Place Matrix

Behavioural Placemaking | Network Science of Cities

型材
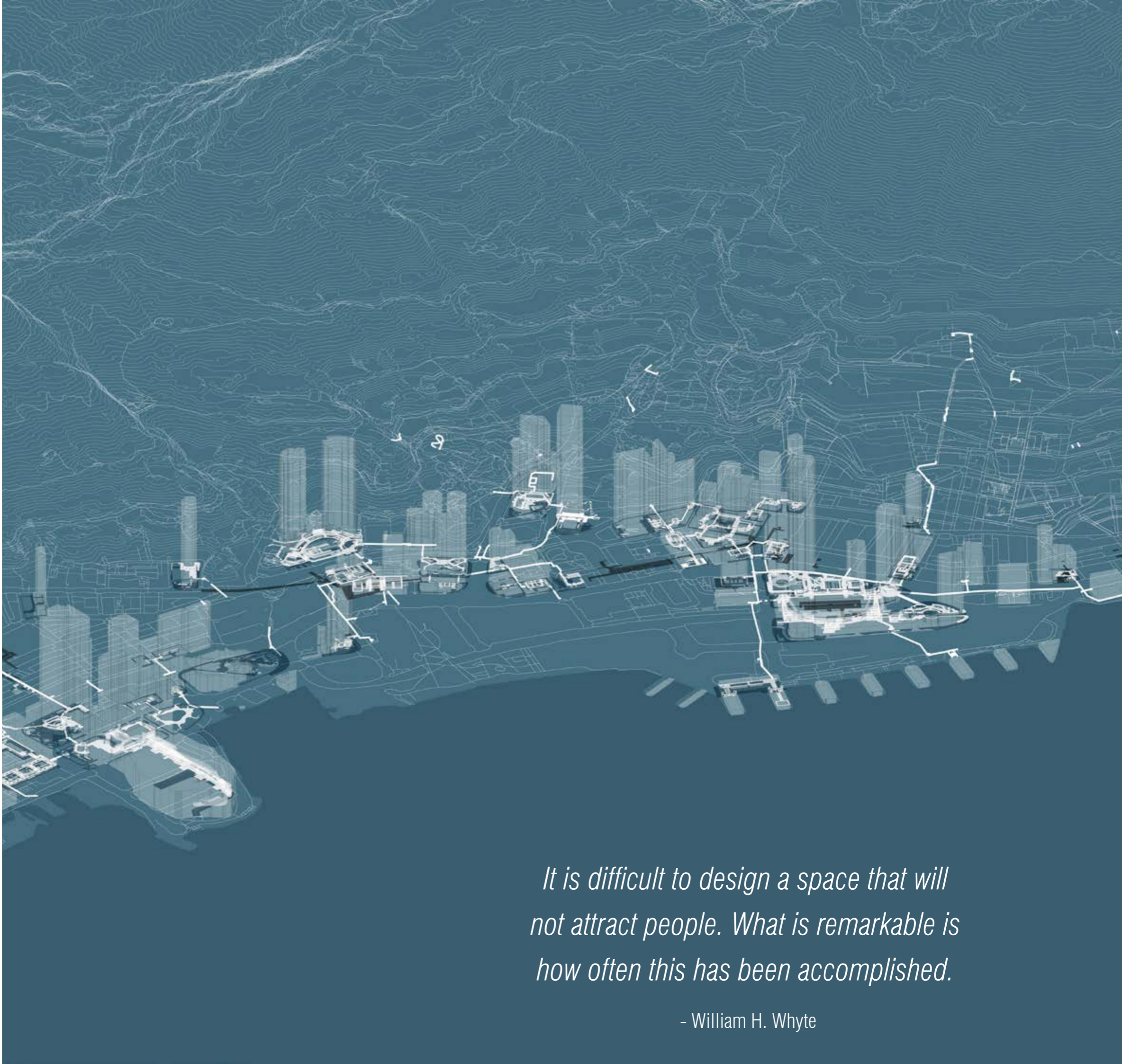*Profile*

关于我们.
About.

我们是一个由建筑师，**城市分析师和设计师组成的开发团队**，致力于将研究和实践**紧密结合在一**起，为多维城市空间提供实证、**人本导向的设计和咨询服务。**

通过我们不同的背景，我们致力于将创新的研究实践与传统的城市设计和总体规划方法完美地融合在一起。

我们与设计师，规划师和研究所紧密合作，提供与3维空间网络分析相关的服务，这些服务可以插入其工作流程，并允许他们探索各种基于证据的最佳选择方案。
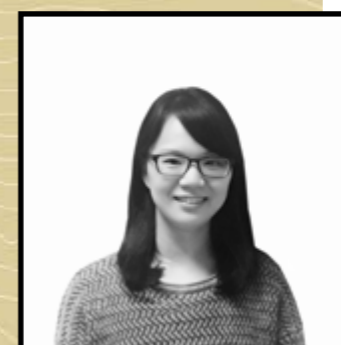
空间网络分析方法是几种城市现象的相对较新的且高度准确的预测指标。作为该领域的设计师和研究人员，我们拥抱了这个日益多维的城市世界的新复杂性，并开发了复杂的网络模型，以便真正为人们创建新的Place Matrix。

It is difficult to design a space that will not attract people. What is remarkable is how often this has been accomplished.

- William H. Whyte

Dr. Lingzhu Zhang
Director

She holds a PhD in Architecture from Tongji University, one of the most reputed unversities in China.
Her research interests lie within the realms of three-dimensional spatial and urban network analysis, Big Data and Machine learning, focusing on people centered urban design qualities. Her keen eye for detail and reasoning is what brings all our projects a sense of value and logic.

Siddharth Khakhar
Director

He is a practicing urban designer with experience of working on large to small masterplans across China, Hong Kong, Middle-East, Russia and India.
He values and pushes for the need of evidence-based urban design within professional practice. At the same time, integrating design research with practice is where he feels lies the key to evolving the urban design and master planning process.

Alain Chiaradia
Non-Executive Director

He is the Programme Director of the Master of Urban Design at HKU. He was previously Executive and Board Director at the global consultancy Space Syntax Ltd, where he directed large scale projects concerning spatial policy analysis, urban design policy formulation and evidence-based spatial design in major cities including Paris, London, Boston, Shanghai.. He's also the inventor of Spatial Design Network Analysis (sDNA) software.

Eventually everything connects- people, ideas, objects. The quality of the connections is the key to quality per se.

- Charles Eames

服务.
Services.

为现有或未来城市空间设计提供
绘制，分析，评估和人本导向的
性能优化

Design Analysis

As professional urban designers and architects, we understand the importance of good city design.
Through network mapping and spatial analysis we aim to instill new values within the design process. We can develop intricate network models based on different design options, suggest various alternatives through spatial analysis simulation and put forward best option scenario. We can also offer recommendations to further strengthen the plans to make it more robust.

Research undertaking

As experienced researchers, we strive to find new strands of research. The beauty of networks is that it can be constantly updated with new values and attributes that pave the way for new research possibilities.
We can provide research for design to consultancies looking to explore evidence-based urban design. We also seek to actively collaborate with different institutions looking to plug-in network analysis and big data as part of their research.

Training laboratory

We can offer in-depth training services related to pedestrian network mapping and the use of 3D spatial design network analysis tools.
Training sessions can be tailored to adapt to different consultancies/ institutions based on their needs. Once an in-house team member is well suited to take up network mapping and spatial analysis, the design/ research process can be a lot more time-saving and effective.
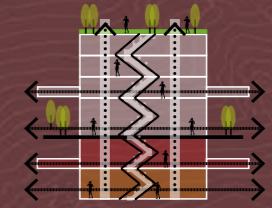
三维步行、车行与公共交通流量潜力

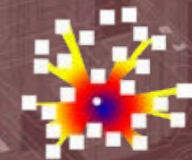3-Dimensional Pedestrian, Vehicular and public transport flow potentials

城市空间的可达性与连通性

Accessibility and Connectivity within urban spaces

多尺度测度和预测宜步行性

Measuring and Predicting walkability on multiple levels

城市环境中的可视性分析和步行体验

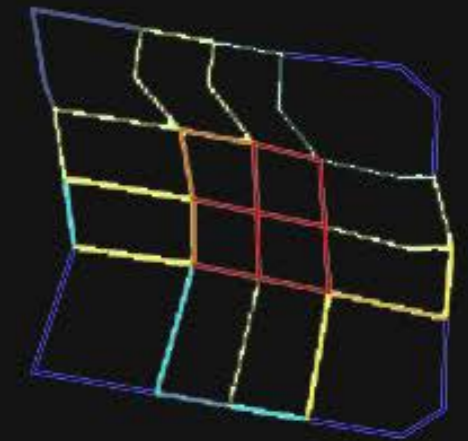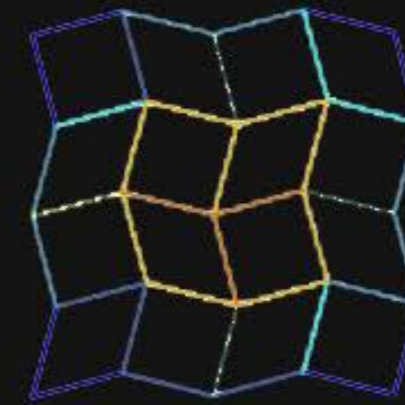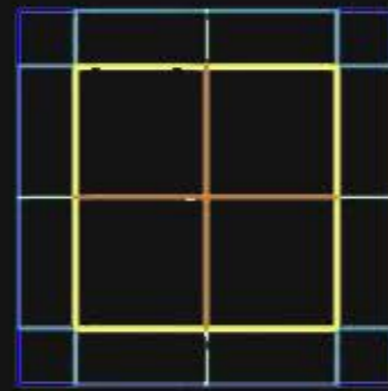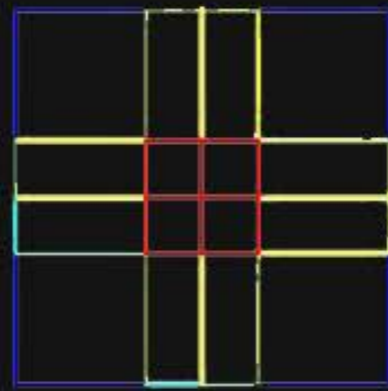Visibility Anlaysis and Experience in urban environments
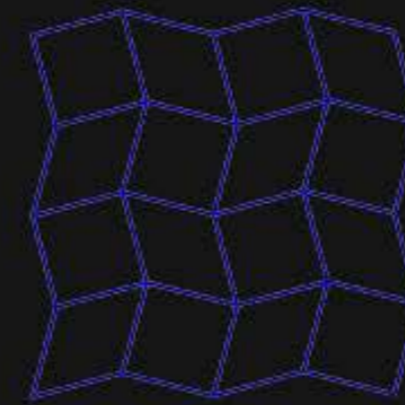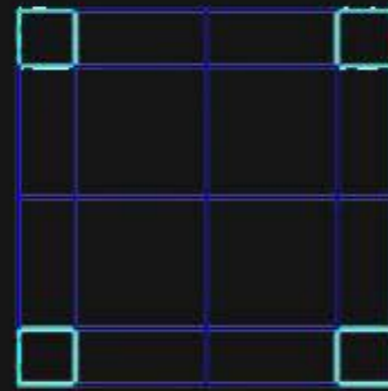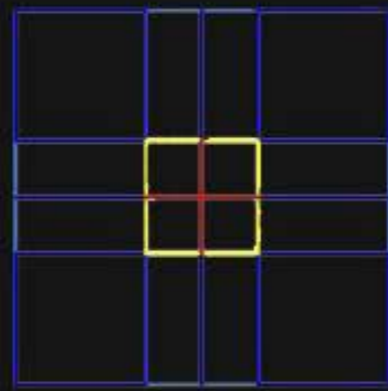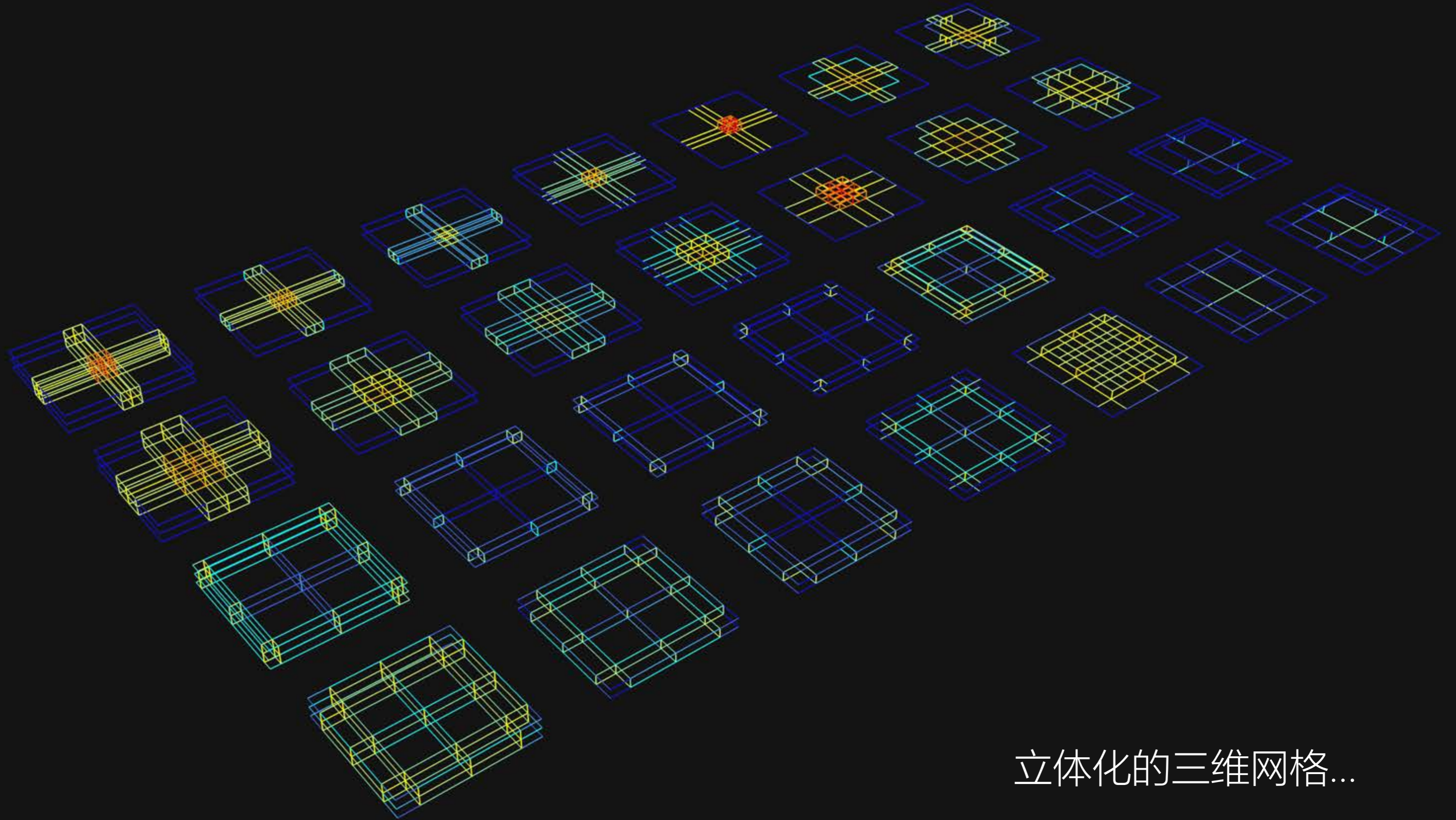
1. 分析   2. 评估   3. 探索

