

# Urban Design Against the Background of Internet Plus: A Case Study of Hipark in Xiaoshan District, Hangzhou

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**Abstract** Internet Plus is an important opportunity for economic transformation. At present, the research for Internet Plus in China that focuses on e-commerce, industrial networks, and Internet banking gives priority to the building of virtual Internet platform and lacks the integration of physical space design. In the context of Internet Plus, urban design of Hipark in Xiaoshan District, Hangzhou adheres to the principals of building the incubator space and services platform, creating urban space environment with distinctive characteristics, and planning sustainable development policies. Furthermore, through the carrier of ispace, the featured context of water towns, and groups of block units, it can carry new industrial capabilities, create diverse living environment, and establish urban growth patterns, in order to make exploratory practice for the integration of Internet Plus with urban design at spatial level in China.

**Keywords** Internet Plus, Urban design, Sustainable development

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Internet Plus relies on the new generation of Internet information technology to reshape the new forms and new formats of urban development, promote user innovation, popular innovation, and collaborative innovation, and lead the innovation-driven urban “new normal”. As the booster for the transformation and upgrading of cities, it has become a hot topic in research on urban development in recent years.

In the current research on urban development against the background of Internet Plus, Song Shouwen *et al.*<sup>[1]</sup> proposed the application of Internet technology from the perspective of commercial bank risk management to establish a bank’s product database, and established a risk management and control system for bank products through quantitative rating; Sun Jian<sup>[2]</sup> proposed to establish a customer data classification database through the Internet, analyze the distribution and flow of online customer data, and guide the hotel’s unique positioning and service product development; Huang Chuxin<sup>[3]</sup> integrated Internet plans with traditional media, proposed the application of Internet thinking to improve the user experience and the selection of media products category through injection social factors; Nie Linhai<sup>[4]</sup> analyzed the development characteristics of e-commerce and put forward the application of Internet technology to promote rural e-commerce and expand the scope of community e-commerce services; and Wu Haoyu *et al.*<sup>[5]</sup> proposed the establishment of a campus cloud database to improve students’ learning

experience and provide students with smart and convenient personalized campus life services. In general, at the current stage, the research on urban development in the context of Internet Plus mainly focuses on e-commerce, industrial networks, and Internet banking. It pays attention to the building of the virtual Internet platform and lacks integration with physical space design.

Based on the deepening of research on urban development against the background of Internet Plus, the urban design Hipark in Xiaoshan District, Hangzhou respects the continuation of traditional contexts and the interpretation of modern elements while following the inherent development laws of Internet enterprises, so as to provide exploratory practice for the integration of Internet Plus with urban design at the spatial level in China.

## 1 Background information and connotation of Internet Plus

On March 5, 2015, Premier Li Keqiang first proposed developing the “Internet Plus” action plan at the Third Session of the Twelfth National People’s Congress to promote the integration of mobile Internet, cloud computing, and big data with modern manufacturing, boost the healthy development of e-commerce, industrial networks, and Internet banking, and guide Internet enterprises to expand their international markets<sup>[6]</sup>. On April 28, 2015, the World Internet Conference, which was held in Beijing, emphasized the important role of “Internet Plus” in guiding China’s manufacturing of 2025

and supporting popular entrepreneurship and innovation<sup>[7]</sup>. On June 24, 2015, at the executive meeting of the State Council, a full-scale deployment of the “Internet Plus” action plan was promoted to accelerate the formation of new impetus for economic development<sup>[8]</sup>. Since then, Internet Plus as a national strategy has been formally implemented to clarify the direction of future transformation of China’s traditional economy.

Internet Plus is essentially a new economic form<sup>[9]</sup> that relies on elements such as Internet technology, Internet thinking, and Internet platforms and uses the advantages of big data processing, social networking, and online trading to reconstruct traditional direct-operated business model, optimize traditional inefficient production methods, establish multi-party information exchange platforms<sup>[6, 10-12]</sup>. That is to form a market-oriented operation system with customer service as the core, thereby realizing the transformation and upgrading of traditional industries and enhancing the comprehensive economic competitiveness<sup>[13]</sup>. In terms of its connotation, Internet Plus involves the following two aspects: on the one hand, Internet Plus, with the aid of Internet technology, links up traditional industries and information technology and meets the traditional industries’ transformation needs for informationization and networking; on the other hand, Internet Plus is not limited to the Internet and traditional industries, but it is a platform to integrate different resources such as finance,

traditional industries, information technology, and communities to enhance economic benefits and promote high-speed, healthy, and sustainable economic development.

