Spatial governance from the perspective of the transformation and development of megacitiesType planningExplore——Based on the practice of master planning of Guangzhou's land and space

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Summarize: Promoting the transformation of spatial governance in megacities is the key task of land and spatial planning. Spatial governanceType planningHow the framework is built and how it works still needs to be explored urgently. In 2018, Guangzhou, as the only municipal land and space master planning pilot in the country, based on the requirements of adapting to the transformation and development mode of megacities in the new era, for spatial governanceType planningThe technical ideas, compilation content and implementation mechanism have been explored and practiced. Based on the overall land and space plan of Guangzhou, combined with the analysis of the response mechanism of Guangzhou's previous master plans for urban transformation and development, it is proposed to implement the national mission as the goal, take the allocation of space resources as the core, take the transformation of space utilization as the grasp, and take the dynamicsDigital intelligence governanceTo support the governanceType and regulationDraw a frame. On this basis, it is proposed that in terms of strategy, national responsibility should be transformed into spatial development strategy.In terms of source allocation, a new mechanism for resource allocation should be formed based on the new development concept, and in terms of space utilization, it should be formedBecome a spatial utilization method that adapts to the needs of megacities. In terms of implementation, perceptible and adaptiveDigital intelligence governanceSystem.

Keyword: Transformation and development of megacities; spatial governanceType planning; Land and Space Master Plan; Guangzhou

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The national "14th Five-Year Plan" outline proposes that "toChange the development and construction mode of megacities, improve the urban refined management system, promote the new urbanization with people as the core, and explore the road to modernize the governance of megacities"[1]. Land and spatial planning as a strategic, basic and institutional tool for planning spatial development and spatial governance [2]], two-way interaction and mutual promotion with urban development and transformation is an important component of the modernization of the governance system, and also the spatial mapping of urban development and transformation and the coordination mode of urban governance.[3-5], therefore, leading and promoting the transformation of space governance in megacities has become the key direction of the current land space planning reform.On the one hand, the transformation of urban development has promoted the evolution of spatial planning. Spatial planning through planning content, value concept, spatial structure, implementation path, etc.The continuous evolution responds to the needs of urban

development and transformation. On the other hand, spatial planning is also promoting the transformation of urban spatial governance.[6], New York, London, Beijing, Shanghai and other cities around the world generally take spatial planning as an important tool to guide and regulate urban development, adapt to and promote urban transformation, and effectively respond to urban development opportunities and challenges with the help of reasonable and forward-looking planning [7].

Focusing on the transformation and development of megacities, domestic scholars from the economic cycle[8-9], institutional evolution [10-11], policy governance [12-131], social structure [14]]And other perspectives were analyzed.GrindJudge, some scholars from the evolutionary stage [15], dynamic mechanism [16], development performance [17-18]The characteristics and benefits of the transformation of megacities are analyzed in other aspects. Generally speaking,Our country's superThe development of big cities has gone through four stages: from the founding of New China to the stage of reform and opening up, cities are based on industry and mainly carry out urban construction around production centers; after the reform and opening up to 2000Year, with the opening up to the outside world and the introduction of the market economy, the construction of the development zone has driven the rapid expansion of urban space; from 2000 to 2020, the fiscal system, land use system, housing system, etc.WITH THE SORGENCE OF A SERIES OF REFORMS, URBAN SPACE HAS ACHIEVED LEAPFROG EXPANSION AS A CARRIER OF CAPITAL PROLIFERATION, ACCUMULATION, RESOURCE AND WEALTH DISTRIBUTION.; After 2020, China has gradually entered the stage of stable development from the stage of rapid urbanization, and the focus of development has changed from speed enhancement to quality improvement. The contradictions between economy and society, culture, ecology and other diversified daily standards are gradually highlighted. InIn this process, megacities face to accurately grasp the new stage of development, deeply implement the new development concept, and accelerate the construction of newThe strategic requirements of the development pattern face the urgent need to change the mode of development and governance [19]. The evolution of time and space in the new era and the changes in the institutional environment give planning practice a new transformation direction [20], and the planning is optimized in accordance with the requirements of development in the new era.[21], form a planning object to expand to the whole area and all elements[22-24], planningThe standard is more comprehensive and multi-dimensional.[25], the planning process emphasizesThe whole process of editing and managementCircular feedback [26-27], planning mechanismHighlight the cooperation between the central and local governmentsGovernance [28-29] and other governance-type spatial planning and compilationMethod.

Guangzhou as havingA megacity with a history of more than 2,200 years, with a resident population of more than 18.8 million, isOur country's superIt is a typical representative of big cities. At the same time, Guangzhou is also one of the earliest megacities to practice the urban master plan in China. Since 1954, Guangzhou has compiled a total of 17 versions of the urban master plan. In 2018, Guangzhou, as the only pilot in the country to carry out the land and space master plan trial.Take the lead in implementing the transformation and development needs of megacities, explore the spatial planning and preparation methods oriented by the spatial governance of megacities, and provide Guangzhou experience for the spatial planning and preparation of China's megacities in the new era. This article takes the process of urban

transformation and development of Guangzhou and the response to the evolution of planning as an observation sample, and distils and forms the governance to adapt to the transformation and development of megacities.Type planningLogical ideas and methods, for super-large megacitiesSpatial planning provides a reference for the transformation of spatial governance.

