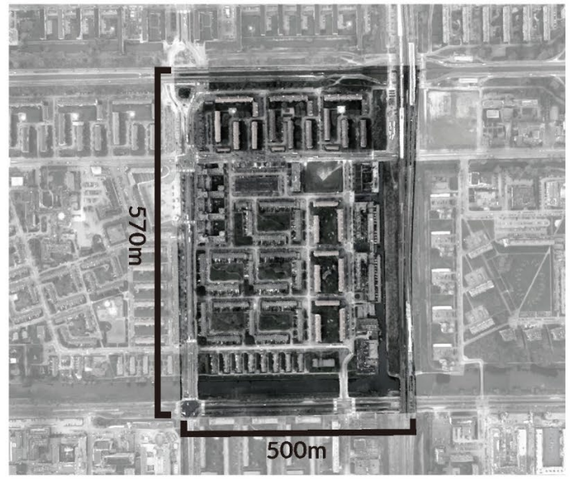
POOR ACCESSIBILITY

Nanjing, CN

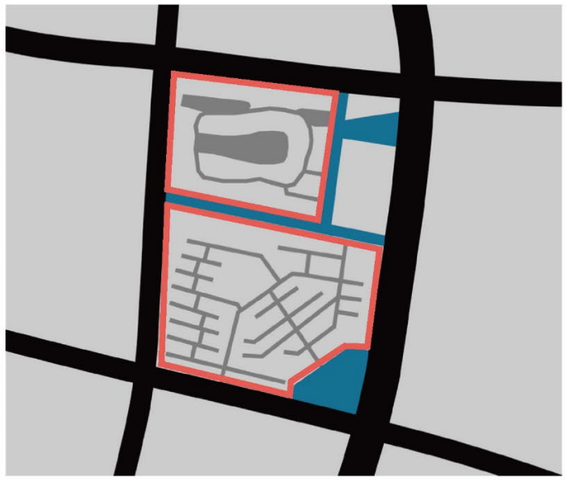


Tokyo, JP

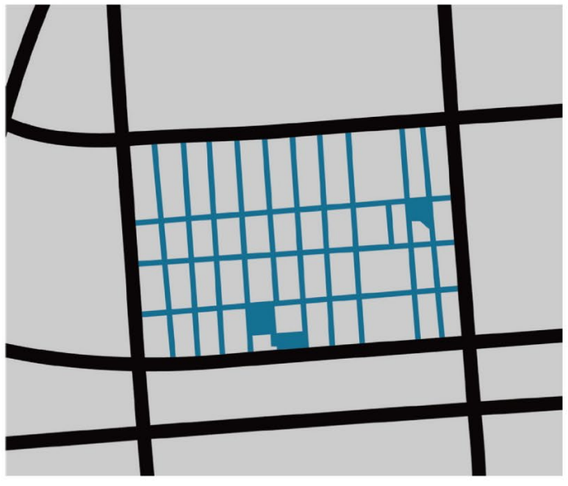
Amsterdam, NL



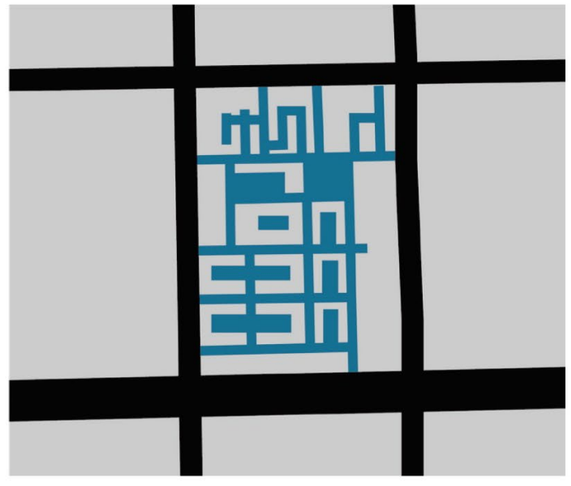
Superblock boundary
Public
Semi-Public
Wall



Sub-block: **3**
Public Street Density: **2.2 km/km²**



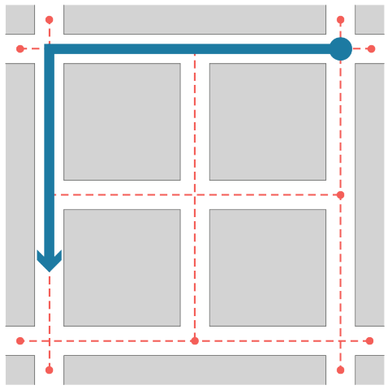
Sub-block: **45**
Public Street Density: **20.8 km/km²**



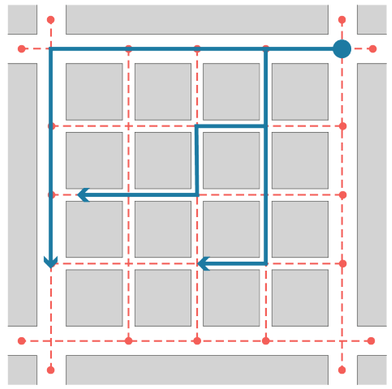
Sub-block: **16**
Public Street Density: **13 km/km²**

The coarse-grained sub-block division and a large number of walled enclaves result in extremely low density of public roads within the superblock.

POOR ACCESSIBILITY



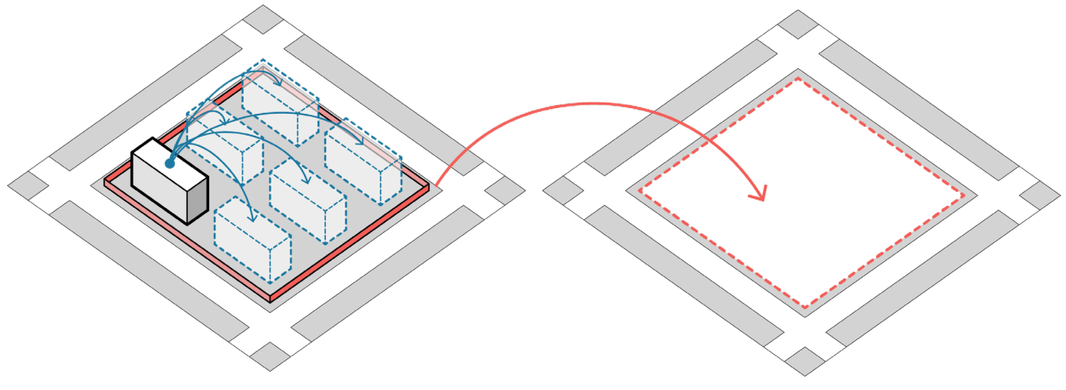
Low Accessibility



Higher Accessibility

Motor vehicles and pedestrians have to move only along the boundaries of superblock, which cause heavy traffic congestion and the loss of street life.

LACK OF DIVERSITY



Standardized residential building models homogenize the types of architectural styles and layouts within the superblocks

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

LACK OF DIVERSITY

Repetitive buildings and the extensive use of walls create an unpleasant, monotonous streetscape.

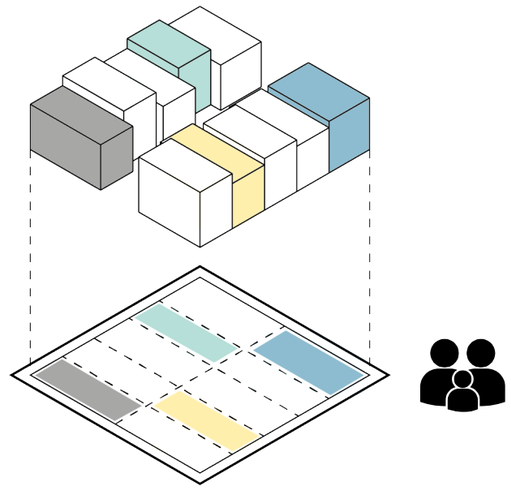
Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

WHY SUPERBLOCKS DEVELOPMENT ARE THE DOMINANT MODEL IN MOST CHINESE CITIES ?

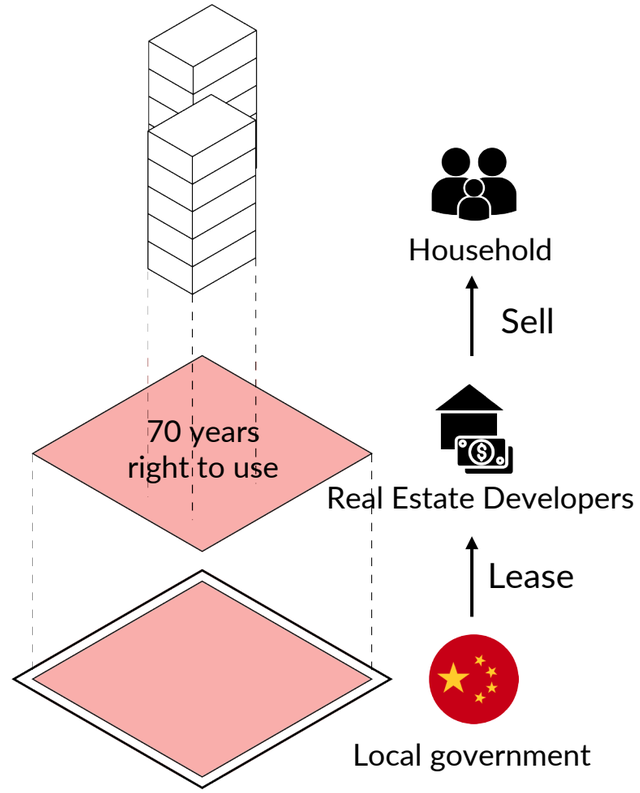
Recognitio ⇢ contextualization ⇢ Analysis ⇢ Design Solution ⇢ Reflection

POLITICAL & ECONOMICAL REASON

The first land auction was held in Shenzhen in 1987



Private Land

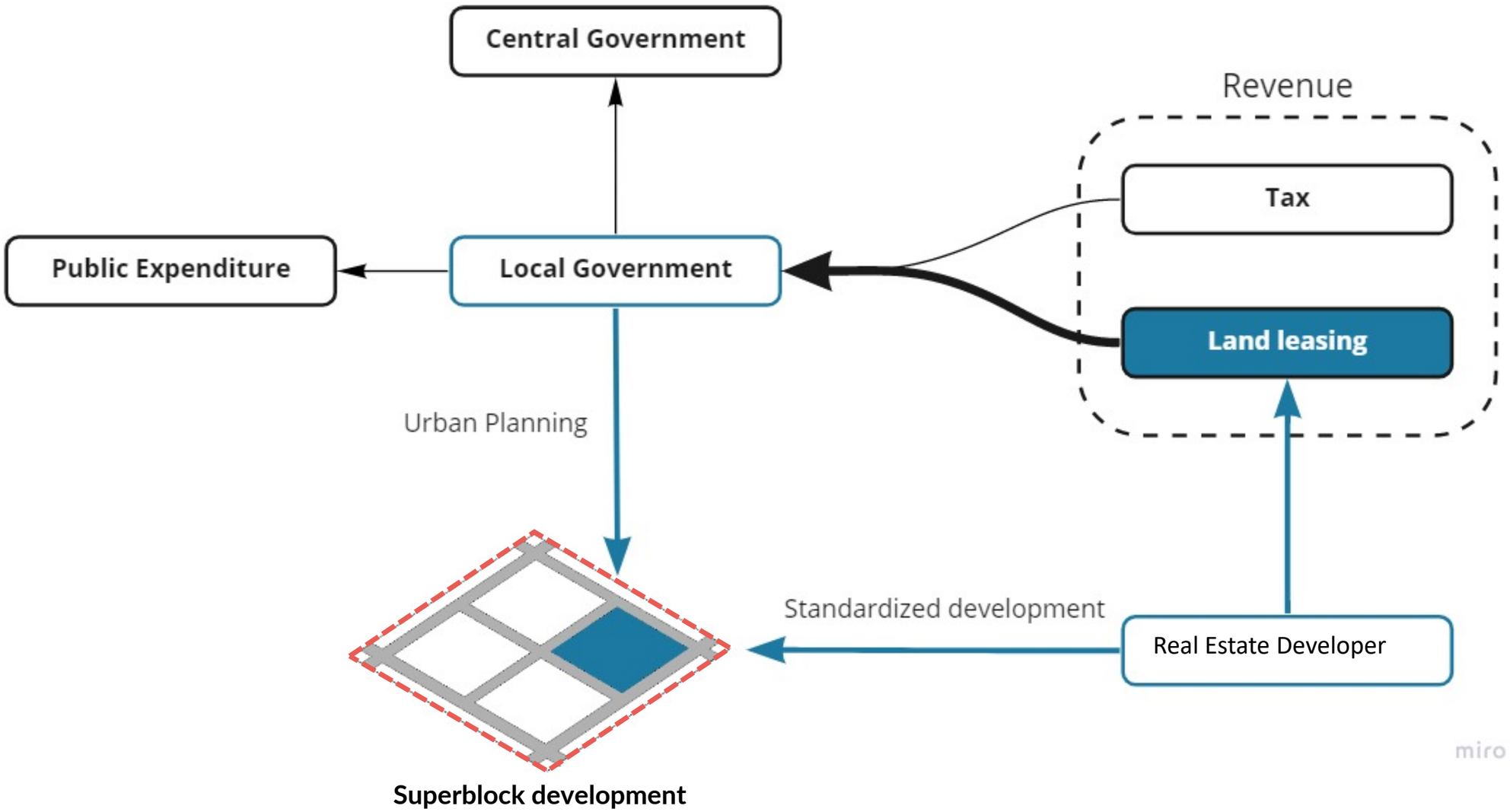


State Land

After the land finance reform starting Shenzhen in 1987, urban housing has changed from being a welfare product to a market product, local government can lease the urban land to developer for 70 years to build housing to sell.

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

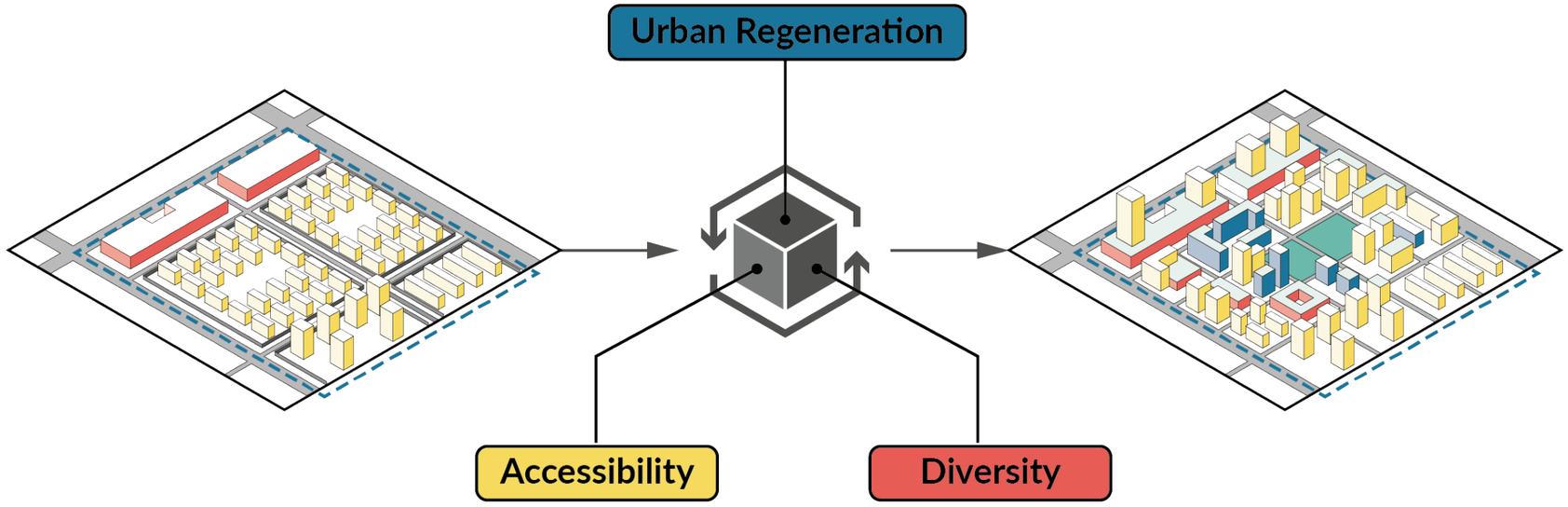
POLITICAL & ECONOMICAL REASON



The land leasing has become one of the most important source of revenue for local governments. Superblocks satisfy the government's and developers' quest for construction efficiency.

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

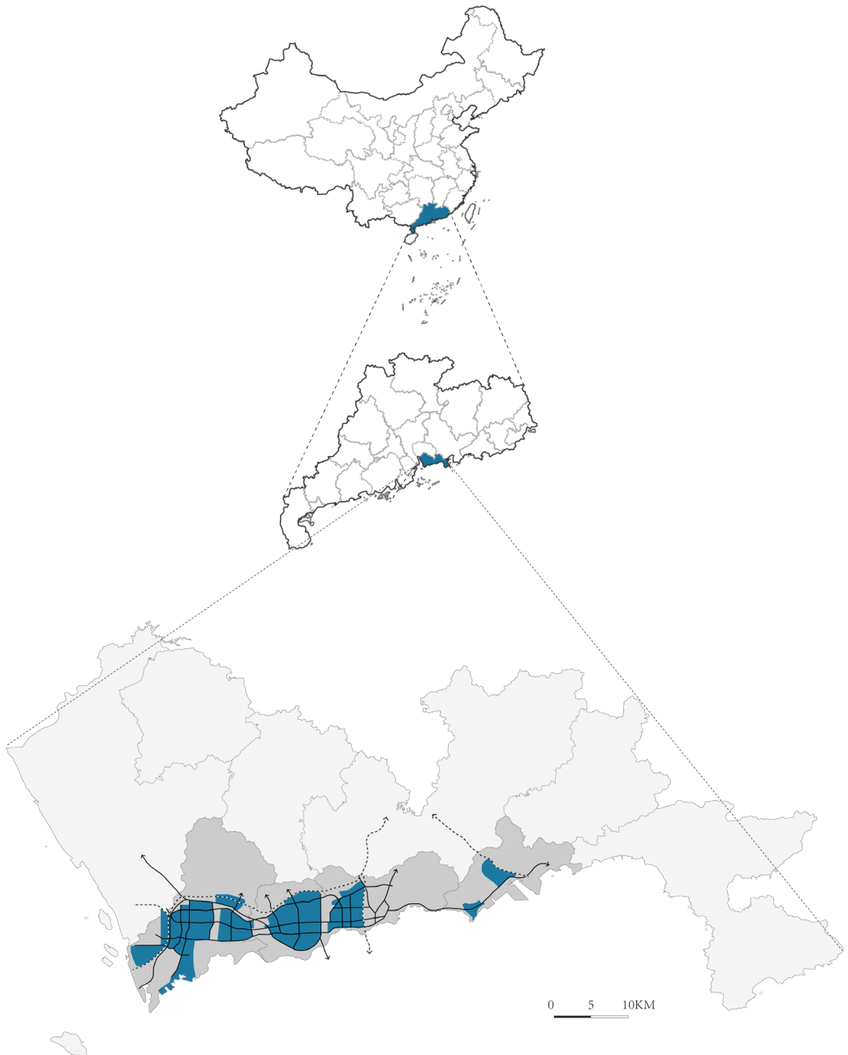
RECOGNITION



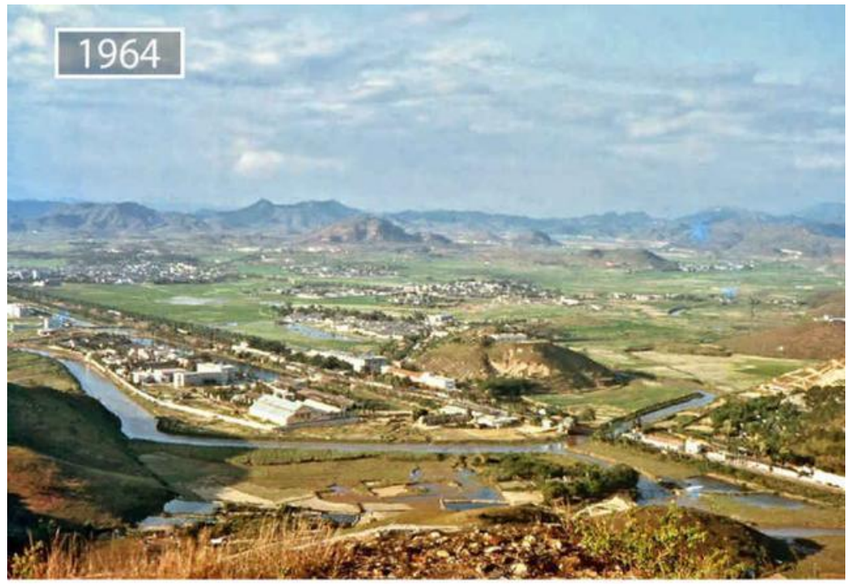
- **The key to superblock transformation is to improve the accessibility of superblocks, particularly the pedestrian experience for residents; and to increase the diversity of superblocks, including building types, public space.**

- **The problems of Superblock are not just about space; there are complex economic reasons behind them. Only by balancing the interests of stakeholders can this transformation truly happen.**

SHENZHEN



Shenzhen Special Economic Zone (SPE)

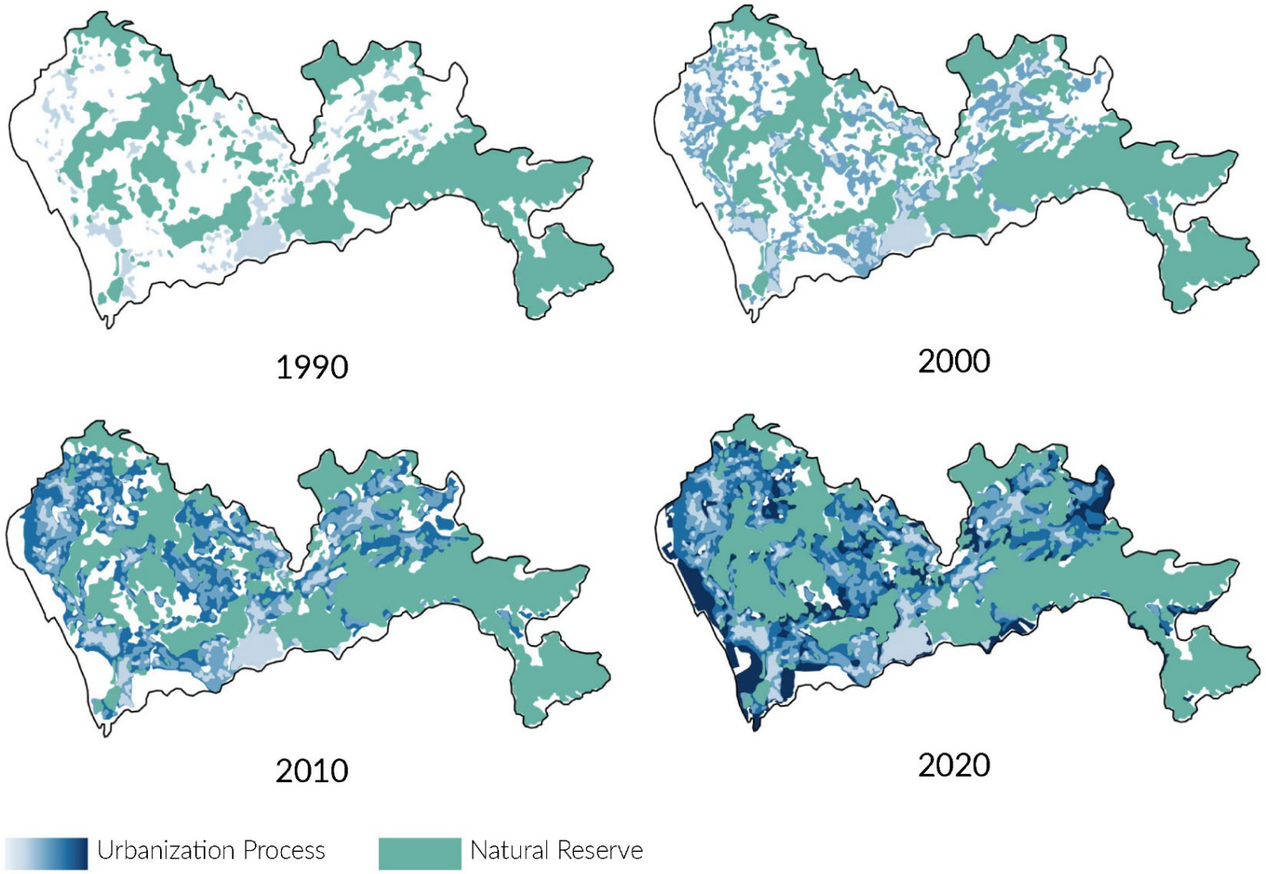


Urban development in Shenzhen

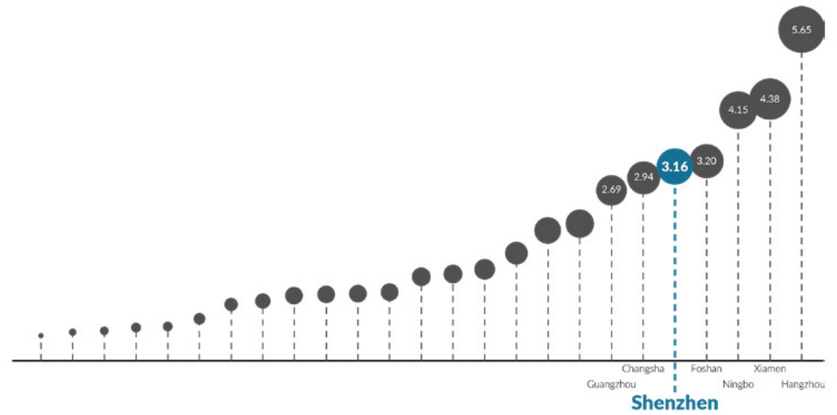
Since Shenzhen was the first city to start land reform, it can provide the most representative sites for analysis and design, and for other Chinese cities to follow.

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

LAND AND HOUSING SHORTAGE



Lack of land for urban expansion



2018-2019 City Population Growth Rate Ranking

1,700,000 new housing units

By 2035, 1.7 million new housing units will be built and least 1 million will be designated as housing units for non-local professionals, affordable homes, and public rental flats.