设计优化

Design Optimisation

From a basic 2-dimensional block/city grid...
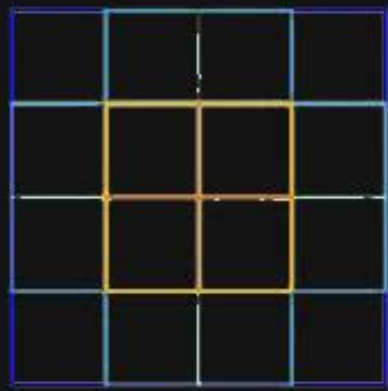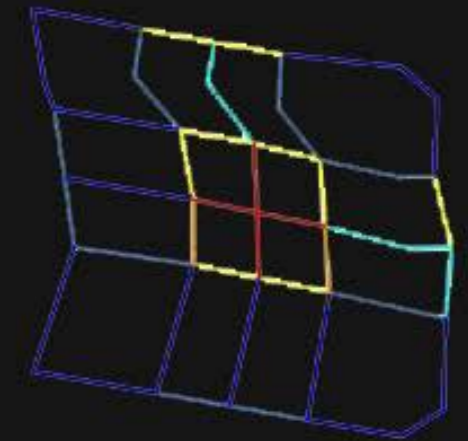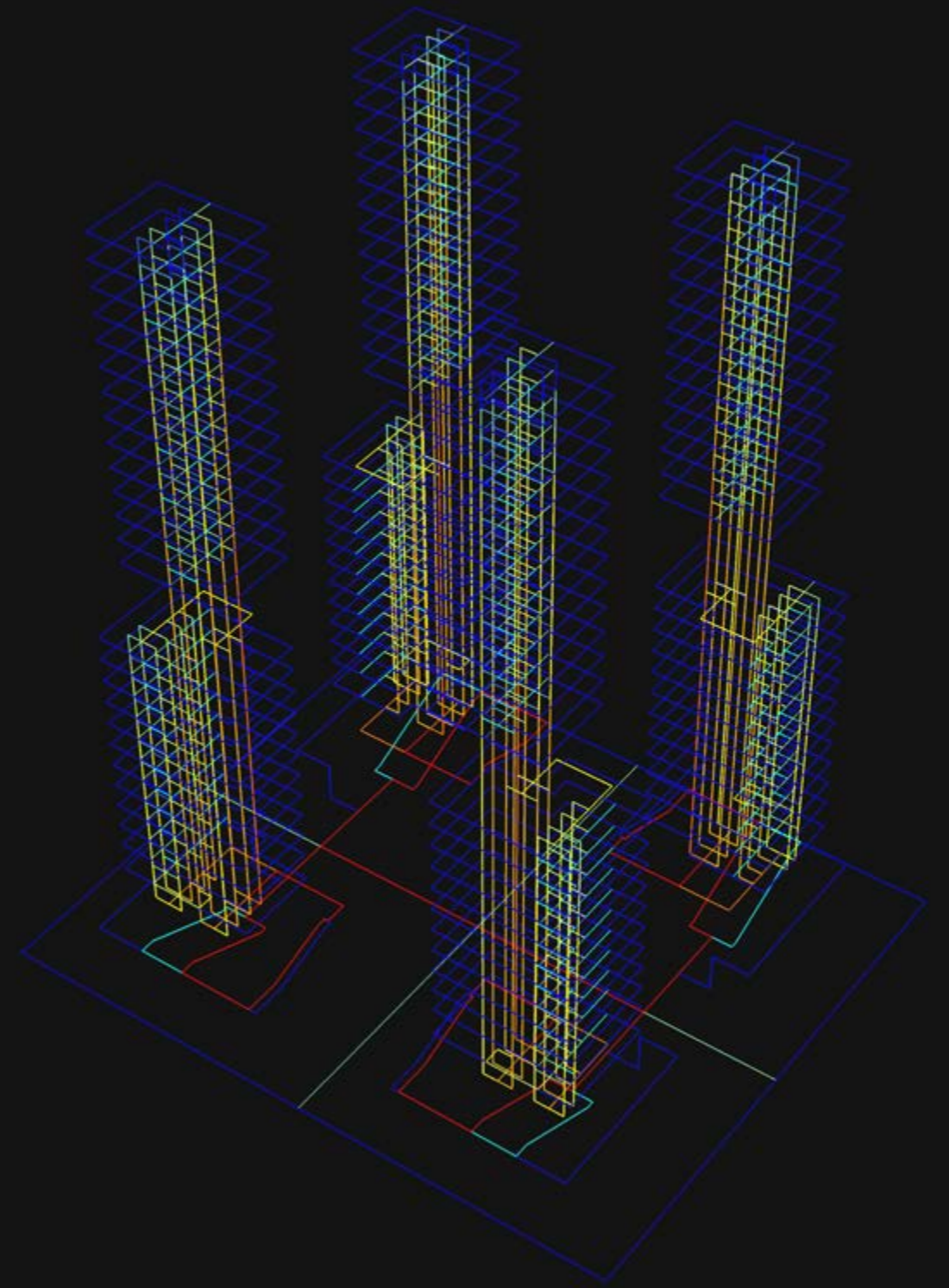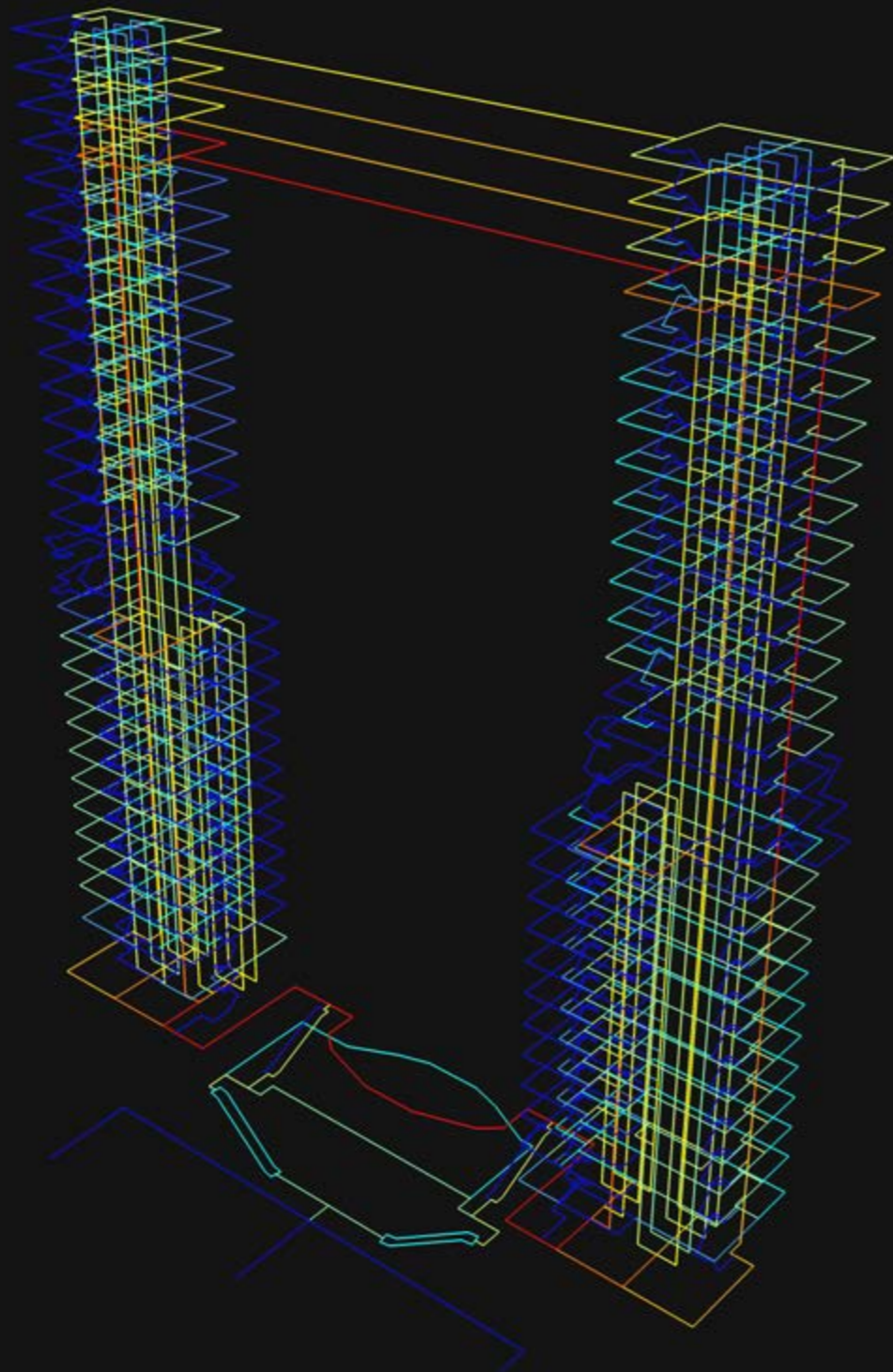
基本的二维/城市网格...

To embracing 3-Dimensional
grids with verticality...

立体化的三维网格...

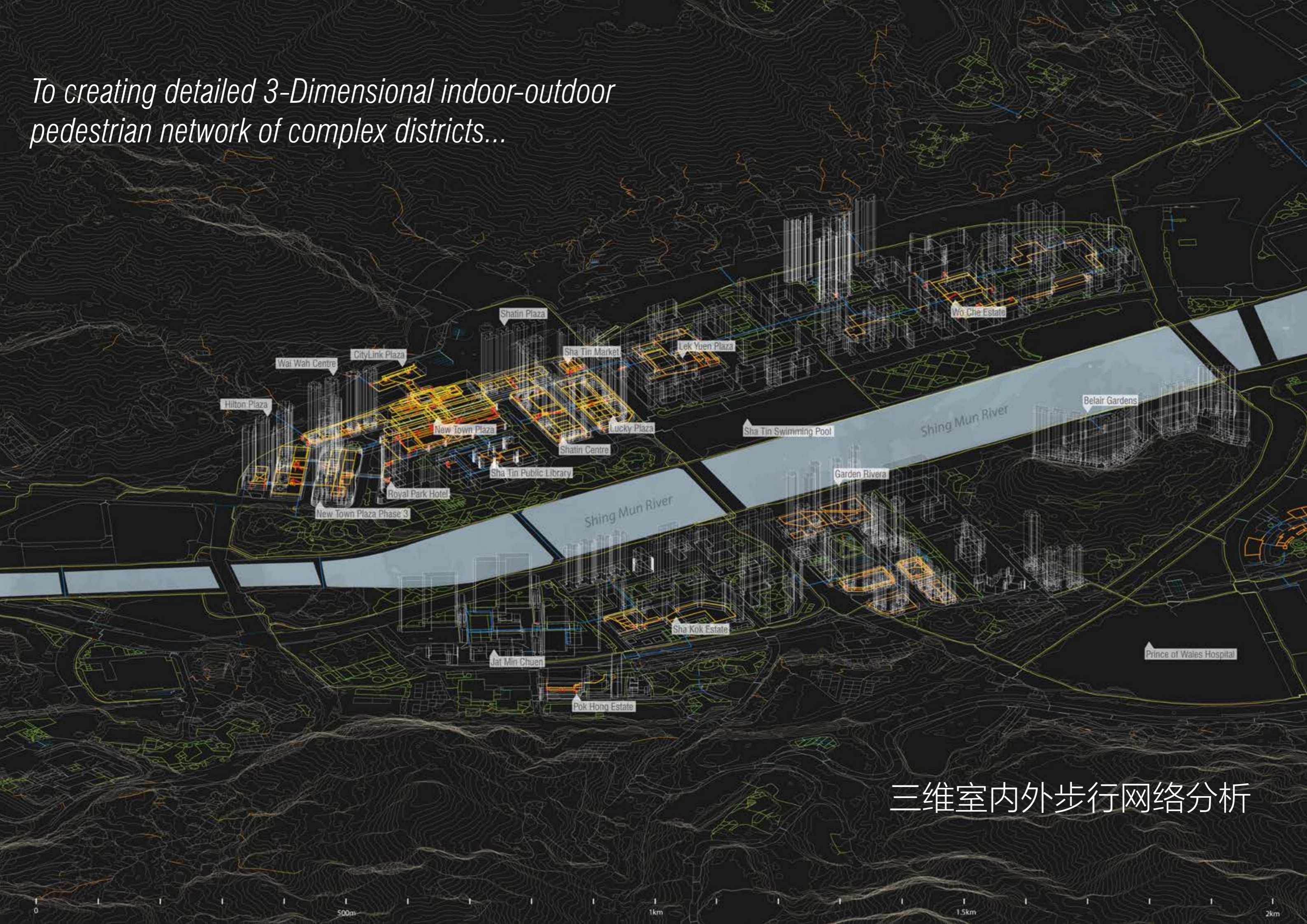*To exploring multi-dimensional
building typologies...*

探索多维度建筑类型...