1 The evolution of Guangzhou spatial planning under the background of urban transformation and development

Guangzhou has always attached great importance to the leading role of planning, in the construction of production cities, the drive of reform and opening up, urbanFast and fastUnder the background of different eras such as development and current high-quality development, it has promoted the transformation of the overall plan from project implementation tools to urban governance means, and effectively guided the construction and development of cities in different periods. See the picture1.

1.1 From the early days of the founding of New China to reform and opening up: planned planning led by industrial production

Under the guidance of "the central link of urban work is to quickly restore and develop urban production and turn the city into a production city" proposed by the Second Plenary Session of the Seventh Central Committee of the Communist Party of China, in order to restore the normal operation of the city and build a production-oriented city as soon as possible, Guangzhou has successively compiled a total of13 versions of the urban master plan.The total of this periodDividersIn terms of preparation content and methods, the planning framework is not completely stable, which can be regarded as an extension of the national economic plan, showing the characteristics of serving production. In terms of the focus of preparation, industrial land is taken as the most important spatial element, taking into account national defense and security, and four industrial areas are scattered around the periphery of the city, showing the development characteristics of traditional centers, industrial groups as units, and along the river.

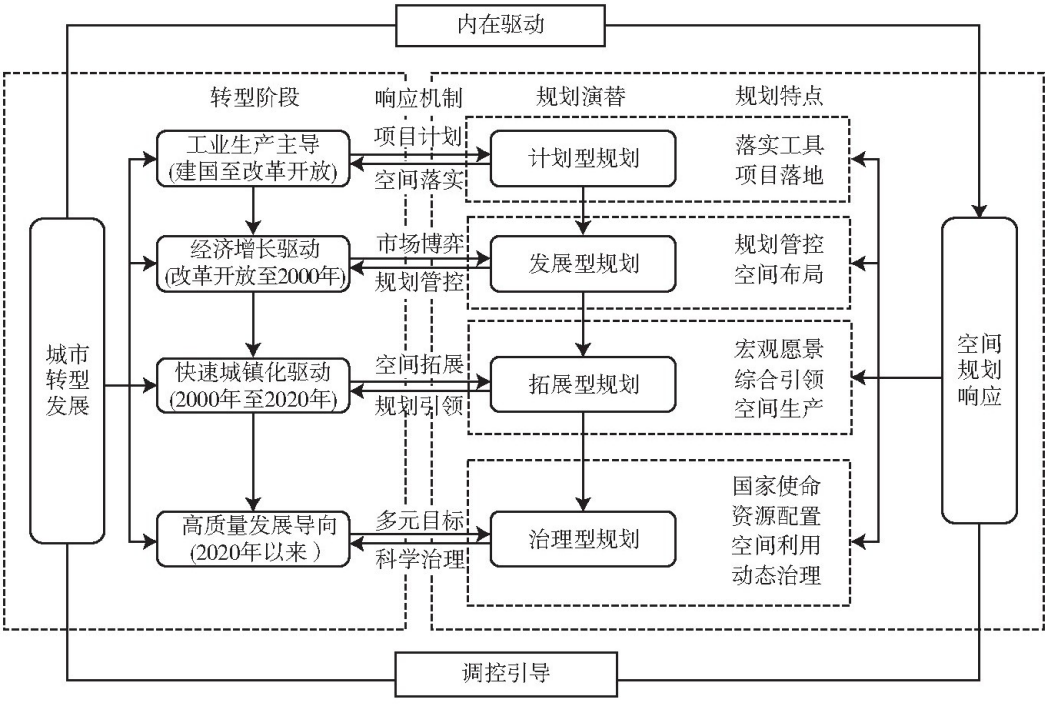
1.2 Reform and opening up to 2000: economic growth-driven development planning

With the shift of the urban development center to economic construction after the reform and opening up, the "transformation from a productive city to a comprehensive city" has gradually become the main theme of urban development.[30], but at this time, the population density of the old city of Guangzhou reached 36,000/km.^{2}The industrial group, which has a relatively single peripheral dot layout function, faces the problems of overcrowding in the old city, insufficient peripheral development, and the urban framework has not been opened, which makes it difficult to effectively support the rapid development of the economy.

In order to improve the comprehensive service function of the city and supply the industrial space to attract foreign capital inflow, Guangzhou launched the preparation of a new round of urban master plan and the first version of the land master plan, which provides a guarantee for the functional layout of business centers, manufacturing industries, ports and terminals and other cities by means of spatial planning control and group-type incremental development. , leading Guangzhou to transform and develop from a productive city to a comprehensive city. From the cityIn terms of the nature of the city, the State Council has approved that Guangzhou is "the political, economic and cultural center of Guangdong

Province, one of the famous historical and cultural cities in China, and one of the important centers of foreign economic and cultural exchanges in China.", requiring the city to develop in a more comprehensive direction. From the perspective of the spatial expansion model, the plan puts forward the idea of developing from "Yunshan" to "Zhushui" along the river to the east, and plans along the river "old city group, Tianhe group, Huangpu group", and the city knotConstructed bySingle centerChange to a "band-shaped group pattern". But at the same time, the contradiction between planning and market demand is gradually highlighted, accompanied byThe construction needs of the central business district brought about by the preparation of the Sixth National Games in 1987,In addition, foreign investment and national development zones "blom everywhere". In 1989, Guangzhou almost used up the planned construction land quota, resulting in the problem of disorderly spread in urban space.