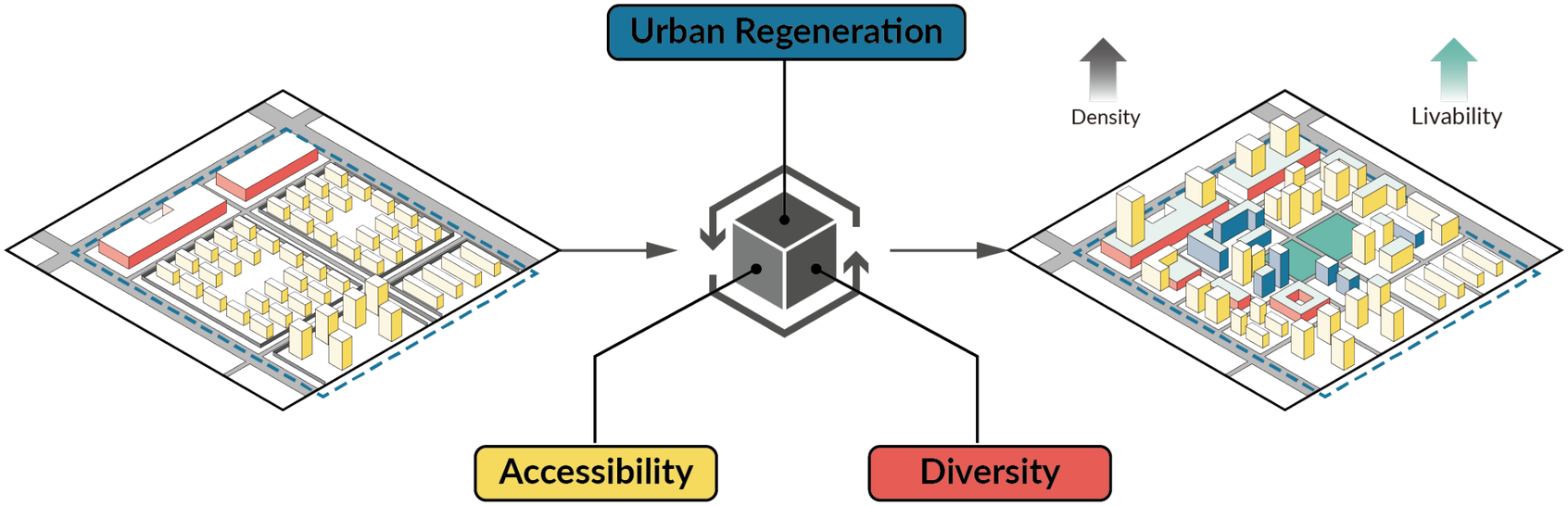
Population growing & housing shortage

Shenzhen has almost no land left for urban expansion, but still facing a serious housing shortage to accommodate the population growth. Urban regeneration will be the main focus in the future.

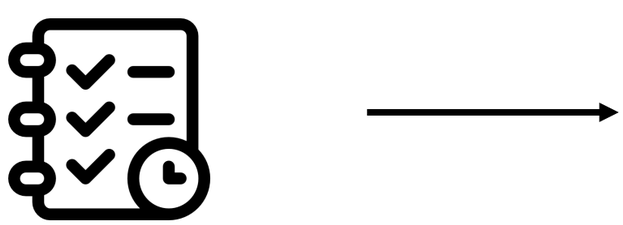
Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection


SOME OF THE LOW DENSITY SUPERBLOCKS
WILL NEED TO BE DEMOLISHED AND
REDEVELOPED INTO HIGHER DENSITY HOUSING
Recognition
contextualization
Analysis
Design Solution
Reflection

RESEARCH QUESTION



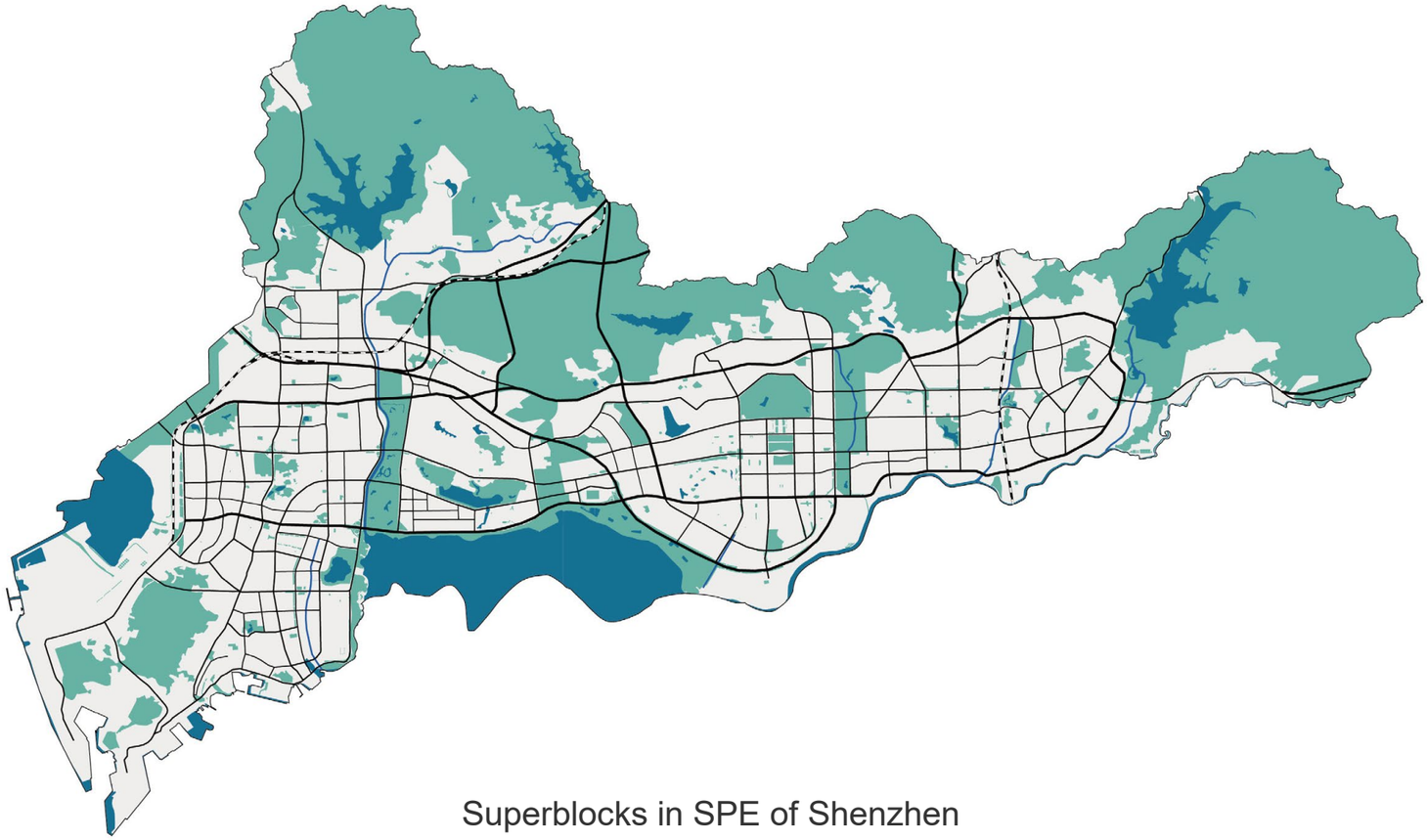
How can the existing superblocks be transformed into the more livable blocks with higher density and better accessibility and diversity, while facing the urgent need of urban regeneration in Shenzhen?



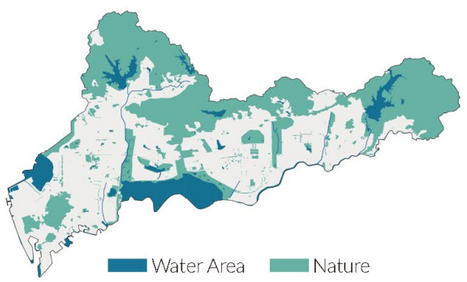
Design Strategies **Urban Design Sample**

Recognition ----> contextualization ----> Analysis ----> Design Solution ----> Reflection

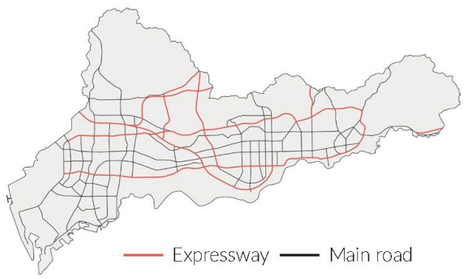
SUPERBLOCK DIVISION

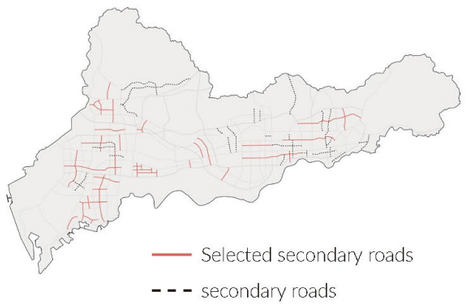


Superblocks in SPE of Shenzhen



Natural boundaries



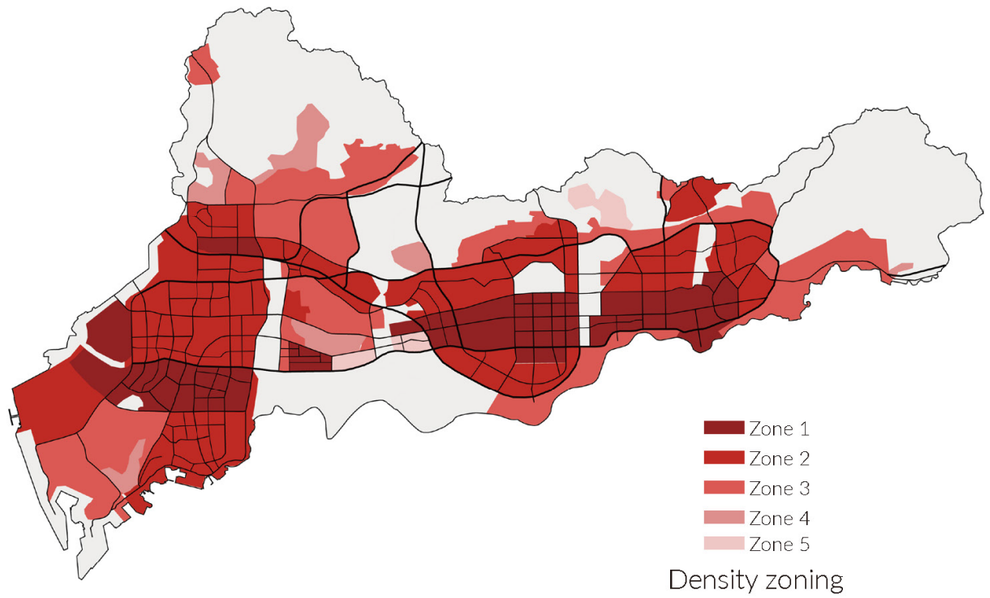


Infrastructure boundaries

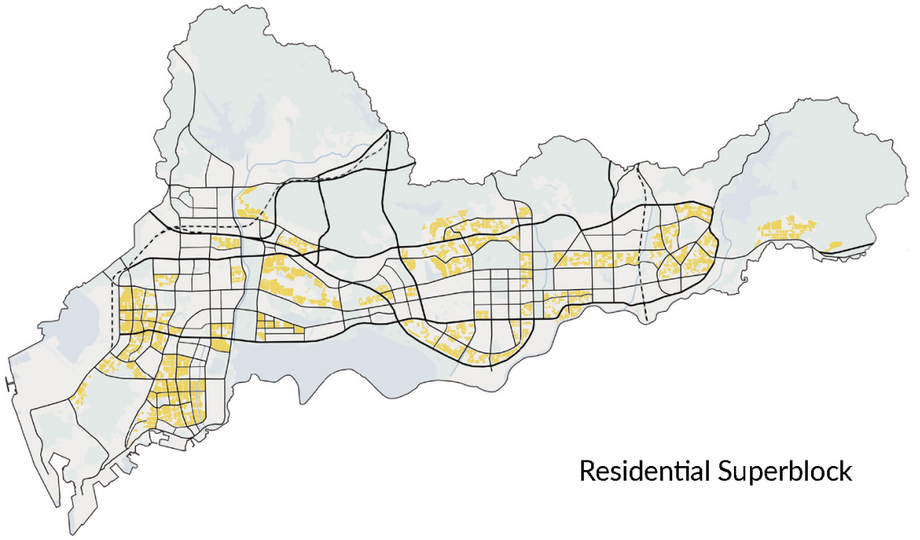
Based on the definition of the superblock,
all superblocks in the Shenzhen Special Economic Zone were delineated.

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

DENSITY ZONING



Density zoning



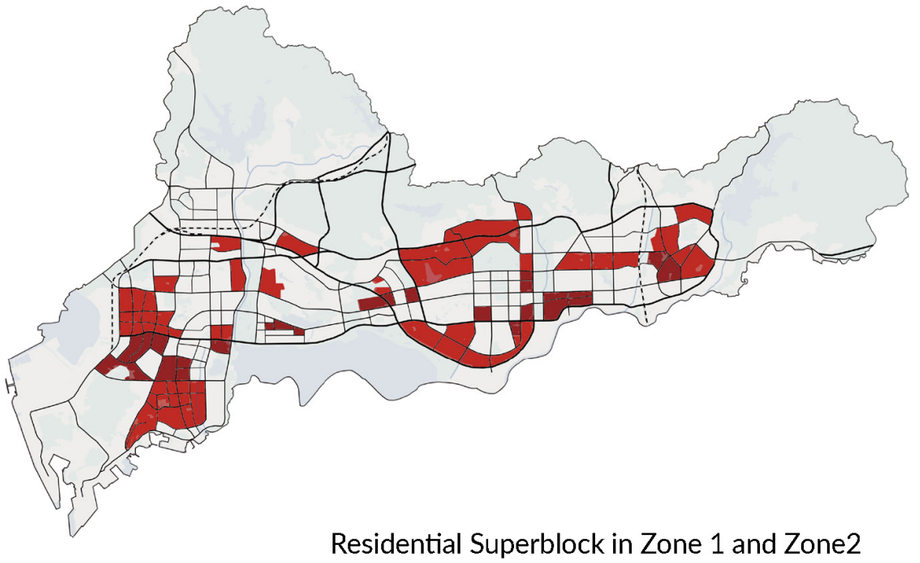
Residential Superblock

FSI guidelines for residential land plots

Grading	Zone	Baseline FSI	Maximum FSI
1	Zone 1&2	3.2	6.0
2	Zone 3	3.0	5.5
3	Zone 4	2.5	4.0
4	Zone 5	1.5	2.5

FSI guidelines for commercial and services land plots

Grading	Zone	Baseline FSI
1	Zone 1	5.4
2	Zone 2	4.5
3	Zone 3	4.0
4	Zone 4	2.5
5	Zone 5	2.0

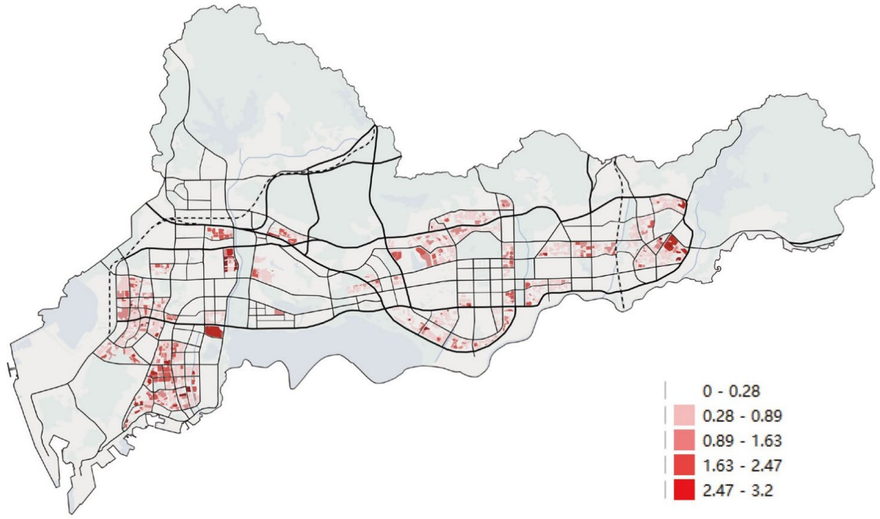


Residential Superblock in Zone 1 and Zone2

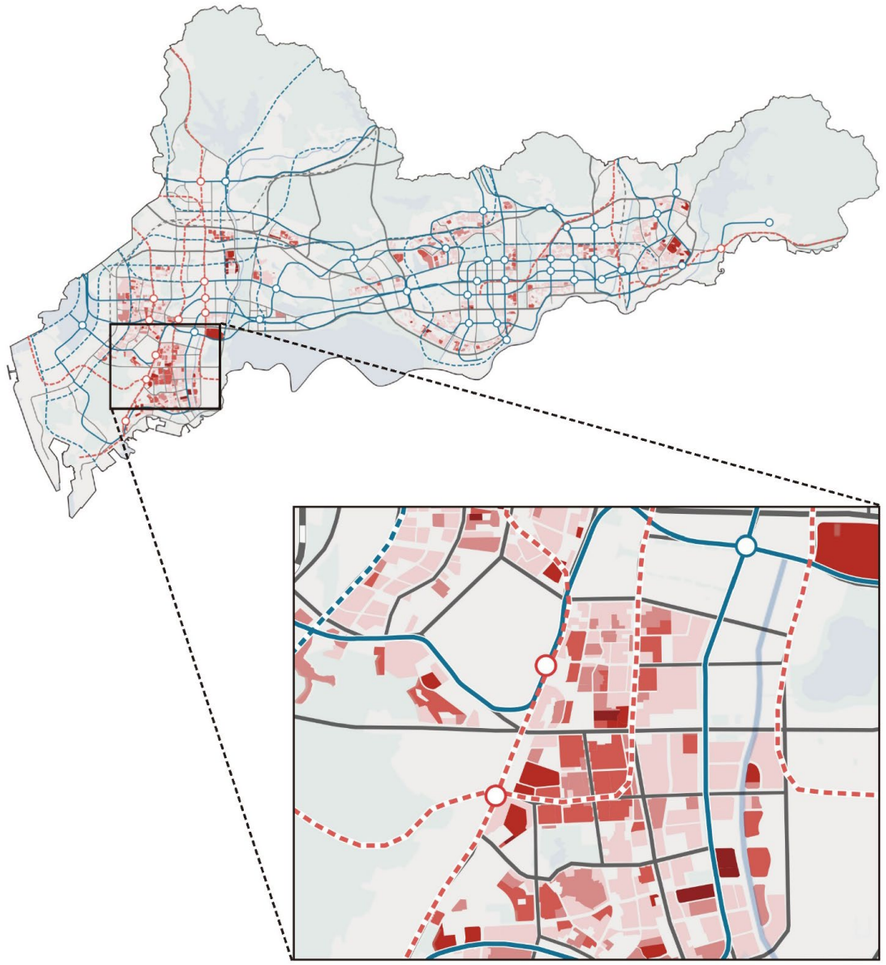
Superblocks located in density zone 1 and 2 are in the urgent need for more compact land use.

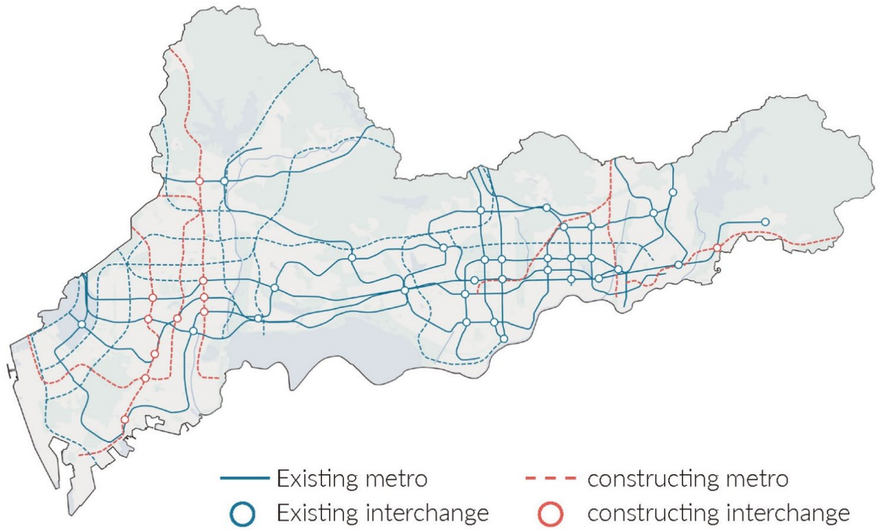
Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

SITE SELECTION



Density Gap



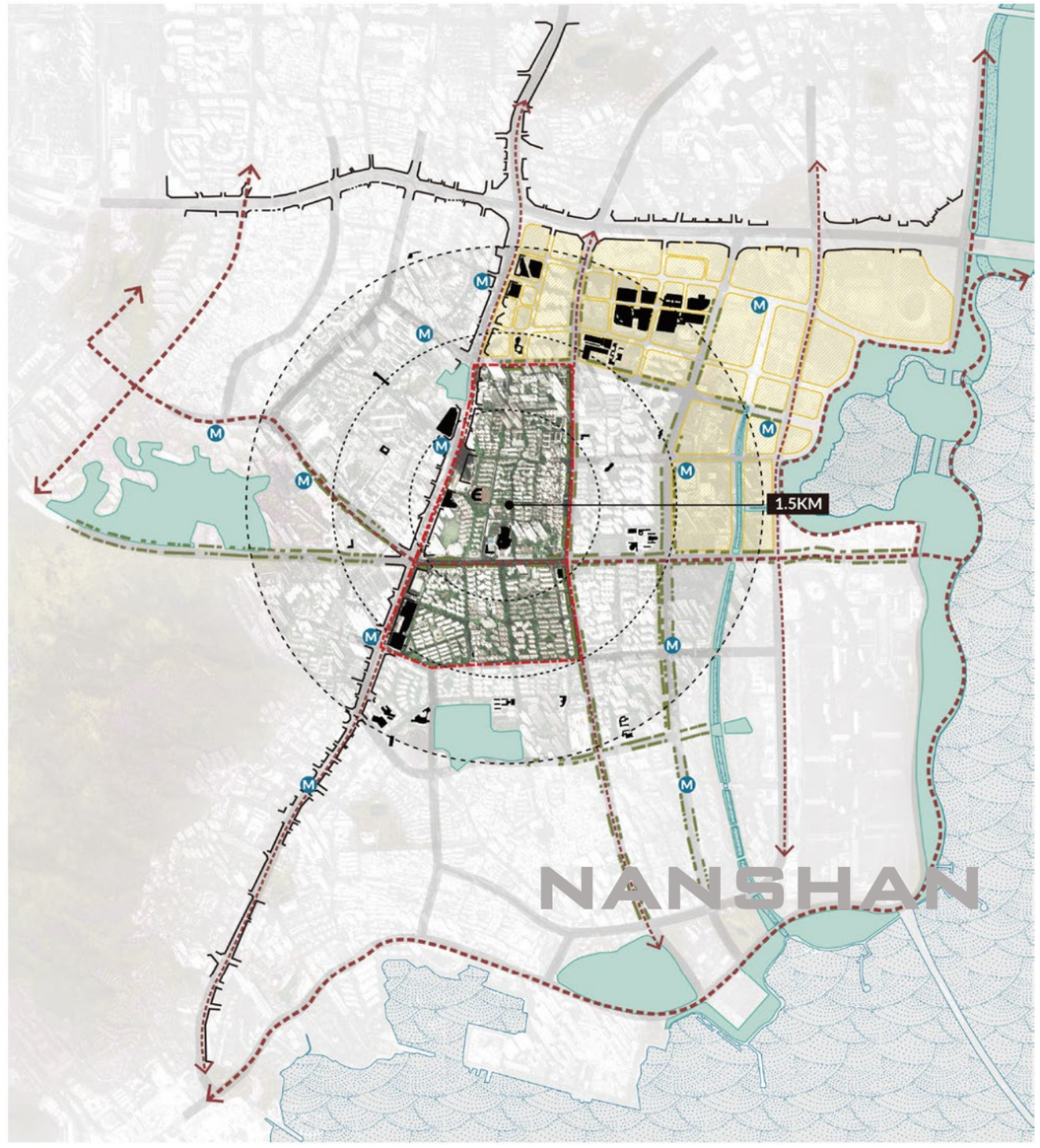


TOD development potential

Large density gaps and construction of metro stations become opportunities for densification

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

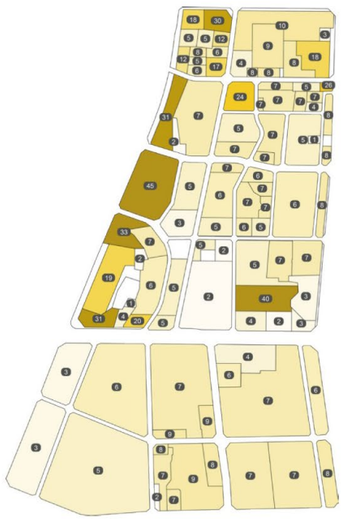
BASIC INFORMATION



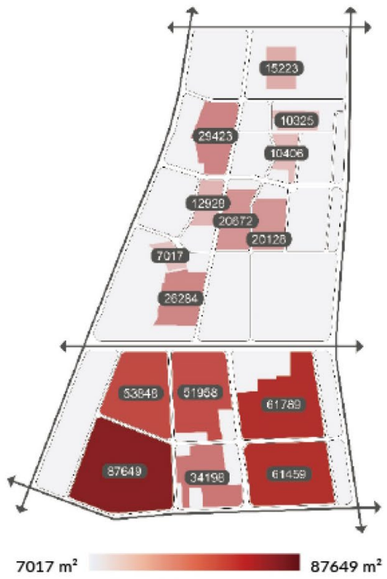
Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