*And Transit Oriented Development complexes
with pedestrian dominated circulation...*

人本导向，公交优先的综合体开发...

To creating detailed 3-Dimensional indoor-outdoor pedestrian network of complex districts...

三维室内外步行网络分析

规模与网络。
Scales & Networks.

We work on a variety of scales, with special focus on pedestrians, to ensure a seamless integration is achieved between all modes of transport

行人

自行车

公共交通

汽车
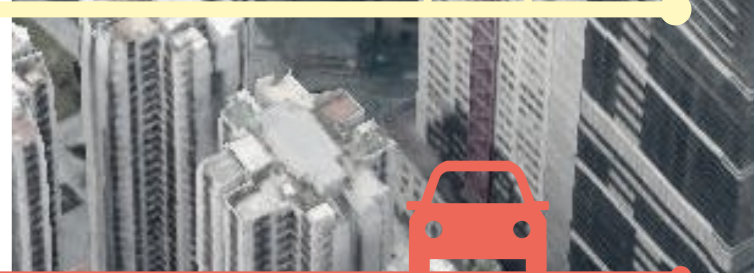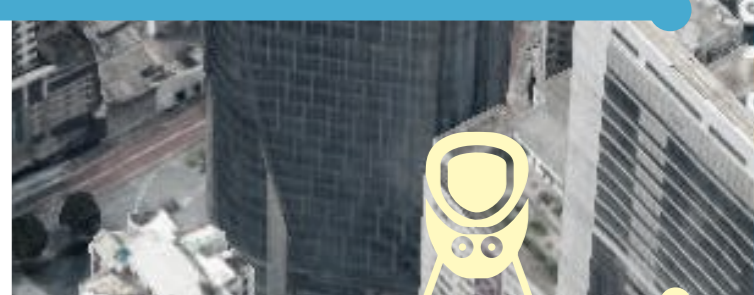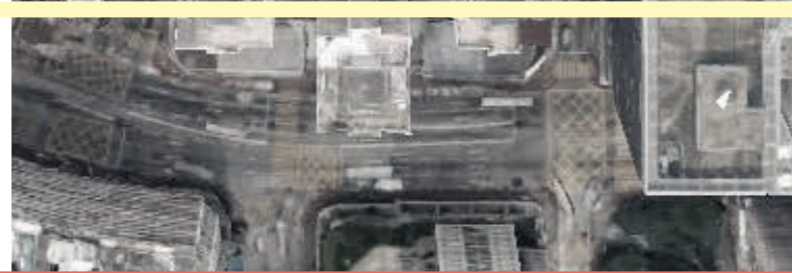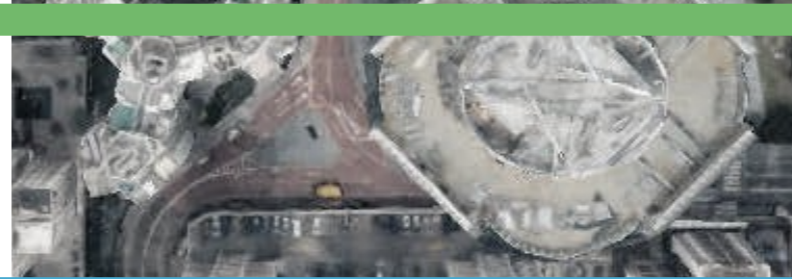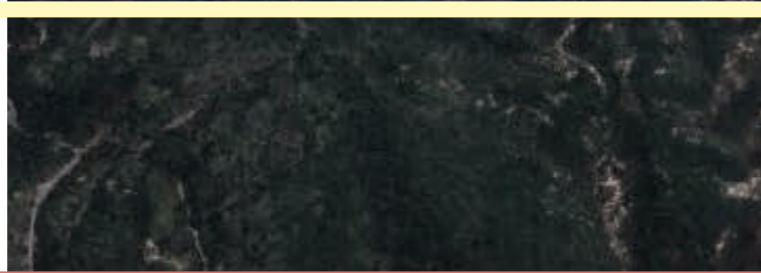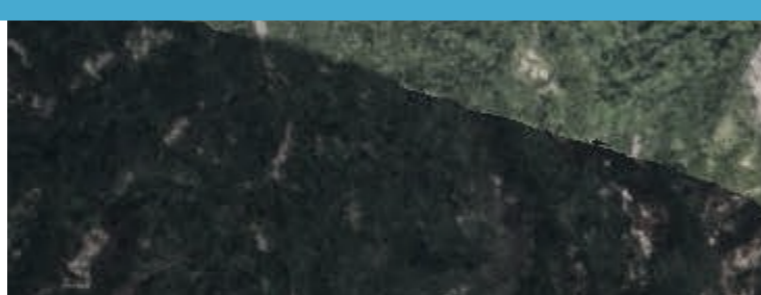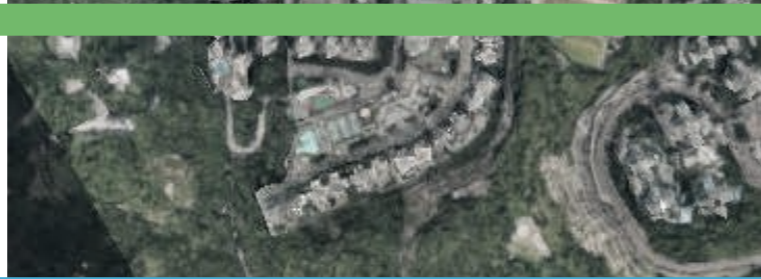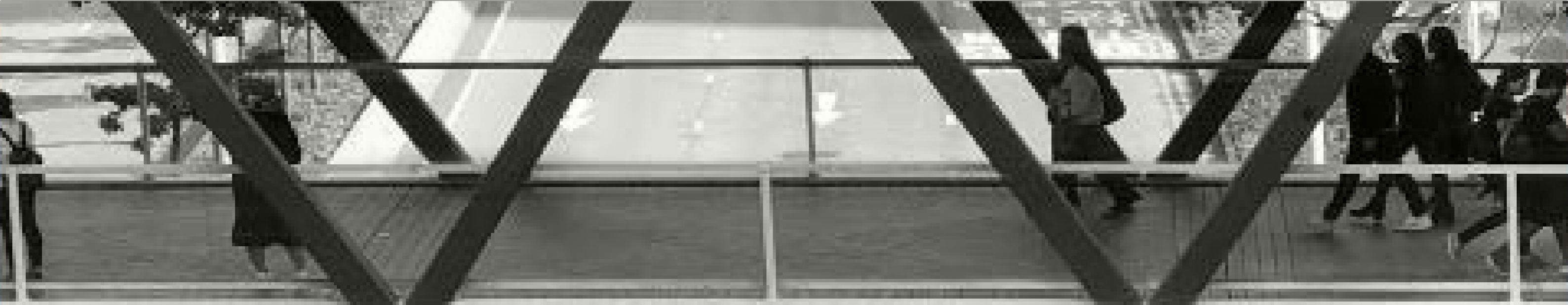
01

总平面评估
香港中环滨水区
Master plan Evaluation
Site 3, Hong Kong Harbourfront

现场.
Site.

Site 3, along the Hong Kong's iconic waterfront, is the last piece of opportunity for the city to develop something more valuable for its people. We developed a detailed 3D indoor-outdoor pedestrian network of what can be touted as one of the most complex multi-dimensional areas in the world.

Site 3

现场.
Harbourfront Master Plan.
Hong Kong Government Proposed Plan

现场.
Existing 3D Indoor-Outdoor Pedestrian Network

Escalator	GF
Footbridge	1F
Lift	2F
POSStep	3F
PedBusTerminal	4F
PedCross	5F
PedeTunnel	6F
PiOpenSpace	7F
PiOpenSpaceOthers	B1
PseudoLink	B2
Ramp	MTR
Sidewalk	
Step	
StreetStep	
POSStep	
Hiking Trail	

Site 3

0m   200m   1km   2km

现场.
Proposed 3D Indoor-Outdoor Pedestrian Network.

Escalator	GF
Footbridge	1F
Lift	2F
POSStep	3F
PedBusTerminal	4F
PedCross	5F
PedeTunnel	6F
PiOpenSpace	7F
PiOpenSpaceOthers	B1
PseudoLink	B2
Ramp	MTR
Sidewalk	
Step	
StreetStep	
POSStep	
Hiking Trail	

Site 3

0m   200m   1km   2km

现场.
Analysed 3D Indoor-Outdoor Pedestrian Network.

Betweenness Hyb 400 (5mins walking distance)

Unweighted
Potential flow

High

Low

0m   200m   1km   2km

现场.
Analysed 3D Indoor-Outdoor Pedestrian Network.

Betweenness Hyb 400 (5mins walking distance)

02

步行流线预测与优化
深圳, 火车北站

Pedestrian Flow Simulations
Shenzhen North Station Urban Design Competition, Shenzhen

现场.
Site.