Picture1 The response mechanism of Guangzhou spatial planning to urban transformation and development



1.3 2000-2020: Expansion planning driven by rapid urbanization

With the continuous deepening of reforms such as tax distribution, land use system, housing system, etc., local governments are increasingly enthusiastic and proactive in urban development.[10] ,"Plann a new space and form a fast, flexible and diverse space expansion strategy" has become the general of this period.DividersThe core goal of compilation. In order to seize the opportunity of administrative division adjustment, expand the space for urban development and strengthen regional competitiveness, Guangzhou launched the 2000 strategic plan and the 2010 version of the master plan, created the model of strategic planning to guide the overall plan, and established the growth of Guangzhou's "international regional central city" from a larger regional perspective. Long-term strategic goals, and put forward the "eight-character policy" of "South Expansion, North Excellence, East Advance,

West Union", and successively promoted Baiyun New City,PaNew areas around the city center, such as the continent area, University City, South Railway Station Business, etc.City construction has played an important leading role in building the rudimentary form of Guangzhou's multi-center structure..

The Outline of Reform and Development Planning for the Pearl River Delta Region approved by the State Council at the end of 2008 clarifies Guangzhou's status as a national central city facing the world and serving the whole country, marking that Guangzhou's development has jumped to the national strategic level. At this time, Guangzhou was affected by the real estate stimulus policy under the 2008 financial crisis. , the problem of flowering on all sides of the new city and the new area is highlighted. In order to assume the city responsibilities that match the positioning of the "national central city", Guangzhou launched the preparation of the 2009 strategic plan and the 2020 version of the master plan, which played a leading role in the expansion of urban space. From the perspective of regional cooperation, Guangzhou actively implements the national strategy, deepens cooperation with Hong Kong and Macao, takes the Nansha Free Trade (Pilot) Zone as the leader, and builds a new fulcrum for innovation and cooperation between Guangdong, Hong Kong and Macao and a new central city.In terms of space and function, it is emphasized thatThe development of urban space has increased from land use to structural optimization, and the "middle adjustment" strategy has been further added to the original "eight-character policy". While dredging the population of the central urban area, a modern service industry and regional high-end functional cluster area have been built, so as to make the central urban area a regional service center in the Pearl River Delta and even a larger geographical area.In 2012, in order to solve the contradiction between urban planning and land planning, Guangzhou took the lead in carrying out "threeDividersThe work of integration and "integration of multiple regulations" promotes the unification of bases, the coordination of differential maps, the integration of special planning and other work, and promotes the coordination and utilization of space resources in the whole area.

1.4 From 2020 to the present: Governance planning under the guidance of high-quality development

After the 19th National Congress, the Party Central Committee promoted the establishment of."MoreDividersThe "unified" land and spatial planning system. While Guangzhou has made great achievements in development, it also faces prominent contradictions in development and protection. There are many challenges such as the lack of balance of the spatial structure, the loose development and the tightening constraints on land resources. From 2010 to 2020, the average annual growth of the resident population in Guangzhou was about 600,000. With the rapid influx of population, the rapid expansion of construction land has continued to squeeze the ecological and agricultural space, which has put great pressure on the urban environment.The ecological space of sub-structural parts is encroached on. In addition, in the urban space structure, althoughCalendar planningGuide the multi-center layout, but the anti-magnetic effect of the peripheral urban area is still insufficient, and the high-quality resources of population and public services are still highly concentrated in the central urban area. In addition, the phenomenon of inefficient use of urban land is widespread.Ubiquitous existence. The scale of low-efficiency land in stock is large, and the city's "three old"Picture spot appointment350km?, accounting for about 20% of

the total area of construction land in the city. As China enters the stage of high-quality development, urban development needs to establish diversified goals such as ecology, economy, society and culture. Guangzhou urgently needs to change the development mode of megacities, coordinate and plan the rational utilization and protection of land space in the whole area, and manage in space Level improvement.Neng CityHigh-quality development,

Therefore, in "ThreeOne rule"."MoreDividersOne"On the basis of the exploration and practice, Guangzhou has been identified as the only pilot city in the country for municipal land and spatial planning, focusing on exploringTerritorySpatial planning reform and compilation of new paradigms,Crack superConflicts in the development and protection of big cities, over-concentration of functions and population, and space utilization.Dregs of grain after distillationRelease and other problems, in order to controlType planningPromote the transformation of space governance in megacities, improve the core functions of cities, unify the allocation of all elements of resources in the whole area, transform the way of space utilization, and establish a more efficient implementation and management mechanism.