BASIC INFORMATION

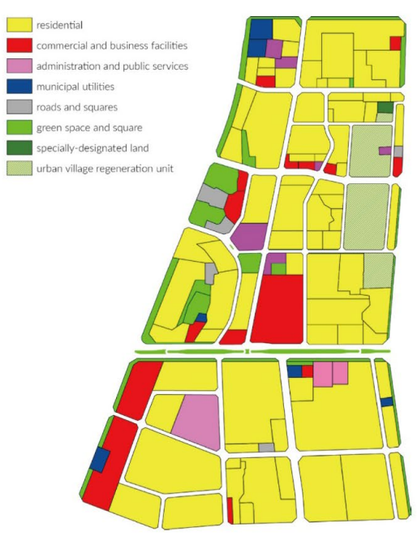
FSI ≈2



L ≈ 8 floors



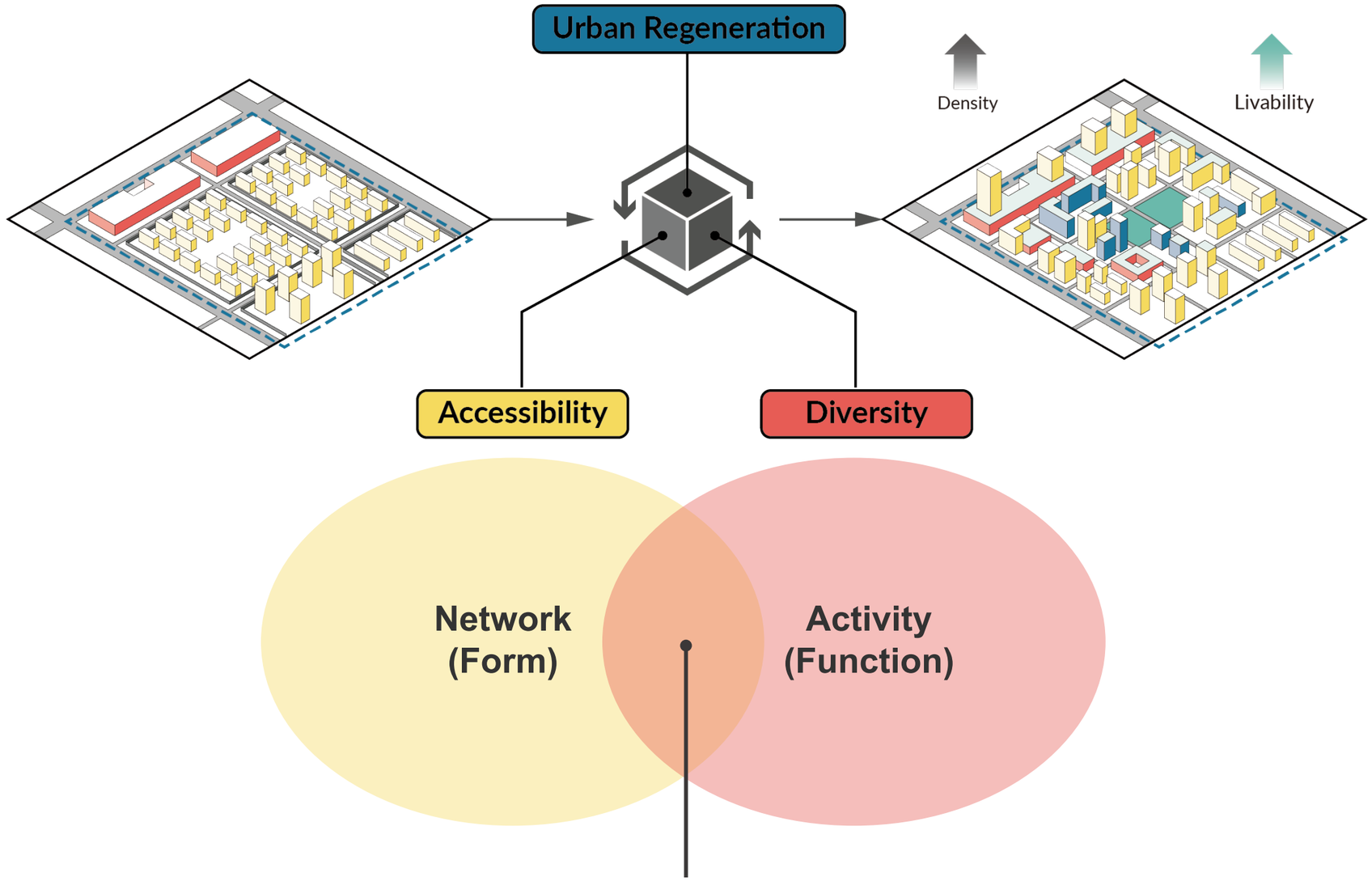
Area ≈ 5ha each enclosed block



Landuse: residential mainly

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

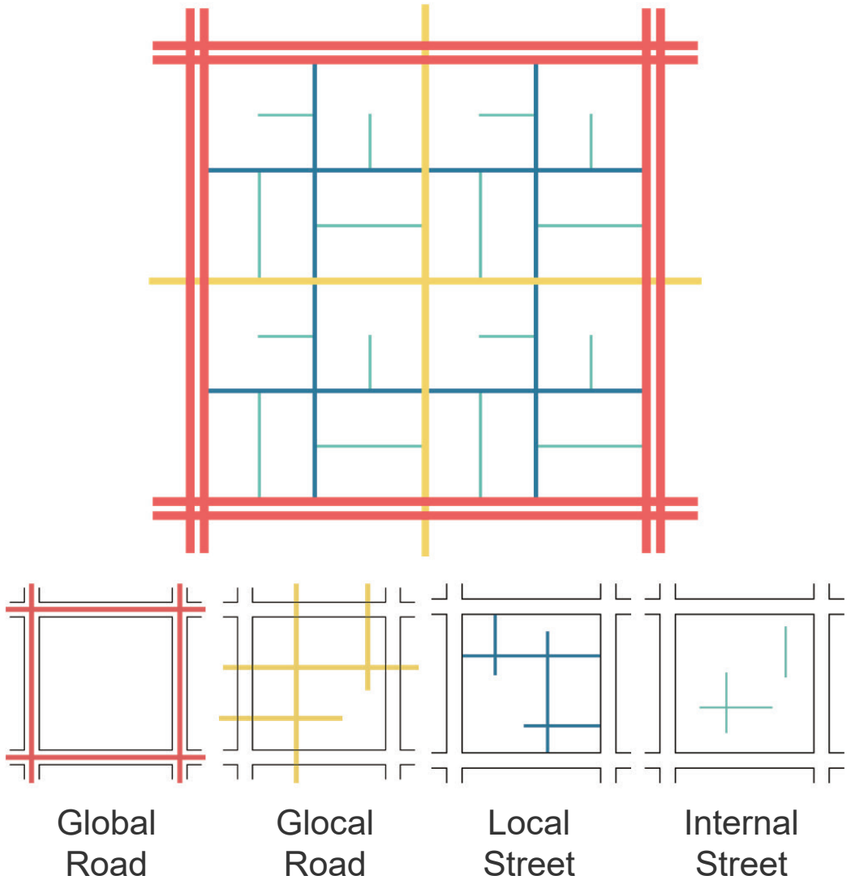
ANALYSIS ENTRY POINT

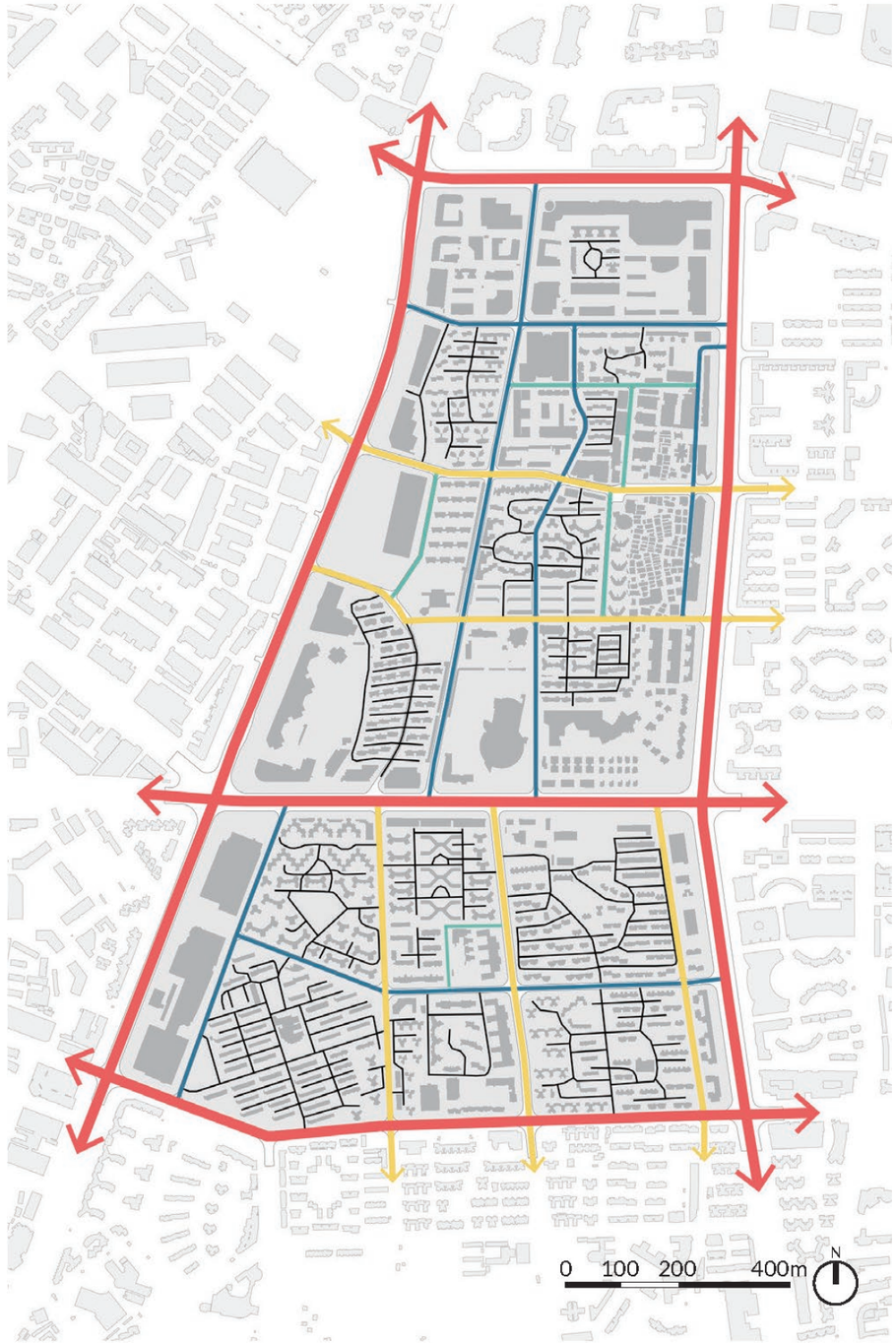


Cities are organized and complex systems. The interplay between urban form can have synergistic effect with the mix of functions, making cities more vibrant, more accessible, and safer.

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

NETWORK INVESTIGATION



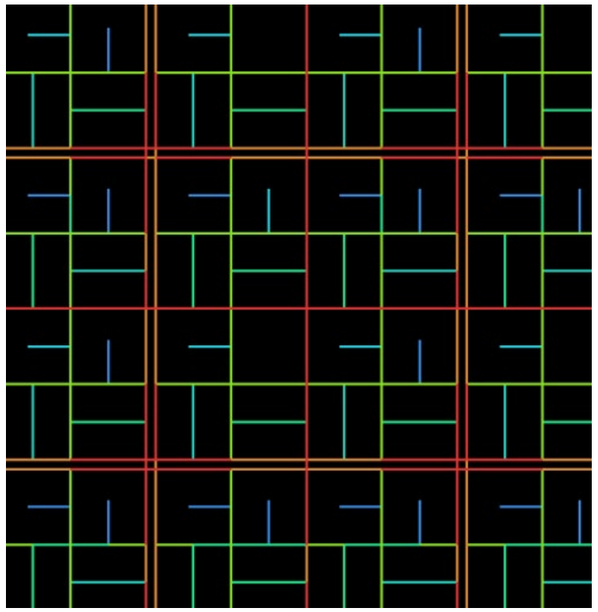


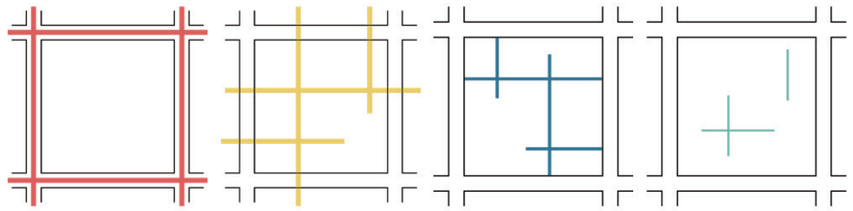
Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

NETWORK INVESTIGATION

Integration

R=1000m

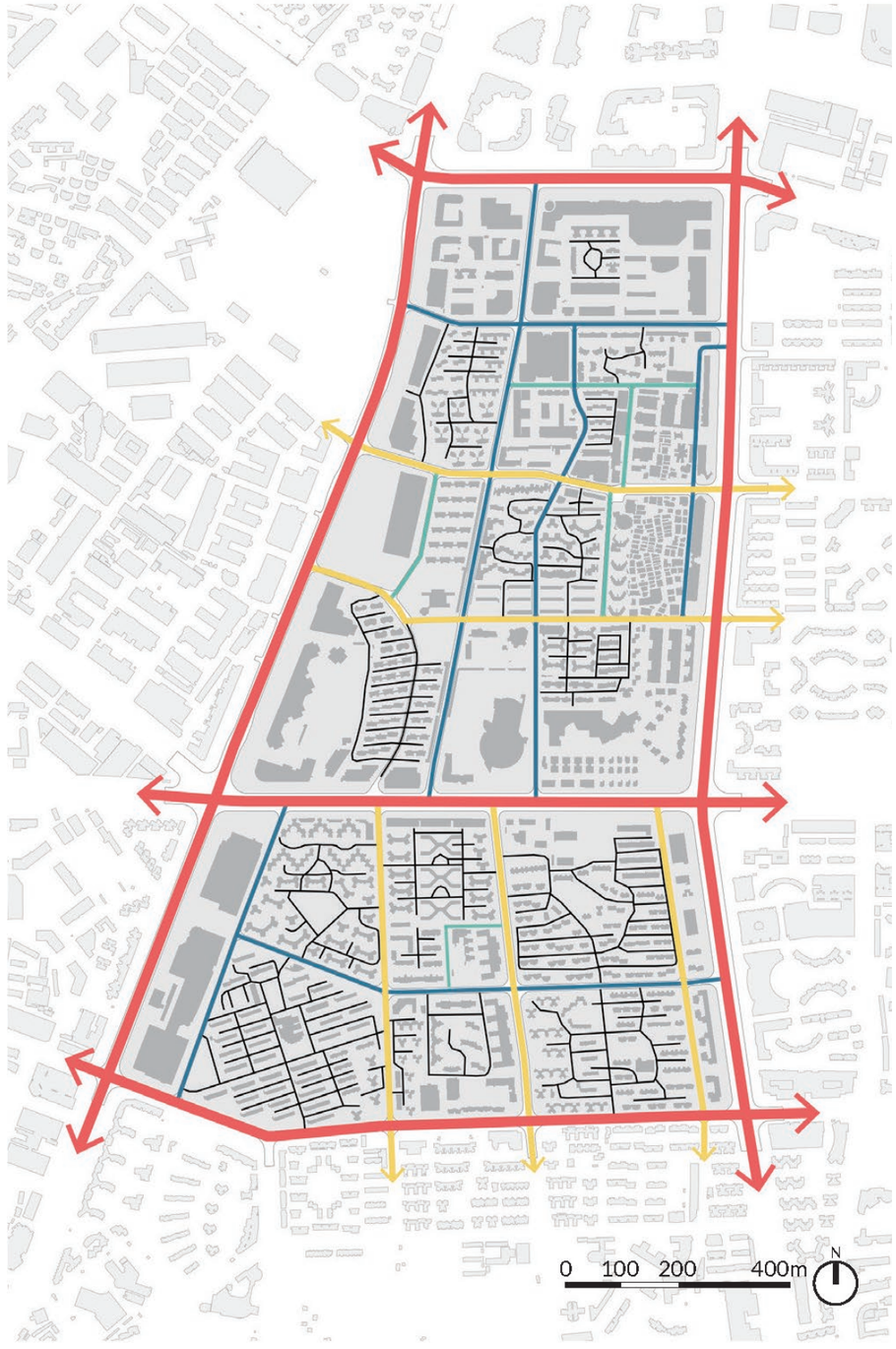




Global Road | Glocal Road | Local Street | Internal Street

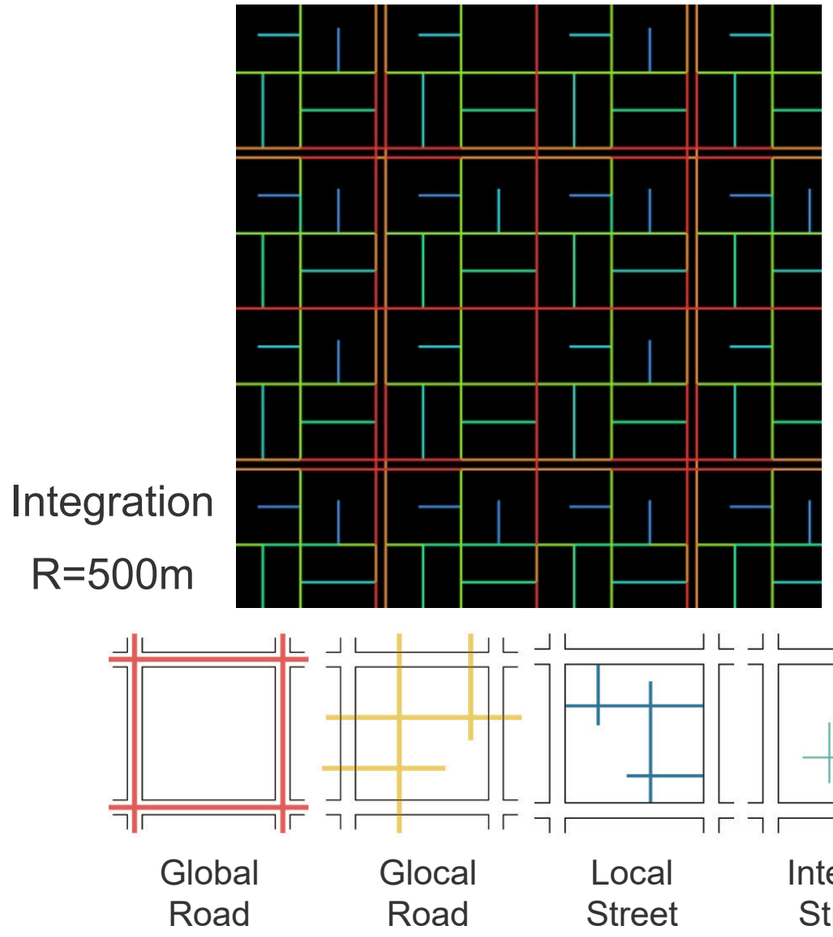
As an intermediary, Glocal Road provides medium distance movement between superblocks and relieve the pressure of Global Road.

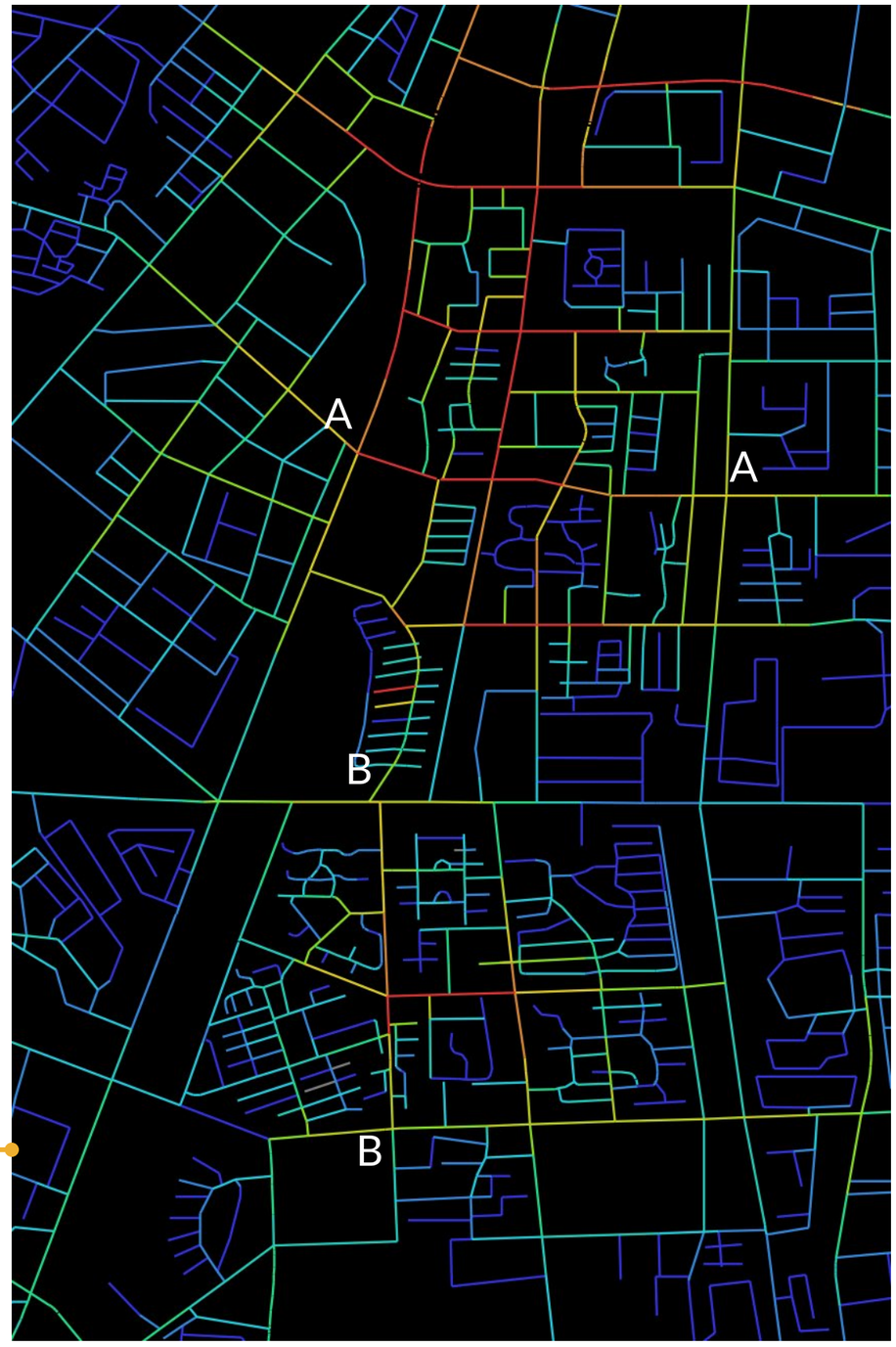
At the walking scale, it even has a higher degree of integration and the potential to attract activity aggregation.



Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

NETWORK INVESTIGATION





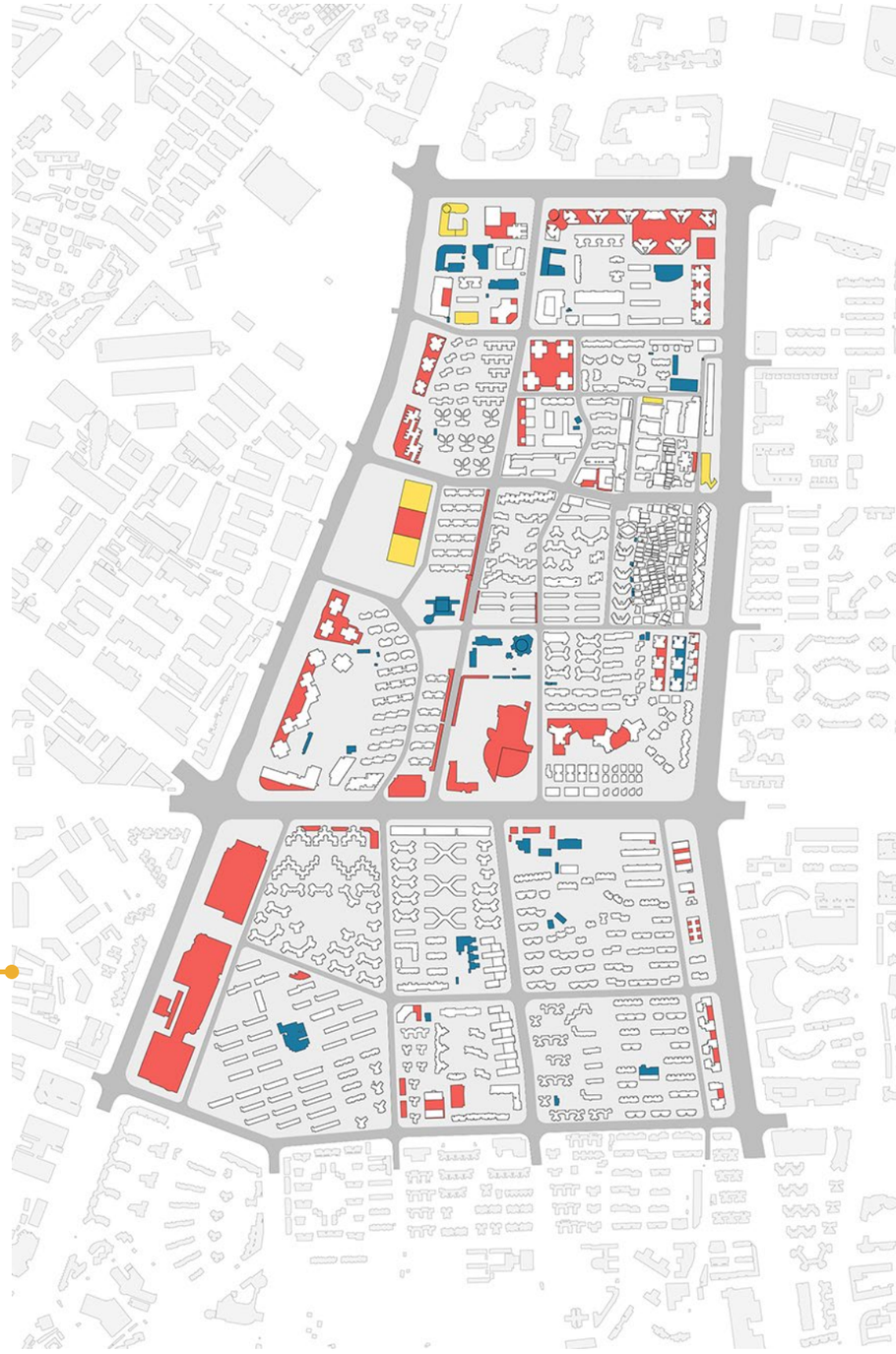
Only A few of Glocal Road perform like the ideal grid.

Most of them just have very limited connections across superblocks and also limited connections to local and internal street.

