

# The Research of Smart Planning and Method in Chengyu Metropolitan Area from the Perspective “Great Health”

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**Abstract:** As the all-around gateway area of “The Belt and Road”, Chengyu Metropolitan Area should constantly improve the construction of various functional Spaces and promote the integration of industry and city. With the improvement of people's material living standards in recent years, as well as the impact of the epidemic, food safety, obesity and other problems, the concept of “Great Health” has been gradually introduced into people's lives. The research on the intelligent planning and utilization of the integration of urban space in Chengyu Metropolitan Area from the perspective of “Great Health” can help promote and deepen the research theory related to the integration of industry and city, and help promote the improvement of the functions of the metropolitan area of Chengdu and Chongqing. Based on the spatial intelligent planning and management of Chengyu Metropolitan Area from the perspective of “Great Health”, this paper hopes to make some discussions and thoughts on the spatial construction strategies and methods of Chengyu Metropolitan Area.

**Keywords:** Great Health, Smart planning, Smart management, Metropolitan area planning

## 1. Introduction

### 1.1. Research background

In the post-epidemic era and the pressure of economic transformation demand, people need all-round health, and urban construction also needs health. The concept of “Great Health” timely solves the relevant problems, and its connotation is not only the individual physical health, but also includes the complete health of psychology, physiology, society, moral and other aspects, which can be summarized as the comprehensive health of human life, body, spirit and environment. It is necessary to seize the opportunity to form a good system of the big health industry construction <sup>[1]</sup>.

As the all-around gateway area of “The Belt and Road”, Chengyu Metropolitan Area is constantly improving the construction of various functional Spaces, promoting the integration of industry and city. To promote urban development through industry, and continue to drive the improvement of industrial functions through urban development. It greatly caters to the spiritual connotation of urban construction and conforms to the requirements of national ecological civilization construction. But the coordination mechanism for the development of the big health industry needs to be improved <sup>[2]</sup>. Smart planning and management methods can play a pivotal role in urban spatial planning and construction <sup>[3]</sup>. So starting from the “Great Health” concept, exploring the the research of smart planning and method in Chengyu Metropolitan Area from the perspective “Great Health”, searching for the spatial placement of health concepts is very important. It's necessary to explore the promotion of smart, convenient, and healthy living through reasonable spatial management methods, find industrial practice methods, and then a high level of “Great Health” Economic Circle will be built successfully. The research framework of this paper is shown in Fig. 1. The specific significance can be summarized into the following aspects:

- (1) To promote and deepen the integration of industry and city;
- (2) To improve the functions of Chengyu Metropolitan Area, especially the functions related to “Great Health”;

- (3) To deepen the material and spiritual civilization of Chengyu Metropolitan Area;
- (4) To promote the intelligent development direction of industry and city space in Chengdu-Chongqing;
- (5) To form relevant research results to promote the sustainable development of similar cities and metropolitan areas.

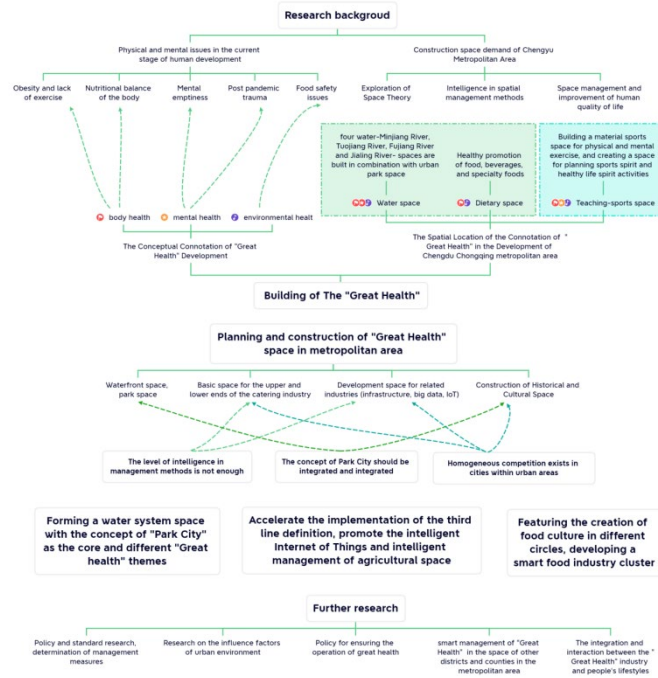


Figure 1: The research framework of this paper; Source: Written by the author.

## 2. The current situation of the large health space in the Chengyu metropolitan area

### 2.1. The connotation of “Great Health” development and the space point of development in Chengyu Metropolitan Area

The material space of urban and rural areas supports the animals and people in the city. The unique natural elements and cultural elements form the spatial form of the city, which is the cornerstone for the sustainable development and survival of urban residents. The “Great Health” life in Chengyu Metropolitan Area must be based on the material space, explore the connotation, and comb along the context of the metropolitan circle, so as to create a metropolitan circle suit for “Great Health” concept. Starting from “body”, “spirit” and “environment”, it studies the spatial location and location of the connotation of “Great Health” in Chengyu Metropolitan Area, analyzes the problems of planning and construction management, and optimizes them by using intelligent planning means.