2 Spatial governance of megacitiesType planningThe framework of thinking

Land space is the physical carrier of human economic and social activities. In the face of the current problems of one-sided pursuit of scale, excessive concentration of functions, excessive population agglomeration, and intensification of diseases in big cities in megacities, it is necessary to realize the overall coordination of various elements and various subject relationships through scientific spatial governance. Therefore, spatial governanceType planningIt should be through the formulation and implementation of scientific top-level design to promote the institutional arrangement and action process of land spatial structure optimization, element integration, function enhancement, value realization and rights and interests protection. As the leader of the country's high-quality development, the spatial governance of megacitiesType planningWe should form a national strategic mission with the goal of improving and implementing the national strategic mission, spatial resource allocation as the core, spatial utilization mode transformation as the grasp, and dynamicDigital intelligence governanceTo supportThe logical thinking provides demonstration and reference for other cities.

2.1 With the goal of implementing the national mission

The support of "big countries" to "big cities" is the foundation for the high-quality development of Guangzhou and other megacities, and the traction of national strategy is the engine for the high-quality development of megacities. At present, national strategic documents such as the National Land and Spatial Planning Outline and the Development Planning Outline of the Guangdong-Hong Kong-Macao Greater Bay Area have been issued. As a systematic work that runs from the country to the locality, megacities should actively undertake and implement the positioning and requirements of the national strategy, and scientifically determine the nature and core of the city in the planning. Function, this is to guide the top-level design of urban space governance by relying on the "super-large" advantage of the country to shape the "super-strong" advantage of the city, so that the service and undertaking the national strategy and the development of the city itself can promote and complement each other.

2.2 Take spatial resource allocation as the core

In the reform and opening upUnder the background of more than 40 years of rapid

development, the incremental supply of construction land resources has become the focus of spatial resource allocation, which has also brought about the imbalance and resource destruction of urban spatial development. In the new era, the spatial governance of megacities should shift from the incremental construction land allocation to the spatial resource allocation mechanism based on the new development concept. The first is the overall allocation of the whole area. First, coordinate the central urban area and peripheral areas, and focus on solving the problems of excessive concentration of resources in the central urban area and insufficient resource supply in peripheral areas and low development energy level: Second, coordinate the whole area and guide the spatial layout, use control and value realization of all elements of natural resources such as landscapes, forests, fields, lakes, grass and seas. The second is the precise and fine configuration. Increase storage and carry out scientific investment of construction land. Focus on improving quality, efficiency and differentiation and accurate revitalization, and give priority to incremental resources.Give development space in line with the new quality of productivity.

2.3 Take the transformation of space utilization as the grasp

Under the background of high-quality development, promoting the transformation of space development and utilization from coarse-type epital to intensive quality is the key to super-large space governance, and we should focus on establishing three thinking. First, bottom line thinking. In the era of ecological civilization, the protection and utilization of ecological agricultural space has become a preliminary work for planning, and it is also a prerequisite for the orderly development of development space. Among them, the top priority is to scientifically and objectively identify the bottom line of urban development, as an insurmountable red line for urban development, construction and economic development. The second is flexible thinking. Artificial intelligence,New type of transportation.Technological changes and extreme climate, epidemic crisis and other risk challenges have brought uncertainty to the future development of cities. The use control of space development should be changed from traditional rigid thinking to flexible thinking. First, quality thinking should be promoted with people as the core.Friends of all agesGoodUrban space construction, improve the spatial function and the matching of residents' actual use needs,

2.4 DynamicDigital intelligence governanceTo support

As a process of space formulation, arrangement and action, governance space planning should shift from the planning plan of static blueprint to the dynamic control of the whole process. Compared with small and medium-sized citiesThe time and space exchange and flow of the city's knowledge, technology, talent funds, etc. are more frequent. The scope of urban production and residents' activities is larger and the types are more complex. It is more difficult to coordinate urban development, residents' lives, ecological protection and other diversified goals through spatial planning. Therefore, it should be through moreYuancheng CitySpace-time data is the country.EarthThe process of spatial information perception, analysis, evaluation and decision-making of various resource elements in space and crowd activities is "empowered",Realize dynamizationThe numerical governance of.

Three Guangzhou spatial governance based on the development and transformation needs of megacitiesType planningPut into practice

3.1 Strategic orientation: Determine the urban spatial development strategy based on national responsibility

3.1.1 Carry the strategic development goals of four dimensions

In the process of preparing the new round of overall land and space planning, Guangzhou deeply grasps the core requirements of the state for Guangzhou to continue to shoulder the "vanguard, leader and locomotive" in the reform, opening up and high-quality development, and fulfills the support of the construction of the Guangdong-Hong Kong-Macao Greater Bay Area into a "strategic fulcrum of the new development pattern and a demonstration place for high-quality development, The responsibility of "the leading place of Chinese-style modernization". At the same time, it benchmarks the samples of New York, London, Paris and other global cities. Starting from four dimensions such as Guangzhou in the world, Guangzhou in China, Guangzhou in the Bay Area, and Guangzhou in Guangdong, it is proposed"Beautiful and livable flower city, vibrant global city"The goal vision is to build a central world city with classic charm and the vitality of the times in an all-round way, and clarify "the capital of Guangdong Province, an important central city of China, a famous national historical and cultural city, a modern city that highlights the characteristics of the ocean, the countryThe characteristics of the six major cities of "international comprehensive transportation hub cities, science and technology education and culture centers", and the four core functions of "international trade center, national advanced manufacturing base, comprehensive portal, and important carrier of international science and technology innovation center".

