

Research on the construction path of large-scale industrial agglomeration circle in Foshan based on computer big data fusion

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Abstract. This paper innovatively proposes the goal of research on the decision support system of the large-scale industrial agglomeration circle in Foshan. Based on the computer big data combined with the process of urban planning and management in Foshan, this paper proposes the construction content of the current planning decision support system for the new industrial agglomeration circle in Foshan. This paper proposes the relevant models for the analysis and construction of the development and evolution model and the construction of the auxiliary decision-making management system. The method of large-scale industrial agglomeration area in Foshan proposed in this paper provides services for the government to make rational and scientific decision-making. The computer big data industry circle planning model proposed in this paper has certain practical significance.

Keywords: computer, big data, industrial agglomeration circle, urban planning, decision support system.

1. Introduction

In today's world, big data, artificial intelligence, cloud technology, mobile Internet, etc. The big data industry has become a cutting-edge, high-end emerging industry with strategic significance. It occupies an important position in the reform and is a key factor in promoting the development of modern society and economy. Major countries in the world have upgraded big data to the national strategic level, and built a big data industry system in an all-round way [1]. In the future, the development of big data will be extremely rapid. The big data industry chain includes data acquisition and collection, data cleaning and processing, data management and use, data analysis and mining, data application service and promotion, data software and hardware environment, information security and authority, system integration and packaging. The application fields of big data are very broad, involving social and economic aspects such as processing and manufacturing, information technology, people's livelihood and government affairs, modern services, medical care, large transportation, business applications, tourism, education and training, and finance. The big data industry will form a huge supply and demand market, and the radiation effect and driving effect of the industrial system on other industries are also immeasurable.

Foshan is an important industrial town in the Guangdong-Hong Kong-Macao Greater Bay Area. After years of development of the socialist market economy and reform and opening up, it has laid a good economic foundation and has a good development trend. Under the new situation, the manufacturing industry is facing the pressure of industrial upgrading and technological innovation, and at the same time, the demand for information services is extremely urgent. Although it deployed the big data industry earlier and introduced leading companies such as Alibaba Cloud and Huawei, it still lacked in-depth thinking in top-level design and industrial layout. How to optimize the industrial structure, promote industrial transformation and upgrading, create a new engine for economic development, reshape high-end manufacturing, and realize intelligent manufacturing 2025 is a major problem facing Foshan today [2]. At the same time, how to use big data technology to improve the happiness index of citizens, enhance the government's decision-making ability, improve capital efficiency, and prevent financial risks are also the key factors to comprehensively enhance the

competitiveness of cities. In the new era of the “One Belt, One Road” and the “Guangdong-Hong Kong-Macao Greater Bay Area” planning and development, the Digital Silk Road will become the commanding height of the “One Belt, One Road” construction, which will greatly enhance the countries along the route in the fields of commerce, finance, The effect of regional cooperation in cultural exchanges, shipping and railways, and health. Foshan is at the forefront of the changing situation. How to give full play to its own advantages and grasp the opportunities of the times is related to the future of the city.

2. Construction of big data system in Foshan strategic industrial agglomeration circle

The construction of the big data industry needs to be designed from the top, led by the government, eliminate information islands and barriers to communication, and build the entire system. In the big data industry system, the main body needs to be clarified, the main body functions need to be strengthened, the big data-related platform needs to be built, and various achievements based on the platform need to be spawned, so as to realize the benefit of big data to the people, realize the adjustment of economic structure, improve the innovation ability, and promote urban competition [3]. The various purposes of force strengthening are shown in Figure 1.