Water is the source of life, is the basis of the people's survival, is the cornerstone of human health. According to a 2013 study published by the Columbia University Water Resources Center in Huffington Post, water supply impacts resulting from the population explosion and climate change, 780 million people will lack clean water, and it also predicts that two-thirds of the population will face a water shortage by 2025 without a change in water use habits. In 2022, the power rationing caused by the lack of water resources in Sichuan has brought great problems to the public, which to some extent reflects the changes in the aforementioned studies. With Chengdu and Chongqing as the core, since ancient times, the metropolitan area is flooded with water, which is rich in water space. The metropolitan area water system with the Yangtze River as the main runoff water area, Minjiang River, Tuojiang River, Fujiang River, Jialing River as the four main tributaries, which are rich in space in the water area. Covering through the mainly metropolitan area, the water space can be described as “A water city of Tianfu, water rhyme for mountain city, a vein of river water”. Therefore, the primary connotation of “Great Health” space of metropolitan area is the health of water system space of metropolitan area, not only to solve the problem of the protection of water space resources, the waterfront environment should be created scientifically. The waterfront space industrial layout should be carried out, building with the concept of

“Park City”, and forming a material space environment that provides citizens to relax. To ensure the great health “body”, “spirit” and “environment” three aspects of health important space. This is the top priority of the space planning for “Great Health” substances.

People's health cannot be separated from three meals a day, and the health of diet is the pillar of people's overall health. The use of diet to improve daily life, rather than focusing on solving a health problem after it has occurred, is one of the spiritual connotations of “Great Health”. In the COVID-19 pandemic in 2020 and 2021, there were some problems with diet transmission supply, which again indicating that the stability of the diet industry and adequate diet supply are very important for the stability of the overall social environment. The results of the 2016 Global Burden of Disease Study showed that the disease burden caused by dietary factors accounted for 15.9%, which had become an important risk factor affecting population health. Therefore, in order to achieve the concept of “Great Health”, we must plan and manage it reasonably from the food culture. Sichuan and Chongqing cuisine is famous for its spicy food, and there are Shanghe Sichuan cuisine in Chengdu and Leshan, Xiaohu Sichuan cuisine in Neijiang, Zigong, Yibin and Luzhou, and Xiahe Sichuan cuisine in eastern Sichuan and Chongqing. Hemp, spicy, fresh, fragrant for the characteristics, flavor diversity is the characteristics of Sichuan and Chongqing. In addition to the dishes, bashu wine culture resources are also extremely rich, “Six golden flowers of Sichuan wine” far famous broadcast. Sichuan and Chongqing have rich tea culture, the rise of tea industry, and teahouses are everywhere. The combination of Sichuan cuisine, tea art and teahouse not only reflects the characteristics of Sichuan tea, but also makes the teahouses in Chengdu spread all over the city. Tea drinking habits give people more time to exercise. Therefore, the second connotation of large space health in Chengyu Metropolitan Area is the health of diet-related industrial space in the metropolitan area, This is directly related to the health of “body” and “environment”. We should fully consider the spatial layout of agricultural products industry, catering industry, characteristic products, cultural products and other industries, carry forward the food culture, and achieve “100 dishes long, spicy, food and healthy”.

The maintenance of physical health and mental health is an important part of the balance of human health. In addition to the external intake of nutrition, physical exercise, moderate activities, good mood and comfortable life are an important part of physical health and mental health. With the rapid development of the network in modern times, it has greatly accelerated the process and development of urbanization, also improves the convenience of life. But the healthy and sustainable development has produced some adverse effects. For example, a survey in universities in Chengdu, Sichuan province, Depression is not uncommon among college students<sup>[4]</sup>. According to the survey, the mental health status of middle school students in ethnic minority areas such as Liangshan Prefecture in Sichuan Province is not optimistic, 44.19% of middle school students in this area have different degrees of psychological problems<sup>[5]</sup>. For social heavy workers, take the driver as an example, the drivers are work by economic benefits, monotonous work, driving safety and other multiple factors interference. So traffic accidents often happened in that situations<sup>[6]</sup>. To change this situation, to think scientifically about how to optimize the way of life is very important. For young and middle-aged people, the happiness of physical exercise still needs to be improved<sup>[7]</sup>. The existence of these Spaces can maintain the basic activities of the body, while cultivating a healthy lifestyle. With the use of the key points of cultural inheritance and cultural development, we can achieve the mental state of “healthy body, straight heart with comfortable mood, Both the heart and the body are strengthened”.

Water and food are the main material to ensure health, the two space -water space and food space-emphasis on the construction and protection of physical space. For urban residents, whether it is the use of traditional Chinese and western medicine, the use of food can only cure physical diseases. However, the shaping of cultural space and the guidance of ideas can better control people's hearts<sup>[8]</sup>. Unlike this, educational space pays attention to the health of people's physical and mental direction. For this reason, in addition to the construction and protection of material space, there are also corresponding cultural activities to support it.

## **2.2. Space planning and construction of urban “Great Health” in Chengyu Metropolitan Area**

### **2.2.1. The waterfront space is rich, and the leisure activity space of the park is becoming more and more perfect**

Due to the support of the four major water systems in the metropolitan area, a rich and unique water space is created. The spatial distribution of the water system between Chengdu and Chongqing can refer to Fig. 2. In the planning management, *Chengdu 14th Five-year Park City Construction Development Plan* specially proposed the construction of urban construction Tianfu Greenway blue net, and claimed

that to construct a overall pattern of “three rivers run city, hundred rivers for the pulse, thousands of channels for admission, thousands of nets”. Relying on the Fujiang River running through the city, Suining has built a beautiful “landscape ecological city, modern garden city, Guanyin cultural city”. Its layout has completed the “five-two”, water ecological civilization, riverside space (including Binjiang South Road and other waterfront space area) and other space planning. The ecological deployment and management and control requirements of the water space have been fully completed by Suining government. Luzhou city followed Suining, not only adopted some sponge infrastructure, using powerful construction and renewal to promote urban landscape upgrading, but also promoted the *Luzhou Central City Center Park City Planning*, focused on the protection along the river, constructed the river and valley water network protection system, and formed a rich riverbank culture. Tongnan District also put forward the requirements of shaping the landscape garden city characteristics, establishing the overall landscape positioning of “landscape pastoral blessed land, riverside people, culture and rhyme city”. Similar to Suining City, it carries the responsibility of the development and joint construction of Chengdu-Chongqing system, and builds the park system of “country park + city park”.