3.1.2 Grasp the strategic mission of leading the coordinated development of the Guangdong-Hong Kong-Macao Greater Bay Area

According to the multi-source data analysis of the Guangdong-Hong Kong-Macao Greater Bay Area,From 2010 to 2020, the GDP in the Greater Bay Area grew by 105%, the number of enterprises increased by 104%, and the population increased by 83%. Judging from the growth of night light data, a functional cooperation network with Guangzhou, Foshan, Hong Kong and Shenzhen as the core has been formed. With the construction of a series of cross-river passages such as the Lion Ocean Channel, the Lotus Mountain Channel and the Nansha Bridge, the state has given the major mission of Nansha, Qianhai, Hengqin and other national strategic platforms, "Lion OceanOne"Lingdingyang" has become the forefront of the coordinated development of the Guangdong-Hong Kong-Macao Greater Bay Area.

Against this background, the new round of land and space master plan proposes to lead the joint construction of the 100 km "Golden Inner Bay" around the Pearl River Estuary to promote the rapid and efficient circulation of elements on the east and west sides.In terms of regional linkage, actively promote GuangfuLong-stem water grass, the integrated development of Nanzhongguan metropolitan area, strengthen the two urban cores, build the Guangzhou-Foshan-Dongguan central urban linkage corridor, Nansha-Zhongshan-Dongguan-Shenzhen emerging linkage corridor, accelerate the interconnection of transportation in border areas, the joint construction and sharing of infrastructure and the construction of cross-sea channels, and lay out major industrial platforms around the two metropolitan cores. In terms of the joint construction of innovation platforms, we will cooperate to jointly build Guangzhou, Shenzhen, Hong Kong and Guangzhou.Australian TechnologyThe innovation corridor, with the eastern center of Guangzhou as the core, strengthens the connection with important innovation platforms such as Dongguan Songshan Lake Science City, Marina Bay Area, Shenzhen Qianhai Cooperation Zone, Hetao Shenzhen-

Hong Kong Science and Technology Innovation Cooperation Zone, Guangming Science City, etc., and promotes finance, ocean, science and technology innovation,Cultural tourism, etc.High-end functional collaboration, joint constructionThe backbone of industrial science and technology innovation; The west bank is led by the central urban area of Guangzhou and Nansha, and along the west bank of the Pearl River, it goes deep into the Sanlongwan area of Foshan, Cuiheng area in Zhongshan, and Tang in Zhuhai.Major innovation platforms such as the Jiawan area and Hengqin Guangdong-Macao Deep Cooperation Zone are docked to create a strategic emerging industry corridor..

3.1.3 The logical transformation of conforming to spatial development

Guided by leading the spatial coordinated development of the Guangdong-Hong Kong-Macao Greater Bay Area, Guangzhou's spatial development has moved from urban logic to a broader "Bay Area"One.The logic of the "watershed" urban cluster, considering the functional layout of the city from the regional space, in order to face the eastNanrong Bay HairThe exhibition focuses on building an urban spatial structure of "one belt, one axis, three cores and four poles". Guangzhou proposed to build the high-quality development belt of the Pearl River, promote the construction of the modern vitality core of the eastern center in Huangpu and Zengcheng, create an innovation and industrial space led by new productivity, and actively integrate into the science and technology innovation corridor on the east bank of the Bay Area. In addition, on the basis of the original "South Expansion" strategy, it is further proposed to follow the "Lion Ocean"OneLingdingyang's "two oceans" southward expansion strategy, to build Guangzhou's vitality and innovation axis, promote the linkage between Panyu and Nansha along the coast of the two oceans, and build the future development of Nansha New Area nuclear and lion.Yang ZengLong pole. As a city with deep development and accumulation, Guangzhou has accumulatedExtremely pushThe quality of the old city is improved, the relationship between the new old city is coordinated, the solution and renewal of non-core functions is guided, and the construction of comprehensive in the peripheral areasHexin City will drive the integrated development of the whole area.

3.2 Resource orientation: Establish a spatial resource allocation mechanism based on the new development concept

3.2.1 Coordinate single-factor and multi-factor resources to reflect the full-factor control of natural resources

GuangzhouTerritoryContinued implementation of the spatial master plan."MoreDividersOne"The overall idea is to coordinate the layout of various natural resources in landscapes, forests, fields, lakes, grass and seas. Through the establishment of a control and transmission system of "planning zoning, one land use and sea classification", we will strengthen the deepening implementation of the strategy of the main functional area, refine the land use and development intensity downwards, and form 6 types of first-level planning zoning in the whole area. The central urban area is The main road network is mainly divided into 18 types of secondary subdivisions [31], on the basis of global zoning, classification and formulation of full-coverage, full-element and differentiated use control rules to fill the gaps such as conversion between agricultural land and ecological land, and through functional guidance and index constraints, we will form global spatial management such as development, protection, rectification, repair and renewal.Control and guidance policyRoad. At the same time, combined with the results of land survey and coastline repair,

it forms a useA map of the current situation of the earth and the sea clearly integrates land and sea.TerritoryThe scope of the overall spatial planning, the marine space is included in the layout of the overall planning of the land and space, the land and sea are coordinated to determine the red line of ecological protection, the land and sea are integrated into the land and space planning zoning, the island is used as a strategic resource for the construction of a strong ocean city for scientific planning and classification management, and the coastline classification, protection and utilization measures are proposed, and Integration of marine space planning and management elements such as original marine functional zoning, island protection planning, coastline management, etc.Territory.Space master plan.