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

ACTIVITY INVESTIGATION

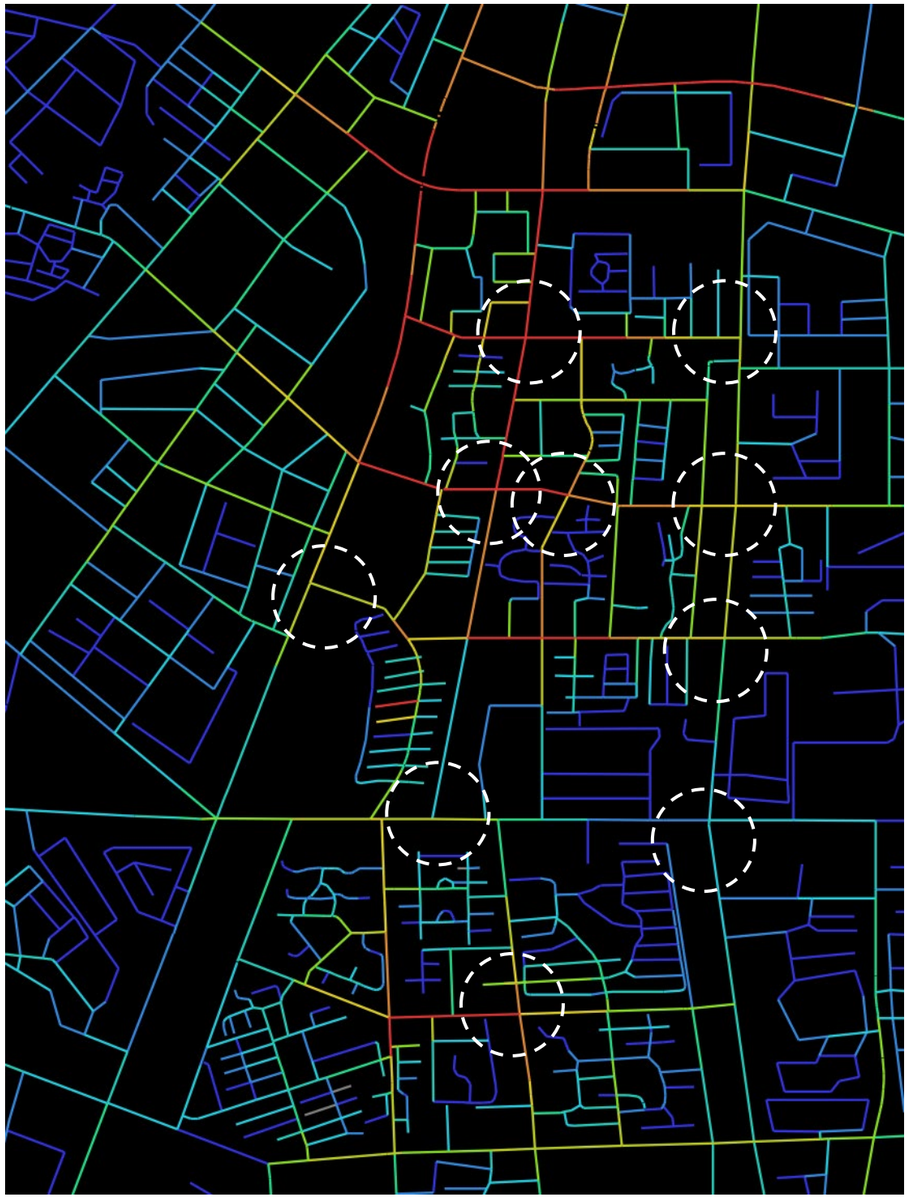
CONSUMPTION	Entertainment	KTV, Gym, Opera, Cinema
	Retail	Supermarkets, All kinds of Shop
	Catering	Restaurants, Food Stores
SERVICE	Governing	Government
	Education	All kinds of School
	Medical	Hospital, Nursing Home
	Parking	Parking lot, parking building
	Logistics	Post office, Express
PRODUCTION	Working	All kinds of Offices
	Manufacturing	All kinds of factories
RESIDENCE	Short term	Hotel, Airbnb
	Long term	House, Apartment



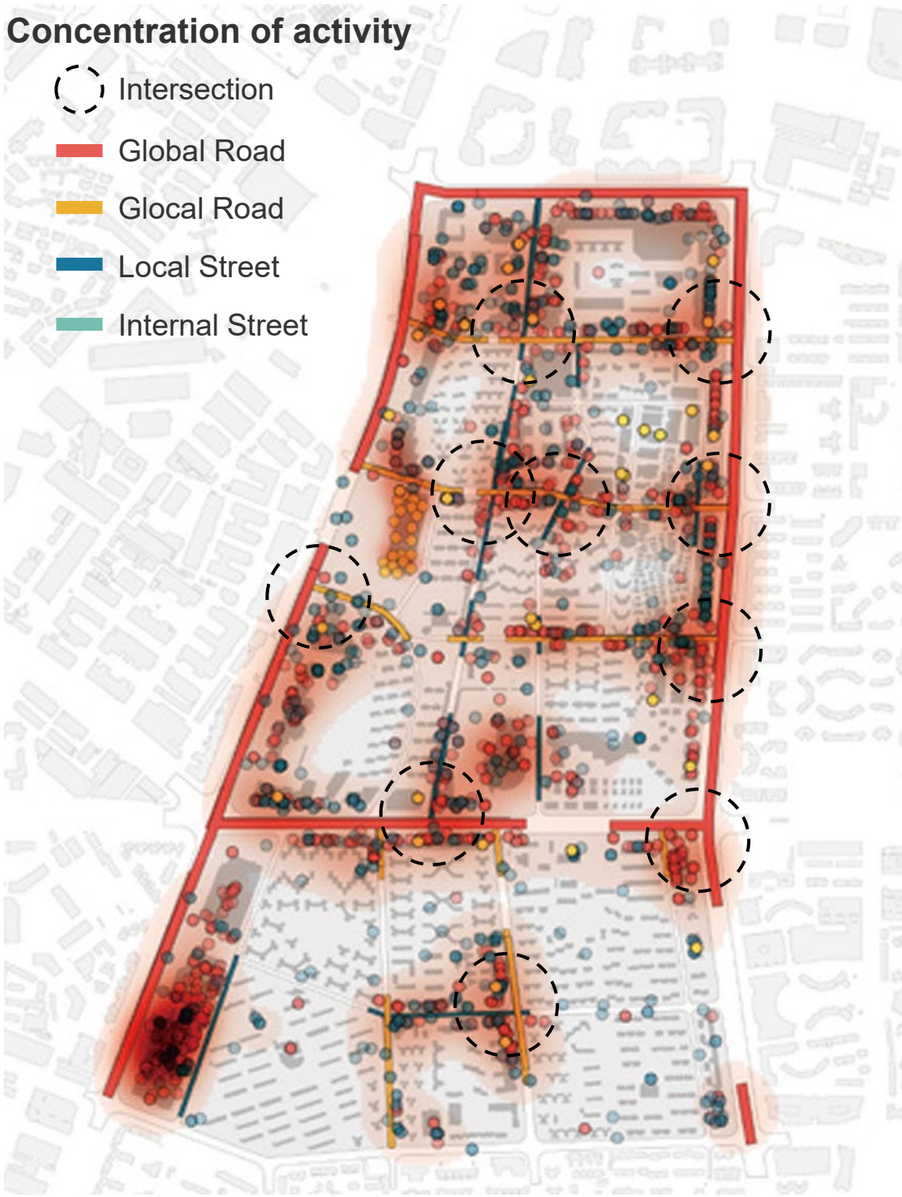
- There is very little production activity within the superblock
- Consumption and service activities are mainly concentrated along the Global Road and the intersection
- There are almost no other activities in gated communities except for residential.

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

NETWORK ACTIVITY INTERACTION



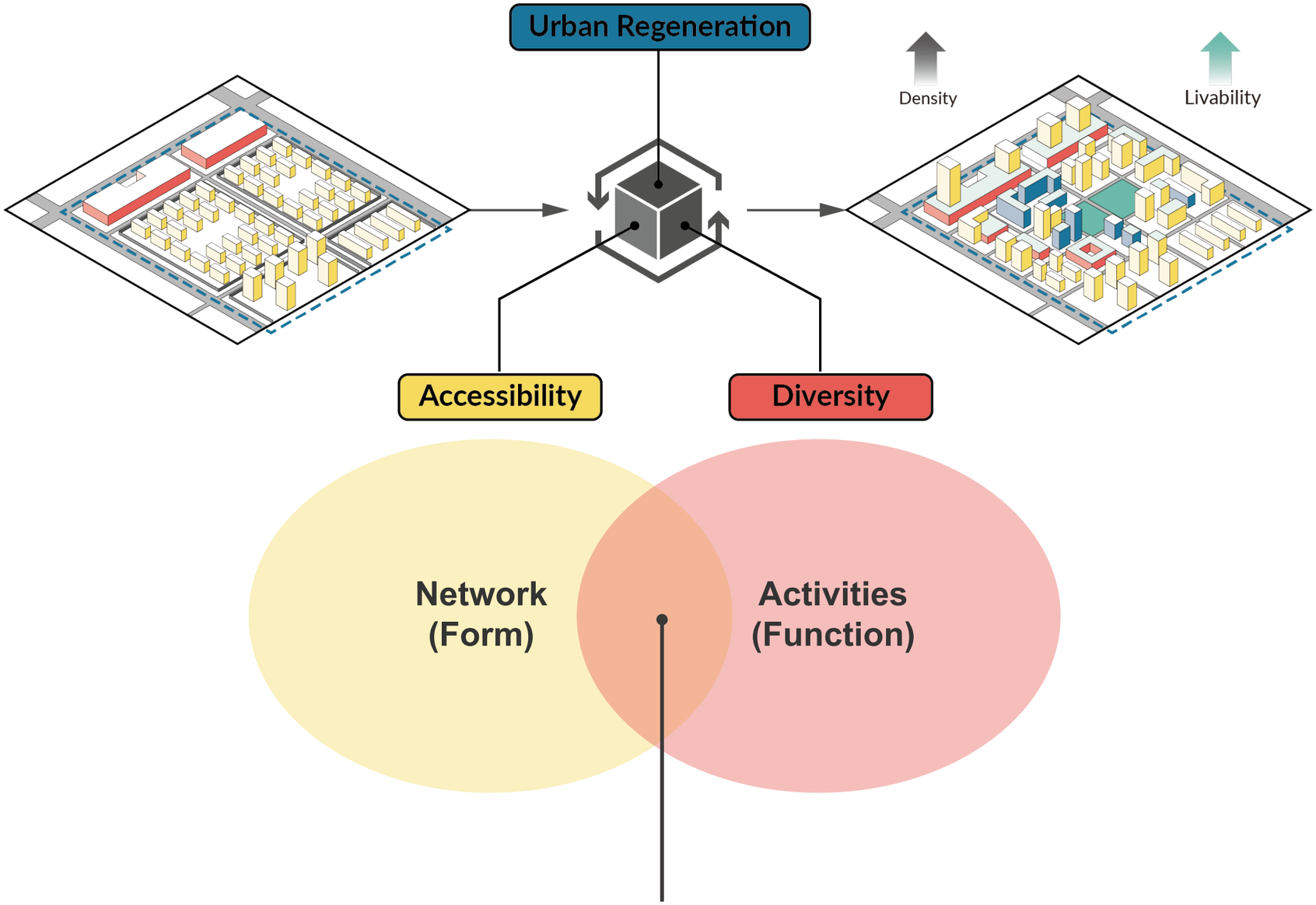
Integration R=1000m



Activities are designed for car, not for pedestrian

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

DESIGN PRINCIPLE



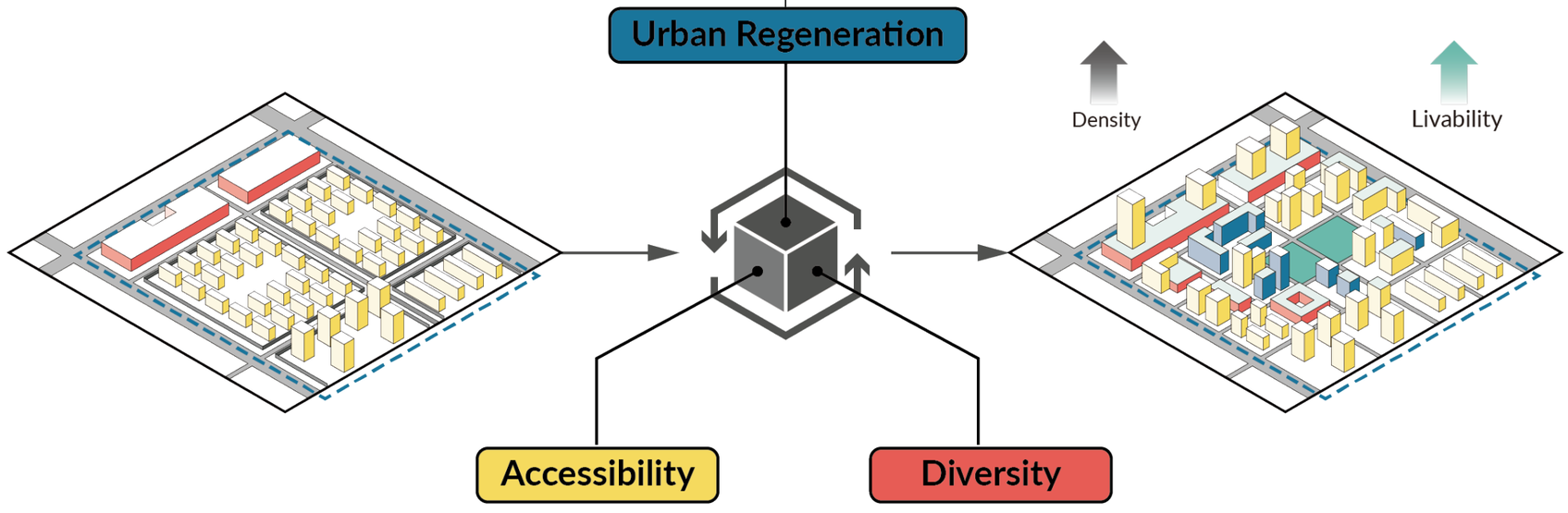
- **Glocal Road's connectivity to the overall network needs to be enhanced;**
- **The distribution of activities needs to be better integrated with the road network, rather than overly concentrated on the edges of superblocks.**

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

URBAN REGENERATION

Urban Regeneration System

Current Design Paradigm



Can the existing urban regeneration mechanisms solve this problem?

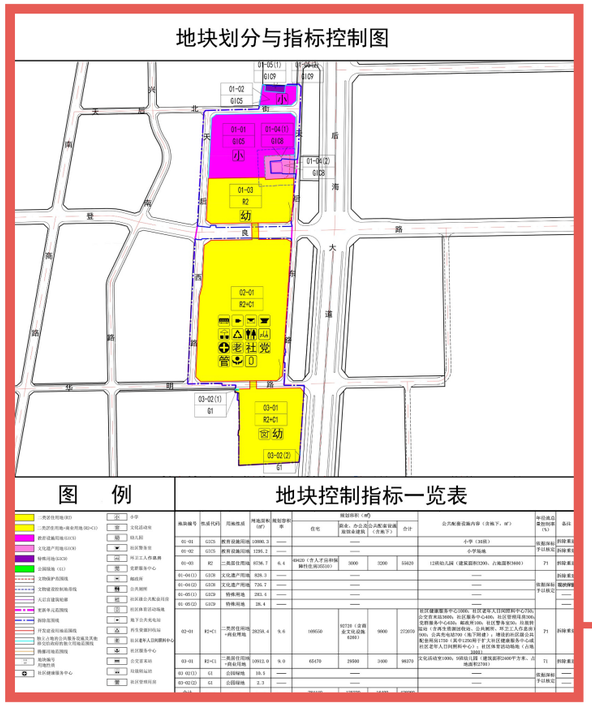
Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

REGENERATION SYSTEM

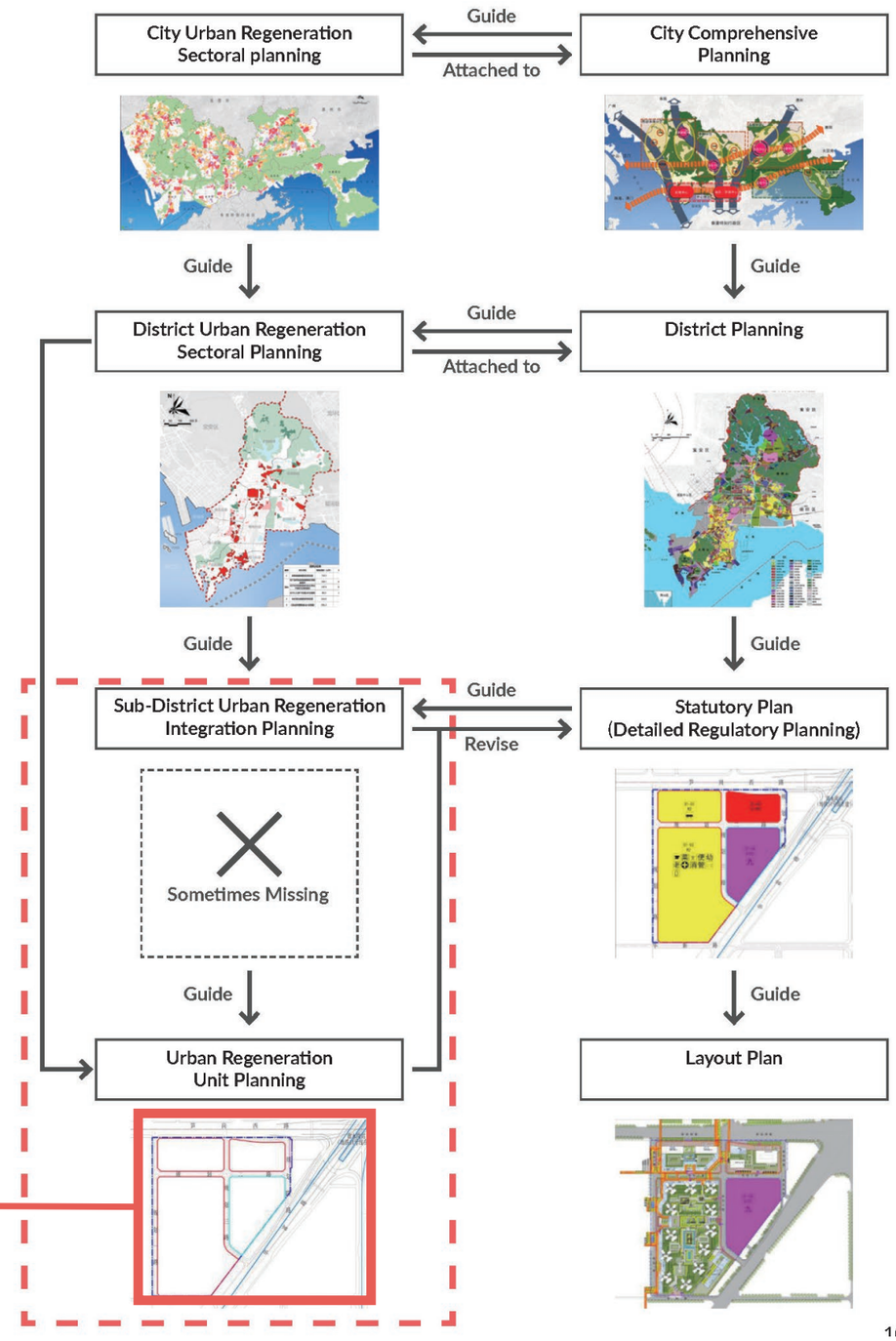
The regeneration unit planning:

- is one of the cores of urban regeneration in Shenzhen, responsible for determining development boundaries, land ownership, development density and other rules.

- only controls the development status within the unit, while the intermediate scale planning are sometimes missing.
- lacks design guidance for mixed use

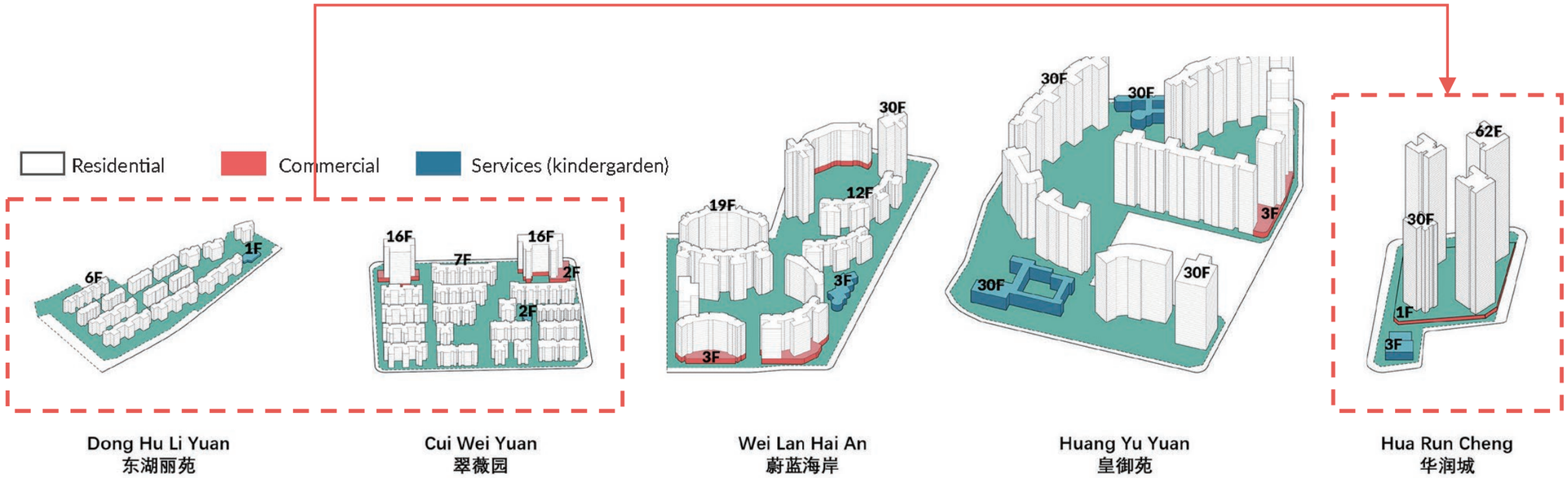


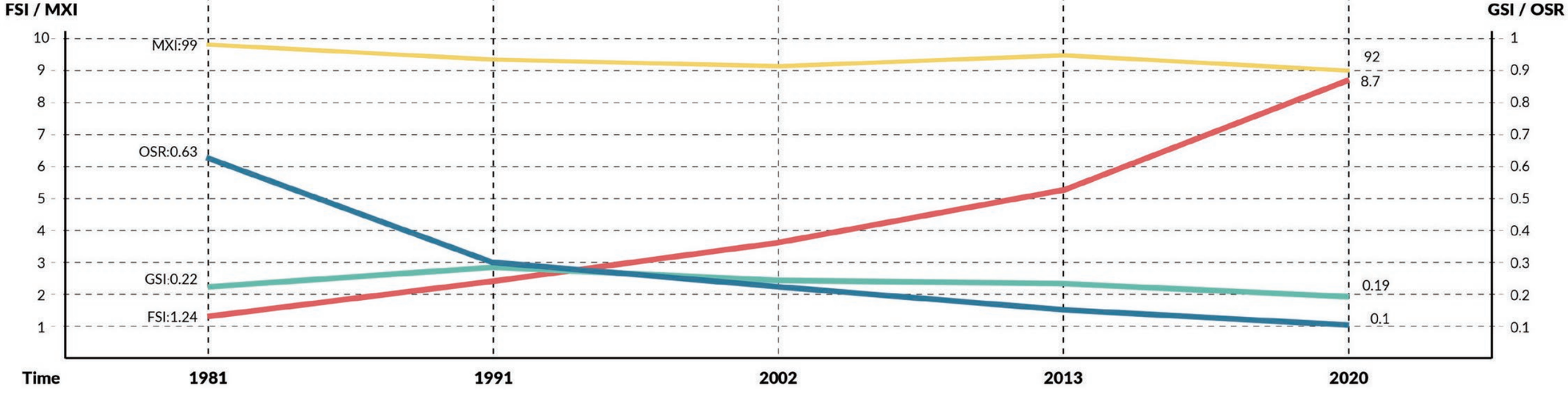
Urban Regeneration Unit Planning



Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

DESIGN PARADIGM





Existing urban regeneration projects often involve redeveloping homes from the 1980s and 1990s into the latest generation of high-rise residential buildings.

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

EXISTING CASE

Before

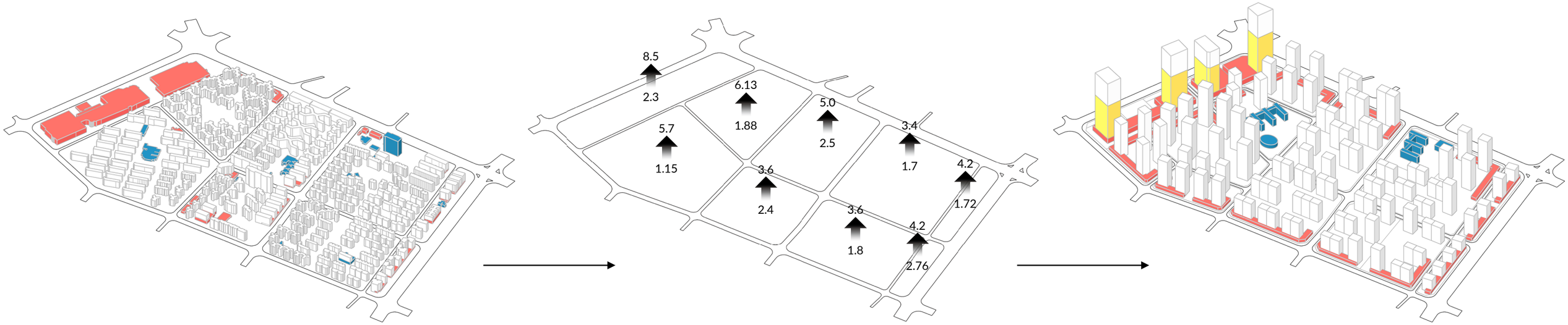
Regeneration unit planning

After

The entire regeneration unit, except for the mandatory public facilities, the remaining parcels are used by developers in a one-size-fits-all approach to maximize the amount of development.

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

POTENTIAL FUTURE



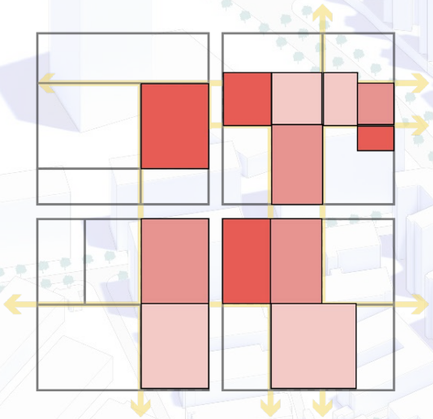
The block's building density and quality of buildings have increased substantially following the regeneration, but it has not produced better public spaces or more vibrant streets.

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

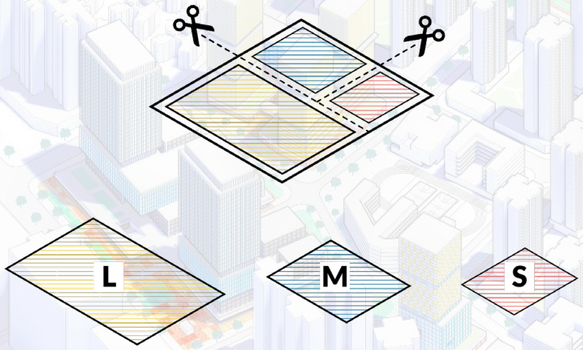
DESIGN SOLUTION

Recognition ----→ contextualization ----→ Analysis ----→ Design Solution ----→ Reflection

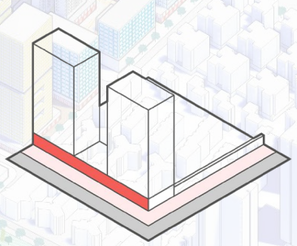
DESIGN SOLUTION

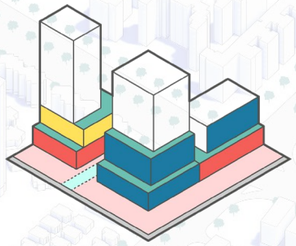


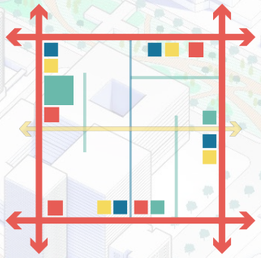
intermediate scale integration

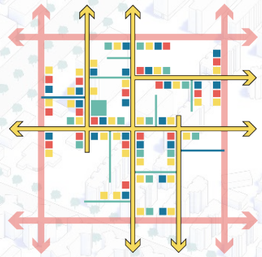


finer-grained block division

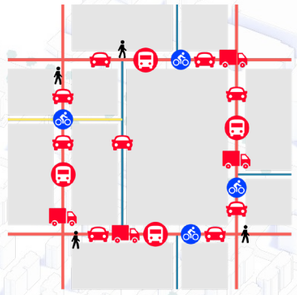


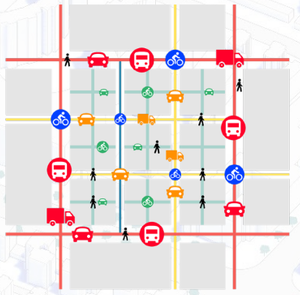






network - activity integration

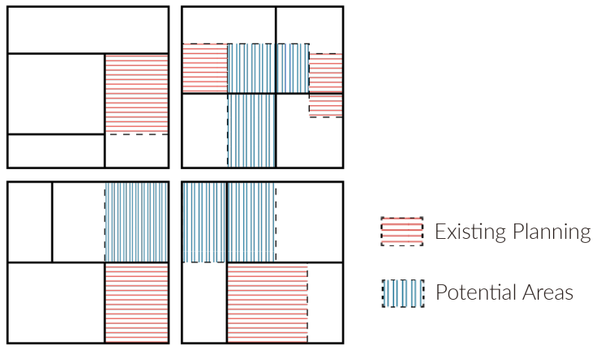




flow management

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

1. INTERMEDIATE SCALE INTEGRATION

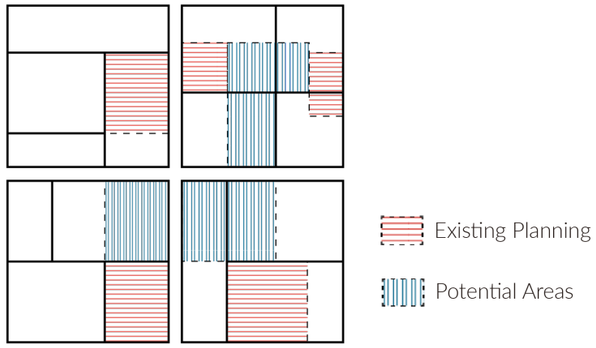


Regeneration Potential Assessment

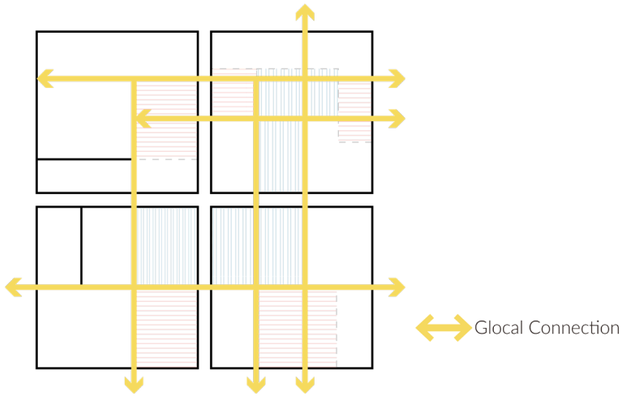
The existing fragmented regeneration unit plan is first identified, and the regeneration potential of the area around the regeneration unit is evaluated to form a regeneration plan across the superblock scale.