In terms of space construction, the two core cities -Chengdu and Chongqing- as well as other cities with a vast waterfront ecological space, have all completed the park city planning. Areas without special planning also put forward complete requirements in the spatial planning to complete the landscape planning covering the whole region. According to the *Land Spatial Planning of Chengdu-Chongqing Shuangcheng Economic Circle*, The “Four rivers” space is an important ecological corridor for ecological restoration. At present, Chongqing follows the POD Park city model, and in building a 10-minute life service circle, The community park will become one of the most important waterfront Spaces in Chongqing, forming a vibrant living space. The *Chengdu “14th Five-year Plan” green transformation Development plan* proposes to speed up the construction of 15-minute convenient living circle and comprehensively promote the comprehensive development of TOD. Chengdu strive to complete the use of 600 urban surplus space by 2025, promote the construction of 100 future park communities, and strongly promote the implementation of the construction of water space parks. *Guidance on Strengthening the Planning and Design of All-age Friendly Urban Parks* by the Chongqing City Administration Bureau in 2022, proposed that by the end of 2025, Chongqing will complete the age-friendly renovation of 80 single urban parks with an area of more than 5 hectares, including at least two age-friendly urban parks in each district (county).

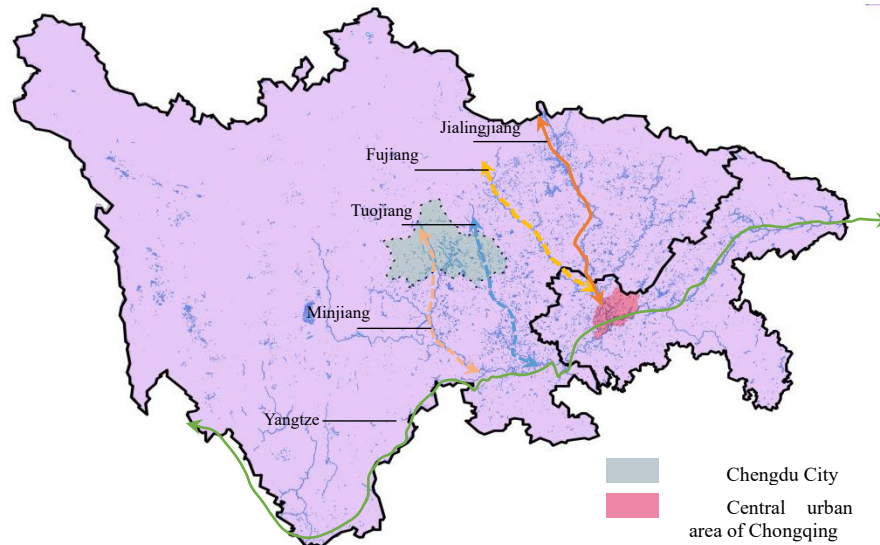


Figure 2: Spatial distribution trend of main water systems in Chengyu Metropolitan Area, Source: Written by the author.

In the waterfront space of the district and county, the spatial planning for the water space is also detailed coordination: *Neijiang city territorial space master planning (2021-2035)* Proposed to build the Chengdu-Chongqing “hydrogen corridor”, using natural parks and drinking water sources as important ecological patches, and creating the rich nightlife culture in the metropolitan circle by the water-adjacent space. In *Master Spatial Planning of Da'an District of Zigong City (2021-2035)*, it is proposed to cultural tourism integration city, improve the level of Tuojiang River waterway, connect the golden waterway of the Yangtze River, and strengthen the application of water area projects. And Tongnan district also put forward the requirements of shaping the landscape garden city characteristics, establish the overall

landscape positioning of “landscape pastoral land, riverside people Wenyun city”, realize the city residents “walk 5 minutes to see the green, walk 10 minutes into the park, car 15 minutes into the countryside”.

In short, it can be seen that the rich water system is an important feature of healthy development and space. The beautiful landscape should be fully created and the physical and mental health requirements mentioned above should be scientifically considered<sup>[9]</sup>, so as to form a healthy park city with big health as the core.

### 2.2.2. The basic diet material space is rich, and the industrial development trend is good

The ecological and agricultural space of industrial development in metropolitan areas is relatively high and slowly reduced. The current ecological space area of Chengdu-Chongqing area is 63,800 square kilometers, accounting for 34.5% of the total area of the whole region. Agricultural space covers 114,000 square kilometers, accounting for 61.7 percent of the total area of the whole region. The unused space is 0200 square kilometers, accounting for less than 0.1% of the total area of the whole region. The proportion of agricultural space in the region is significantly higher than the average level of other provinces and cities along the Yangtze River Economic Belt (29.8%). Chengdu-Chongqing area urban expansion space surplus is large. The total scale of agricultural production in the whole region is 88,500 square kilometers, higher than the current situation of 74,900 square kilometers, and the total capacity of urban construction is 17,200 square kilometers, much higher than the current situation of 7,600 square kilometers. However, the agricultural production carrying capacity of Chongqing in central city, Mianyang City, Deyang City and Guangyuan City are in overload. There are 117 major grain and oil production counties (cities and districts) in Chengyu region, including Renshou, Zizhong, Anyue, and Hechuan. It is the only major grain producing area in western China and an important agricultural production base such as pigs, citrus, vegetables, silk and Chinese medicinal materials, with a good foundation for agricultural and rural development. Chongqing and Chengdu are both pilot zones for comprehensive reform of urban and rural areas. The income gap between urban and rural residents in Chengdu-Chongqing region is about 2.24, lower than the national average of 2.73.