## 2 Integration of Internet Plus with urban design

Adhering to principles of fostering a new economy of information industry, creating a new life with wisdom and pleasantness, and exploring new ways of transformation, the integration of urban design with Internet Plus builds a space incubation and service platform from a spatial perspective, shapes a distinctive urban space environment at the cultural level, and achieves the sustainable development at the target level, transforms the virtual Internet Plus platform into a physical space design, realizes the mutual integration of the two, thus promoting the healthy transformation and upgrading of urban development against the background of Internet Plus.

### 2.1 To build a space incubation and service platform with the principle of fostering a new economy of information industry

Urban design involves many factors such as the reorganization of industrial formats and the positioning of functions and development. With the help of clear types of space industry, the integration of urban design with Internet Plus depends on rational spatial organization to build a full-process information industry development chain for Internet data analysis and information processing, and smart output on the premise of determining functional positioning, so as to build a space incubation and service platform for information services, entrepreneurial services, collaborative manufacturing, e-commerce, and financial services in the traditional industry transition under the background of Internet Plus.

### 2.2 To create a distinctive urban space environment with the core of creating a new life with wisdom and pleasantness

Urban design emphasizes the construction of public spaces, the inheritance of lanes, and the protection of the ecological environment. Through the systematic design of the space environment, it creates a strong living atmosphere for residents and provides a comfortable living environment. The integration of Internet Plus with urban design makes use of advantages of efficient operation and intelligent service of Internet and sorts out and optimizes elements such as the lane texture, ecological environment, and public space so as to realize the efficient and convenient linking and transformation of various

elements. That is to create a distinctive space living environment with wisdom and pleasantness for residents.

### 2.3 To achieve sustainable development with the goal of exploring new ways of transformation

Urban design is not the ultimate planning that can be done at one go, but rather the progressive design process that focuses on urban cultural heritage. The integration of urban design with Internet Plus relies on the technologies of e-commerce, industrial networks, and Internet banking, explains the cultural connotation of the city in the context of Internet Plus, explores new ways of urban transformation, and achieves sustainable development.

## 3 Practice of urban design of Hipark in Xiaoshan District, Hangzhou

### 3.1 Overview of Hipark and main issues

The urban design project of Hipark is located in Xiaoshan District, southeast of Hangzhou, with a planned area of 368 hm<sup>2</sup>. The base is adjacent to Qingnian Road in the west, Jinyi Road in the east, Wenming Road in the north, and Beitang Road in the south. Wuci Straight River, Sijia River and Wujia River pass through the planning area so that the area enjoys abundant water resources and superior landscape conditions. The southwest corner of the planning area is dominated by residential buildings in good conditions, while the southeast corner is dotted with small-scale processing factories in good or poor conditions (Fig.1). In November 2014, the first World Internet Conference was held in Hangzhou, and Zhejiang Province proposed to build a series of featured towns. In January 2015, the Third Session of the Zhejiang Provincial People's Congress of the Twelfth National People's Congress of the People's Congress of Zhejiang Province further determined the construction of seven major industries including classic industries concerning silk and yellow rice wine and the building of featured towns with unique cultural connotations and tourism functions. On June 4, 2015, the first provincial featured towns in Zhejiang Province were formally announced, and 37 towns across 10 cities were included on the list. In this context, urban design project of Hipark in Xiaoshan District, Hangzhou came into being.

Despite its good development prospect, Hipark in Xiaoshan District, Hangzhou has some development issues. Firstly, the type of industry is frivolous, the scale effect is insufficient, and no industrial chain development has been formed. How to closely link the development opportunity

against the background of Internet Plus, create a new type of ispace, and carry new industrial functions have become problems demanding urgent solution. Secondly, the base is located in the region of rivers and lakes, that is, it is rich in water resources. How to highlight the features of the region of rivers and lakes in the design and create a diverse living atmosphere is the focus of this planning and design. Thirdly, compared with other design projects, the planning area covers large areas and contains informative contents. How to lay a framework for the development of the planning area through planning and design and guide the sustainable construction of the project area is a bright spot that determines whether the project can be successfully implemented.