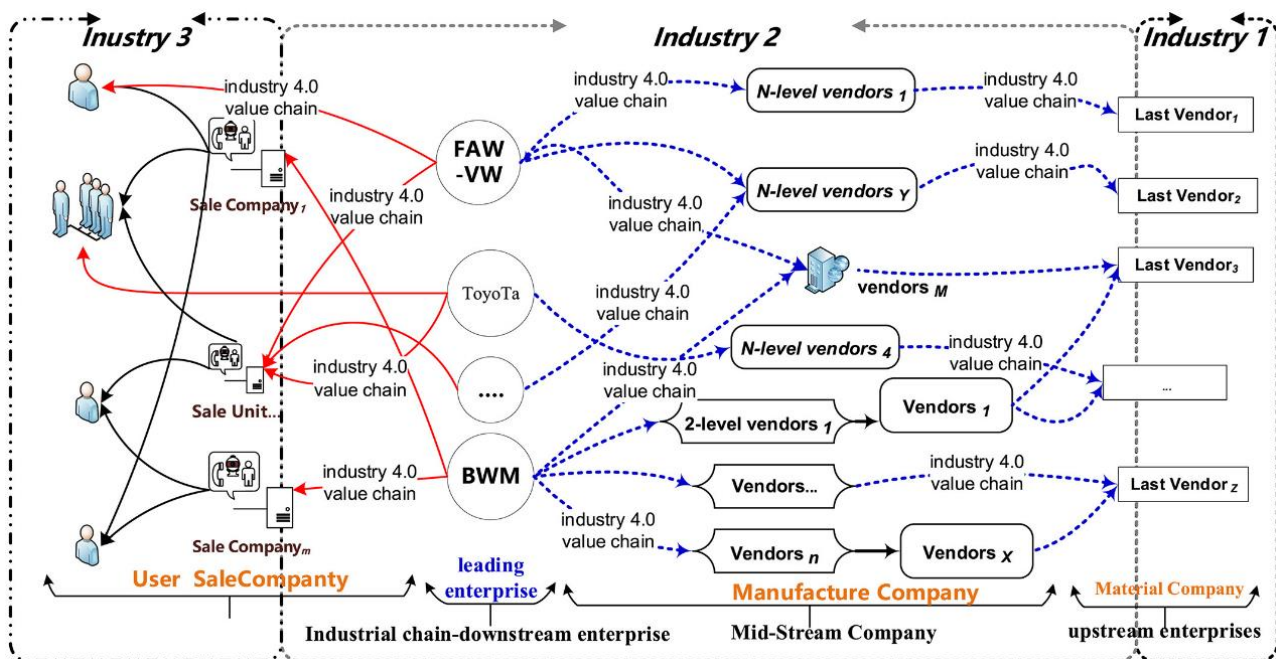


Fig. 1 Big data industry agglomeration circle system

2.1. Functional Architecture

Design, management and coordination of the big data industry: all government departments, one big data bureau, one center, and one company (data coordination bureau, big data application service center, big data industrialization company); the carrier of the big data industry: pilot areas, Industrial parks, high-tech zones, IT towns; conventions and exhibitions: big data annual conferences, summits, promotion conferences, expositions; participants in the big data industry: traditional industries, financial institutions, scientific research institutions, higher education institutions, industry associations, etc.

The government should do a good job in top-level design, do a good job in the city's big data industry planning, project introduction and implementation, and all government departments should do a good job in opening up data and strengthening sharing. Among them, the Government Construction Administration: formulate plans, coordinate and cooperate; management, application of data, responsible for the promotion of big data in the society; big data industrialization company: big

data development, market-oriented operation [4]. Through the carrier of the big data industry, we introduce leading big data companies and incubate the big data industry to complete the process from landing, incubation, growth and expansion; traditional industries need to deeply integrate the big data industry, and carry out demand-oriented supply-side reforms to achieve Innovation and upgrading and intelligent manufacturing; financial institutions take advantage of capital to use big data technology to do a good job in financing, investment, loan, and payment, and at the same time can achieve effective financial supervision and risk control; scientific research institutions, higher education institutions, and industry associations can provide talents. , expert opinions, and contribute wisdom to the development of the big data industry and the improvement of the comprehensive strength of the city.

2.2. Platform Construction

The big data content center and the big data service center can build e-government, which is convenient for the public and the government to handle government affairs, improve business efficiency, and improve the effect of government affairs; smart city is a key construction project in Foshan at present, which can include smart transportation, logistics Information, environmental protection, tourism, business, etc., to build a digital city, improve the level of urban management, and provide the public with convenient, visualized and regular urban information; livelihood projects are widely implemented in Shunde District, such as health cloud, food safety cloud, medical cloud, Projects such as education cloud are related to the vital interests of the common people, and livelihood projects play a pivotal role in urban management; the establishment of business models such as data transactions, data consulting and analysis in the big data industry can rely on the current relatively complete big data software and hardware. Platforms, such as various industrial parks and leading enterprises, form large-scale, influential, and high-tech big data enterprise groups to serve the entire Foshan industry and form new industrial forces; at the same time, the manufacturing industry also needs It is deeply integrated with the big data industry, guided by demand, supported by consumption data, with intelligent manufacturing as the starting point, and technological innovation as the engine to realize the transformation and upgrading of traditional industries and revive new vitality [5]. The big data financial center needs to rely on the Internet and mobile Internet finance to realize the upgrade of the traditional financial industry, realize the efficient use of financial capital, realize financial inclusion, help key enterprises and innovative enterprises, and be in the key period of incubation and growth of the industrial park. It plays an important supporting role, and at the same time, it can realize effective financial supervision and prevent financial risks with the help of massive financial data.