From the perspective of the catering industry, compare the industrial situation of Chengdu and Chongqing, the center of the metropolitan circle. In 2021, there were nearly 35,000 catering outlets, and more than 100,000 shopping centers in Chengdu. The number of catering outlets 29,000, and shopping centers is about 80,000 in central city. And for Chongqing, there were nearly 350,000 catering outlets in the city, and more than 220,000 shopping centers. The number of catering outlets 128,000, and shopping centers is about 100,000 in central city. We can easily see that food services have been very perfect, Chengdu area is smaller and the comprehensive number is small, but in terms of the central city, the degree of perfection of Chengyu is quite high. In addition, in the food field search of Chengdu and Chongqing, there are many stores containing Chongqing food in Chengdu and specialty stores containing Chengdu name in Chongqing, which shows the interconnection and inclusiveness of Chengdu-Chongqing food. We can see them clearly in Fig. 3.

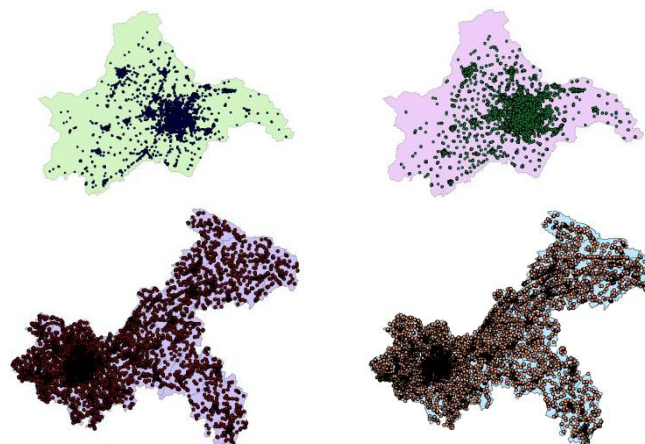


Figure 3: Layout of Catering Points in Chengdu City(left above),Layout of Shopping Centers in Chengdu City(right above), Layout of Catering Points in Chongqing City(left bellow), Layout of Shopping Centers in Chengdu City(right bellow) Source: Written by the author.

Therefore, in terms of food, considering the development of Chengdu-Chongqing integration, it is

particularly important for such development to jointly build Chongqing urban food gallery<sup>[10]</sup>, and use emerging technology and media to build an industrial chain and make publicity<sup>[11]</sup>.

### ***2.2.3. The foundation for “Great health”-related industry development is solid, and the integration between urban and rural areas is sound***

Chengdu-Chongqing region is the region with the strongest economic strength in western China, and its industrial innovation capacity is being rapidly improved. For a long time, Chengdu-Chongqing region has accounted for about 1/3 of the total GDP of the western region. At present, per capital GDP has laid the foundation of light industry, such as liquor, ceramics and silk, the industry has formed a complete industrial system. Since 2008, high-tech industries such as electronic information and medicine in Chengdu-Chongqing region have developed rapidly. The electronic information industry has reached a trillion-level industrial scale, and it is the world's largest pen and electricity production base. At present, Chengdu-Chongqing region has established 34 national demonstration bases for new industrialization, and is actively cultivating national strategic emerging industrial clusters such as biomedicine, energy conservation and environmental protection, and rail transit. The dense water network and agricultural development tradition in the central region of Sichuan Basin breed the spatial pattern of urban-rural integration, and bring a large number of population of “both urban and rural areas and both workers and peasants”, which had laid a good foundation for integrated urban and rural development. According to the research based on entropy method and coupling coordination degree by Wang Linmei and other experts, the research on urban-rural integration degree shows that by 2019, the Chengdu-Chongqing integration index is about 0.44, and the integration level 5 is the general level. The integration speed of Chongqing is accelerated and Sichuan is developing steadily, but the gap in Sichuan is still large.

In recent years, Chengdu High-tech Zone has seized the development opportunity of national health and medical big data industry and focused on the health industry. Through the construction of national electronic health care big data center, the construction of the national leading medical data trading platform, to build the national leading “Internet + medical health” innovation demonstration base, it accelerate the development of the “Great Health” industry. At present, Chengdu High-tech Zone has gathered a number of scientific research institutions and innovation platforms such as Chengdu Institute of Biology of Chinese Academy of Sciences and Chengdu Academy of Biotechnology and Medicine of Chinese Academy of Sciences. As one of the key “Great Health” industry ecosystems in Chengdu High-tech Zone, The Chengdu Institute of Biology, Chinese Academy of Sciences has been established and will become an important cornerstone of big health.