### 3.2 Interaction between Internet Plus and the urban design of Hipark

3.2.1 To carry new industrial functions with ispace as the carrier. The full-process information industry development chain for Internet data analysis and information processing, and smart output requires a flexible physical space organization to provide specific R&D and innovation service space for Internet enterprises that are in different stages of development and that enter Hipark, including newly established enterprises, small and micro enterprises, small and medium-sized enterprises, and large enterprises. According to the rules of the development of Internet enterprises, the spatial layout of Hipark is centered on "Four Workshops and One Port". Specifically, the planning and design aims to build an innovative service platform centered on Intelligence Gathering Port that links with four Internet enterprise functional areas of different stages (Fig.2), namely Software Dream Workshop (software incubation and accelerator—newly established enterprises), E-commerce Dream Workshop (e-commerce training base—small and micro enterprises), IoT Dream Workshop (IoT technology innovation base—small and medium-sized enterprises), and R&D Workshop (smart R&D and headquarter base—large enterprises). Software Dream Workshop, which fulfils the incubation training function of industries, connects Hangzhou Binjiang Hi-tech Corridor, develops software technology innovation and product research and development, and adopts a 4,000–6,000 m<sup>2</sup> office-to-office organization model to provide newly established enterprises with entrepreneurial space through card rental (Fig.3). E-commerce Dream Workshop connects commercial centers Hangzhou, retains the original small-scale factories of the base, nurtures the e-commerce research and