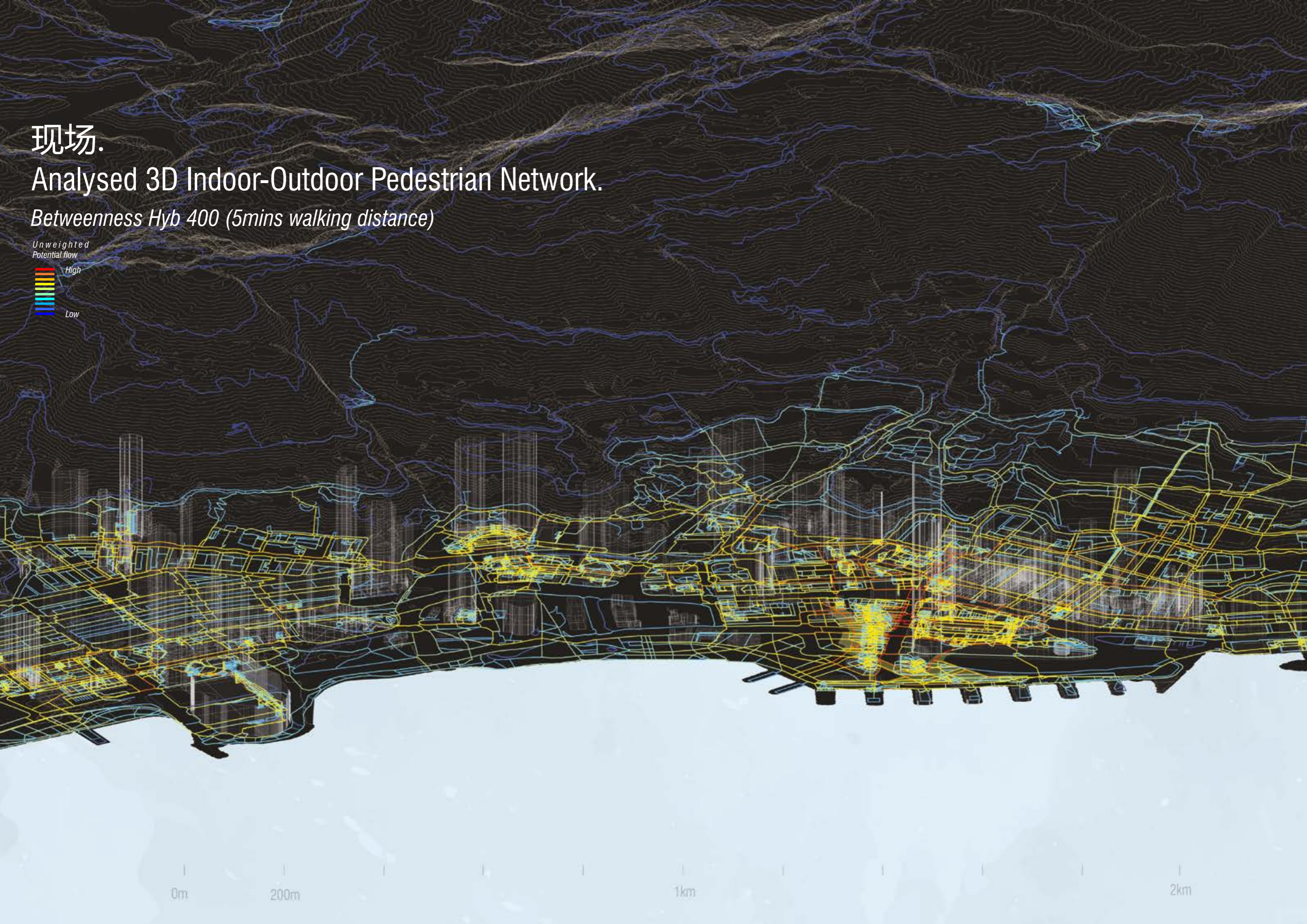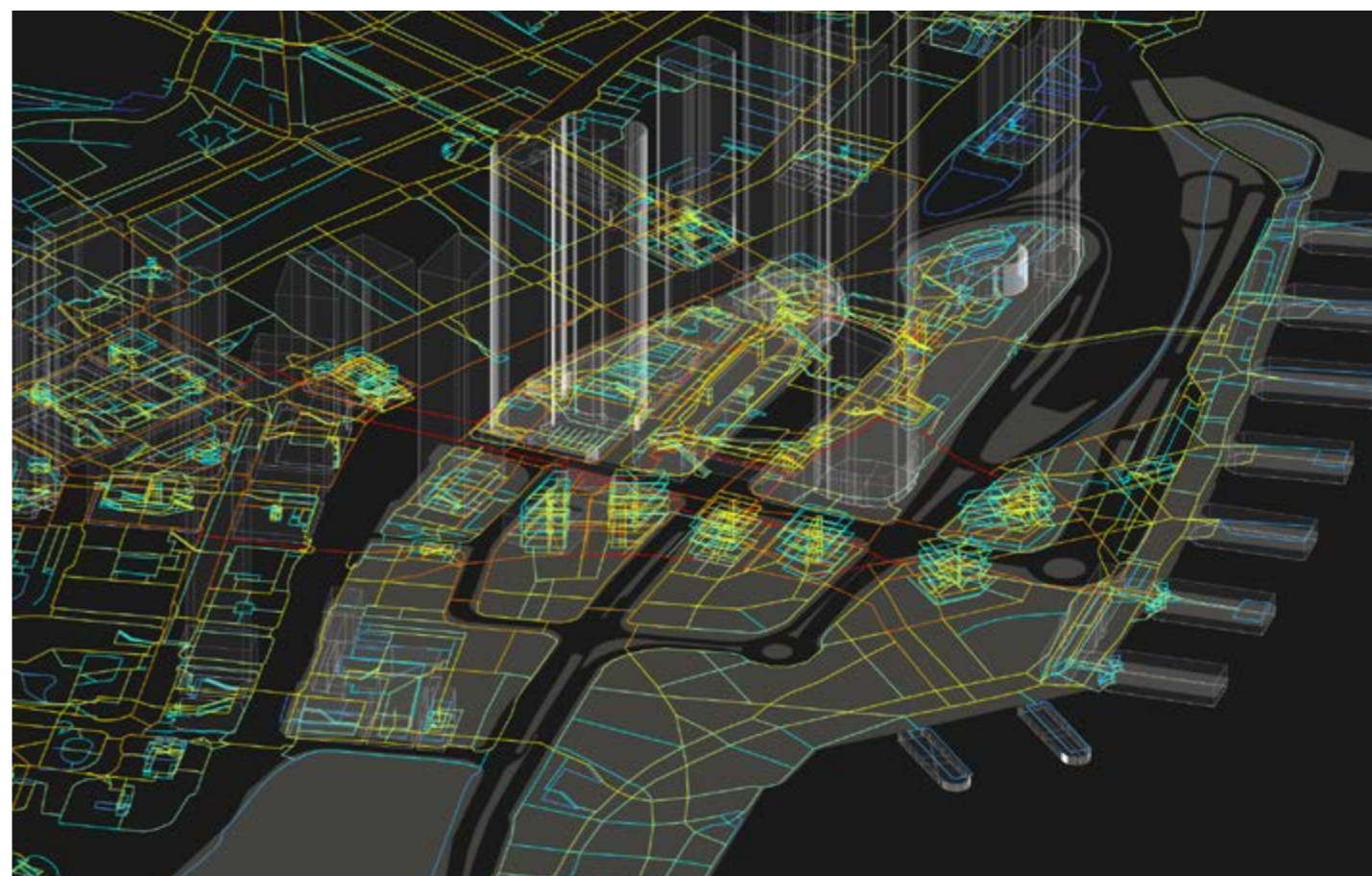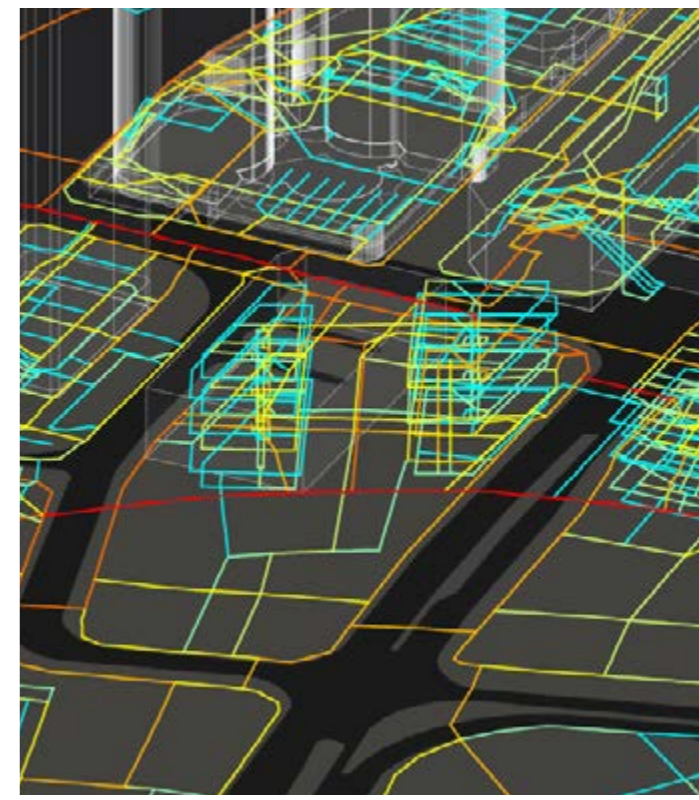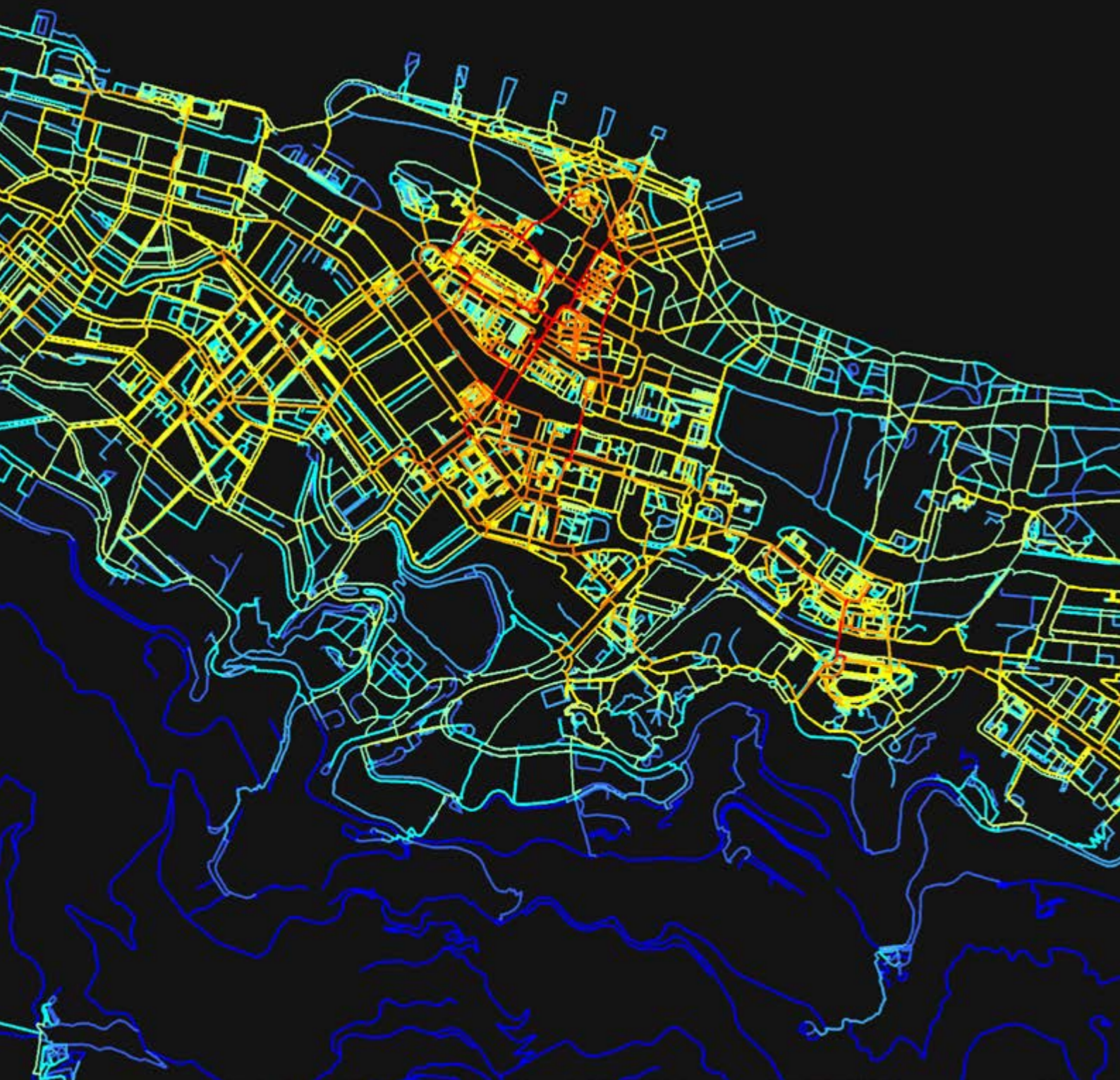Collaborating with MLA+ and Guanzhou Transport Planning Institute, we aimed at including evidence-based analysis within the master planning process by evaluating design options through the means of a pedestrian network. Recommendations and suggestions on people flows and catchments were made to optimise on circulation in a complex TOD neighbourhood.
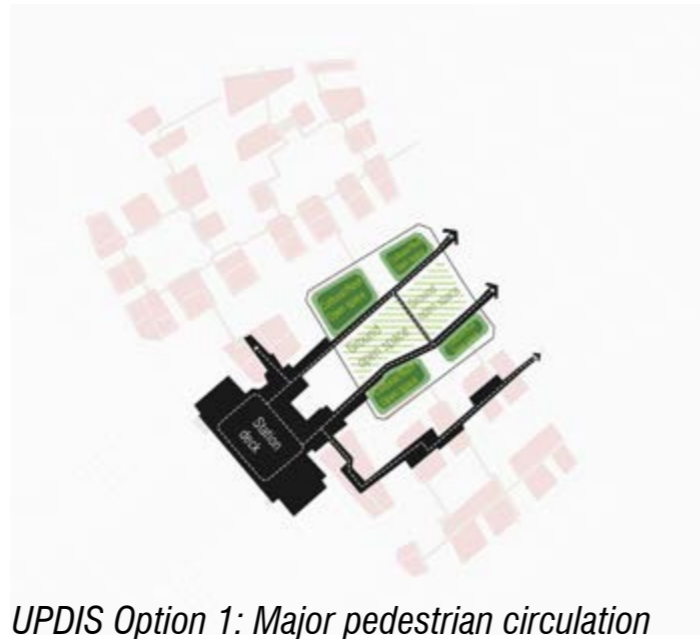
UPDIS Option 1: Major pedestrian circulation
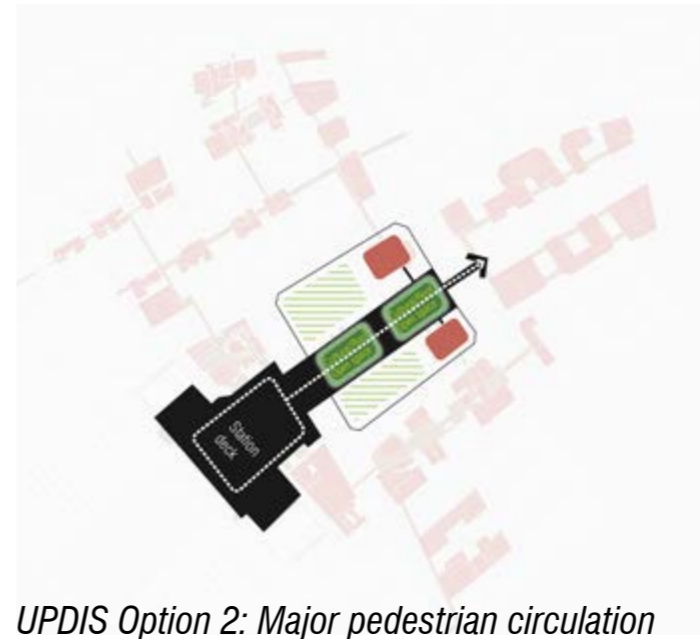
UPDIS Option 2: Major pedestrian circulation
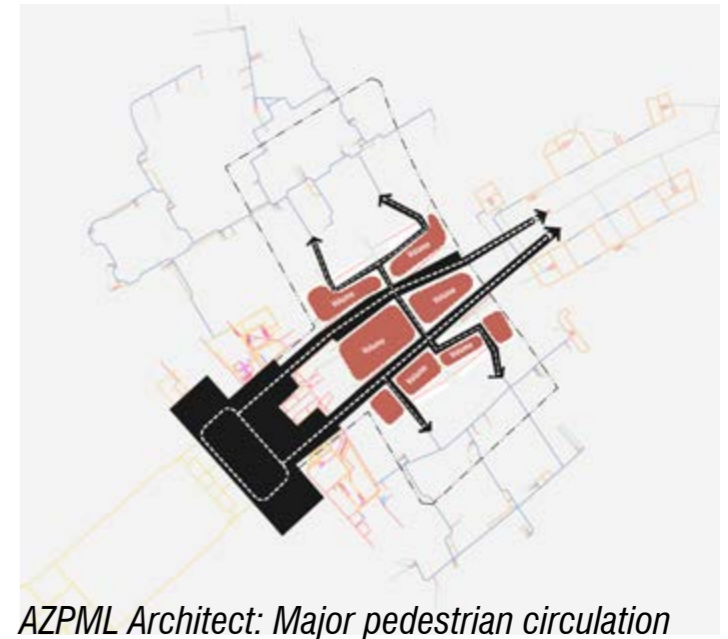
AZPML Architect: Major pedestrian circulation
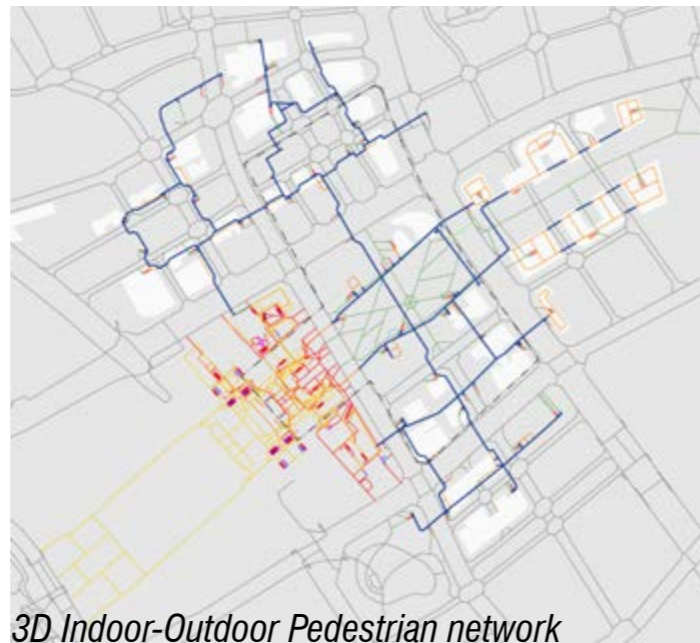
3D Indoor-Outdoor Pedestrian network
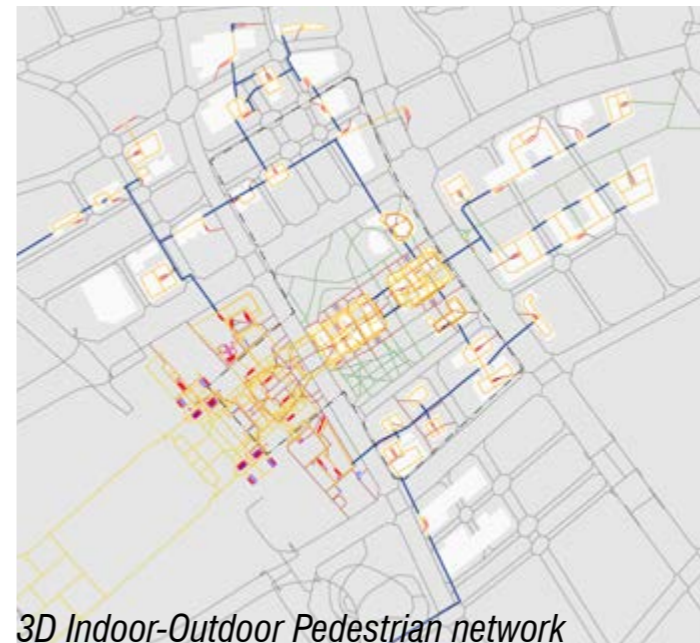
3D Indoor-Outdoor Pedestrian network
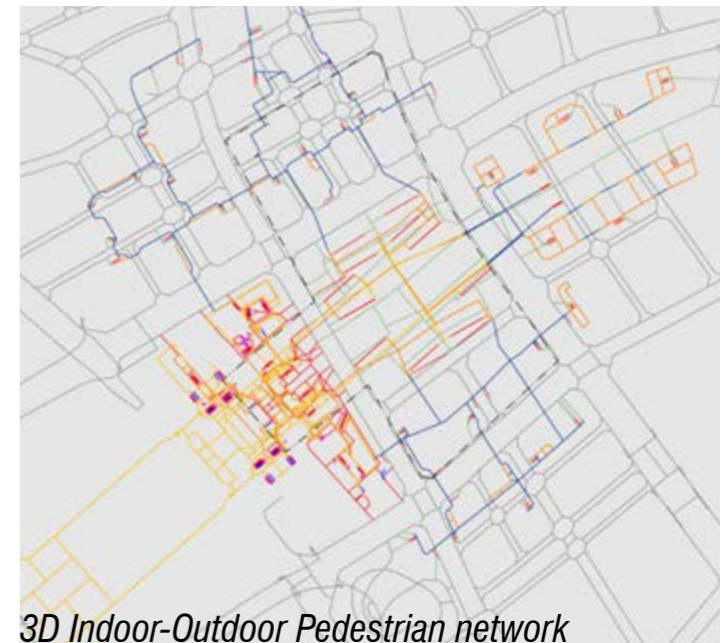
3D Indoor-Outdoor Pedestrian network