3.2.2 Coordinate increment and stock resources to achieve accurate and efficient allocation of spatial resources

Achieving sustainable urban operation is an important direction for the transformation of megacity spatial governance.[32], Guangzhou's land and spatial planning is established in stock for urban space."The land-based construction land supply mechanism of "quality and efficiency improvement" implements the construction land regulation strategy of "strictly controlling the total amount, revitalizing the stock, accurate allocation, improving quality and increasing efficiency", and increasing the stock in terms of indicator control, and implementing the central area and the central area of the peripheral urban area.Adjust and reconstructType planning, put in about 15% of the incremental scale to promote the continuous renewal and transformation of stock land; implement moderate expansion planning in key platforms and transportation hub areas that undertake regional functions, and focus on investing more than 70% of the city's incremental scale, focusing on ensuring strategic emerging industries, advanced manufacturing and modern service industries. Layout; reserve 15% of the incremental scale for the planning periodGreat opportunity projects, infrastructure, public services and rural revitalization projects. Implement a differentiated urban renewal strategy, divide into three urban renewal zones to promote urban renewal through micro-transformation, hybrid transformation, comprehensive transformation and other means, actively and steadily promote the transformation of urban villages and village industrial agglomeration areas, promote regional continuous development through integration and land replacement, and optimize land use functions. Layout, improve the efficiency of land use, and make up for the shortcomings of infrastructure.

3.2.3 Collaborate with the center and peripheral resources to promote the orderly solution of non-core functions

Solve the problem that urban functions are excessively concentrated in the central urban area, coordinate the functional and spatial resource allocation of the central urban area and the peripheral comprehensive new city, and based on the positioning of the core functions of the city in an orderly manner.Solve the faultCore functions, accelerate the dredging of inefficient scattered warehousing, labor-intensive manufacturing, general equipment manufacturing, textile and agricultural products and other wholesale markets, regional logistics centers and other functions in the central urban area to the peripheral urban area, strictly control the scale of new land in the control area, focus on the redevelopment of inefficient land, and increase the central urban area On behalf of the supply of service industry, commercial service industry, green space and public service facilities, and comprehensively enhance the global resource allocation and service capacity of the central urban area.Promote

the improvement of the comprehensive carrying capacity of the peripheral comprehensive new cities, and guide the new land resources toThe peripheral comprehensive new cities and key platforms will be launched to increase the public in the peripheral urban areas.Service facilitiesConfigure the energy level and strengthen the trackThe supply of housing land within a 1km service radius will promote the peripheral comprehensive new city to effectively share the functions of the central urban area and improve the pull effect on population and employment.

3.3 Spatial orientation: explore space utilization methods to meet the development needs of megacities

3.3.1 Build a tough chassis for homeland and space safety to ensure a high level of safety

Guangzhou Land and Space Master Plan adheres to the bottom line thinking and builds a land and space bottom line limit system composed of development bottom line, security risks and carrying the upper limit.(Figure 2). Prioritize"The third line (ecological protection red line, permanent basic farmland protection line, urban development boundary) "small fourth line (green line, blue line, purple line, yellow line)", classify and determine the control and transmission requirements of different control lines[33], identify the list of homeland security risks such as geological safety, flood control and drainage, and delimit 7 types of geological safety risk areas such as karst and soft soil subsidence; use remote sensing, height model, water conservancy model and other technologies to identify 62 prone flood risk areas in the city, and establish the overall development and control of the basin, and increaseRain and flood stagnationComprehensive and systematic risk control system such as space and improvement of drainage standards, combined with the southCoastal superBig cities are densely populated,With the characteristics of humid and hot climate and frequent typhoons, carry out the evaluation of the carrying capacity of resources and environment and the suitability of land and spatial development, comprehensively evaluate and determine the upper limit of the intensity of land development and the population capacity, and determine that the urban construction space of the city is not higher than that of the city.The measure of area1/3, the ecological and agricultural space is not less than 2/3 of the urban area, the resident population is controlled at 22 million, and the actual service population is controlled at 25 million.-30 million people, the population density of construction land in the city is controlled at 10,000/km^2., the population density of the central urban area is controlled at 16,500 people/km^2.