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

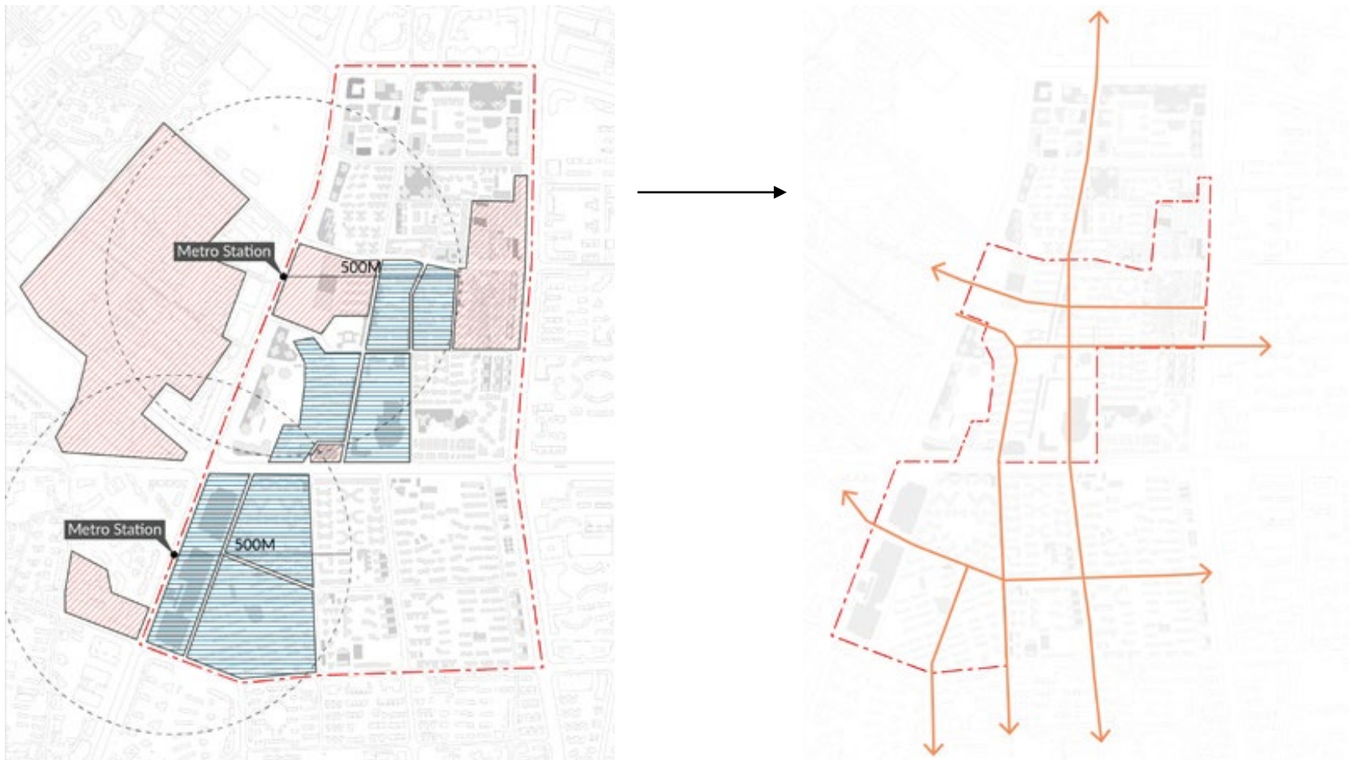
1. INTERMEDIATE SCALE INTEGRATION



Regeneration Potential Assessment



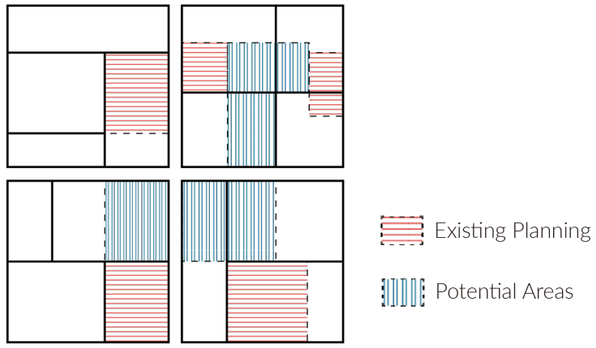
Superblock Interconnection



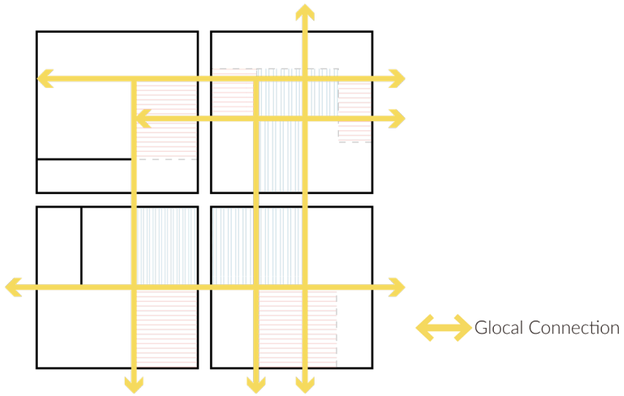
Based on the existing road network, Glocal Road connections between superblocks are increased as much as possible to improve the integration of the overall network while avoiding massive infrastructure reconstruction.

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

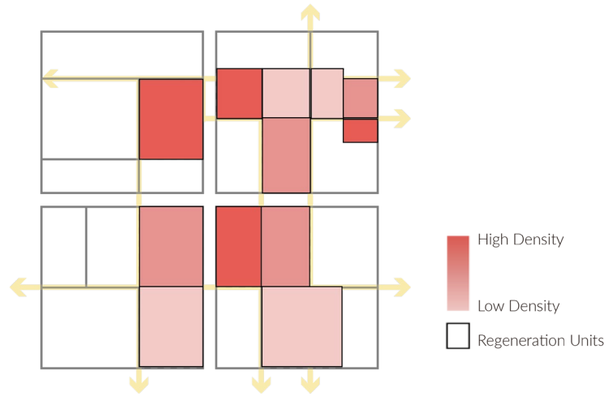
1. INTERMEDIATE SCALE INTEGRATION



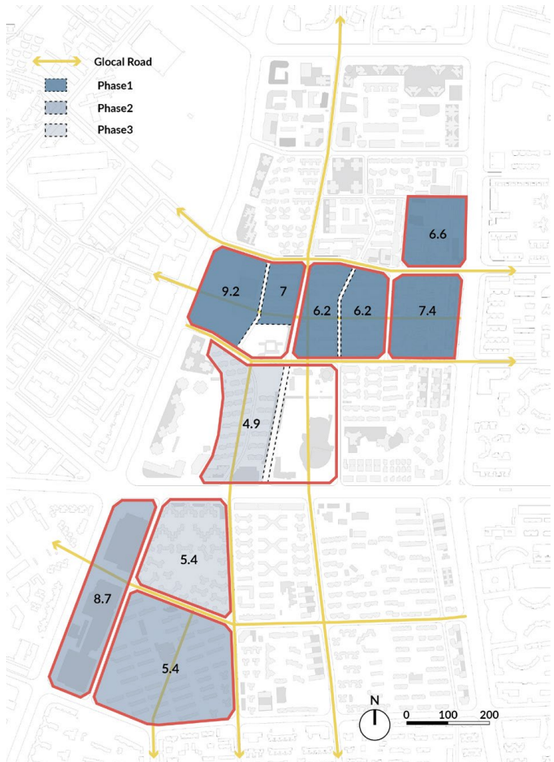
Regeneration Potential Assessment



Superblock Interconnection



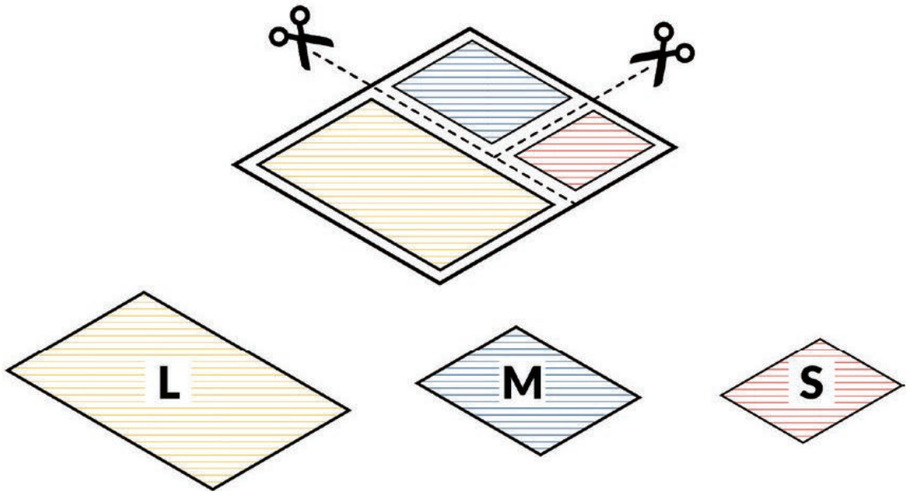
Regeneration Unit Integration

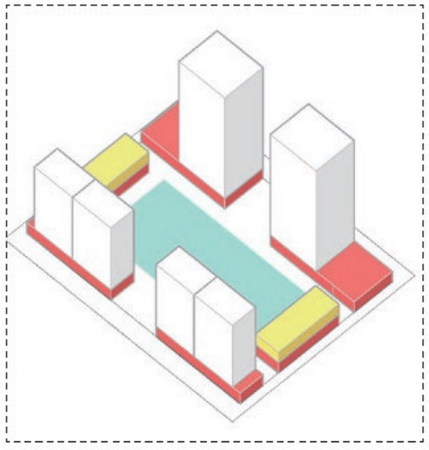


Determine the boundaries and density cap of the regeneration units and set the development time sequence.

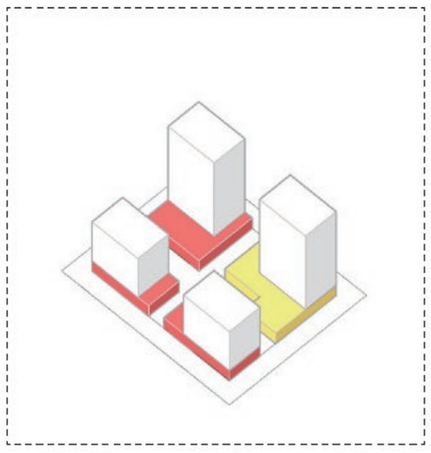
Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

2. FINER-GRAINED BLOCK DIVISION

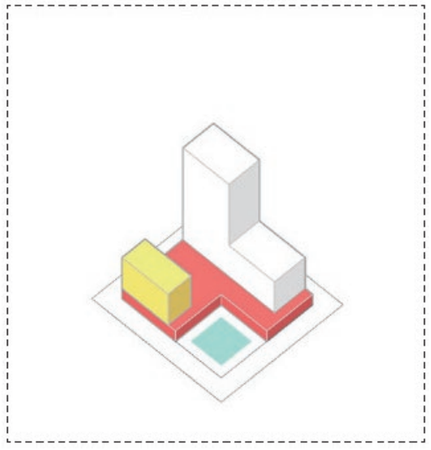




L:
Garden Community



M:
Open Block

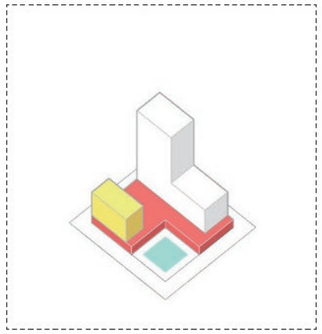


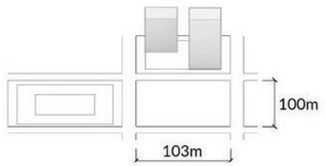
S:
Mixed-use Complex

To increase road density on both local streets and internal streets to improve the overall network integration. At the same time, to make customized design instead of one-size-fit-all development

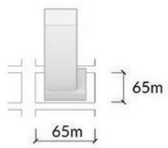
Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

2. FINER-GRAINED BLOCK DIVISION

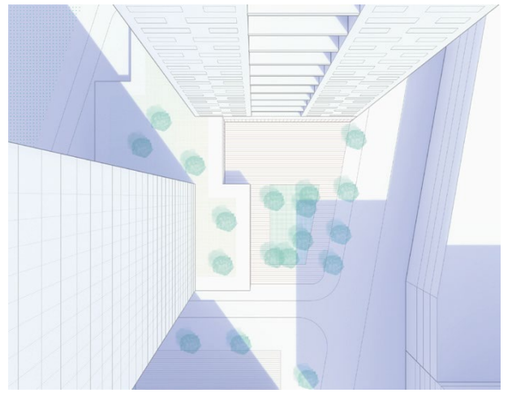




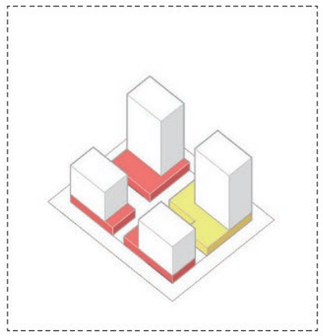
Max Size

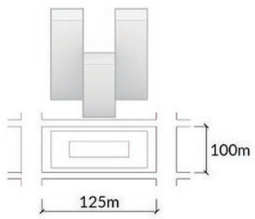


Min Size



S: Mixed-Use Complex





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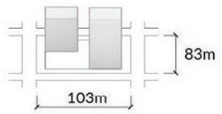
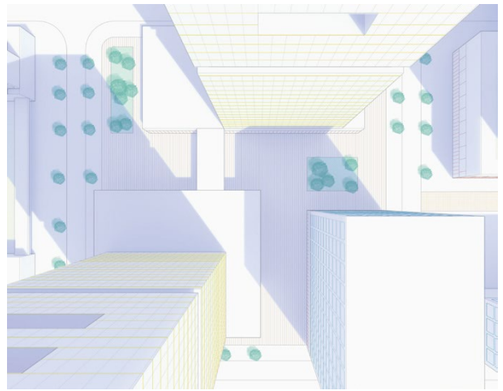
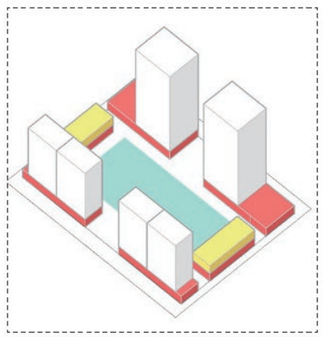
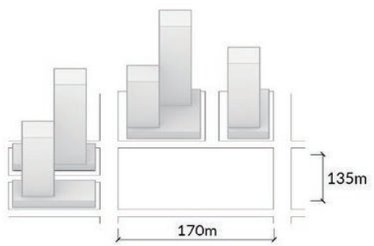


Min Size



M: Open Block





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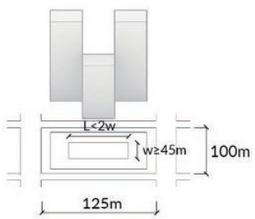

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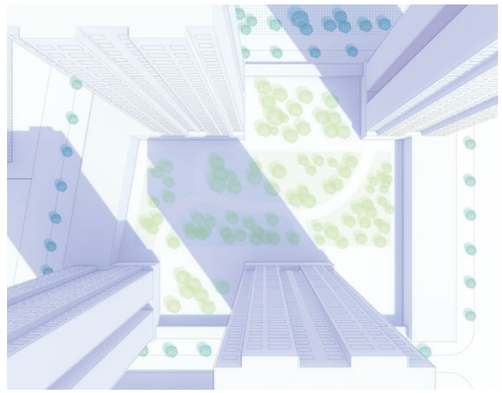
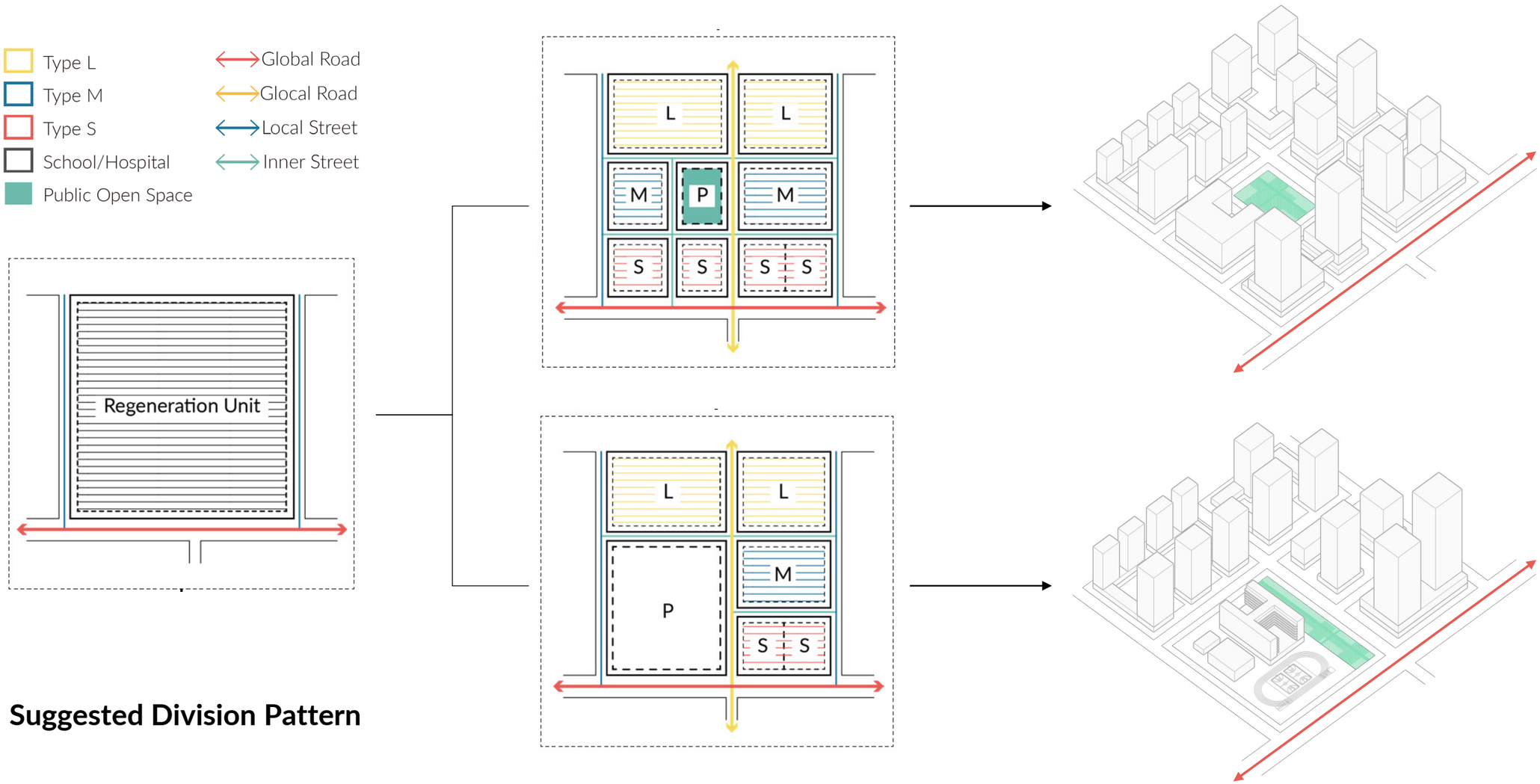


L: Garden Community

These three block types can accommodate most common residential and office buildings in China, adapt to different density and mixed use requirements, and meet the building regulations.

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

2. FINER-GRAINED BLOCK DIVISION

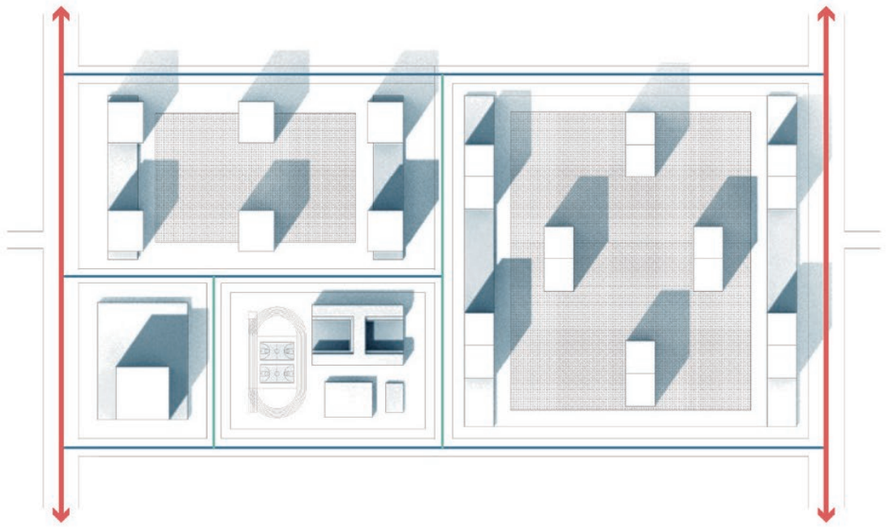


Suggested Division Pattern

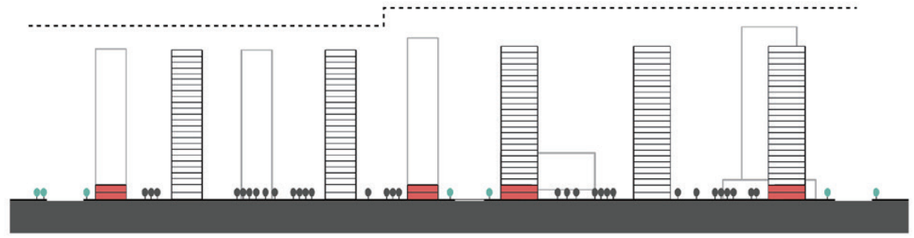
- The small size block should be located along the Global Road;
- Public facilities should be located along the Global Road;
- Middle size block should be located in between;
- The public open space should be located in the middle of the regeneration unit;
- The large size block should be in the inner position of the whole superblock

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

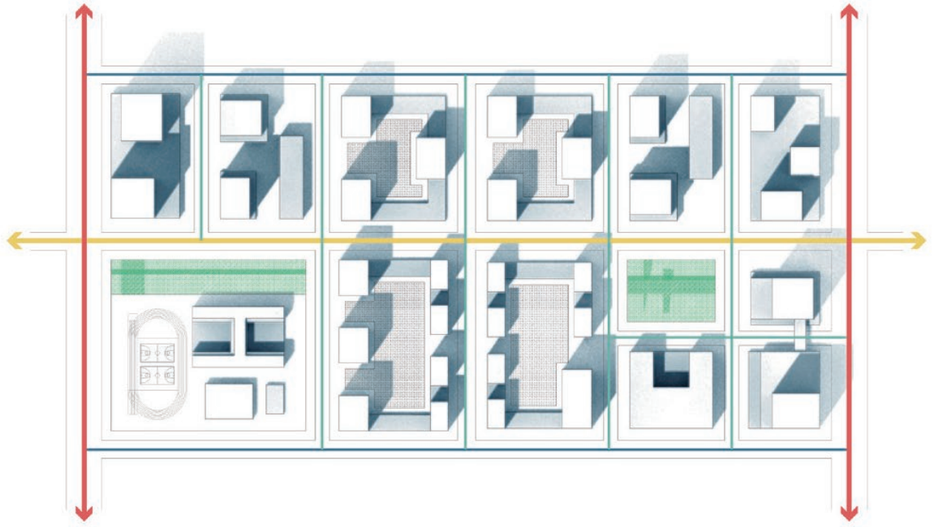
2. FINER-GRAINED BLOCK DIVISION



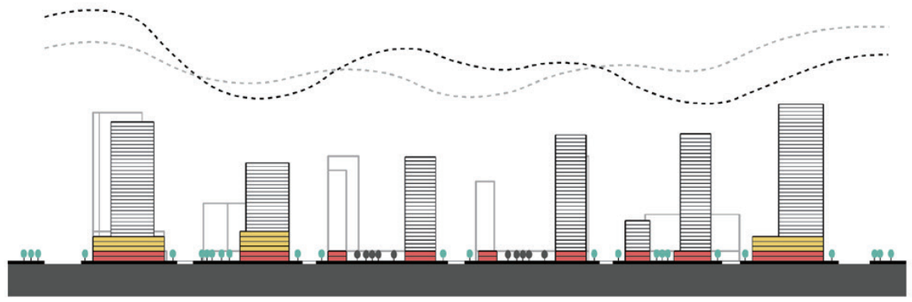
Existing Paradigm:



Existing Section:



Alternative Paradigm:

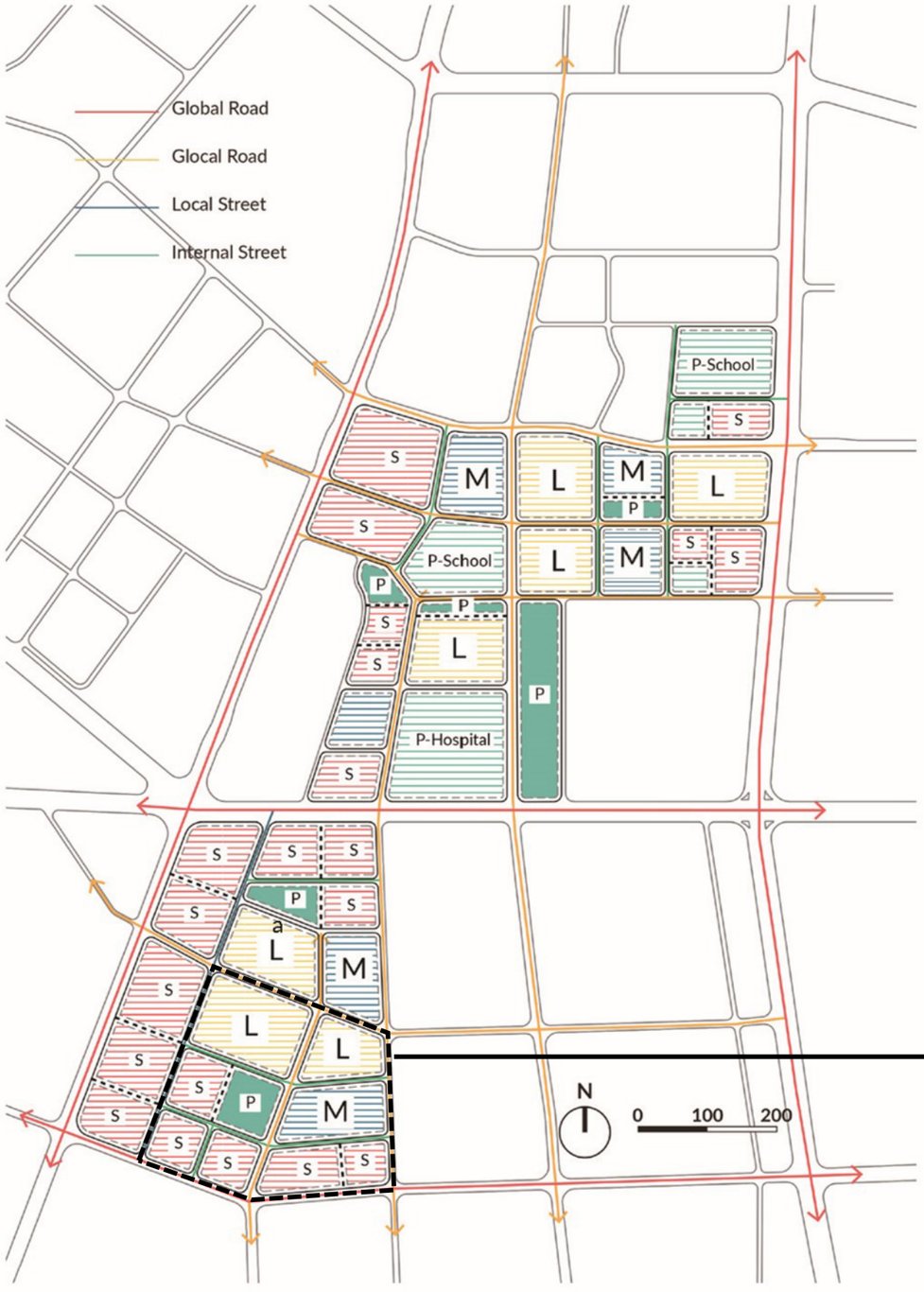


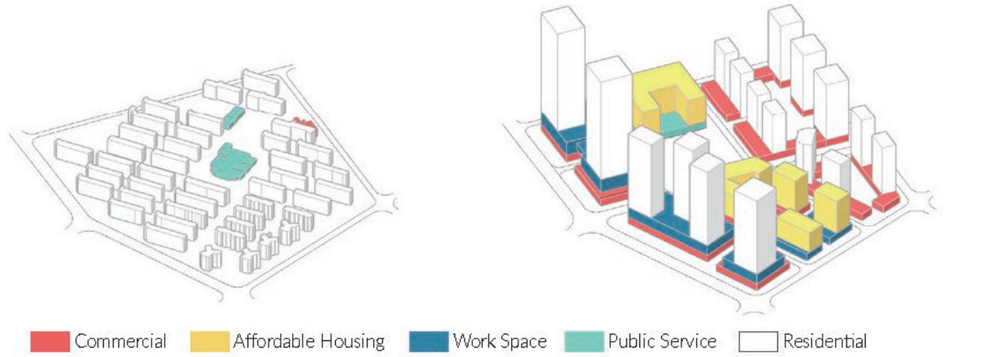
Alternative Section:

This division pattern can create a higher density of the road network and free up more public space, and increases the diversity of architectural form in the superblock.