UPDIS Option 1 Evaluation based on 3D pedestrian network circulation

UPDIS Option 2 Evaluation based on 3D pedestrian network circulation

AZPML Architects' Option Evaluation based on 3D pedestrian network circulation

现场.
Network Analysis.

Unweighted Potential flow

High

Low

UPDIS Option 1 Evaluation based on 3D pedestrian network circulation

Unweighted Potential flow

High

Low

UPDIS Option 2 Evaluation based on 3D pedestrian network circulation

Unweighted Potential flow

High

Low

AZPML Architects' Option Evaluation based on 3D pedestrian network circulation
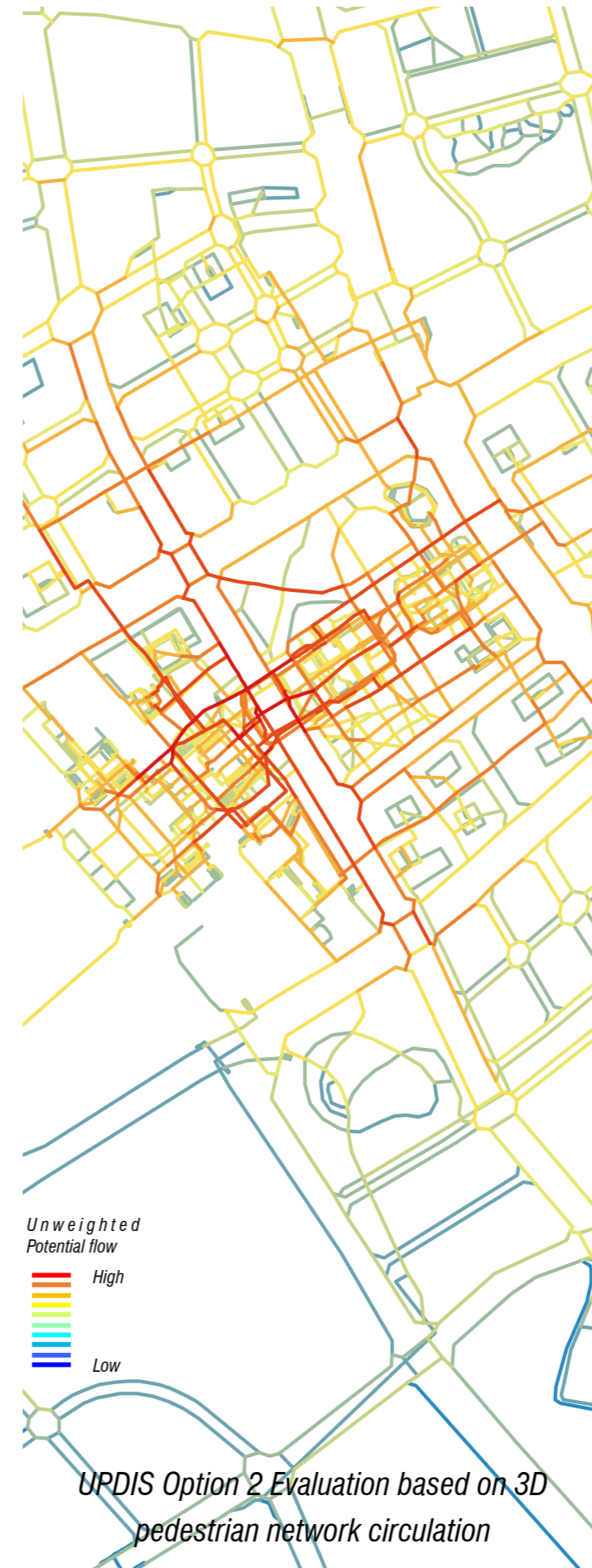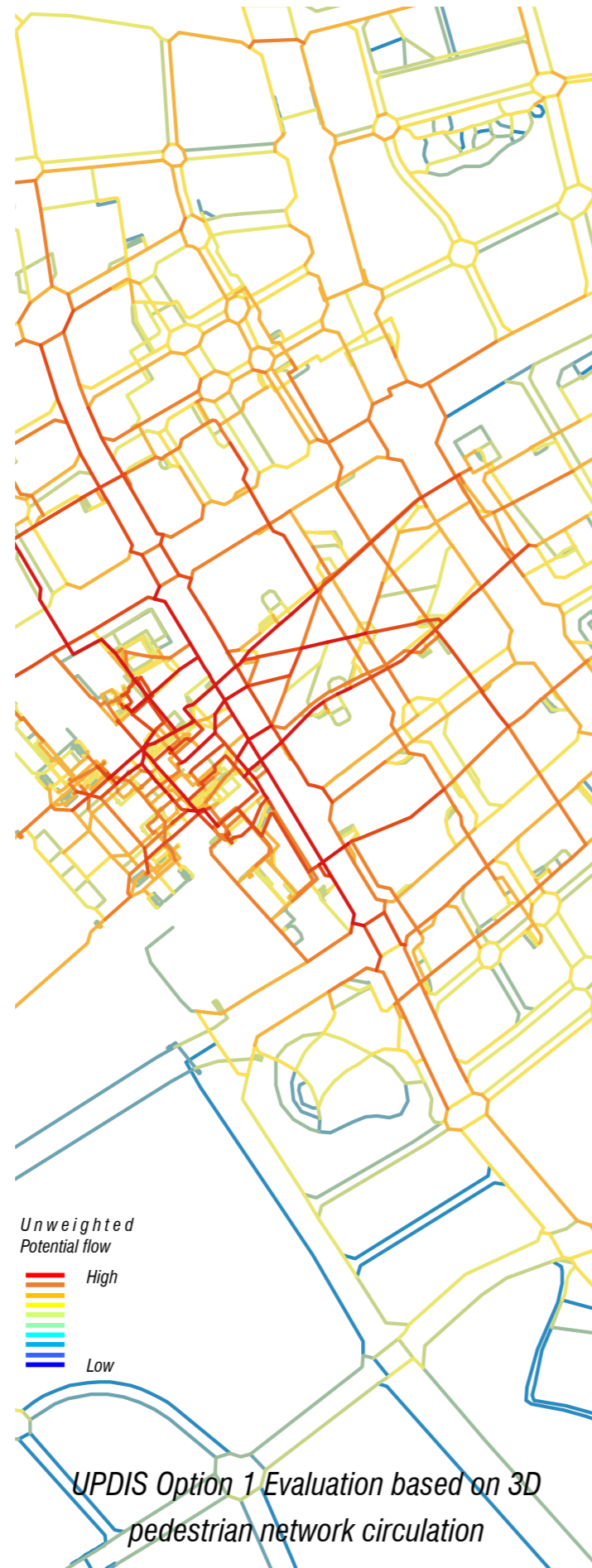
现场.
UPDIS Option 2 Spatial Model.
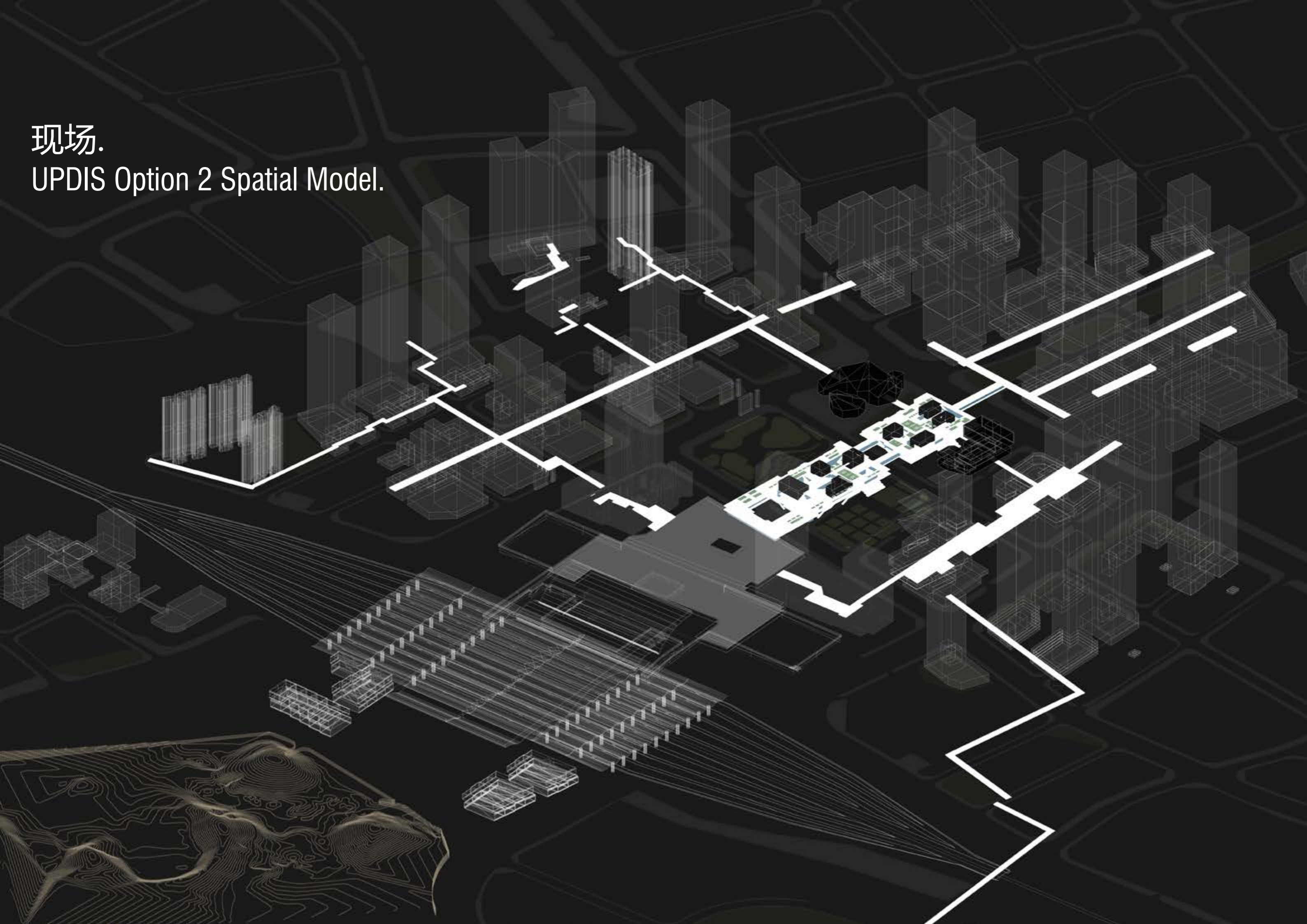
现场.
3D Indoor-Outdoor Pedestrian Network.