### ***2.2.4. Bashu civilization has a long history and rich historical and cultural resources, which is an important basis of healthy culture***

The Bashu region where Chengyu is located is one of the important birthplaces of Chinese civilization, and Bashu culture is also an important symbol of Chinese culture. In ancient times, the silkworm congealed in the upper reaches of the Minjiang River moved south and gradually established a crowd settlement on the Chengdu Plain. With the completion of the Dujiangyan water conservancy project, a large number of people settled in the Chengdu Plain, and the ancestors of the Ba people moved south from the upper and middle reaches of the Han River, along the mouth of the Yangtze River to the Jialing River through the Three Gorges area, Chengdu-Chongqing region has gradually become the birthplace of civilization in the upper reaches of the Yangtze River and the birthplace of agricultural civilization, giving birth to the Bashu culture among the three ancient cultures of the Yangtze River. Bashu areas in history has always been an important transportation hub connecting the middle and lower reaches of the Yangtze River, the Central Plains, the Tibetan areas and the Western Regions. It is also the most important place for the country to resist foreign enemies, so it has become an important integration area between the Central Plains culture and the ethnic minority culture of Tibet, northwest and Yunnan-Guizhou regions, and retains rich cultural heritage in the process of historical development. At present, Chengdu-Chongqing region has 27 national and provincial famous historical and cultural cities, 87 famous historical and cultural towns, 29 famous villages, and 5 world cultural and natural heritage sites.

From the development history of Bashu medicine, Bashu region has been one of the medical centers in China since ancient times. Especially in the Qin and Han dynasties, Zhang Zhongjing's *Treatise on Febrile Diseases* was published, marking the birth and development of Chinese medicine here. According to historical records, the term “medicine” was recorded in Sichuan in the early Qin dynasty. After the Qin Dynasty established, the first unified centralized country in the history of China, Shu prefecture. Shu county and Ba county were established in the Bashu region. During the Three Kingdoms period, Zhuge Liang also set up the capital of Meng Huo here. Since then, the imperial court of all dynasties has always attached great importance to the governance here, and many prefectures and

counties were set up here. According to the *Annals of Huayang Kingdom*, “The State of Bashu...the good medicine of its people”, Shu was once the highest medical level in China at that time. A large number of famous doctors appeared in the Bashu area, such as Zhang Zhongjing, Bian Que, Hua Tuo, Sun Simiao, Liu Wansu and so on. The nate medical background and medical cultural background also contributed to the achievements of West China Medical College of Sichuan University, North Sichuan Medical College and Southwest Medical University in southern Sichuan. Take West China Hospital as an example. It is the largest comprehensive third-class-A hospital in western China. Its predecessor, the Medical School of West China Cooperative University, founded in 1916, is one of the first eight medical universities established in China. After nearly a hundred years of development, it has become the only large-scale general hospital in southwest China integrating medical treatment, teaching, scientific research and preventive health care, and is one of the first eight medical universities established in China. These are the characteristic historical and cultural medical space, which also reflects the development and application of the concept of “Great Health”.

### **3. Problems in the spatial planning and management of “Great health”**

#### ***3.1. Management is not smart enough***

Intelligent management is an important part of modern management, but in the planning and construction of modern health space, the degree of intelligence is still not enough. At the present stage, the demarcation of the three lines of territorial space is in full swing, but the specific implementation is particularly difficult. Because of the changes of departments, and the supplement of new forestry space and agricultural space, it is necessary to carry out field research again, and redraw the node boundary. The delineation of ecological protection red line and permanent basic farmland is the focus of the state. In this process, it needs to be applied to intelligent management. In the planning of urban health space, more attention needs to be paid to the health space and public space, as well as the corresponding supporting facilities and services. For the planning and construction of healthy space, the application of new technologies such as BIM has always been in modeling, and collaborative management and time control are still lacking. The promotion of CIM at the prefecture-level still needs some funding consideration and technical work. Especially for small towns, there should be opportunities for synchronous intelligent cloud management and platform construction, but due to these reasons, the actual construction is still lagging behind<sup>[12]</sup>. The intelligent management means also exist in the urban two-dimensional plane and the basic two-dimensional model. Many of the three-dimensional work cost is high, the maintenance is large, and it has not been successfully accessed. From the overall perspective of Sichuan and Chongqing, the implementation of intelligent management mode in healthy space planning still needs further efforts.

#### ***3.2. The Park City concept should be integrated***

Park city is an important part of Chengdu's urban space construction, and also an important part of the Chengyu Metropolitan Area to build a slow life. Urban governance is a complex and systematic project. The construction of park cities involves many departments such as territorial space planning, ecological environment protection, urban and rural construction, public health and so on, and a cross-departmental coordination mechanism needs to be established. Therefore, the construction of Park City needs to integrate all kinds of resources, promote as a whole, and realize the integration of planning, design, construction and management. The combination of the construction concept of Park City and the scientific development of the metropolitan circle will help to optimize the urban spatial structure and functional layout, improve the ecological environment and living environment, and promote the transformation and upgrading of the urban development way. The water system of Chengdu-Chongqing metropolitan area is vast, the pattern of “Four Water Embellish Capital” indicates that the metropolitan circle should grasp the forging of water space. In this respect, in the cities on the central axis of Chengyu metropolitan circle -Chengdu, Chongqing, Suining and Tongnan districts- are relatively well completed, and other regions have also achieved certain achievements. However, in terms of management mode, there is still a phenomenon of “separate governance” in the metropolitan area, there is no interconnection mechanism among cities, and the communication barriers at the government level are still a gap. In addition, the concept of Park City in the space, the unique water cultural life has not been established. Water space culture construction, water space entertainment facilities, water space industry development, water space pollution control, etc., need to be put on the agenda.