Establishing a data sharing route between two systems can easily lead to data inconsistency, data changes cannot be responded to in time, too many data sharing routes are difficult to maintain, systems affect each other's operating performance, and the overall system stability is poor. Therefore, it is necessary to establish a unified data exchange platform to provide bus-style centralized data exchange and data sharing. The unified data exchange platform mainly includes: data center, exchange center, backup center, security center and service platform. Starting from the composition, development trend and sharing needs of urban planning information resources, an open information exchange management platform based on computer technology, database technology, GIS technology, network communication and other technologies with unified data specifications is established. This platform is designed with an open and distributed database management model based on SDE, and at the same time, through the establishment of efficient data exchange channels with all relevant units of urban planning, a set of unified data exchange, distributed storage, and distributed applications based on the government broadband network is formed [6]. The city planning data exchange system realizes unified management, information exchange and sharing. Figure 2 shows the functional architecture of the unified data exchange platform.

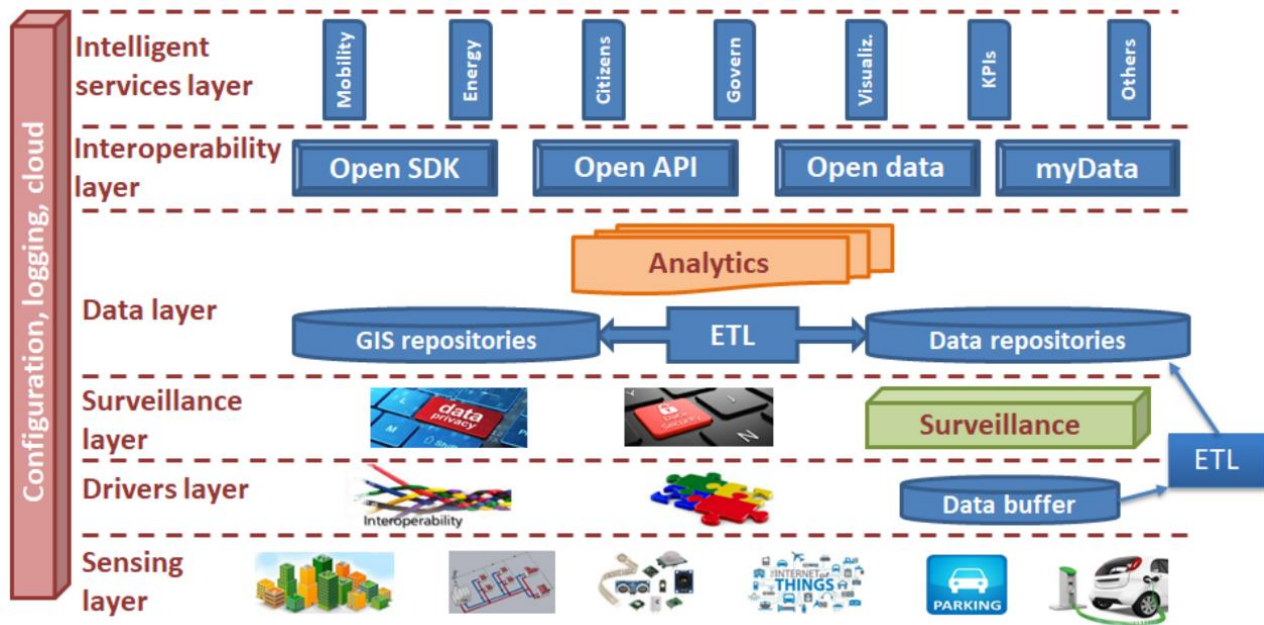


Fig. 2 Unified data exchange platform functional architecture

3. System submodule construction

3.1. Construction and analysis of urban development and evolution model

The urban development and evolution model is a mathematical expression of urban spatial phenomena and processes. It abandons some details and abstracts the spatial phenomena and processes. Generally, abstract processes such as realistic system-logical system-mathematical system-simulation decision-making system are required to finally realize the simulation verification of the urban system and the effect evaluation of the planning scheme, and provide decision support for the determination of urban policies and urban planning schemes. The urban model has gone through the development stages of morphological structure model, static model, dynamic model represented by system dynamics, and dynamic model represented by cellular automata [7]. In the future, the evolution model of urban development will introduce new theories such as fractal and genetic algorithm. Through the study of these models, establish model analysis algorithms for data mining and knowledge discovery, combine GIS technology, virtual reality technology, scientific visualization technology and data warehouse technology to establish a decision support system for urban planning, discover the law of urban development, and ensure its availability.

3.2. Data Mining Assisted Decision Management System

On the basis of the completed urban basic geographic information database and urban planning special database, by combining new technologies such as GIS with urban planning concepts, a special prediction and analysis data model for urban planning is established, and an auxiliary decision support system is established. Mining useful information from massive planning information databases to provide services for urban management decision-making, such as model analysis, prospect forecast analysis, three-dimensional landscape analysis, economic analysis of urban construction and old city demolition, and traffic model analysis for planning work. Figure 3 shows the architecture of the urban development assistant decision-making management system.