- Escalator
- Footbridge
- Lift
- POSStep
- PedBusTerminal
- PedCross
- PedeTunnel
- PiOpenSpace
- PiOpenSpaceOthers
- PseudoLink
- Ramp
- Sidewalk
- Step
- StreetStep
- POSStep
- Hiking Trail
- GF
- 1F
- 2F
- 3F
- 4F
- 5F
- 6F
- 7F
- B1
- B2
- MTR

现场.
Analysed 3D Indoor-Outdoor Pedestrian Network.

Betweenness Hyb 400 (5mins walking distance)

Unweighted
Potential flow

High

Low
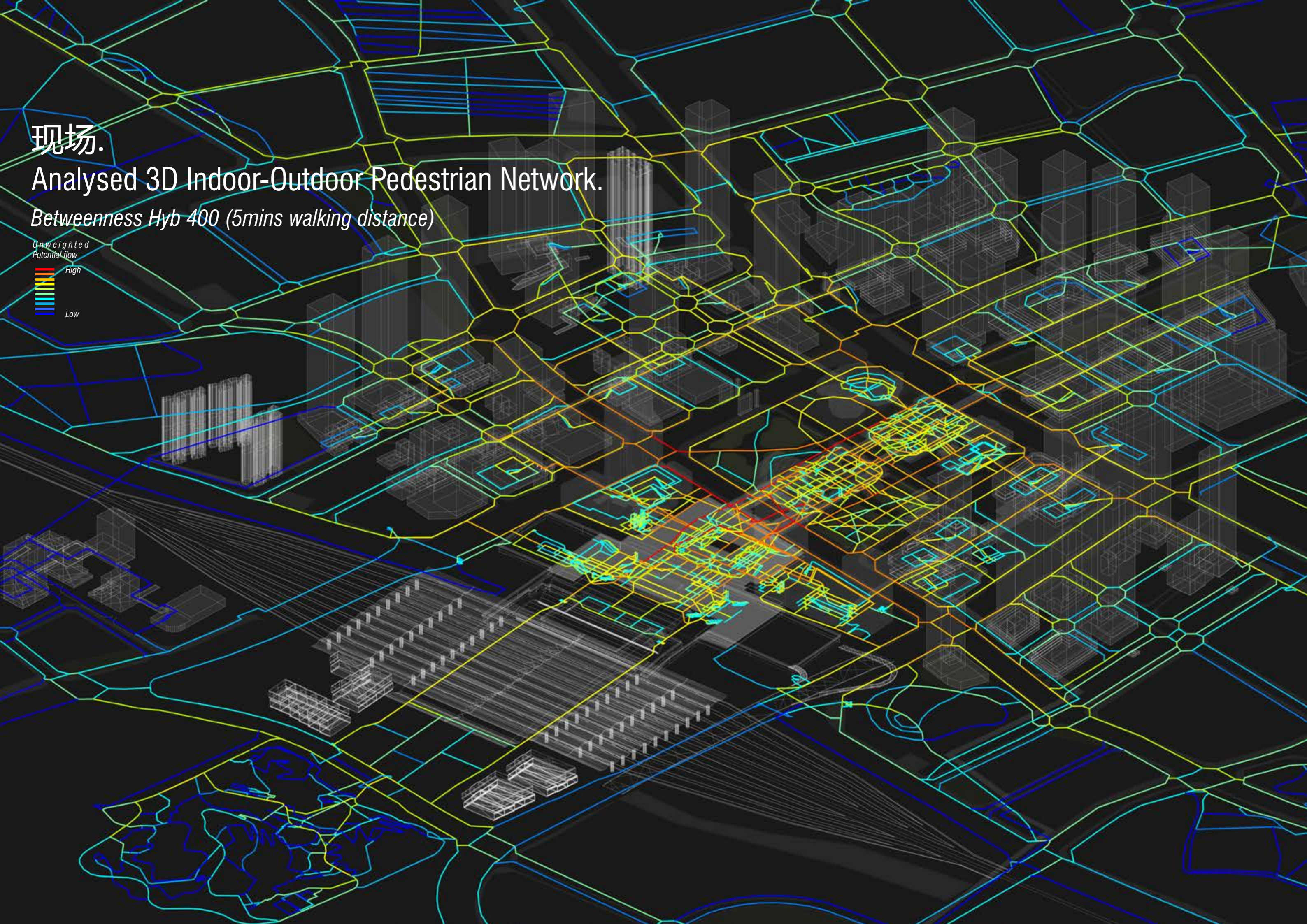
03

重构地铁网络
上海

Restructuring Metro Network
Shanghai Metro Network

现场.
Site.

Using Shanghai metro system 2017 as baseline, we consider the novel morphological alternative scenario of two overlapping ellipses and compare its relative performance to the moretraditional ring metro line. The analysis is especially useful at the strategic conceptual planning phase, to test different network design scenarios alongside conventional transport planning tools.

Legend:
- Metro Station
- City Center: People's Square
- Airport
- Railway Staion
- Water
- Inner, Middle, Outering s of Shanghai
- Provincial Boundary

Shanghai Railway Station
People's Square
Hongqiao Int'l Airport
Hongqiao Railway Station
Shanghai South Railway Station
Songjiang Railway Station

Metro Lines
- Line 1
- Line 2
- Line 3
- Line 4
- Line 5
- Line 6
- Line 7
- Line 8
- Line 9
- Line 10
- Line 11
- Line 12
- Line 13
- Line 16
- Line 17

现场.
Network Evolution.

High
Low

Average BtCn: 0.33
1995
0 4.25 8.5 17 km

Average BtCn: 14.18; Convex ratio: 0.55%
2000
0 4.25 8.5 17 km

Average BtCn: 159.44; Convex ratio: 3.09%
2005
0 4.25 8.5 17 km

Average BtCn: 529.37; Convex ratio: 3.12%
2010
0 4.25 8.5 17 km

Average BtCn: 1000.41; Convex ratio: 3.34%
2015
0 4.25 8.5 17 km

Average BtCn: 1621.99; Convex ratio: 4.48%
2020
0 4.25 8.5 17 km

Ring Line Scenario (R Scenario)

City Sub-center
District Center
Airport
Railway Staion
Water
Ring Metro Line

In Shanghai Master Plan 2016-2040 , the government proposed to construct a second ring-shaped metro line near Shanghai Middle Ring road.

Metro Networks	No.of Stations	Network length (km)	Av. Line length (km)	Av.Inter-station spacing (km)
2020	392	760	44.71	1.61
R Scenario	397	838	55.84	1.68
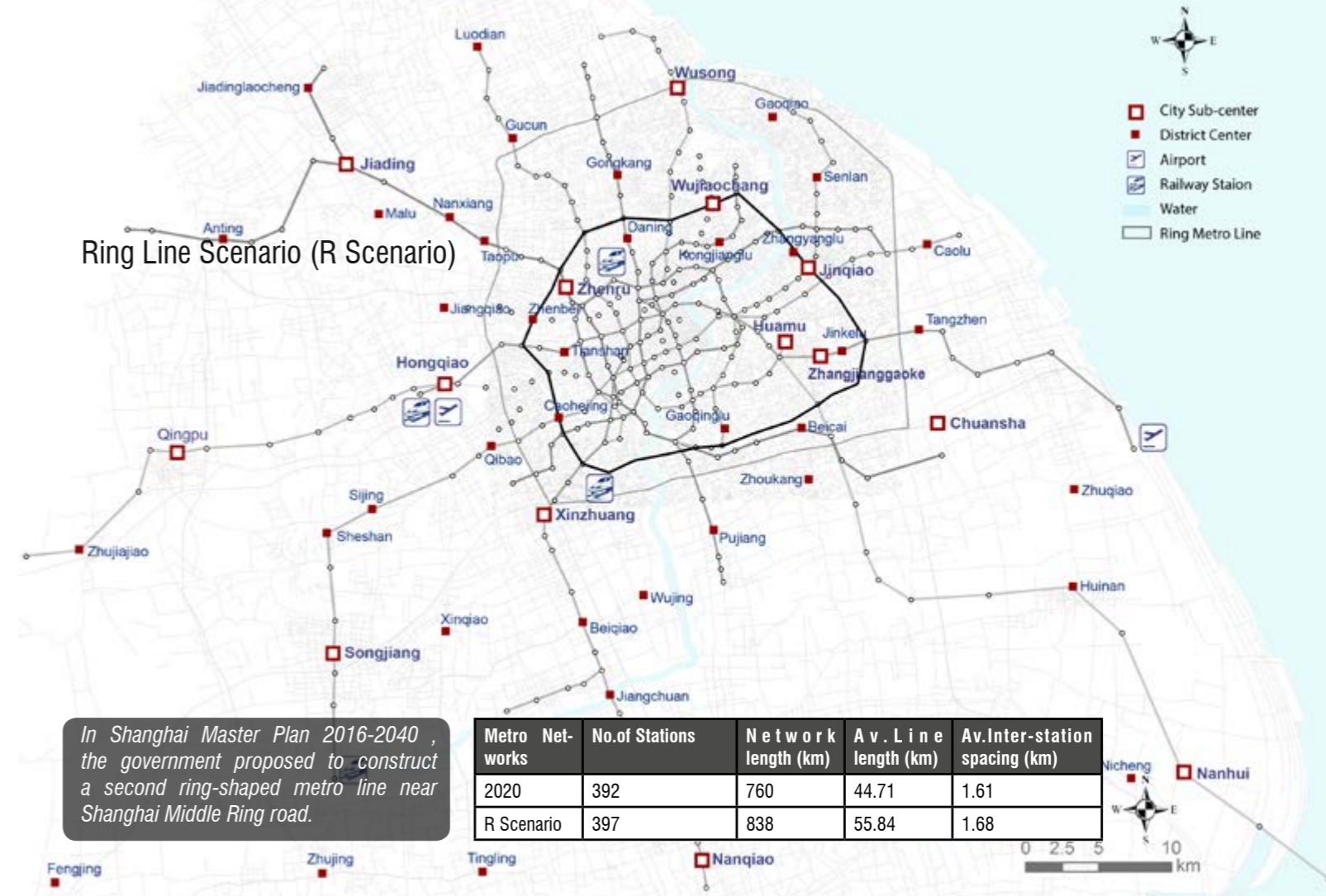
Two Overlapping Ellipse Line Scenario (TOE Scenario)

City Sub-center
District Center
Airport
Railway Staion
Water
Ellipse Metro Line

We proposed the Two Overlapping Ellipse Lines scenario to locate as many metro stations as possible on the future City Sub-centres. It further helps improve suburb-to-suburb connections

Metro Networks	No.of Stations	Network length (km)	Av. Line length (km)	Av.Inter-station spacing (km)
2020	392	760	44.71	1.61
TOE Scenario	401	991	61.92	1.92

48   Company Profile

Highest 10% accessible area for R Scenario

High

Low

Highest 10% accessible area for TOE Scenario

High

Low

The size of the highest 10% accessible area in TOE scenario is 1.93 times bigger than R scenario (241.67 and 465.84 in respectively), implying that passenger flow will be more evenly distributed for TOE scenario, making further reduction in crowdedness level in a metro line.

04

测度商业价值
上海, 五角场

Place Evaluation
Pedestrian flow potential analysis of 3D environments in Wujiochang, Shanghai.

现场.
Site.