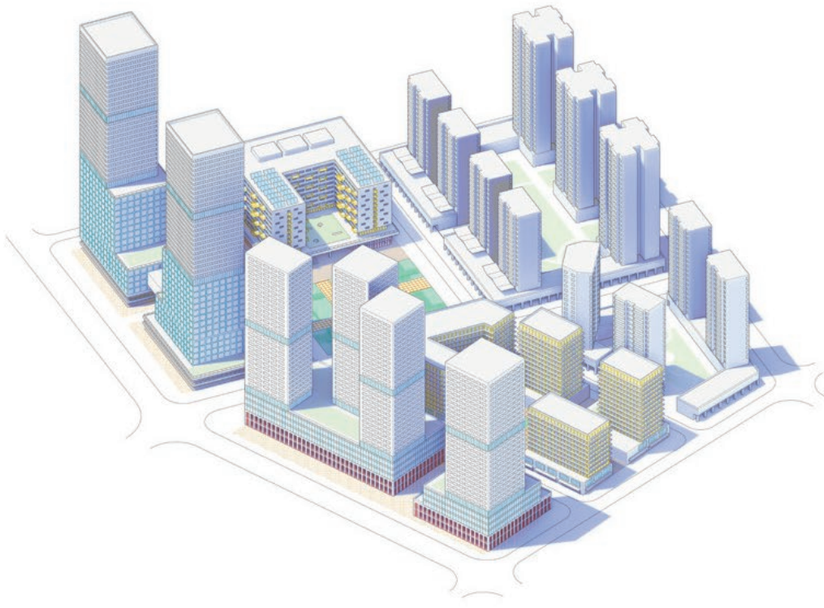
Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

2. FINER-GRAINED BLOCK DIVISION



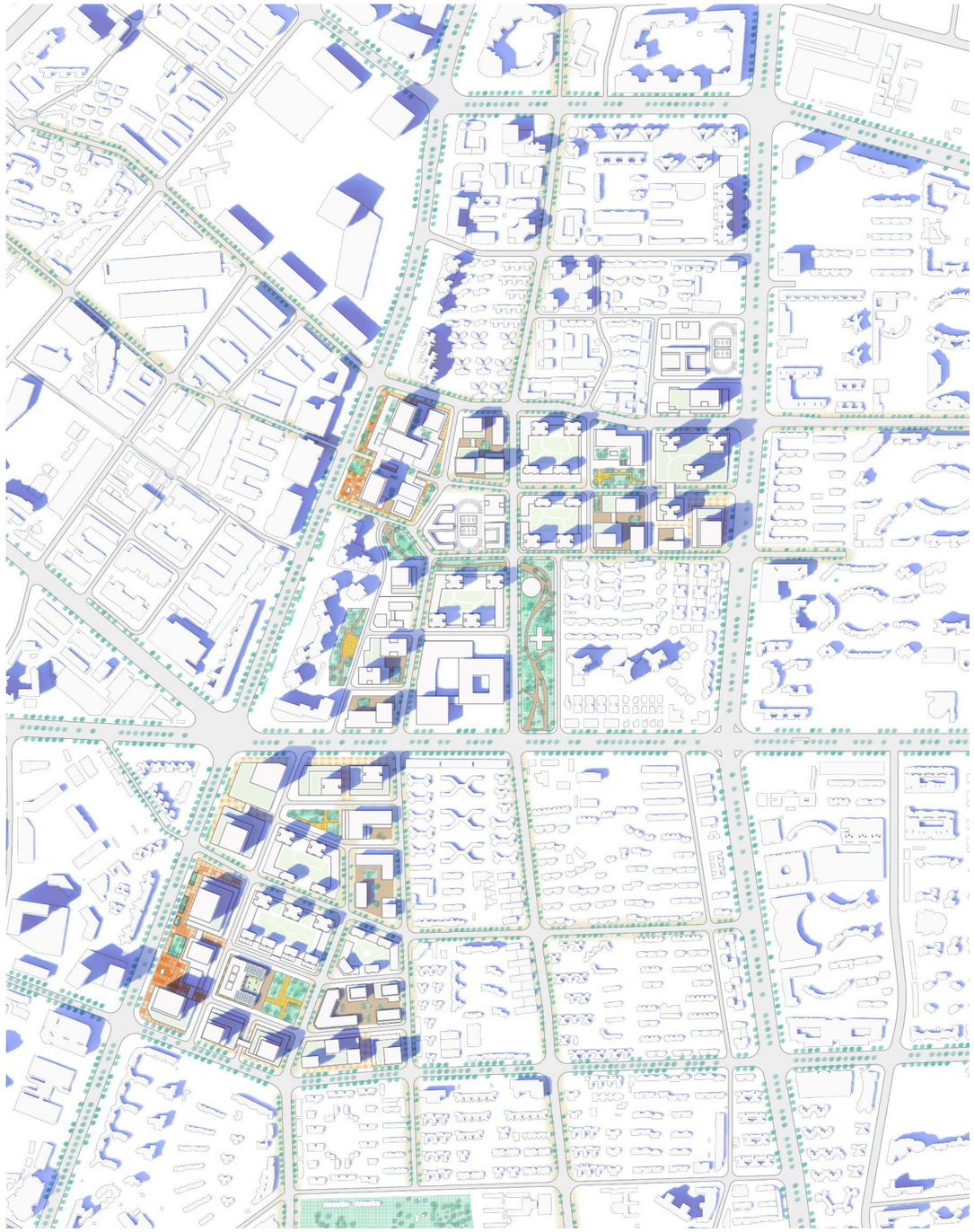


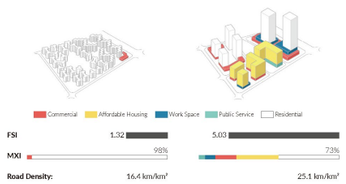
FSI	1.62	4.9
MXI	94%	76%
Road Density:	12.5 km/km²	22.7 km/km²

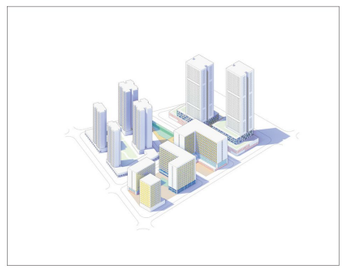


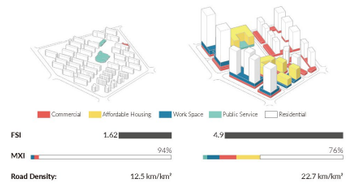
Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

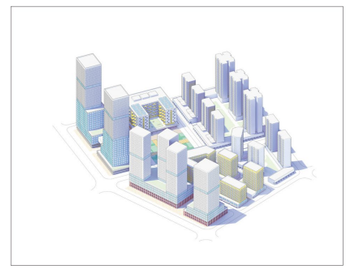
2. FINER-GRAINED BLOCK DIVISION

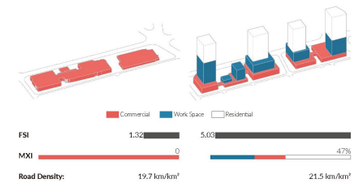


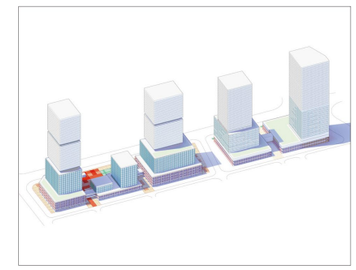


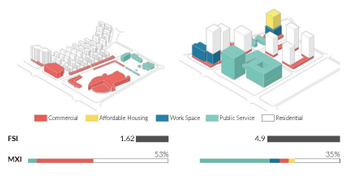


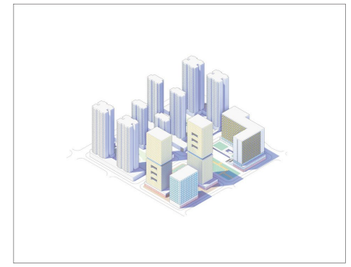


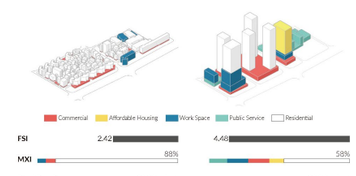


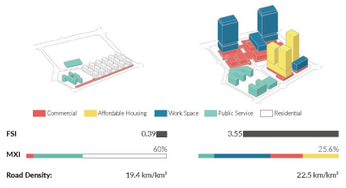






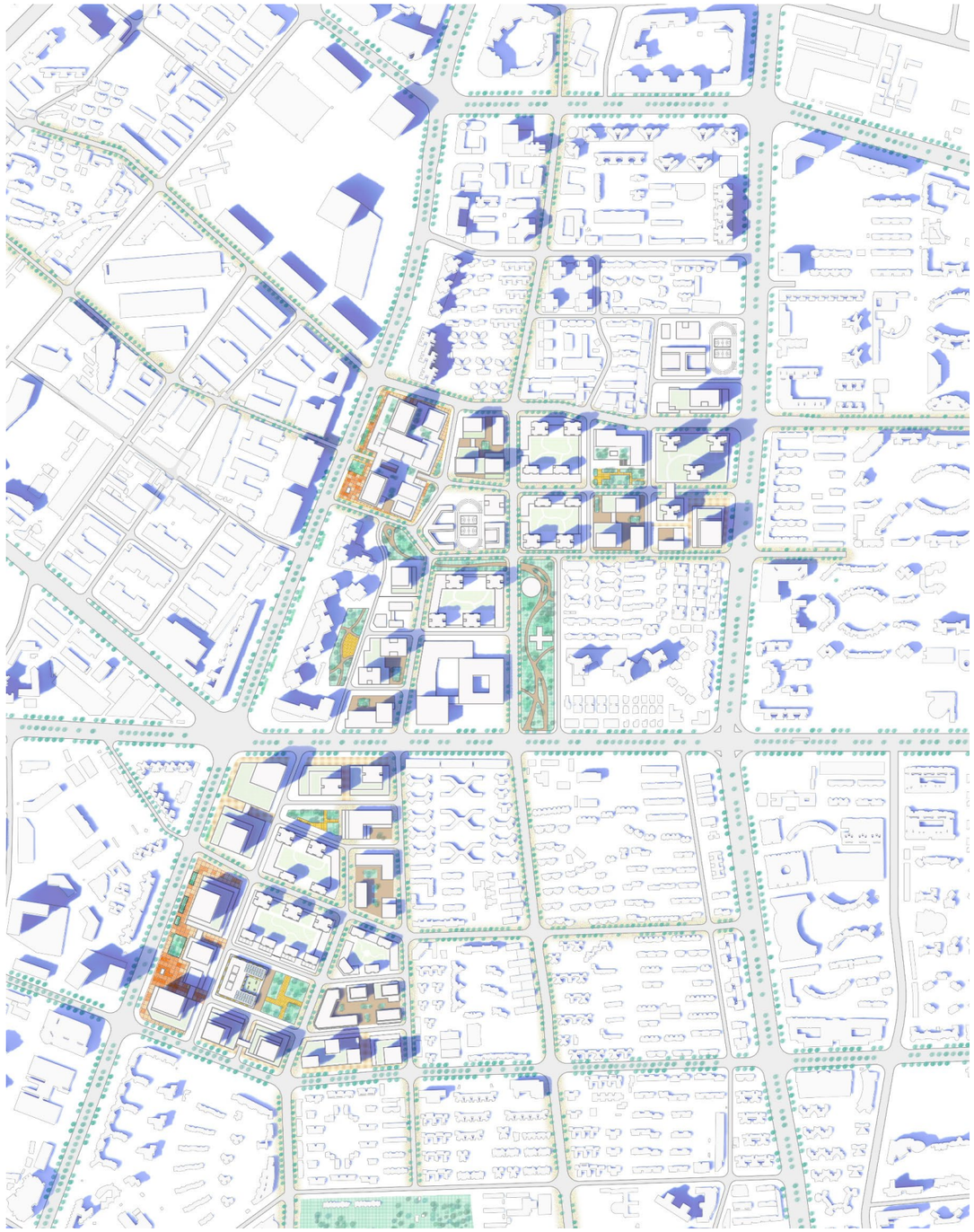


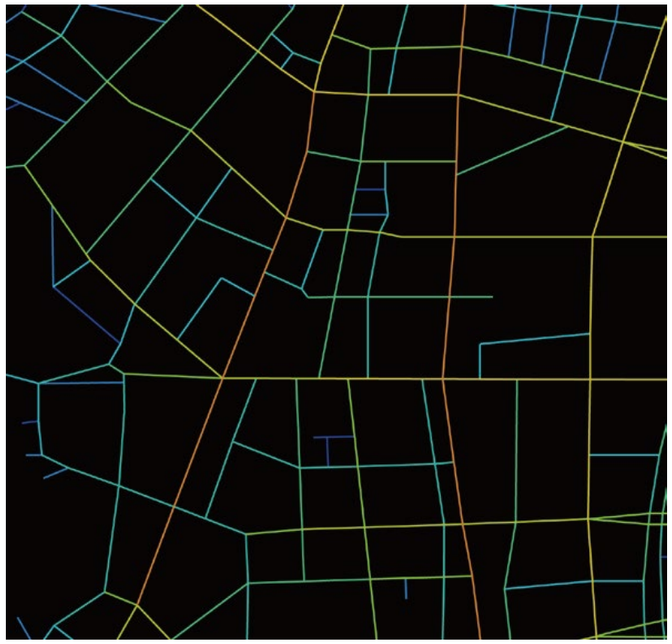




Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

2. FINER-GRAINED BLOCK DIVISION



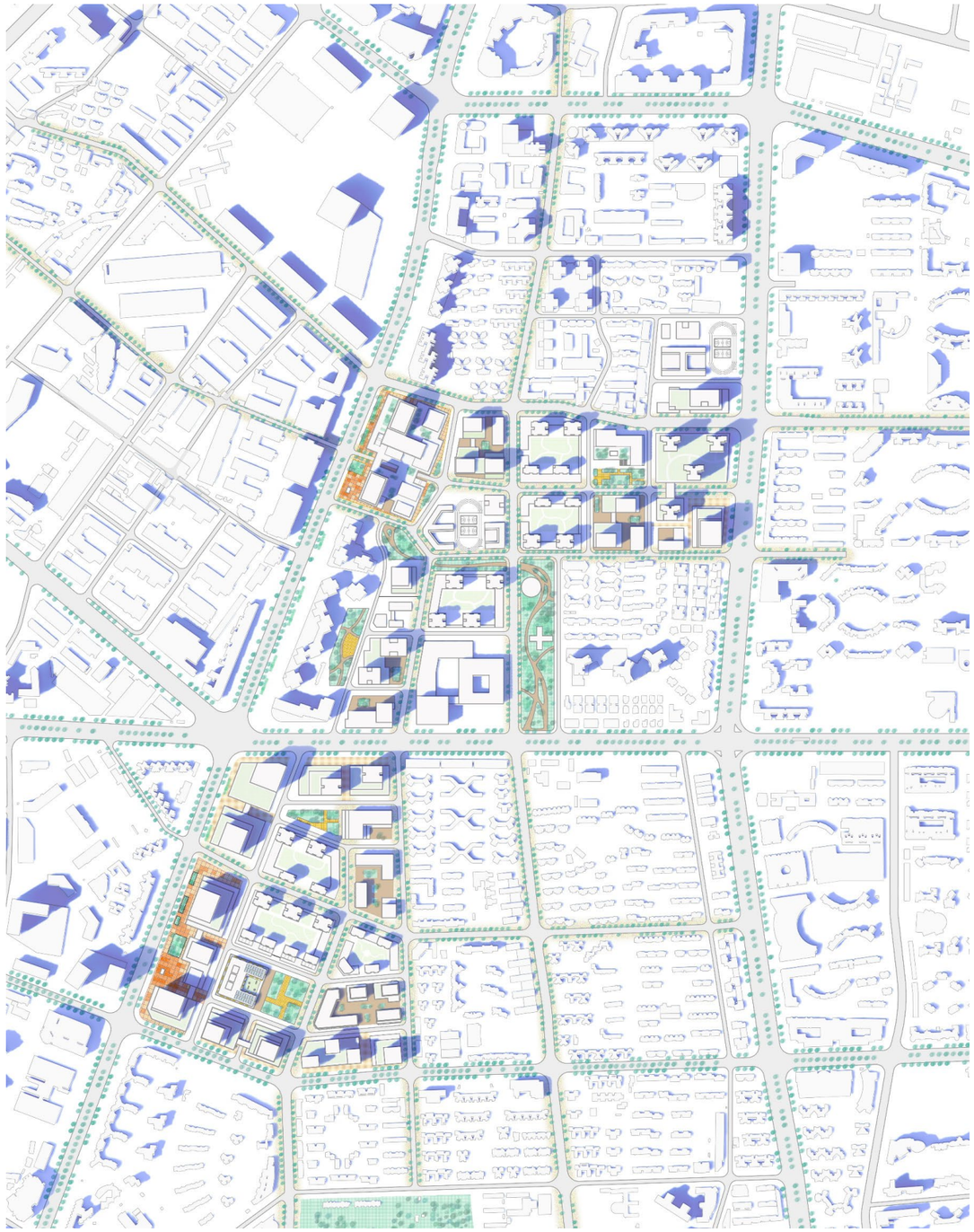


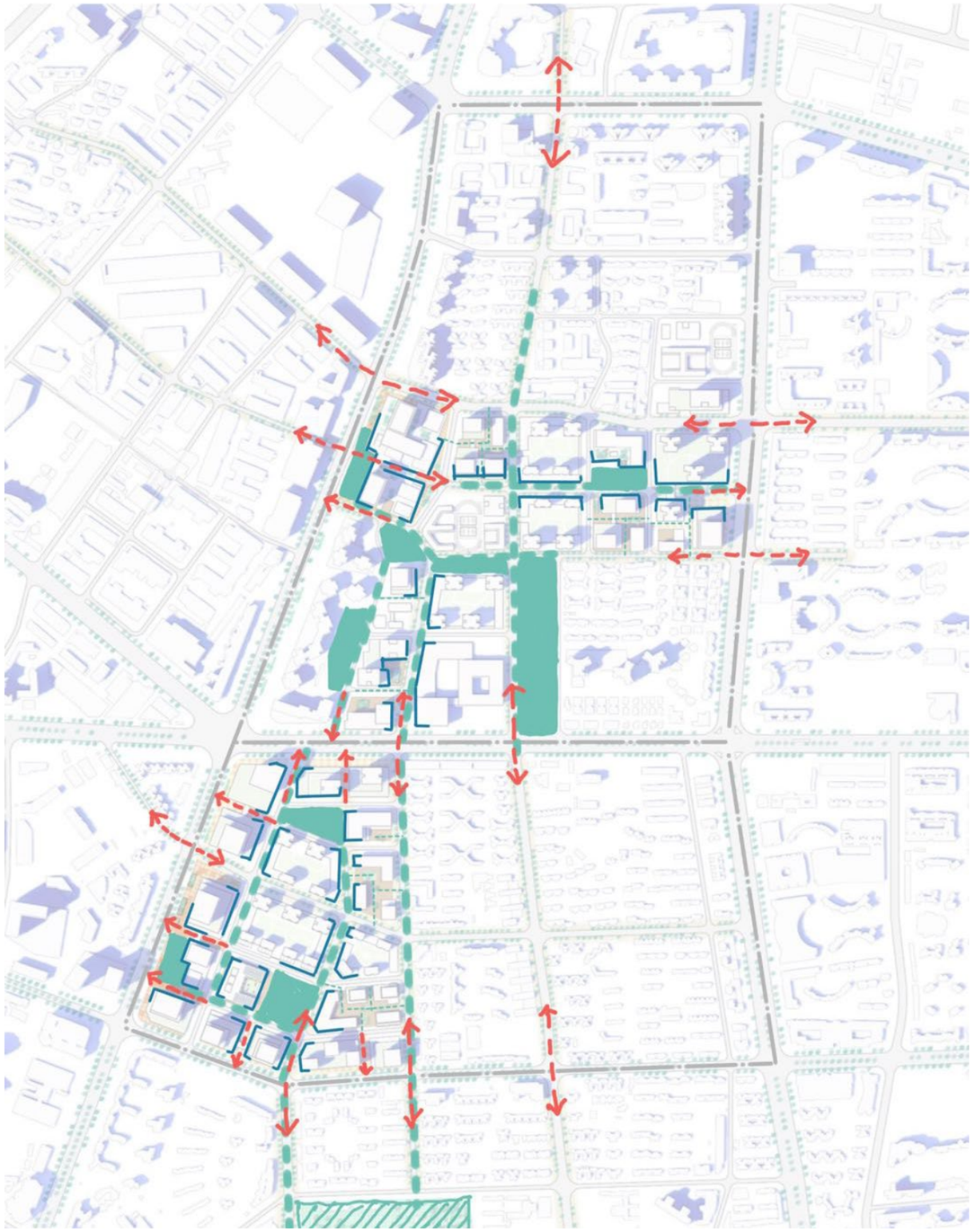
Before

After

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

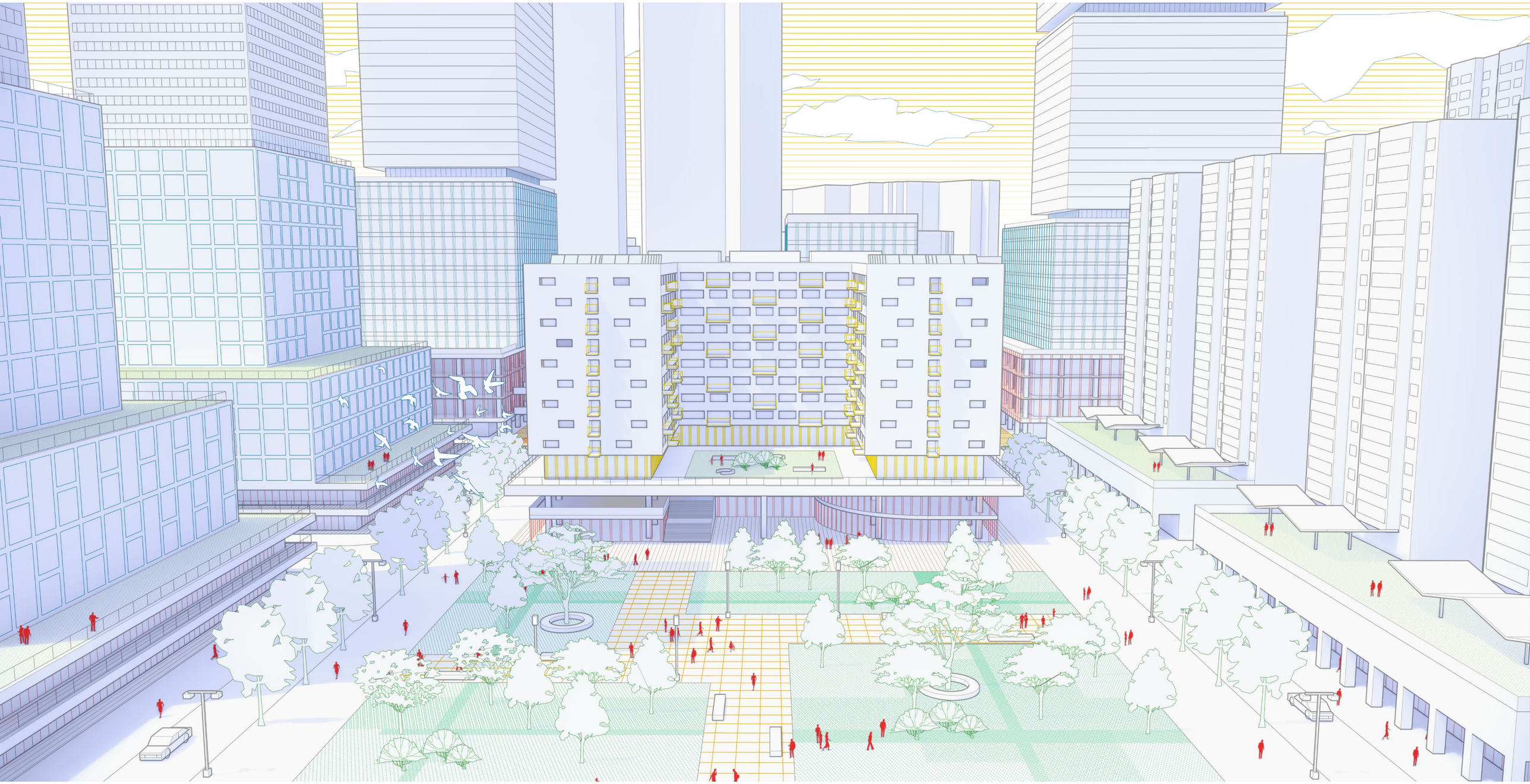
2. FINER-GRAINED BLOCK DIVISION





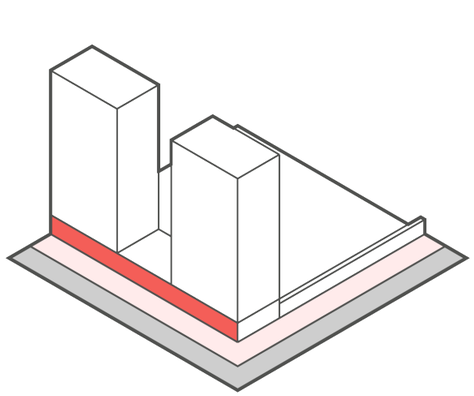
Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