3.3.2 Establish a strategic white space control mechanism to support high-quality development

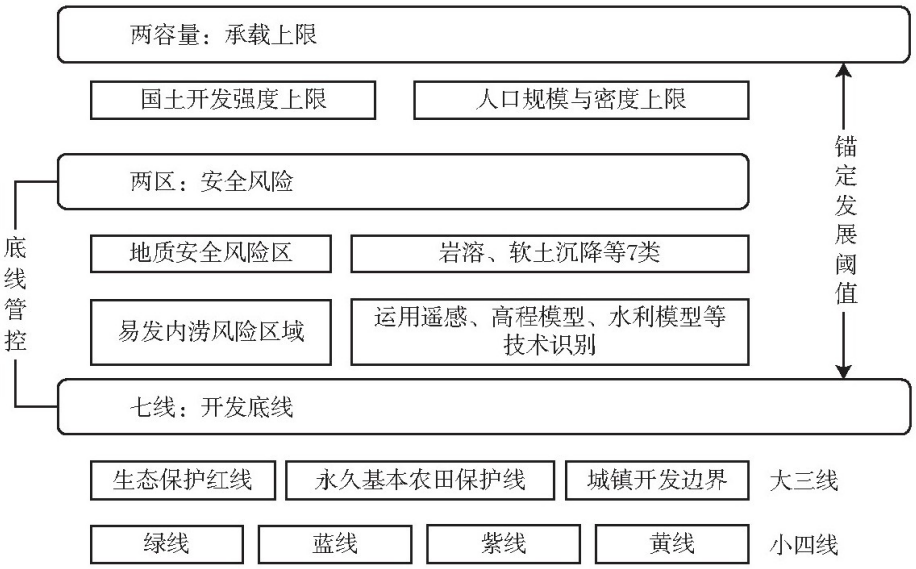
In order to deal with artificial intelligence,New type of transportationThe uncertainty brought by scientific and technological changes, extreme climate, epidemic crisis and other risk challenges to the future development of cities will strengthen the city's ability to guarantee major events and major projects in the future. This round of planning and research will establish a strategic blank space control system to leave enough strategic space and scarce resources for the transformation and development of megacities. The plan fully considers the shortage of incremental industrial space in Guangzhou, the gathering of non-core functions in the old city, etc., and divides two types of strategic blank space.: The space blank category is located outside the urban development boundary, and the development space around the important platform is strategically pre-controlled, focusing on dealing with

unexpected major events and major projects, so as to achieve the forward-looking nature of "land and other projects"; the functional blank category is located within the urban development boundary, which mainly affects the transportation location conditions. Improve andThe planning intention is not yet clear to pre-control the stock of construction land, and the function is not clear for the time being. It provides flexible space for scientific and technological innovation to return to the city, the layout of new infrastructure, and the improvement of the space quality of the old city. In order to realize the scientific delimitation and implementation of the management of blank land, explore and introduce strategic management measures for leaving blank space, and establish cities and districts. The delimitation and management mechanism of the linkage at the top and bottom, and standardize the application for leaving blank land-Transitional management-Implement supervision" for the whole life cycle control.

3.3.3 Implement the facility configuration model with the living circle as the unit to create a livable home that everyone can enjoy.

Take people as the core and soundFriendly to all agesCommunity construction, comprehensively understand the portraits of children, teenagers, the elderly, the employed population, mobile population and other kinds of people, use mobile phone signaling data to analyze the spatial activity laws and spatial demand characteristics of residents, facing the whole life cycle refinement needs of diverse groups, and put forward happy age communities, youth communities, child-friendly communities, The construction of urban and rural communities such as foot communities refers toLead, build a complex community from four aspects such as "precise public service support, comfortable living environment, special public space, and community joint creation". At5-15 minutes to improve the service support within walking range, promote the centralized layout of elderly care, childcare, sports, culture, commerce, public space, etc., and build characteristic public spaces around the themes of childish fun, aging, national fitness, waterfront charm, historical imprint and so on.Build a networked, barrier-free and functional composite public space network, adhere to the concept of co-creation, build a community governance community with the participation of professional masters, technical teams and community residents, and create a convenient living circle that is livable, workable, travelable, studied and raised.

Picture.2 Schematic diagram of the composition of the bottom line limit system of Guoshi space



3.4 Implementation Orientation: Establish Perceptible And AdaptiveDigital intelligence governanceSystem

3.4.1 Build a digital implementation monitoring, evaluation and early warning system to ensure that "a blueprint is done to the end"