### **3.3. There is homogeneous competition in the metropolitan areas**

It should be said that the urban characteristics of Chengdu and Chongqing are relatively obvious, but the cities involved in the scope of the metropolitan area all have certain problems of homogeneous resources competition. In terms of the two major cities, in terms of resource integration, Chengdu and Chongqing are both inflow cities, Chengdu's permanent population has exceeded 20 million, while Chongqing has about the same population. In terms of economic development, Chengdu and Chongqing are both important economies in China and the central cities in the upper reaches of the Yangtze River. From the perspective of "Great Health" material space environment, water system space is the resource of most cities. How to make use of these water space give full play to the unique city of urban waters and the primary issues. In terms of the food industry, in terms of resources, the spicy dishes, hot pot and fish practices of the basic products must overlap, and the upstream basic agricultural products and the downstream specific products are repetitive. In terms of urban space construction, Chengdu and Chongqing have built a relatively complete urban system, also with a number of rail transit lines, international airports, high-tech manufacturing industries and other aspects. Chengdu and Chongqing have a momentum of competition, and the momentum of the competition between Sichuan and Chongqing often appears on the Internet, making the two big cities "born from the same root, why is it too urgent to fry each other". Therefore, to become the fourth pole of China, it is necessary to create a new metropolitan area with distinctive characteristics, coordinated development and high level of integration. The culture, industry and concept of its healthy development must complete their own characteristics, and the existing problems can be solved through the concept of "Park City". In the information age, intelligent management is an important driving force to realize the two concepts, "Park City" and "Great Health".

## **4. Optimization way of management mode**

### **4.1. To form a water system space with the concept of "Park City" as the core and different "Great Health" themes**

In *Outline of Planning for the Construction of Chengdu-Chongqing Twin Cities Economic Circle*, it is clearly proposed that "We will strive to build the ecological barrier in the upper reaches of the Yangtze River, focusing on the coordinated development of water resources, the comprehensive improvement of the water environment, the protection and restoration of the water ecosystem, and the innovation of the water landscape". It is clearly proposed to "promote the connectivity of rivers, lakes and reservoirs, and accelerate the construction of an ecological circle of one river, four rivers and two lakes". Based on this, Chengyu Metropolitan Area needs to build a water ecological environment protection system with the concept of "Park City" as the core, and promote the modernization construction of water ecological environment governance system and governance capacity by integrating water space resources and optimizing the spatial structure of water area. The water ecological space protection system of "one river, four rivers and two lakes" is formed in the Chengyu Metropolitan Area space, to realize the overall optimization of the regional life community of mountains, rivers, forests, fields, lakes and grass, and to build the core concept of park urbanization as its whole.

The Chengyu Metropolitan Area has a continuous, rich and beautiful water system space, and the water space of different levels and dimensions has its own uniqueness, which can form different health themes based on "Great Health". The city prospers because of water, water is the soul of the city, water ecological environment protection for inheriting and developing the charm culture of Chengyu Metropolitan Area. It is of great significance to optimize urban space and economic geography, enhance urban soft power, and build a high-quality, harmonious and livable city. The space of Sichuan and Chongqing metropolitan area must be divided in the water space planning, excavate the spirit of Bashu water area, and create a water system space system beyond the spatial barriers of Sichuan and Chongqing. As an important part of the natural ecosystem, water is also an important part of life maintenance. Building a harmonious symbiotic relationship between man and water is the key to building a harmonious coexistence between man and nature, and is also related to the healthy and sustainable development of economy and society.

The intelligent planning and construction of water area ecology should start from the sustainable development of water area space culture. First, the water space environment safety detection should be established. Water space safety affects the life environment of human survival, which should cover the intelligent management system, the use of intelligent detection means. The second is to form a perfect



water space intelligent display space, which can widely display and convey the unique rhythm of the water ecological culture. Such as forming a unique sketch and landscape lighting [13]. The development of sports is also the required part. Healthy characteristic sports activities, sports app development, and accessible sports broadcasts can also be built around these waterfront Spaces or park Spaces [14]. Of course, the building of sports is more than this, and more parts need to be improved in other parts. Imagining a movie display space with a water screen, or a music broadcast on the waterfront, which is all a pleasant thing. Third, to form a water space intelligent facilities. The interesting intelligent interactive feeling entertainment facilities should be constructed, considering the intelligent activity interactive facilities, the development of personalized lines, driving rental, intelligent navigation and other systems. Fourth, we need to build water ecological intelligent infrastructure, Things such as sponge city and rain garden should also be integrated with the intelligent integration experience. The intelligent construction intention of water space can refer to Fig. 4.