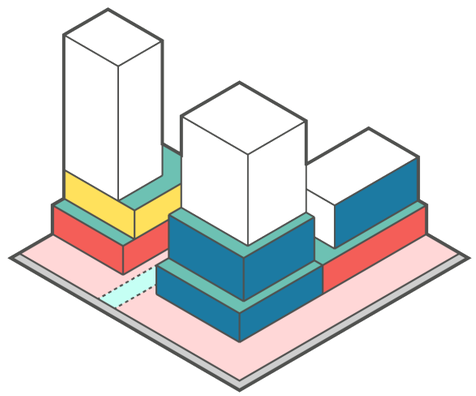
2. FINER-GRAINED BLOCK DIVISION



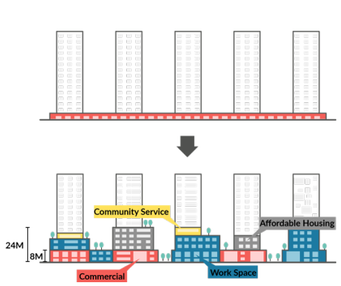
Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

3. NETWORK - ACTIVITY INTEGRATION

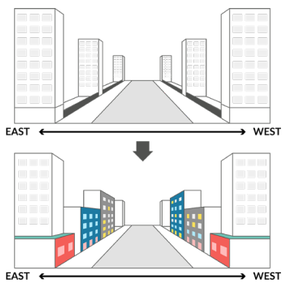




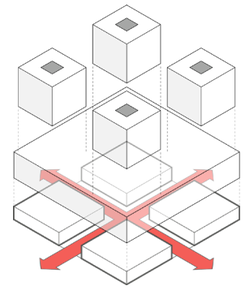
A. Thickened Podium



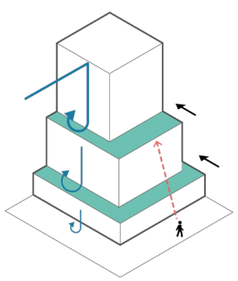
A-1. mix-use podium



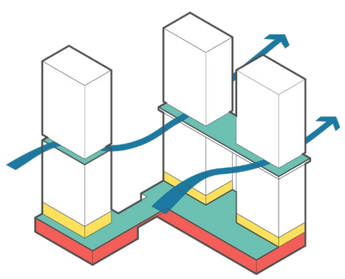
A-2. east-west street front



A-3. permeable ground floor



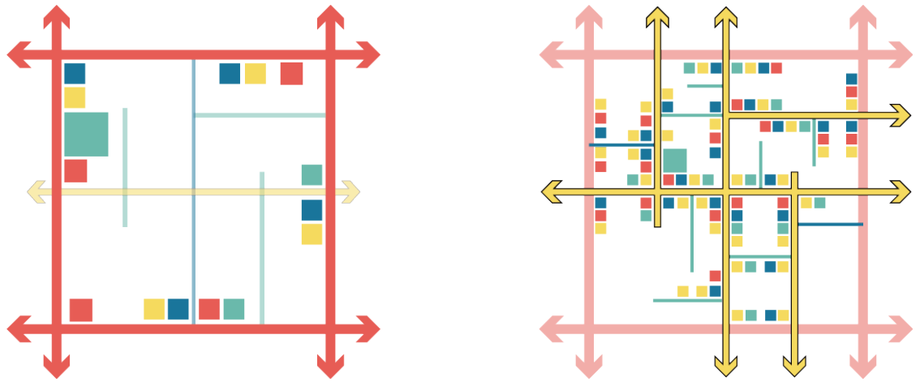
A-4. east-west street front



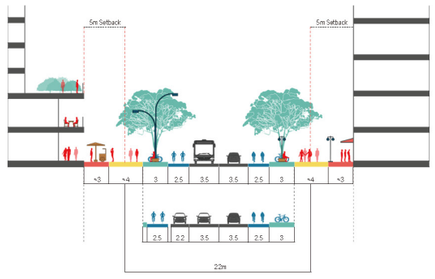
A-5. Multiple layers of open space

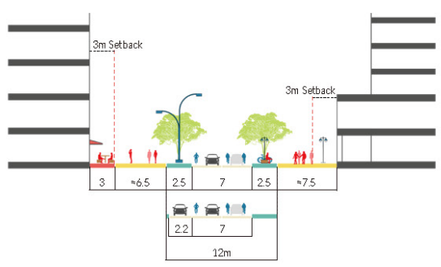
Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

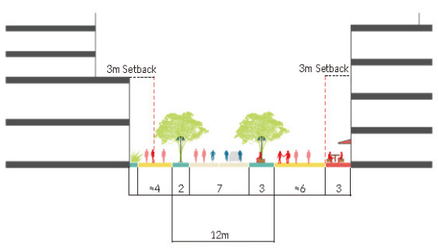
3. NETWORK - ACTIVITY INTEGRATION

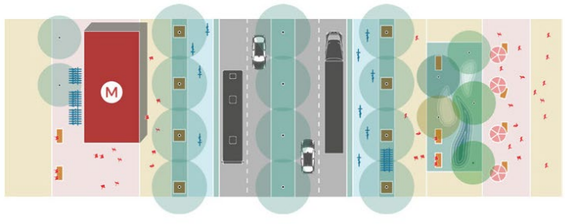


B. Decentralize activities to the streets

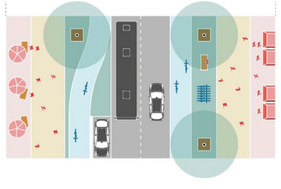




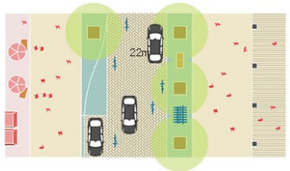




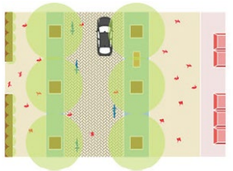
Global Road



Glocal Road



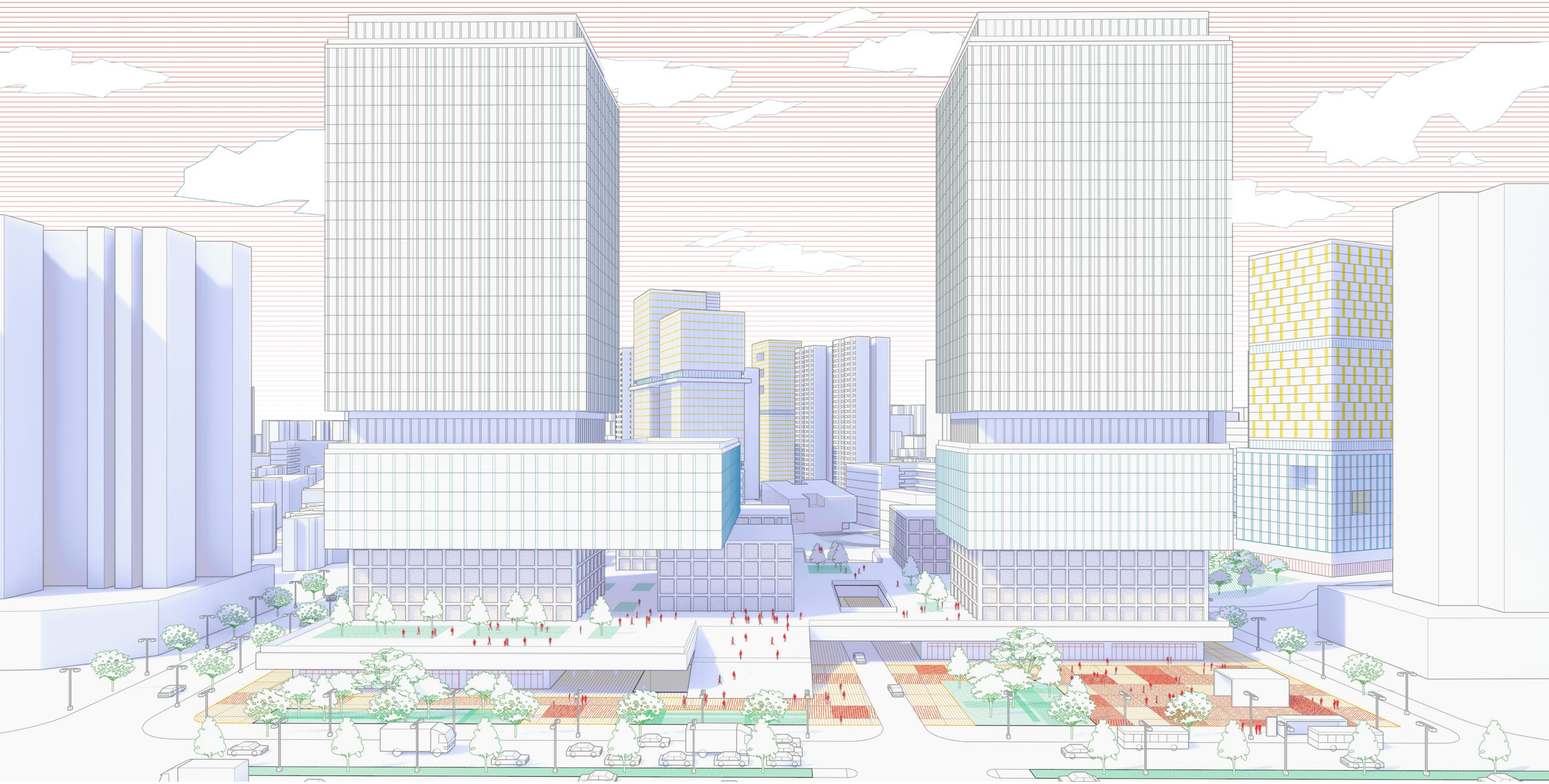
Local Street



Internal Street

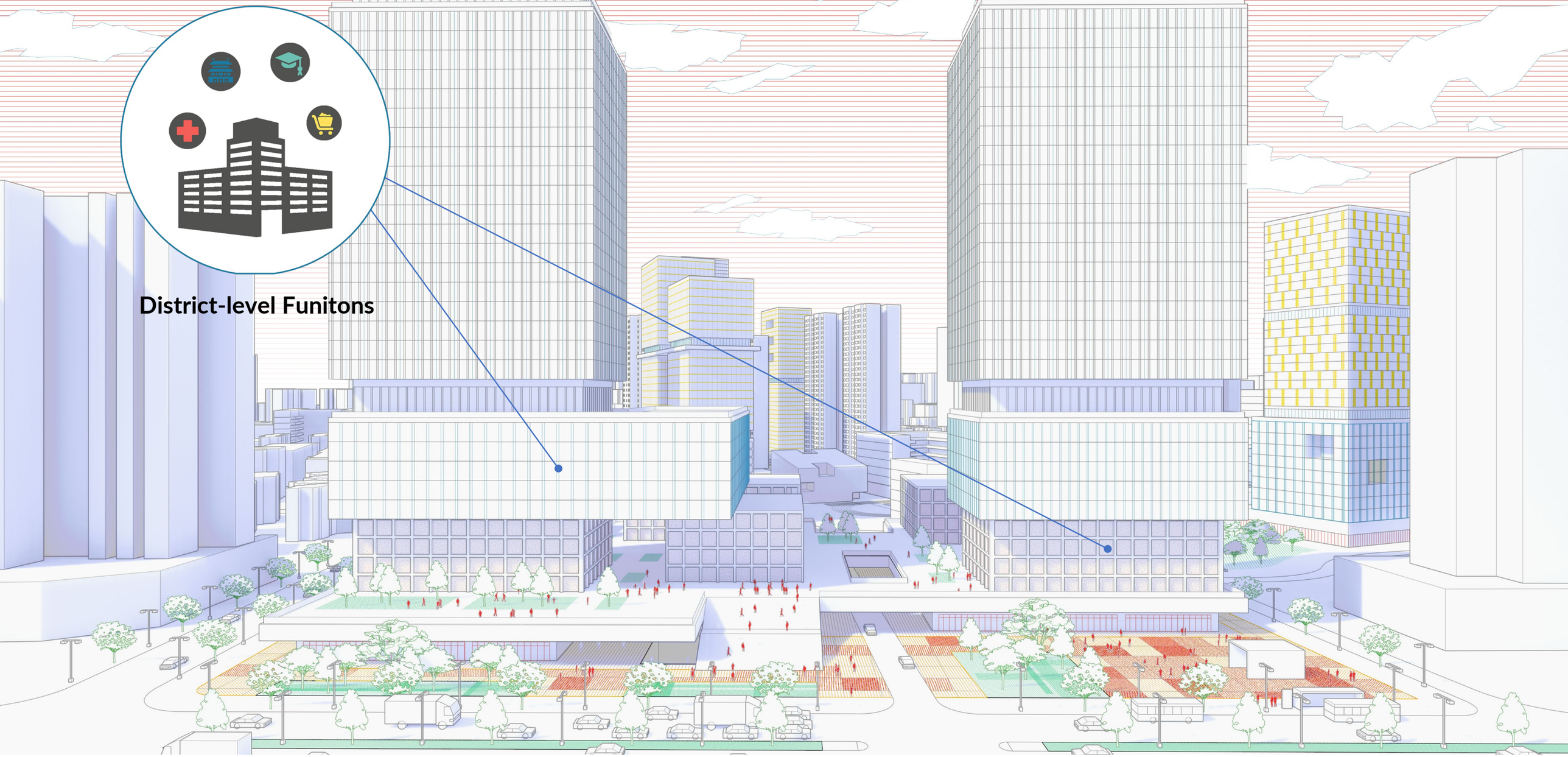
Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

3. NETWORK - ACTIVITY INTEGRATION



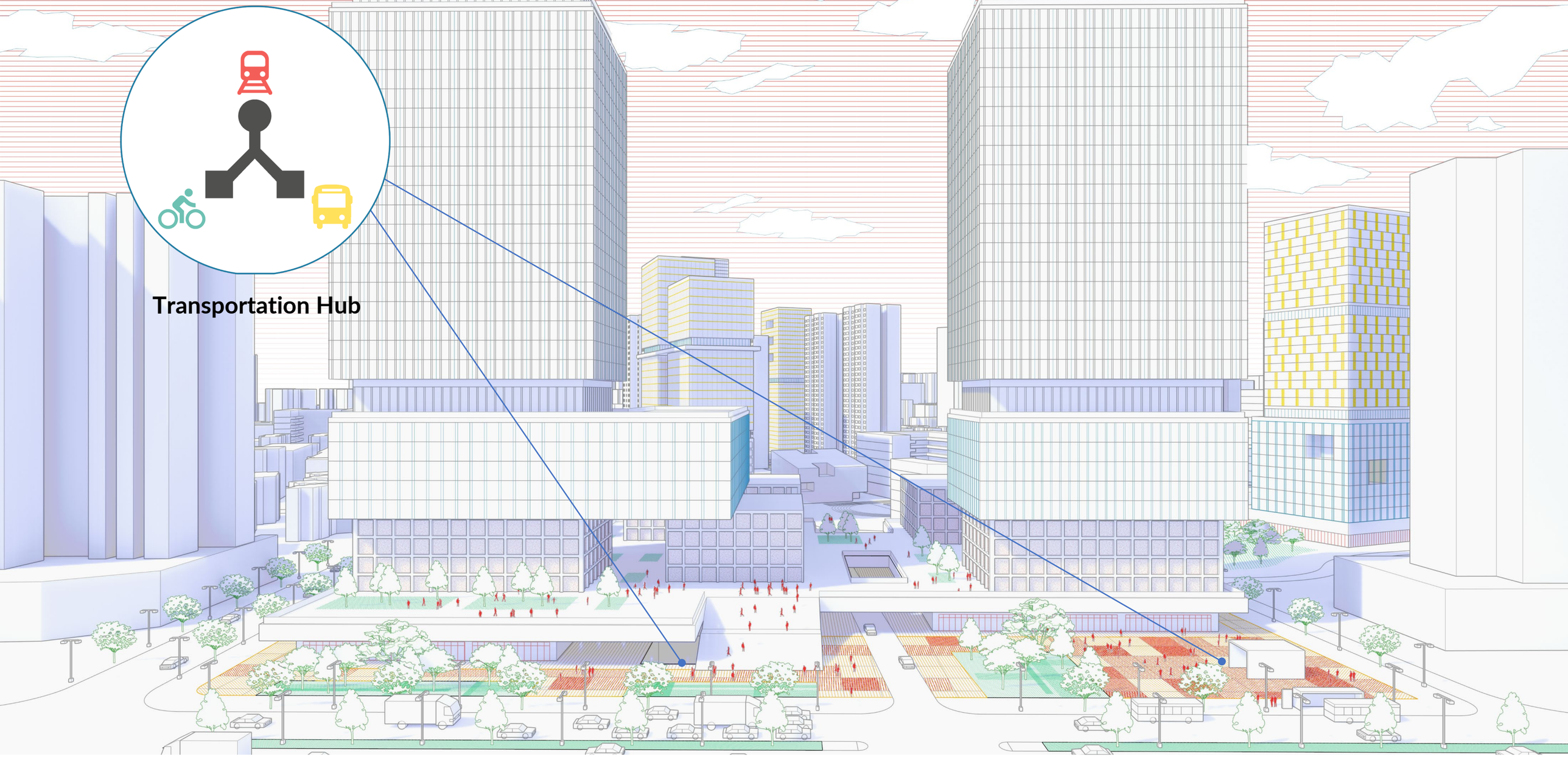
Recognition ----→ contextualization ----→ Analysis ----→ Design Solution ----→ Reflection

3. NETWORK - ACTIVITY INTEGRATION



Recognition ----→ contextualization ----→ Analysis ----→ Design Solution ----→ Reflection

3. NETWORK - ACTIVITY INTEGRATION



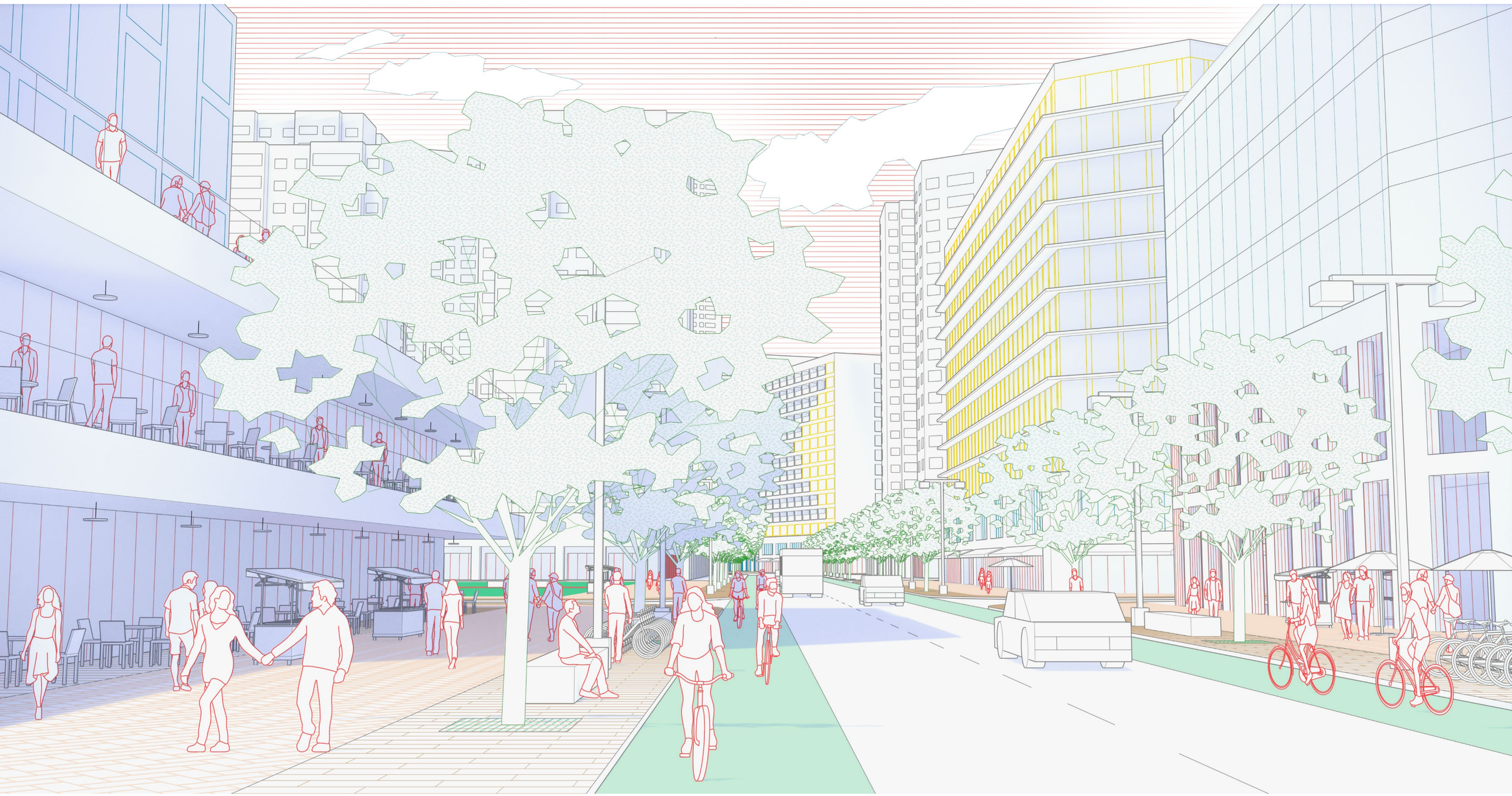
Recognition ----→ contextualization ----→ Analysis ----→ Design Solution ----→ Reflection

3. NETWORK - ACTIVITY INTEGRATION

Green Space Along the Road

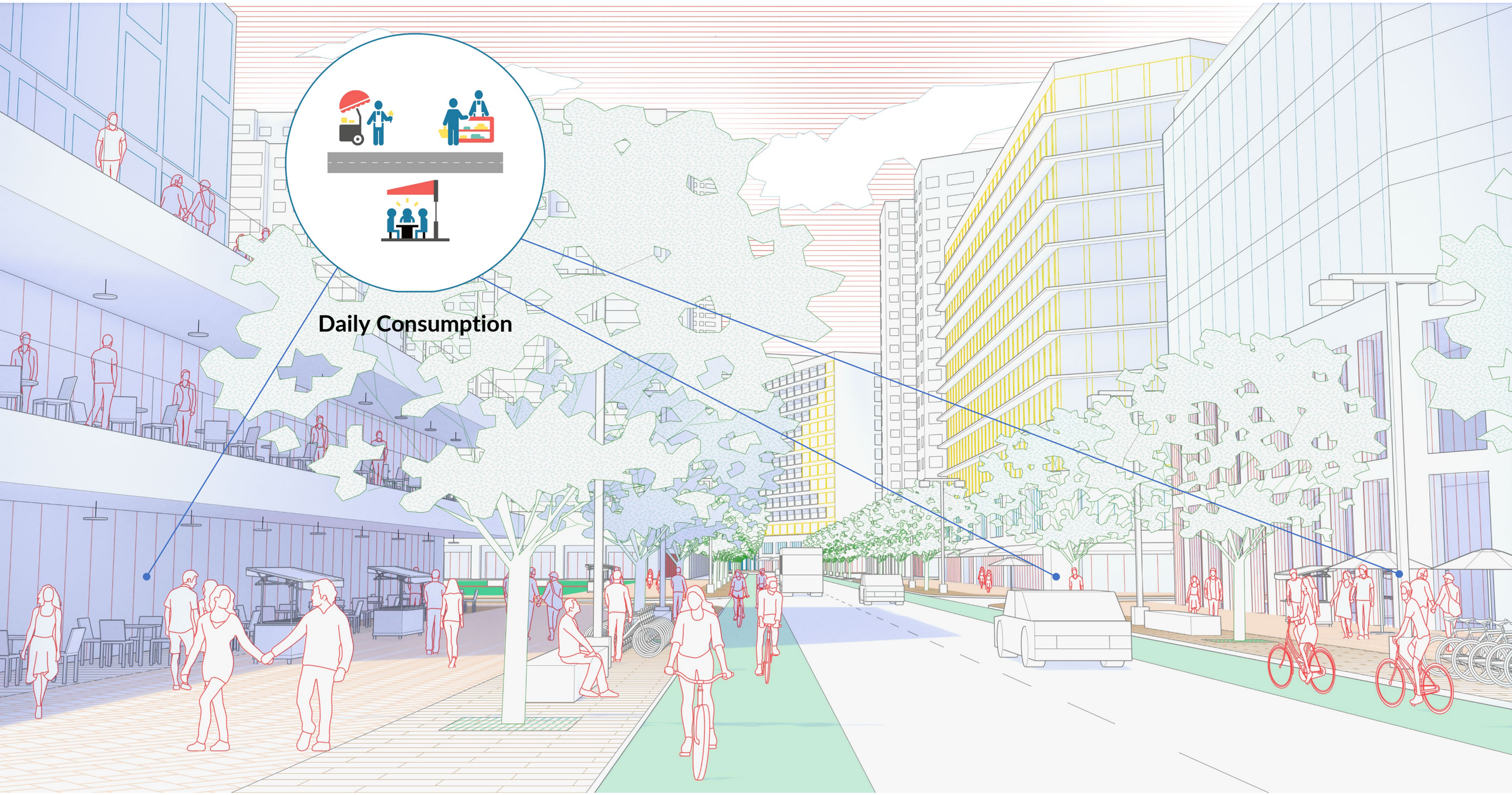
Recognition ----→ contextualization ----→ Analysis ----→ Design Solution ----→ Reflection