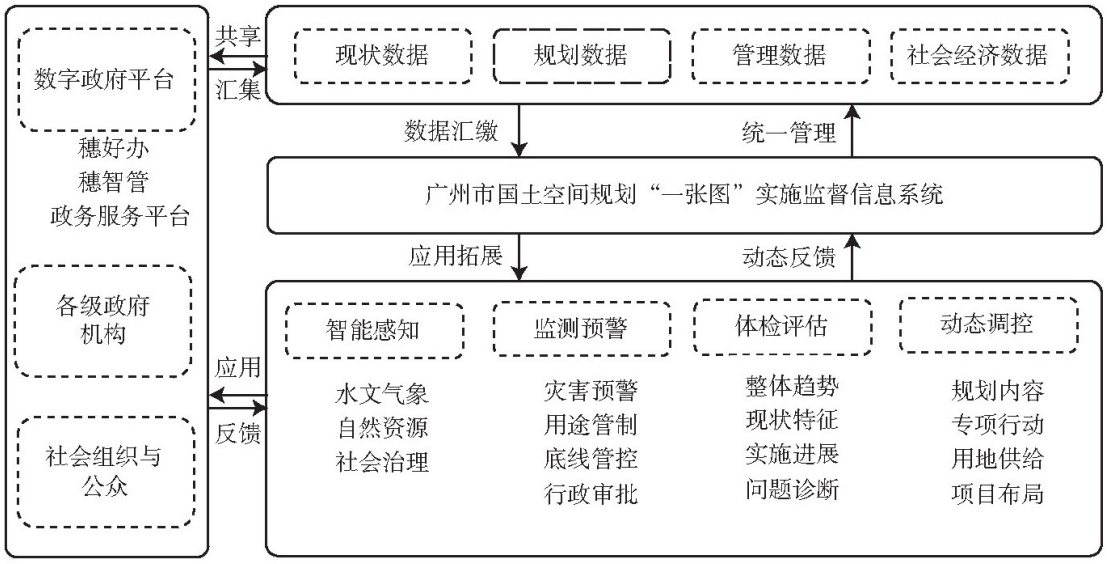
This round of planning promotes the establishment of a basic information platform for land and space and a "one map" implementation supervision information system, and carries out land spacePlan and implement the monitoring network(CSPON) pilot, expand intelligent perception, physical examination evaluation, monitoring and early warning, dynamic regulation and other functions (Figure 3) to serve the preparation, approval, implementation and supervision of land and spatial planning.Supervise the whole process, realize the information exchange of land and space planning and information sharing and business coordination between the competent departments of various industries. First, intelligent perception, using airTiandihai Group NetworkDetection and urban collaborative perception technology, exploring the intelligent perception of urban natural resources and socio-economic activities; the second is monitoring and early warning, research and development of large models of natural resources interpretation, and carrying out special monitoring of arable land, cities, oceans, forestry, etc.; the third is physical examination and evaluation, building a set of highlighting international vision, implementing national requirements, andThe physical examination evaluation index system with Guangzhou characteristics, includingThere are more than 120 indicators in 6 dimensions. At the same time, taking into account the limitations of individual indicators in the analysis of urban development problems, according to the basic plate, heavyThe ideas of point fields and key areas, sort out and integrate the monitoring content of various indicators and spatial monitoring contents, dock and implement monitoring application scenarios, and optimize the construction of evaluation modules; Fourth, dynamic regulation, through analysis model construction, indicator analysis visualization, and big data computing analysis, to realize the dynamic adjustment of the planning and implementation plan. Transformation.

3.4.2 Improve comprehensive laws, regulations, policies and standards to form a public policy

platform

This round of spatial planning aims to strengthen the guiding role of planning on urban construction behavior and promote the improvement of the policy framework for planning implementation. On the one hand, improve the planning, regulations and policy system, connect the upper legislative process, and promote the "GuangzhouTerritoryRegulations on Spatial Planning "GuangzhouTerritoryPreliminary research on "Technical Provisions on Spatial Planning" ensures that spatial planning and management is fully integrated into the rule of law track, focuses on key areas such as arable land protection, ecological restoration, urban renewal, urban village transformation, and intensive land conservation, formulates relevant supporting policies for the preparation and implementation of land and spatial planning, strengthens the public policy attributes of planning, and guarantees The orderly implementation of planning objectives and spatial layout. On the other hand, we will improve the planning technical standards, study and formulate technical standards and guidelines covering all fields of planning and construction, natural resource protection and utilization, promote the development of key and emergency standards, revise relevant technical specifications in a timely manner, and build a local technical standard system for land and spatial planning in line with Guangzhou characteristics. Strengthen top-level design and standardized management, promote the interconnection of technical standards, and improveTerritoryThe openness and advanced nature of the spatial planning technical standard system.

Picture3 The composition and function of Guangzhou Land and Space Planning Implementation Monitoring, Evaluation and Early Warning System



4 Summary and Prospect

The transformation and development of megacities have gone through different stages. As the main tool of spatial governance, spatial planning has always responded to and guided the development of megacities and has become an important component of the modernization of the governance system and governance capacity. Looking back on the evolution of Guangzhou's spatial planning since the founding of New China, with the driving force of urban development and the change of waiting for change, spatial planning has

experienced the implementation of urban production and construction, introductionLead the rapid expansion of the city, and then take the initiative to guide the transformation and development of the city with the spatial policy of comprehensive governance, respond to the requirements of the transformation and development mode of megacities in the new era, and gradually form megacity governance.Type planningMethod, from four dimensions such as urban energy level, resource allocation, space utilization, implementation management, etc.Degree to promoteTransformation of spatial governance in megacities: In terms of urban energy level, improve the responsibility and responsibility in the national strategy,Lead the regional coordinated development of the Guangdong-Hong Kong-Macao Greater Bay Area, and optimize the formation of regionalization,Multi-center and networked spatial structure; inIn terms of resource allocation, we should establish a spatial resource allocation mechanism based on the new development concept, and coordinate the relationship between the center and the periphery, increment and stock, and various natural resource elements; in terms of space utilization, we should explore the space utilization methods to adapt to high-quality development, build a resilient chassis for homeland and space security and strategic blank space, and push Implement a people-oriented public service facility configuration model; in terms of implementation and management, build dynamicsDigital intelligence governanceSystem, promote the scientific, refined and intelligent development of urban governance.

For the future-oriented spatial planning and preparation, we should further realize that the transformation and development of super-large megacities is a complex system project, involving industrial economy, spatial layout, social governance and otherDimension, the spatial response under the background of the transformation of megacities has richer multiple connotations. Under the wave of emerging technological change and the trend of post-modern society, lifestyle and production mode have accelerated the reshaping. In the future, we should pay more attention to following the needs of future people and industrial restructuring changes, from macro, medium, micro and other scales. Exploration and research on the urban spatial governance model.

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