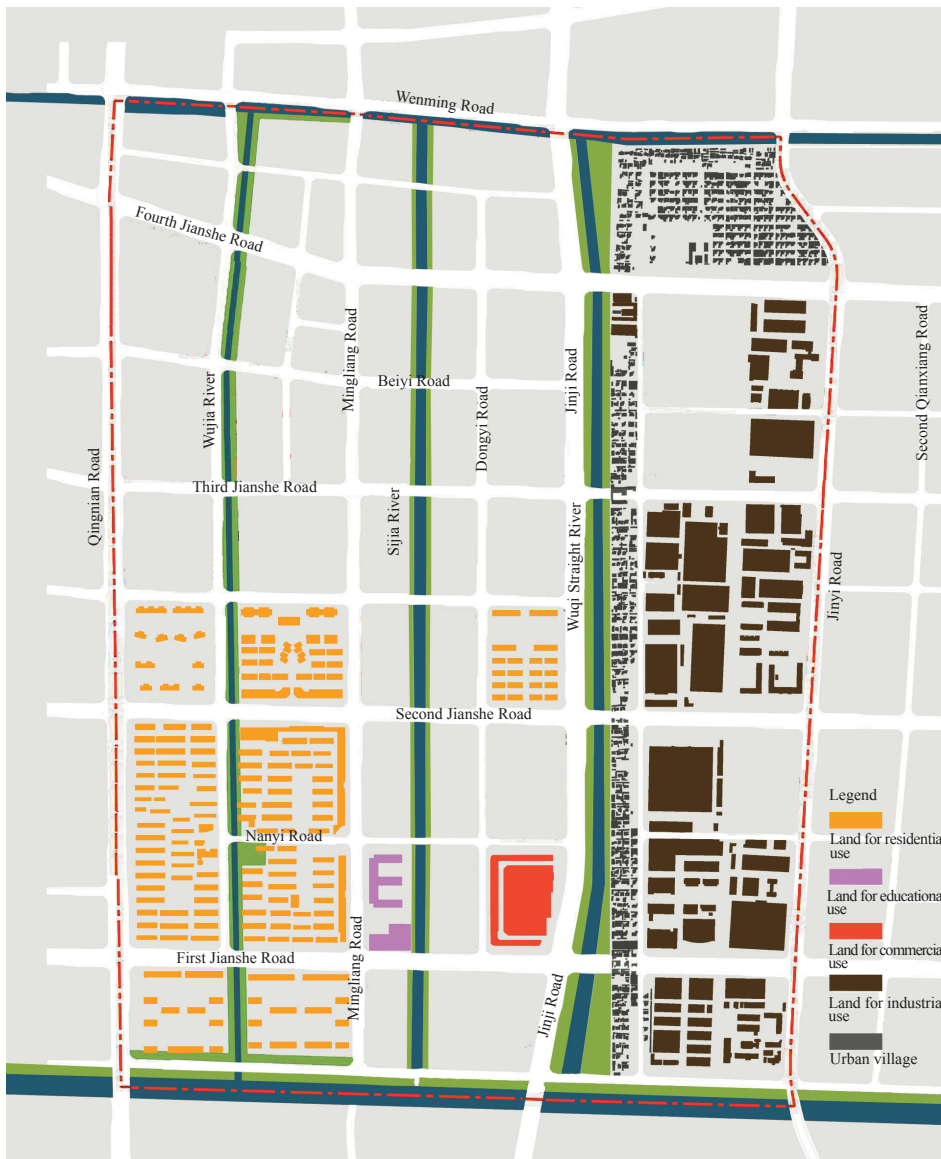


Fig.1 Current situation of the planning area



Fig.2 Innovation service platform established by Intelligence Gathering Port

development platform, and adopts the standard floor of 2,000–4,000 m<sup>2</sup> that hosts 2–4 units per floor with a unit area of 500–1,000 m<sup>2</sup> to provide a free-combination office space for small and micro enterprises (Fig.4). IoT Dream Workshop seamlessly connects with the Hangzhou Science and Technology Innovation Corridor, focuses on cloud computing, Internet of things, information security research and development, and adopts the standard floor of 3,000–4,000 m<sup>2</sup> that hosts 4–6 units per floor with a unit area of 500–1,000 m<sup>2</sup> to provide flat office space for small and micro enterprises (Fig.5). R&D Workshop connects the Hangzhou Century City Business Services Corridor, takes the headquarters office as the carrier to provide a single-family office space for large enterprise headquarters, and adopts the standard floor of 900–1,200 m<sup>2</sup> to ensure the overall image of the headquarters enterprises (Fig.6). As the core of Hipark, the Intelligence Gathering Port establishes the innovation service platform integrating enterprise management consulting platform, public technology service platform, science and technology financial platform, and humanities community exchange platform for four different phases of Internet enterprise functional areas by providing entrepreneurial training, entrepreneurial exchange, public technology support, enterprise consultation, roadshow platform, trading platform, and entrepreneurial apartments. The “Four Workshops and One Port” spatial arrangement provides the chain-style services that run through the entire life cycle of enterprises for different types of enterprises in Hipark in accordance with the development rules of Internet enterprises.

**3.2.2** To create a diverse living atmosphere with the context of regions of rivers and lakes as the characteristic. According to the specific functional zoning of Hipark and the spatial characteristics of the south of the lower reaches of the Yangtze River, the urban design follows the principal of “constructing a water-based park at the overall level and locally shaping the distinctive water space” to further optimize the space environment, highlight the context features of regions of rivers and lakes, and create a variety of living atmosphere. Overall, the water system is combed on the premise of retaining the current water system. Based on this, four axes of water parks running through the north and south are constructed. They are combined with corresponding functional areas to create a dynamic zone of the park that integrates culture, commerce, ecological vitality, and recreation and that provides a variety of space for local