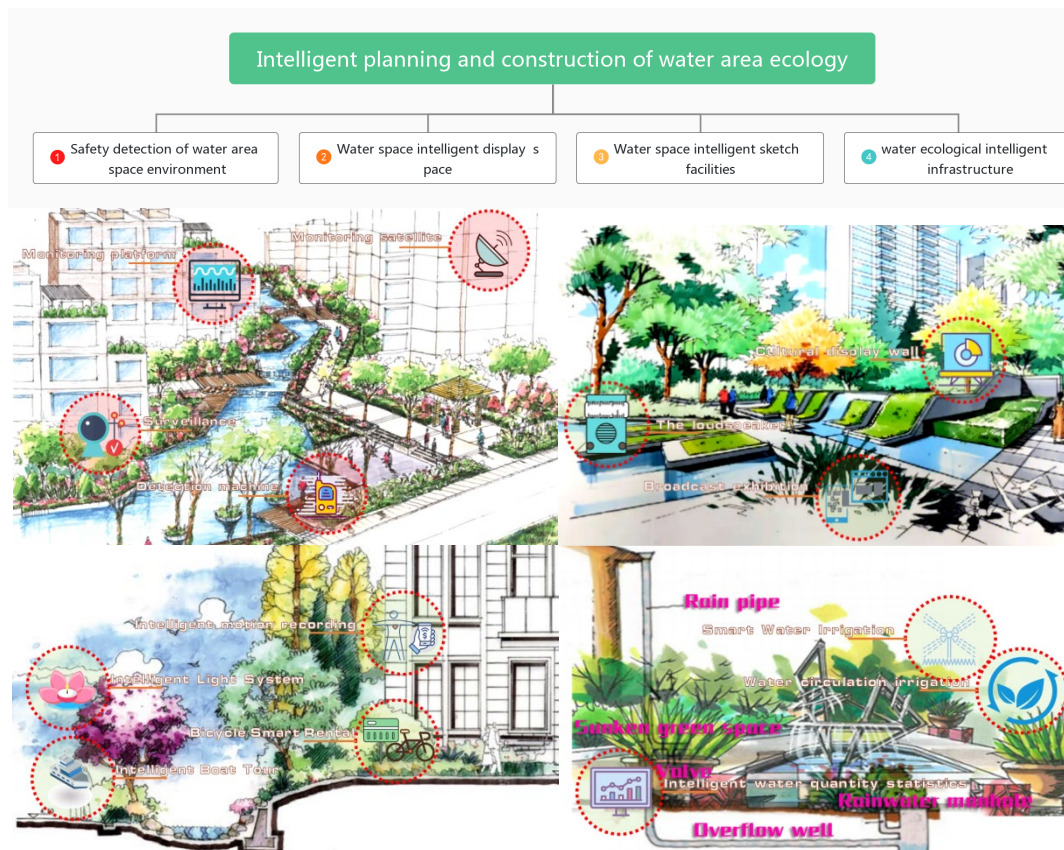


Figure 4: Design Drawing for Planning and Construction of Waterfront Smart Facilities, Source: Written by the author

#### 4.2. To accelerate the implementation of the three-line demarcation, and promote intelligent Internet and intelligent management of agricultural space

First, we will optimize and improve the agricultural spatial information management system, promote the construction of the agricultural information monitoring and control network platform, accelerate the implementation of the three control lines, and ensure that the three control lines are defined in the territorial spatial planning, so that the “three lines” are integrated in space and coherent in layout. Next, it is necessary to promote the wisdom of agricultural space information management, promote the digital construction of agricultural space, make use of rural planners and available planning and design talents, and cooperate with the construction of information monitoring and control network. On the basis of ensuring the safety of agricultural land, with the support of unified data, to make dynamic monitor land use, spatial layout, industrial development and other. At the same time, we should actively promote the integration of agricultural big data, Internet of Things, artificial intelligence and other next-generation information technologies with modern agricultural production and operation, and take the lead in the implementation of intelligence in the form of cross-regional cooperation. In terms of land supervision, we will promote the application of the “three inspection in one” mode with “satellite remote sensing +

UAV + inspection + manual verification” as the core to find and solve problems <sup>[15]</sup>. It is necessary to promote the optimization of regional resources, integrate and form a stable industrial chain, use the network advantages to comb the advantages of regional villages, layout different regional industries, and form cooperation, ensure the regional advantages to avoid homogeneous competition, and carry out the construction of intelligent Iot network and artificial intelligence in cities around the metropolitan area simultaneously. Then, We will actively explore the application of intelligent technologies such as big data and the Internet of Things in the agricultural production process, promote the development of “Internet +” modern agriculture, use big data to deliver advanced production experience, expand production channels, carry out agricultural production education, complete the spatial protection of agricultural products, and help the transformation and upgrading of traditional agriculture. Finally, clear that all this is based on the big data era of data management, so as a top-level management, establish a complete set of data management system, and form with the matching organization governance institutions, process system and supporting tools, so as to realize the data standards, model, collection, integration, security, unified control, ultimately ensure that the data management environment is reliable, efficient and safe <sup>[16]</sup>. That's what matters.

### ***4.3. To create different circles of food culture as the characteristics, the development of smart food industry clusters***

One is to form the characteristics of “eating”. To create an international standard of “food +” catering service chain, highlighting the high-quality, international “food”. Firstly, to create international standard of delicious food “+”. we must take food as the main body, combine the historical and cultural resources of surrounding cities, integrate the city characteristic food and tourism routes, create a food “+” service chain with international standards, take food as the theme, combine “eating” with “living”, to create an international chain of food service. Simultaneous researching and developing cultural and creative products of food, tell a beautiful story of Bashu <sup>[17]</sup>. Secondly, to form a leisure culture type of “+” food culture system. We must take the leisure culture as the theme, through the holding of various forms of food festival, cultural festival and other activities, the colleges and universities or districts and counties popular food festival gradually spread into different places and different periods of food culture festival, such as: Chengdu Chunxi Road food Festival, Chongqing food and culture festival, etc. Thirdly, to build fashionable gourmet food “+”: With fashion as the theme, with young people as the main target group, to form a fashion food space such as Chengdu Kuanzhai Alley International Creative Culture Food Street District, Chongqing Jiefangbei Xinjiekou Food Culture Block, etc. Fourthly, complete the “+” food experience area, for example, parent-child as the main target group, such as Chengdu Sansheng village restaurant. For the construction planning of different food culture areas, please refer to Fig. 5.