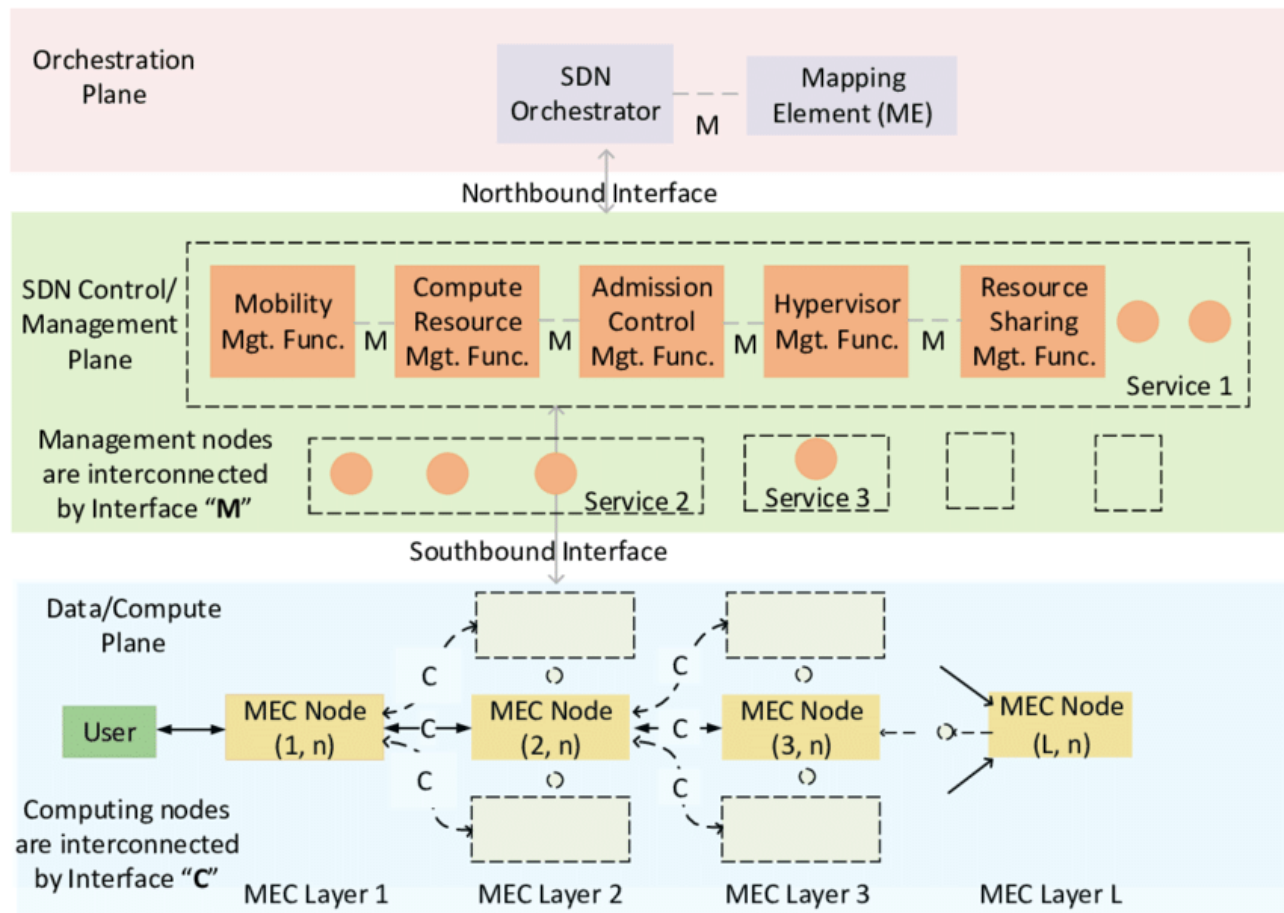


Fig. 3 Architecture of urban development assistant decision-making management system

3.3. Urban Space Landscape Simulation Management System

The system is based on 3S technology, through virtual reality technology (VR) and Internet technology (WEB), to fully realize historical landscape reproduction, realistic landscape simulation, future planning simulation, three-dimensional visual approval of planning schemes, etc., to provide services for planning decision makers and the public, Such as the evolution of urban development process, urban investment and real estate over time. It can be considered to carry out comprehensive analysis and simulation of urban space in conjunction with the construction of new urban areas, and to control urban planning, urban construction intensity and urban space.

4. Conclusion

Big data has become one of the strategic commanding heights to shape national competitiveness. A city is a complex giant system with multiple factors. The industrial agglomeration circle planning problems and planning objectives faced by planners are diverse and complex. The planning of urban industrial agglomeration circle space cannot draw a blueprint for urban development based on experience alone. Requires a combination of qualitative and quantitative, time and space, manual and automatic auxiliary work, scientific planning and decision-making.

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