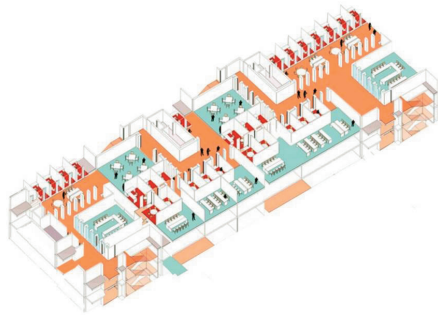


Fig.3 Unit space of newly established enterprises

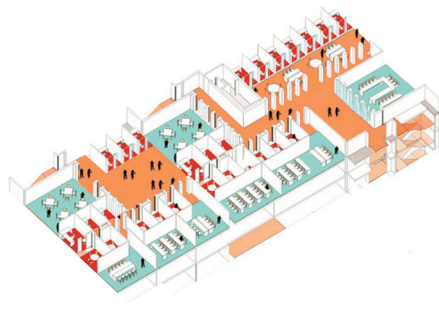


Fig.4 Unit space of small and micro enterprises

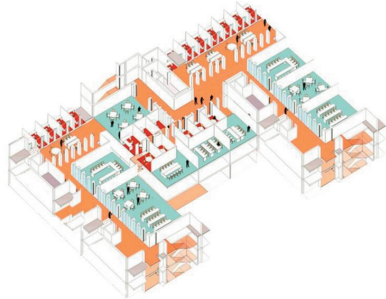


Fig.5 Unit space of small and medium-sized enterprises

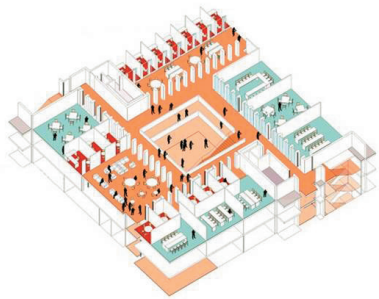


Fig.6 Unit space of large enterprises



Fig.7 Water axes of the park

residents (Fig.7). Partially, relying on the dynamic zone, the urban design refines the unique elements of the regions of rivers and lakes and adopts four types of architectural space including water settlements, water lanes, water markets, and water courtyards to demonstrate the context of the regions of rivers and lakes and create a variety of miniature living space. (1) Water settlements. With the help of water elements such as rivers and pools, small-volume buildings are used as unit's parent to reorganize space, so as to create multiple living space types where R&D workshops neighbor water or embrace water and form a diverse and richly-characterized water settlement space environment (Fig.8). (2) Water lanes. Based on the original water system and the characteristic water street running through the E-commerce Dream Workshop and Software Dream Workshop, elements such as gallery bridges, waterside platforms, and plazas

are adopted with the interface design of lanes to create a variety of public spaces for residents and enrich the living experience of residents (Fig.9). (3) Water markets. They are distributed around high-rise buildings of Intelligence Gathering Port, the core area of the central wetland park, and low-rise buildings for recreational use are constructed on the basis of the good ecological environment of the park, thus forming water marketplaces with mixed high-rise and low-rise buildings as well as various spatial changes (Fig.10). (4) Water courtyards. They adopt the traditional courtyard architectural style of the south of the lower reaches of the Yangtze River and use a semi-open L-shaped IoT workshop enclosed by buildings (Fig.11).

**3.2.3** To build the urban growth model with block group as a unit. Based on the clear functional zoning of Hipark and detailed spatial strategies, the urban design abides by the

principal of market development, introduces block unit model, and effectively organize land resource to achieve efficient market operation and implement basic urban design concepts, thus achieving the sustainable development of Hipark. The development model of block group is to guarantee the integrity of community life in the process of urban development and construction. According to the urban design, the 10–15 hm<sup>2</sup> residential area is divided into 36 basic development units. Based on their functions and conditions, the 36 development units are further classified as four market-oriented development models: urban renewal, overall transfer, project introduction, and agile development (Fig.12, Table 1). (1) Urban renewal model. For the existing workshops and construction areas of the Software Dream Workshop and the E-commerce Dream Workshop, a government-guided, enterprise's self-development way is applied, through which the environment of the constructed area is improved and the quality of life there is upgraded. (2) Overall transfer model. For the core functional areas of the Intelligence Gathering Port, important public spaces and major facilities are bound, and lanes are transferred in the form of bid, auction, and listing, so as to ensure the environmental quality of the core area and the overall construction quality of important projects. (3) Project introduction model. As the basic innovation base and the R&D headquarters base in Hipark, IoT Dream Workshop and R&D Dream Workshop have high requirements for enterprises. The project introduction model reserves management service space for enterprises introduced by major projects, providing support for the innovation and R&D of Hipark. (4) Agile development model. For the repair of partial plots, there are few restrictions for development enterprises to recoup the government funds. Through bid, auction, and listing, both the internal service functions and the environmental quality are improved. As the development model of the unit, block group implements the construction goals of urban design through a variety of land transfer modes (Fig.13), which makes it possible for the sustainable construction and development of Hipark.