Wujiaochang
Seen as a "new" commercial sub-centre of Shanghai
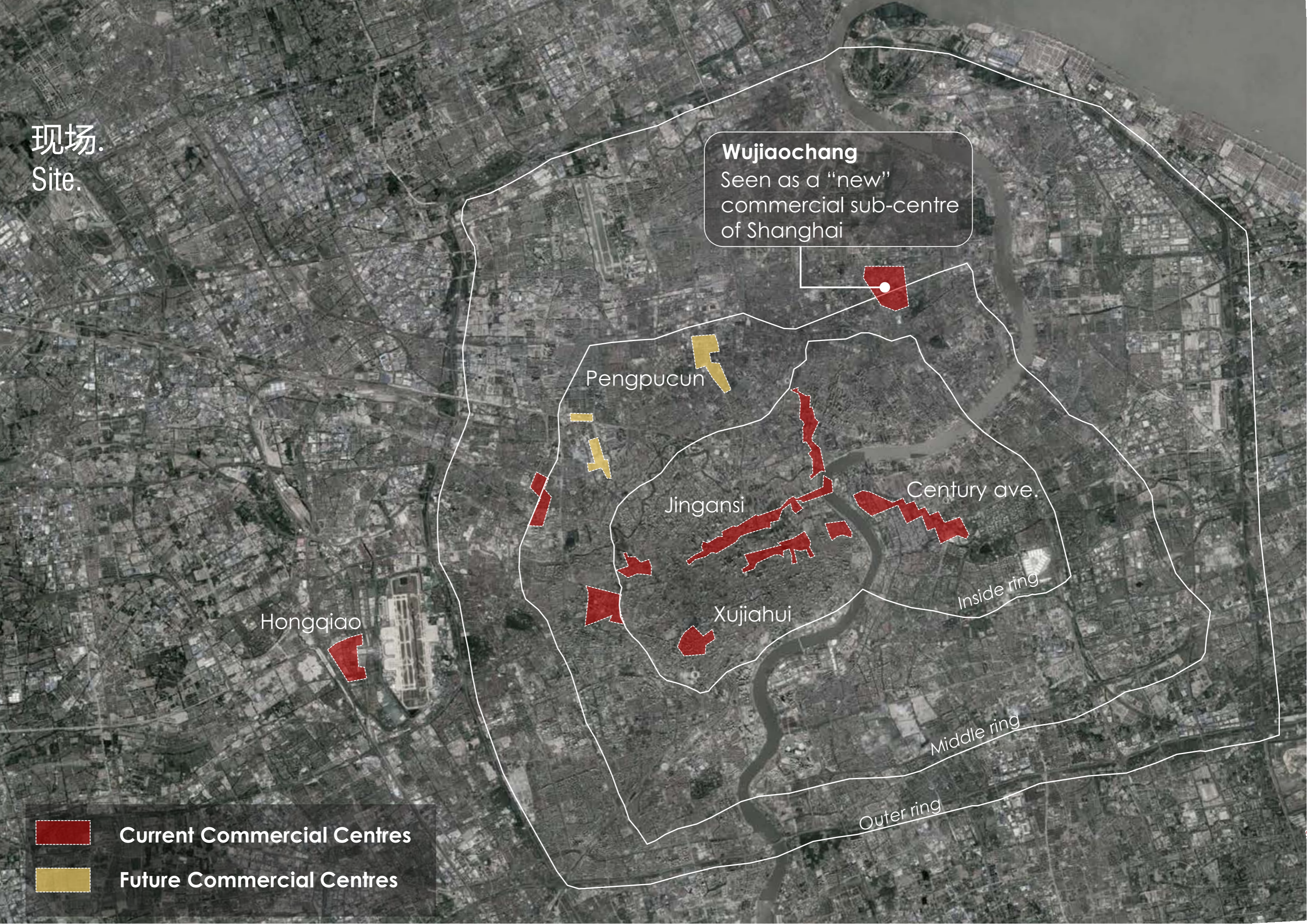
Pengpucun

Jingansi

Century ave.

Xujiahui

Inside ring

Hongqiao

Middle ring

Outer ring
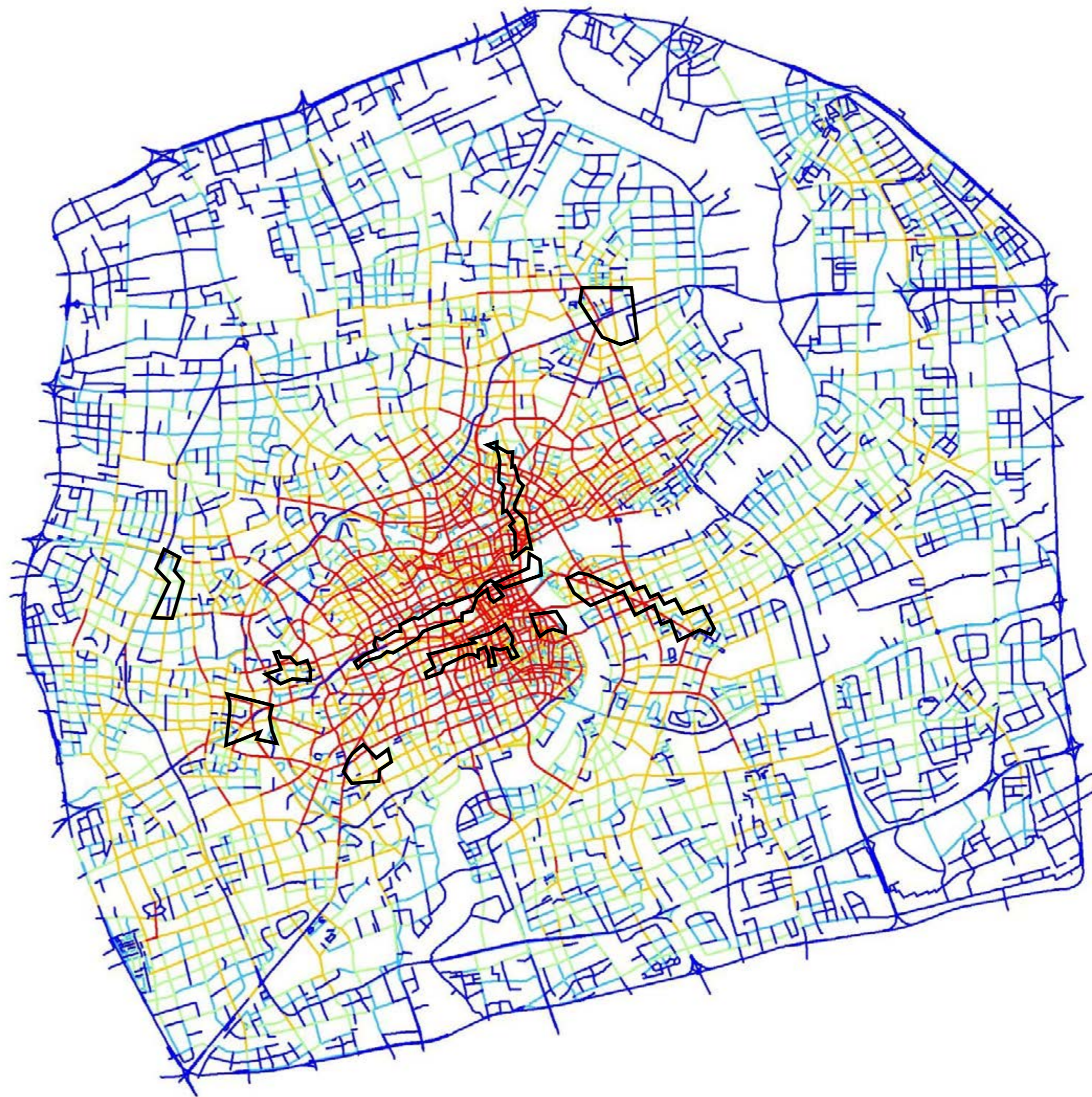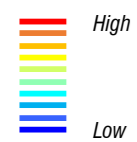
Current Commercial Centres

Future Commercial Centres

现场.
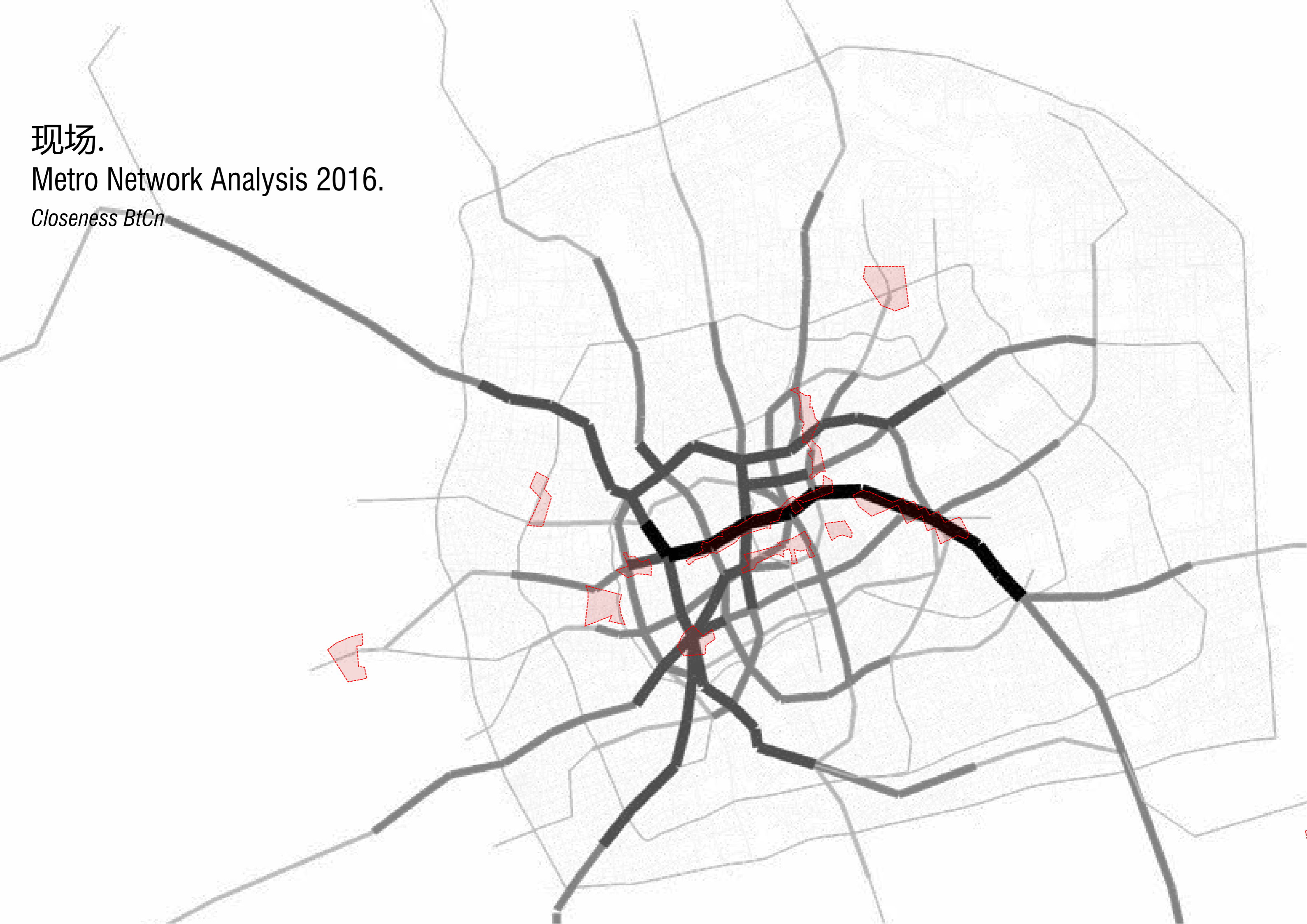Road Network Analysis.

Betweenness Hyb 500

U n w e i g h t e d
Potential flow

High

Low

现场.
Metro Network Analysis 2016.

Closeness BtCn

现场.
Study Area.

500m

1km

1km

500m

Observation area

Study area

0 100 200   500M
N

Google
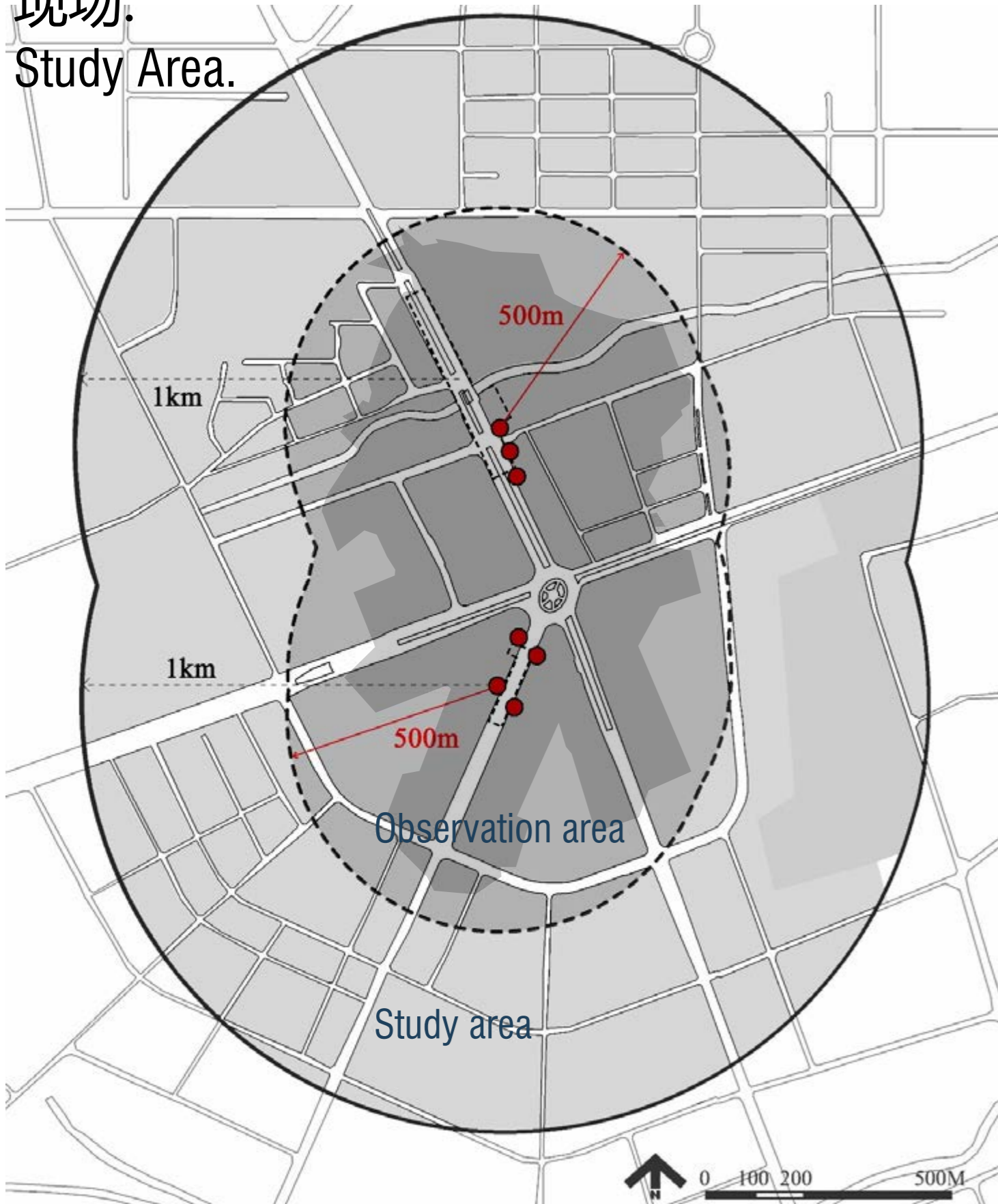
现场.
Land use and Built form.