3. NETWORK - ACTIVITY INTEGRATION



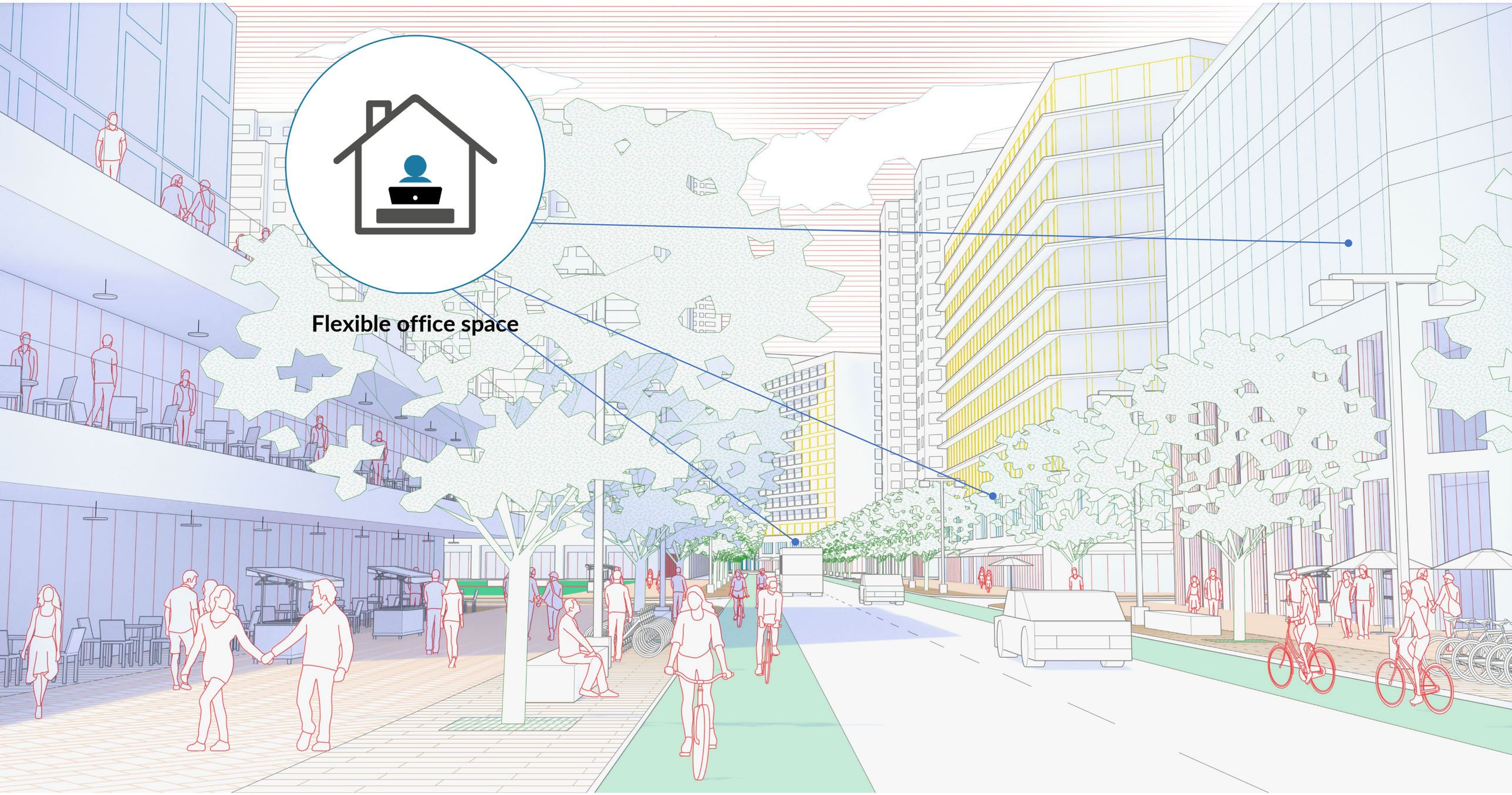
Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

3. NETWORK - ACTIVITY INTEGRATION



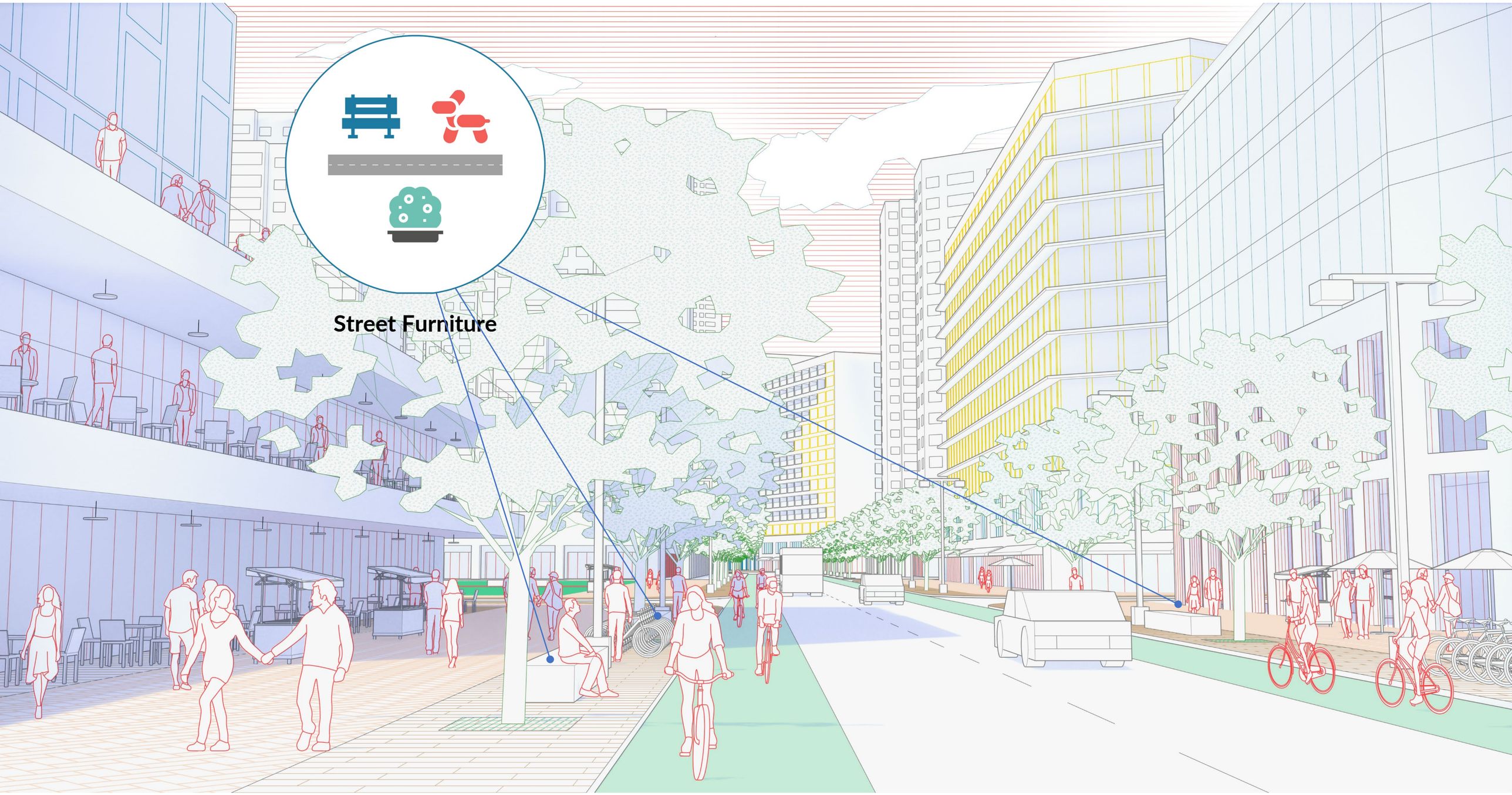
Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

3. NETWORK - ACTIVITY INTEGRATION



Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

3. NETWORK - ACTIVITY INTEGRATION

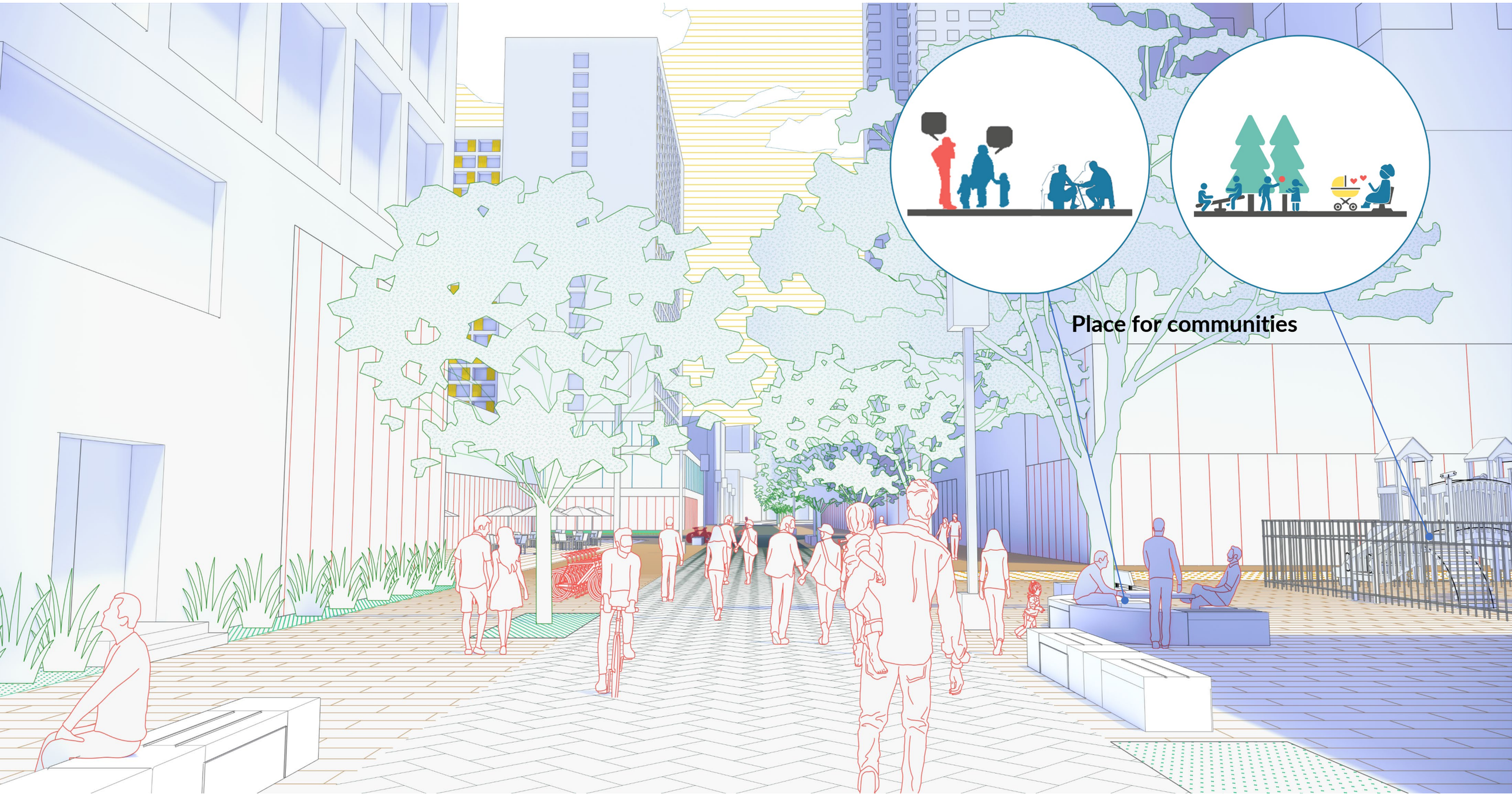


Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

3. NETWORK - ACTIVITY INTEGRATION

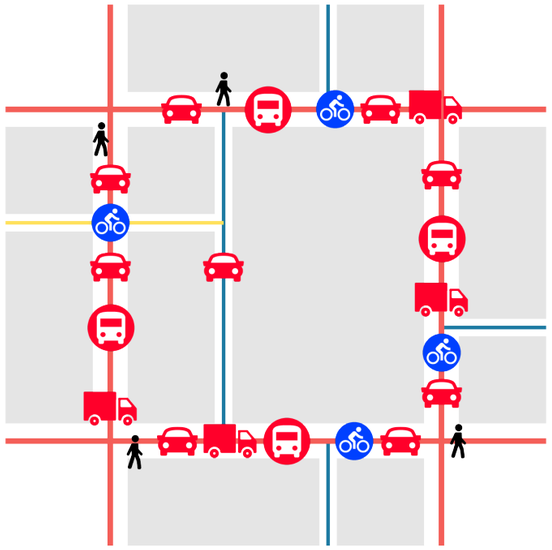
Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

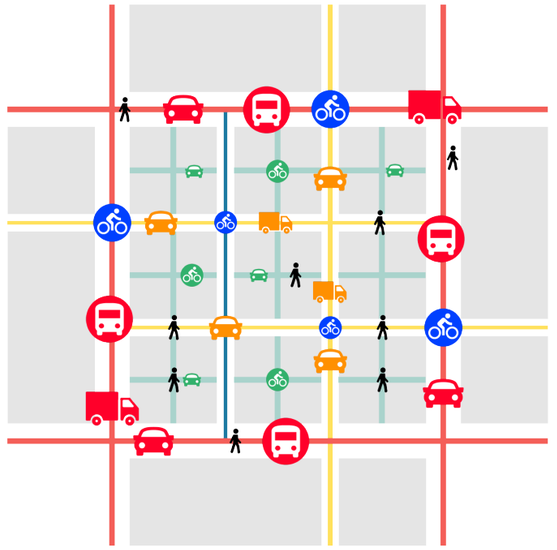
3. NETWORK - ACTIVITY INTEGRATION



Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

3. FLOW MANAGEMENT





Public Transportation
Public Transportation
Public Transportation

Private Vehicle
Low Speed Private Vehicle
Residents Vehicles

Logistics
Urban Services
Pedestrian

Global Road
Glocal Road
Local Street
Internal Street

Speed Control

Distribution Management

Walking Only Zone

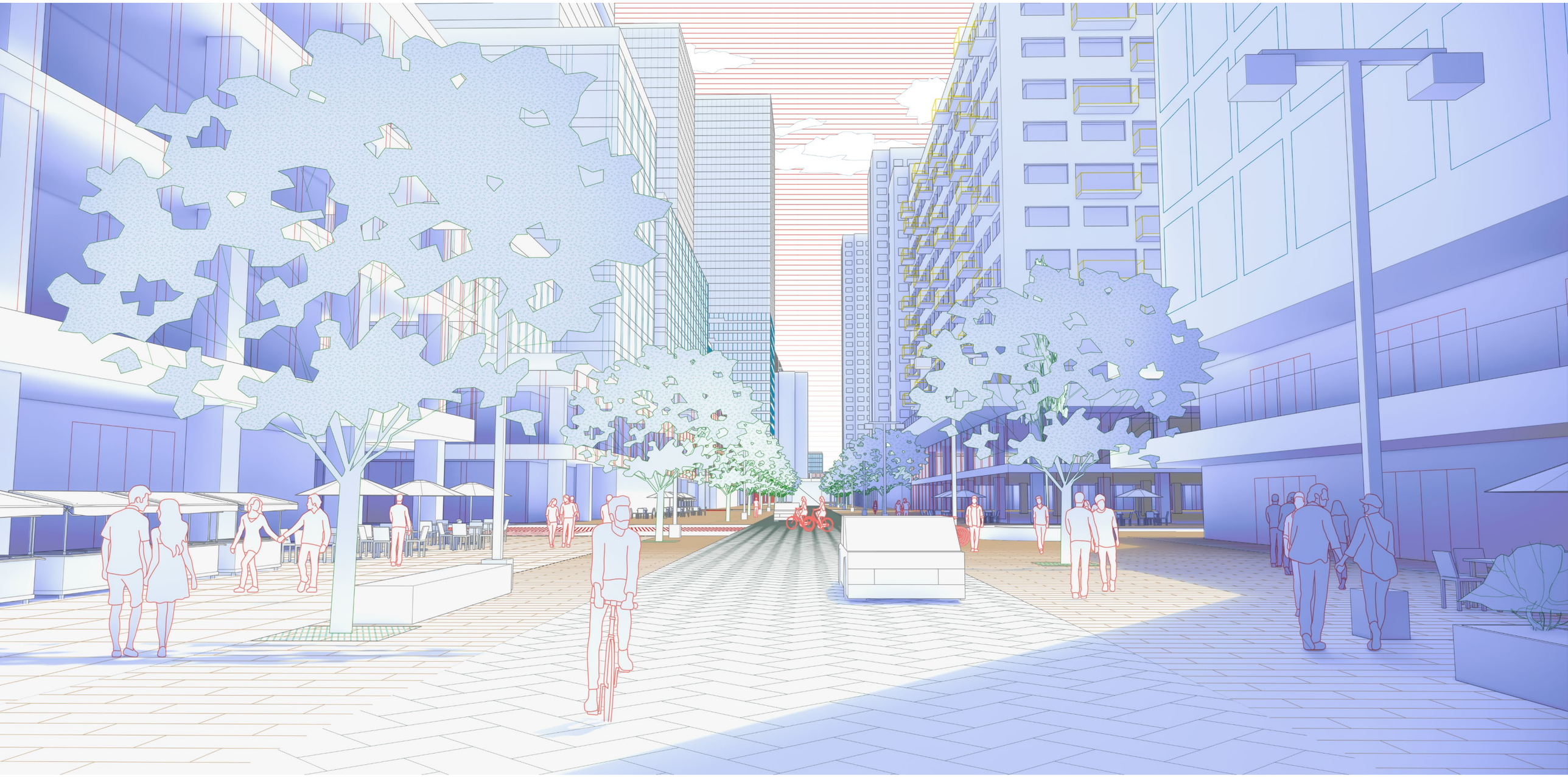
Reversible lanes

No honking

Intersection Management

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

3. FLOW MANAGEMENT



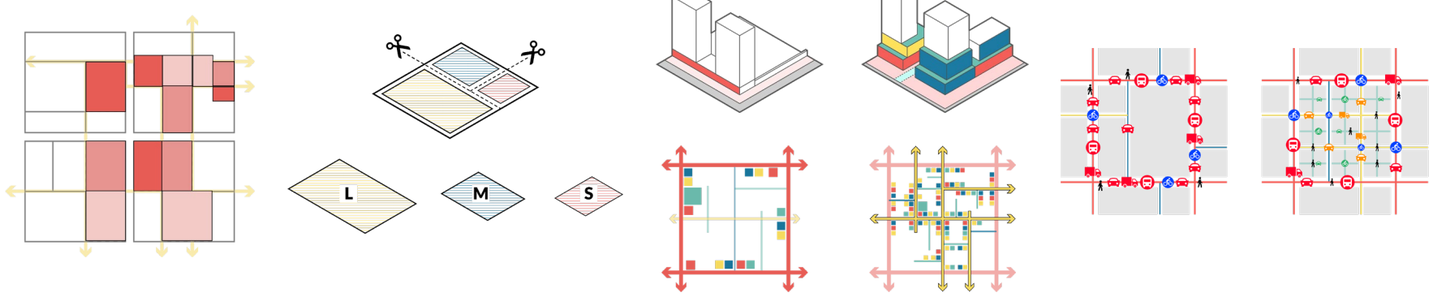
Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

REFLECTION

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

CONCLUSION

- The most prominent problems of superblocks are their poor accessibility and lack of diversity.
- Urban regeneration is an opportunity to improve the problems of superblocks.
- However, it is important to note that the design can only be implemented and promoted if it balances the requirements of the government and the developer for benefits such as development density and development efficiency.
- Based on these, the design strategies I propose have proven to be effective in the selected sites and have the potential to be applied to other urban regeneration projects in superblocks.



intermediate scale integration

finer-grained block division

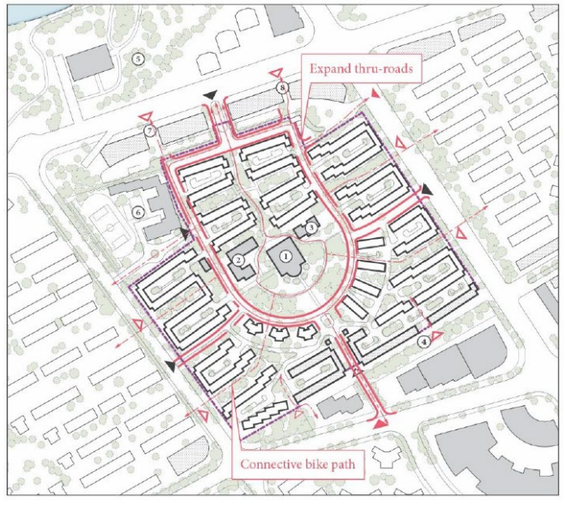
network - activity integration

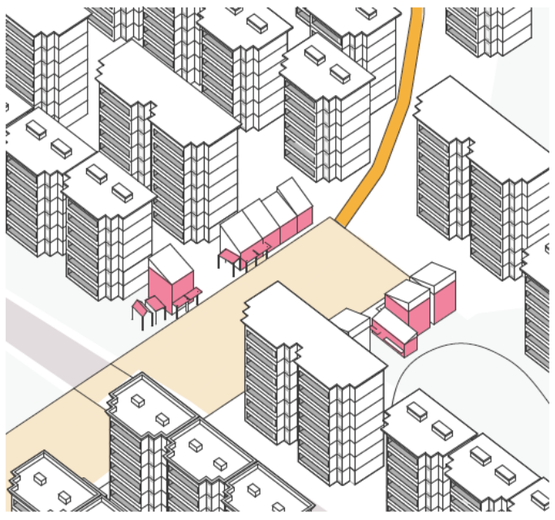
flow management

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

REFLECTION

Comparison with existing Superblock solutions

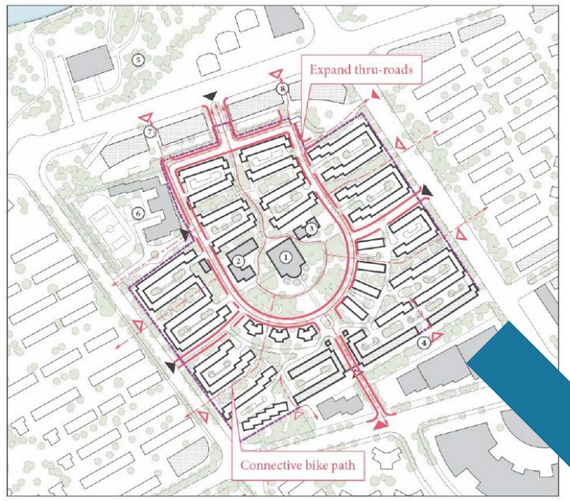


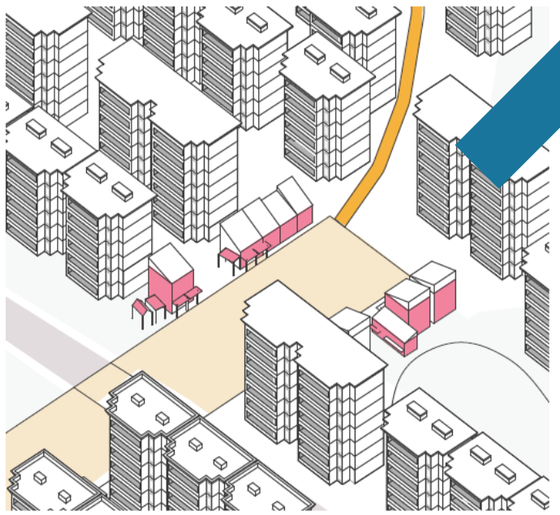


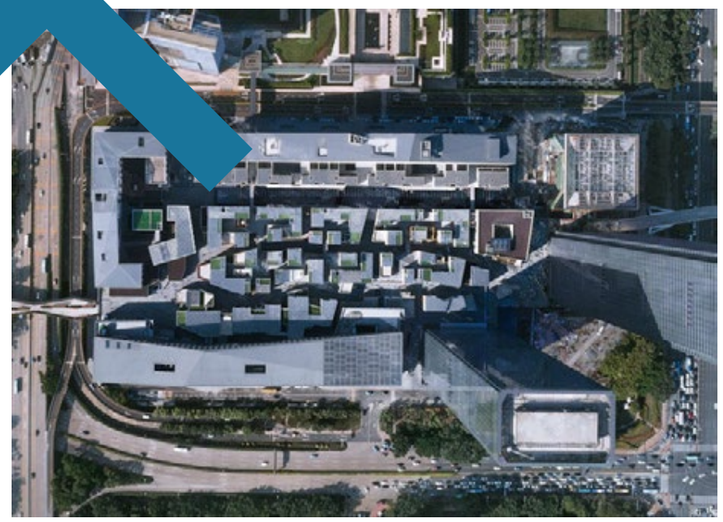
Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

REFLECTION

Comparison with existing Superblock solutions







‘MAGIC MUST DEFEAT MAGIC’

Recognition ——→ contextualization ——→ Analysis ——→ Design Solution ——→ Reflection

REFLECTION

Comparison with existing Superblock solutions

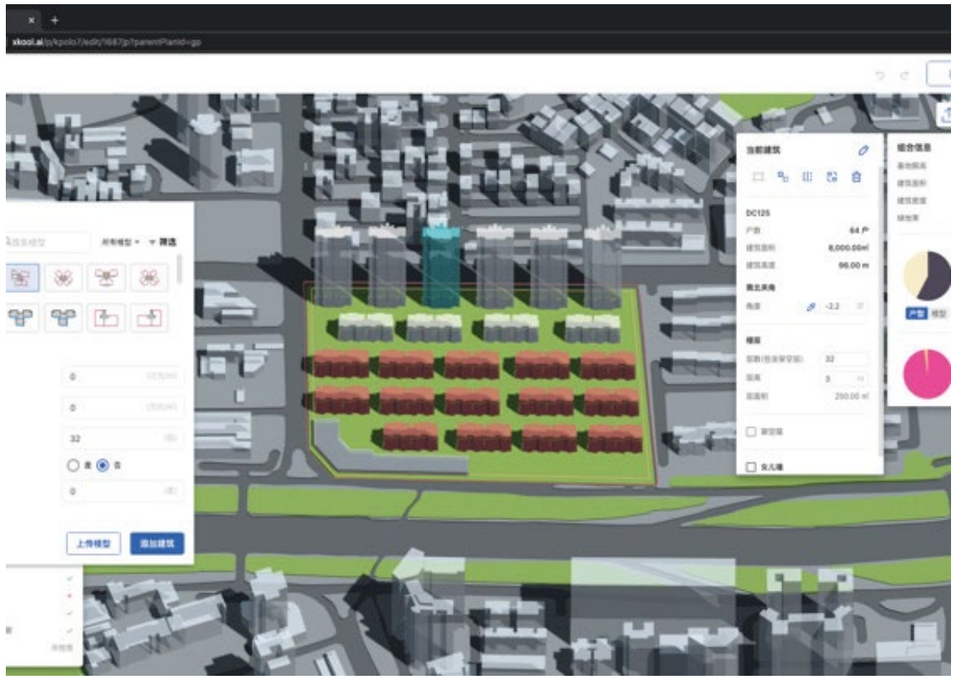
residents

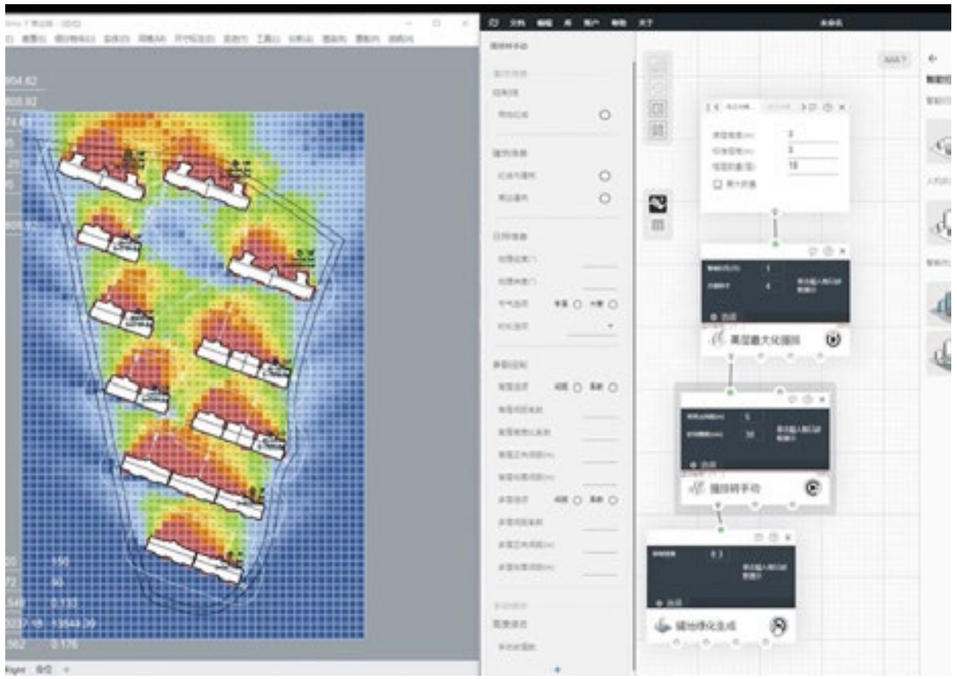
Urban context

Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

REFLECTION

The potential of parametric design in superblock transformation





Recognition ⟶ contextualization ⟶ Analysis ⟶ Design Solution ⟶ Reflection

THANK YOU FOR YOUR LISTENING