## 4 Summary

In the context of Internet Plus, the urban design of Hipark in Xiaoshan District, Hangzhou analyzes the spatial requirements of newly established enterprises, small and micro enterprises, small and medium-sized enterprises, and large enterprise corresponding to the full-process

information industry development chain and follows its development law to construct a spatial layout of “Four Workshops and One Port” to provide chain-type services for different types of

enterprises throughout their lives. According to the geographical features of regions of rivers and lakes, the urban design refines four different spaces including “water settlements, water lanes, water

markets, and water courtyards” and interprets the context of the regions of rivers and lakes to create a variety of living spaces for residents. Through the development of block groups, the urban design

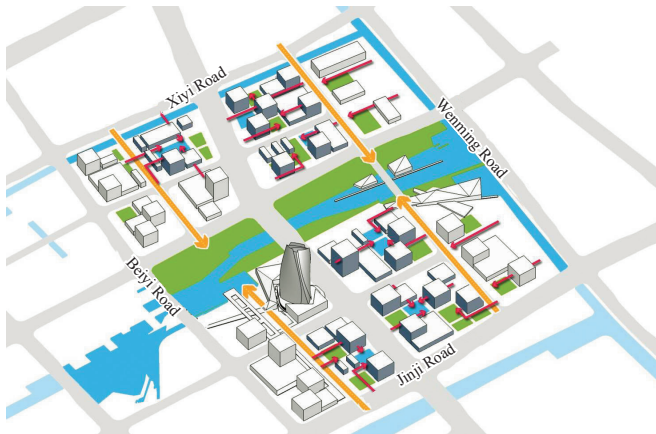


Fig.8 Water settlement space

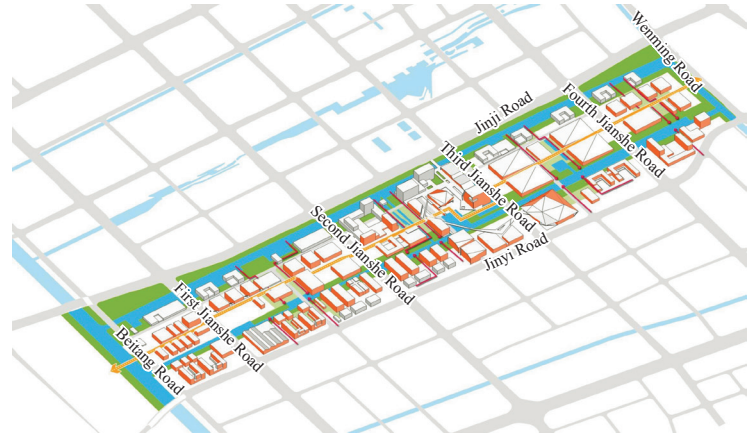


Fig.9 Water lane space

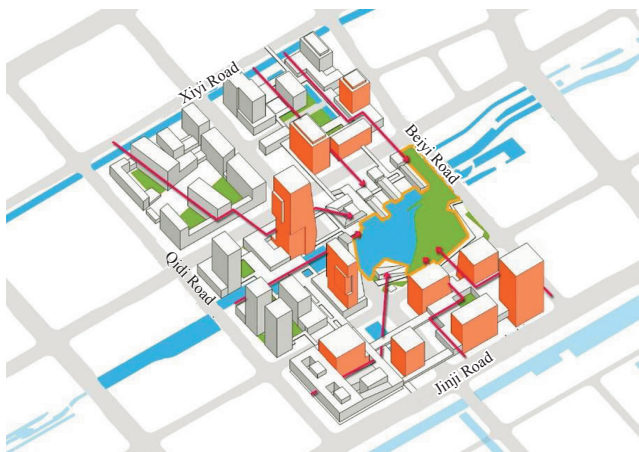


Fig.10 Water market space



Fig.11 Water courtyard space

Table 1 Unit development of block groups

Land transfer model	Role specification	Requirements of development enterprise	Development model	Transfer pattern	Development responsibility	Property ownership
A urban renewal model	Guided by the government, enterprises independently develop their own businesses to promote environmental improvement in built-up areas such as old industrial districts and urban villages	Enterprises holding the original land or developers with experience in urban renewal	Development of a single plot or an entire block	After the executor pays the overdue land price, the land can be freely transferred	Renewing the comprehensive improvement of regional environment	Market rental with the returning of a certain percentage of government industrial housing
B overall transfer model	Ensure the overall quality of core projects and construct important public spaces and infrastructure	Developers with large real estate development experience	Transfer of the entire block	Bid, auction, and listing	Bundling-development of important public spaces and infrastructure	Market rental with the returning of a certain percentage of government industrial housing