Evaluating Hopson One.

居住
RESIDENTIAL

公共管理与公共服务设施
ADMINISTRATION & PUBLIC SERVICES

商业
COMMERCIAL

商务
BUSINESS

工业
INDUSTRIAL & MANUFACTURING
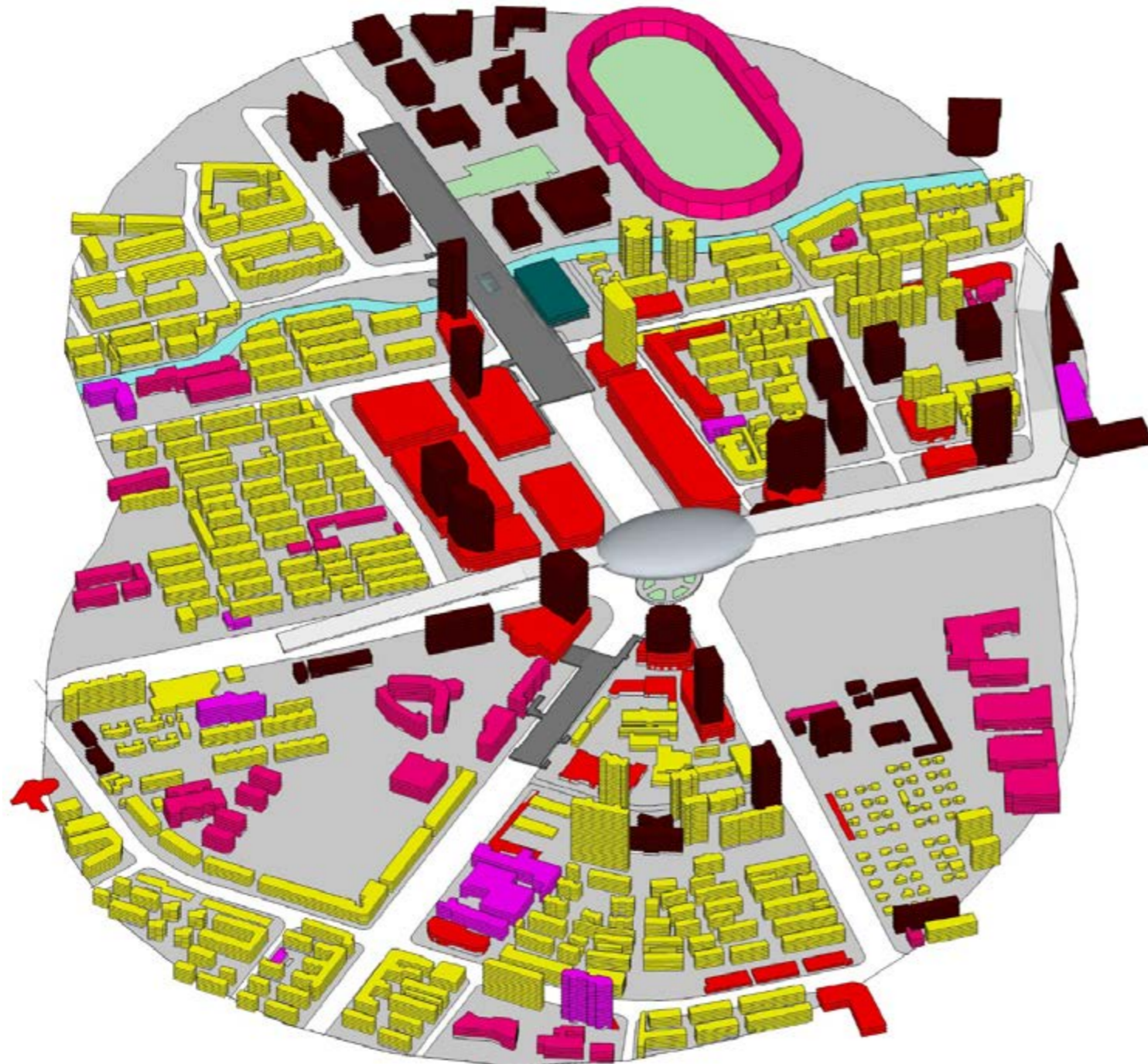
物流仓储
LOGISTICS & WAREHOUSE

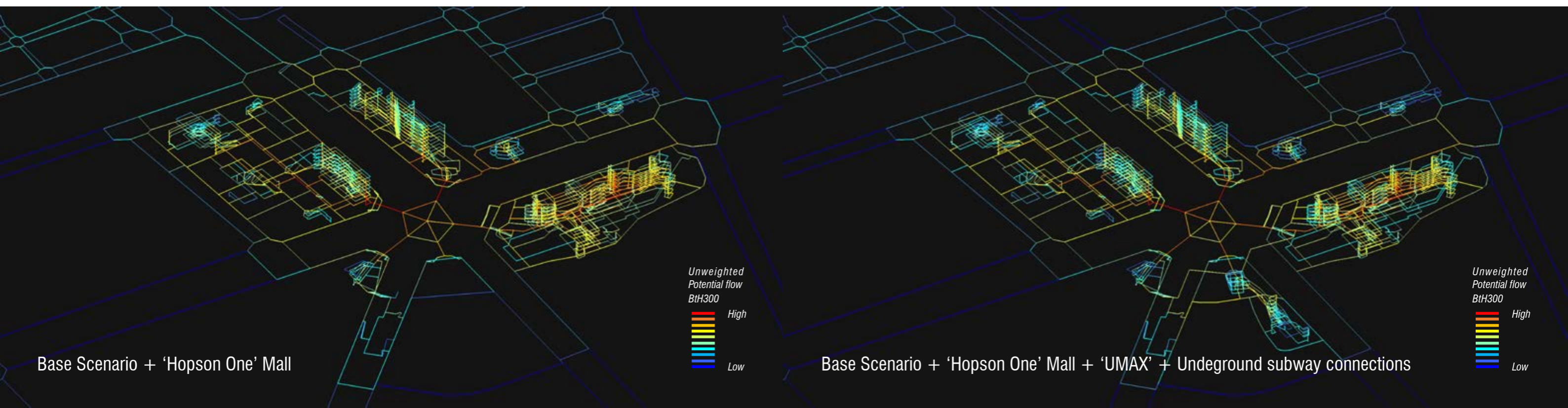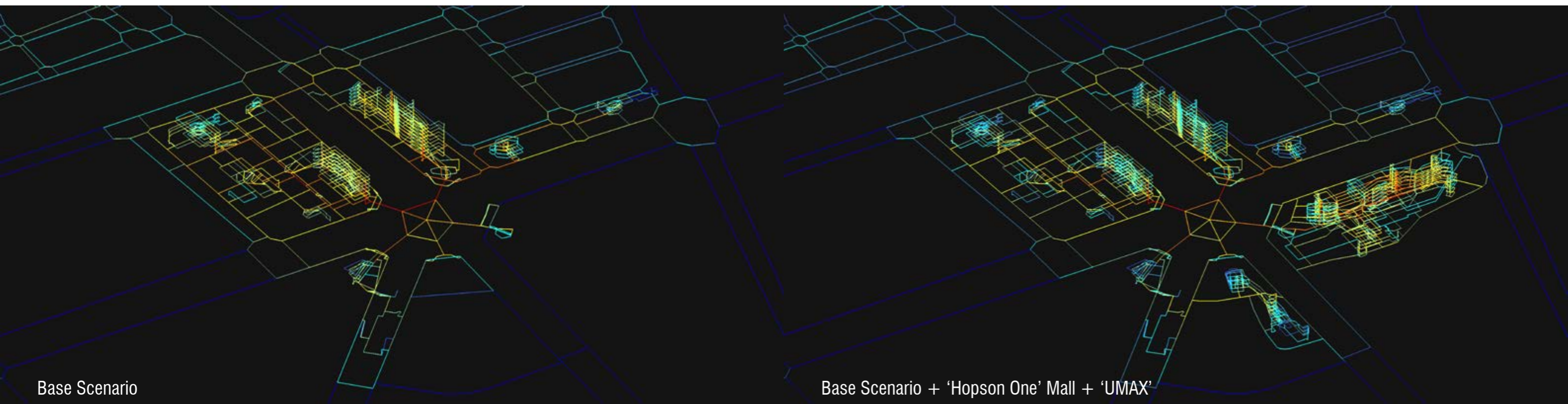交通设施
TRANSPORTATION

公用设施
PUBLIC UTILITIES

酒店
HOTEL

地铁站点
METRO STATION
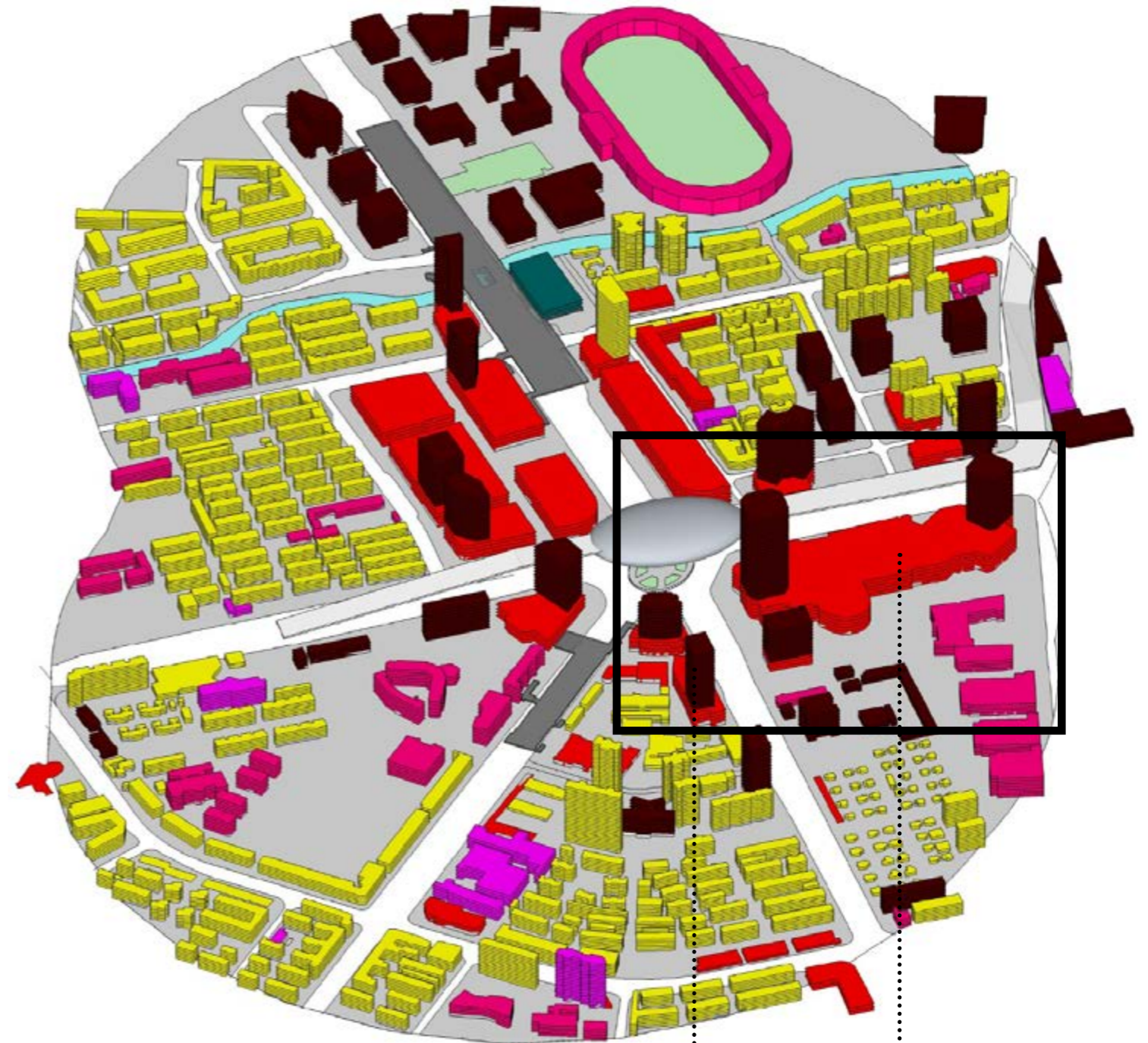
New addition of "Hopson One" Shopping mall and newly refurbished UMAX

现场.
Analysed 3D Indoor-Outdoor Pedestrian Network.

Base Scenario

Base Scenario + 'Hopson One' Mall + 'UMAX'

Base Scenario + 'Hopson One' Mall

Unweighted Potential flow BtH300
High
Low

Base Scenario + 'Hopson One' Mall + 'UMAX' + Undeground subway connections

Unweighted Potential flow BtH300
High
Low

Place Matrix

Behavioural Placemaking | Network Science of Cities