Second, to ensure the inheritance and innovation of “taste”. Government-enterprise cooperation can be carried out, combining the most popular digital media technology, build the Internet big data cloud platform, build the big data center of the food industry, and integrate the food consumption data in Chengdu-Chongqing region. Through the intelligent management system, intelligent logistics system and other intelligent technology means, the digital management and improvement of the urban catering industry can improve the operating efficiency and management level. Through modern information technology means such as “Internet +” and “mobile Internet +”, the data analysis center of the catering industry has been formed, providing big data analysis, planning consulting and other services for catering enterprises in Chengdu-Chongqing region. Use relevant data and the food cultural characteristics of different cities to create characteristic food cultural activities.

Third, “raise” wisdom and health. Smart health care is an important part of smart city and healthy China, based on life science and information science. Advanced information technology should be used to carry out deep integration and innovation in the aspects of “medicine, care, health, food, and tourism”, so as to form an industrial complex with active health management and service capabilities. At present, the state has put forward the strategy of “combining medical care and nursing care”, which organically combines medical and health care and elderly care services. Chengdu-Chongqing region is one of the regions with a high degree of population aging in China, with a strong consumption power of the elderly. Taking Chengdu and Chongqing as an example, according to the data in 2022, the aging degree of Chengdu reached 13.62%, and the aging rate in Chongqing reached 17.75%. At the same time, both Chengdu and Chongqing have better medical conditions and rich medical resources, which is conducive to exploring a new model of combining smart pension diet with medical and health services.

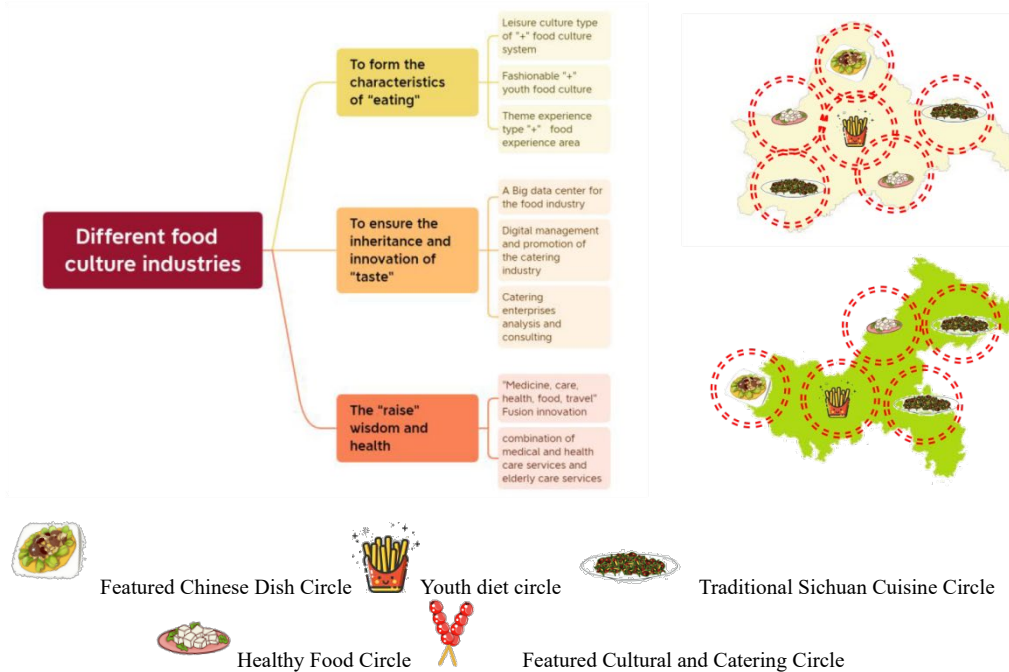


Figure 5: Food planning and construction measures (left), food circle planning map (right), Source: Written by the author

## 5. Conclusion and Further suggestions

At present, the spatial intelligent planning and management of Chengdu-Chongqing metropolitan area from the perspective of "big health" has formed a preliminary research, and it is necessary to determine the core location and existing problems of the big health industry. On this basis, some suggestions are put forward according to the development requirements of Chengdu-Chongqing economic circle. In order to complete the intelligent spatial planning and management of Chengdu-Chongqing metropolitan area and realize the concept of "Great Health", it is necessary to make a detailed analysis of the subject space affected by the three core connotations, and use the intelligent management means in multi-dimensional ways such as new technologies, management platform and promotion activities.

In the implementation, to improve the relevant work, Further research work is still under way. First, according to the construction and implementation and intelligent management of the "Great Health production industry" in Chengdu-Chongqing metropolitan area, Management policies and standards being under, Determine the key work points of production management, scientific research management, quality management and other aspects; The second is to study the urban comprehensive environmental influencing factors, Such as considering the urban traffic, population density, environmental quality and other factors on the great health impact of urban settlements; Third, to consider the big health of the security operation policy, To study the guidance and guarantee of talents, technology and funds, This is the basic to improve the development strength and core competitiveness of the industry; Fourth, we are carrying out research on the application of "Great Health" intelligent management in the space of various districts and counties in the metropolitan area, Including water space, industrial space, sports space, educational space and other aspects of the research, At present, "research on the connotation, path and mode of the big health industry in Nanchong city under the background of park city" has been approved and is being carried out; Fifth, the ongoing analysis of the impact of cultural and environmental elements, Study the integration and interaction of the big health industry and people's lifestyle, To study the specific project of "health concept integration city", Hope that measures such as building healthy communities, promoting healthy education, and encouraging a healthy lifestyle, Let the big health industry truly enter people's lives, To bring more convenience and health experience to people's life.

## Acknowledgement

Project of Chengyu Region Shuangcheng Economic Circle Research Center, No. CYSC22C008.

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