C project introduction model	Reserve management service space for large enterprises and provide important support for the introduction of major projects	Large enterprises introduced by major projects	Single plot development	Enterprises that meet the conditions for industry introduction can auction and list	Roads near the block	Independently held by enterprises
A agile development model	Improve other business and service functions and recoup the government funds	No limit	Development of a single plot or an entire block	Bid, auction, and listing	Roads near the block	Market rental with the returning of a certain percentage of government industrial housing



Fig.12 Unit division of block groups

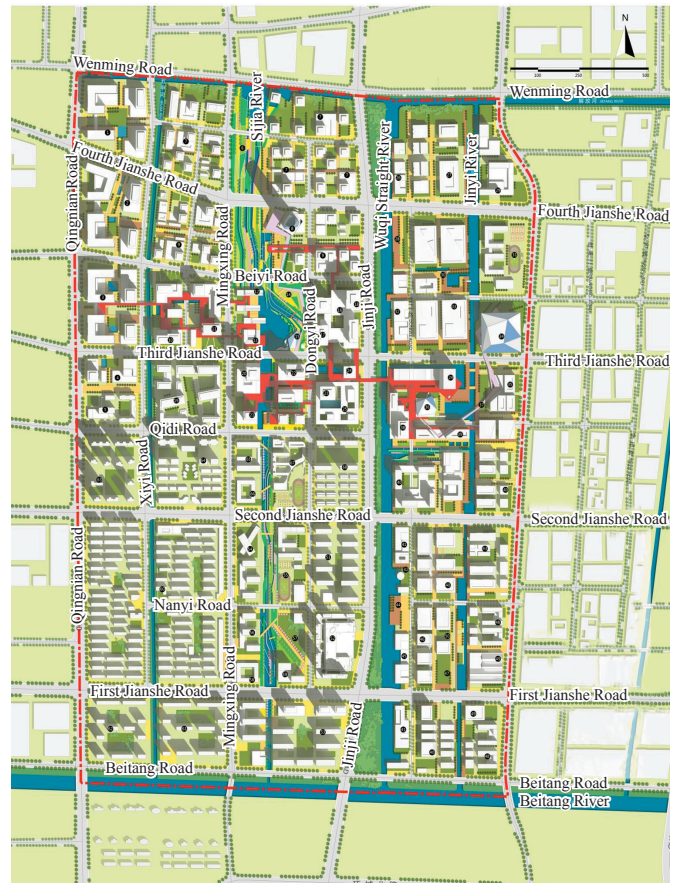


Fig.13 General plan of the planning area

also adopts four land transfer models, namely urban renewal model, overall transfer model, project introduction model, and agile development model to link up with market development and intensively use land resources, which lays the foundation for the sustainable development of Hipark.

**5 Conclusion**

With the advancement of new forms of cities and new forms of business against the background of Internet Plus, there will be growing urban designs related to the integration of Internet Plus with physical space in the future. As an exploratory practice of urban design under the background of Internet Plus, the urban design of Hipark in Xiaoshan District, Hangzhou respects the continuation of traditional contexts and the interpretation of modern elements while following the inherent development laws of Internet enterprises and effectively integrates land resources through the establishment of a market-based development model, which avoids the waste of resources and cultural damage caused by traditional

blind development and realizes the sustainable development of Hipark. It is hoped that this project will expand the urban design ideas against the background of Internet Plus.

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