



A Modern Platform for Social Governance

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Abstract. With the rapid development of today's society, the traditional social and government management model has gradually emerged drawbacks, modern social management requires multi-sectoral integration of government resources to provide joint management and services. In addition, because the speed of economic development in the new era is far ahead of social management, the adjustment of the pattern of interests in social management and more weak links, resulting in conflicts and occasional incidents in the community increased, which requires social management work to reach a higher level. In recent years, China has actively explored and innovated in social governance and continuously improved the level of social governance. But the overall effect and management level still need to be further improved. This paper first expounds the basic connotation and category of social governance, and then comprehensively analyzes the problems existing in social governance. Combined with modeling and simulation system, intelligent governance support, GIS [9, 10] and other technologies, after combing the business, the social comprehensive management information system is designed. The main application modules of the system include provincial and municipal standard platform module, provincial supervision module, data docking standard module, system docking module.

Keywords: MBSE · Social governance · Modern platform

1 Introduction

The most fundamental point of promoting the modernization of social governance is in the “social” field, and the core content of governance in the “social”

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field is to prevent, control and defuse conflicts and risks. In recent years, China has been attaching great importance to the development of social governance and actively promoting the construction of collaborative mechanisms. When dealing with social problems in provinces and cities themselves, there are many problems, such as difficulties in public reflection, difficulties in dealing with grassroots personnel, difficulties in supervising command centers, difficulties in coordinating units, and difficulties in commanding decision-making leaders [1–3]. These problems seriously affect the efficiency of social governance and seriously slow down the processing speed of social governance issues.

The “social governance modern management platform” project aims to solve the above problems by strengthening collaborative command, grassroots governance ability, and intelligent management platform, so that it can effectively break the information barriers between functional departments, integrate and share information resources, and improve the efficiency of comprehensive management [4, 5].

2 Background

At present, social security governance in our country is in the process of transformation from a single subject to multiple subjects, and the cooperative governance mechanism among multiple subjects of social security governance needs to be rebuilt. The further development of social governance is affected by problems such as hidden dangers in function division, difficulties in collaborative command, immature social development, and inadequate system guarantee. These problems urgently need to be solved by modern information technology.

There are hidden dangers in the division of governance functions, and the powers and responsibilities of various departments are not clear enough. Since each governance body is independent, and there is no unified organization or department that can directly manage and directs all the governing bodies, in the actual process of governance, it is easy to appear problems such as overlapping responsibilities of various governance subjects, multiple management or mutual deniability, and lack of management, which lead to the unreasonable phenomenon of governance vacuum and reduced efficiency, affect the construction of collaborative governance mechanism, and affect the overall performance of social governance, to make it difficult to form governance synergy.

Insufficient data and information statistics lead to insufficient decision support. The information between various departments cannot be exchanged, the data is scattered and isolated, the existing precipitated data cannot be effectively utilized, and the information resources at the grassroots level cannot be timely collated and reported, which all lead to insufficient data support of personnel in social governance. The popularity of smart devices is not high, and there is a lack of corresponding early warning and prevention measures. Not yet able to achieve the liberation of manpower, comprehensive perception and the city is prone to a “problem blind Angle”, and there is a lack of intelligent analysis models and algorithms adapted to application scenarios to support early warning and prevention.

The deployment and control ability of grid workers is weak, which cannot guarantee the working efficiency of grid workers. Most of the command and scheduling still stay in remote viewing and video consultation and do not play the real sense of command and scheduling [6, 7]. Finally, the single access channel of information is also a big problem. The current social governance information collection relies on the manual collection of grid workers and there is no corresponding more intelligent and automatic collection method, and the lack of channels for the masses to actively participate, which greatly limits the source and collection of governance information. At the same time, the intervention of social forces is also not formed, which has caused some obstacles to the construction of social co-governance forces and the formation of mass prevention and mass governance system.

3 Design Elaboration

In the design of this scheme, we fully consider meeting the new requirements of social governance development and construction [11], and at the same time consider the application of advanced technology to achieve social governance innovation [12–14]. Through the innovation of the social governance system and mechanism, we can accelerate the solution of the existing problems of relatively backward and inadequate social development, and realize the people's new demand for a better life. We will strengthen the development of coordination mechanisms, encourage the active cooperation and efforts of all types of cooperative governance entities, open up new prospects in social governance, and realize the modernization of social governance.

3.1 Building a Platform

With the goal of social governance construction, the platform is constructed to sort out and formulate unified standard and normative systems such as data standards, business standards, and interface standards and it collect the underlying general serviceability according to the standard specification, supporting the upper data, business, application and service of the upper layer, to ensure the smooth operation, efficient operation and continuous iterative upgrading of the platform. At the same time, the unified business assessment mechanism of the province is formulated, and according to the assessment mechanism, all cities (districts) and counties of the province are assessed to promote excellence.

The data on social governance in cities and regions of the province are gathered together. Through big data analysis, the in-depth mining and analysis of various thematic information are ensured to assist decision-making. The data on municipal social governance of the whole province will be collected and deeply mined. Through big data analysis and algorithm model matching, combined with the actual governance thematic scenes, the “municipal physical signs analysis report” supported by data is formed, and the municipal social governance provides the basis for decision-making. To build an integrated municipal social

governance platform for the whole province, the provincial platform can coordinate the disposal across prefectures and cities, to achieve high-level coordination and overall planning.

3.2 Modeling Techniques

Advanced modeling and simulation technology (MBSE) [8] is adopted to conduct digital modeling of the social governance comprehensive platform construction model. It can quickly and efficiently build a model to simulate the real-world collaborative working process of government affairs, clearly show the process of government affairs processing subject, and deeply analyze the collaborative sharing needs of information systems.

The MBSE methodology is a collection of processes, methods, and tools that supports systems engineering disciplines in a “model-based” or “model-driven” context. Through a standard modeling language, construct system requirements model, function model, architecture model, implementation requirements, functional decomposition and distribution to the architecture, through the model execution, logic system requirements and functions of “verification” and “confirm” are achieved, and drive the joint simulation, product design, implementation, testing, integration, verification, and validation.

Model, transferred by MBSE, includes requirements, structure, behavior, and parameters of the dynamic information model, enables all kinds of professional engineering and technical personnel throughout the entire organization to understand and express the system more intuitively, to ensure that the whole process of transmission and use is based on the same model. Based on the goal-oriented business modeling method, this paper analyzes the operation mechanism of business data and information systems. The method of cross-department business collaboration and resource sharing is formed, and the solution to the problem of cross-department information sharing and business collaboration is developed from the aspects of the organization, application, and technology.

3.3 Modeling Techniques

It can achieve multi-level grid governance and fast dynamic information collection and help to realize the functions of cooperative command, research, and decision of social governance. The five-level grid governance system of province, city, district, county, town, and street, community (village) is constructed to realize the rapid and dynamic collection of various social governance elements and form an all-round, dynamic, and fine management and service pattern based on the grid unit. This function is expected to be provided by standard platform modules at the provincial and municipal levels.

It can realize the command and supervision of the whole process of the incident problem and can be coordinated and co-governed among different levels. Build the provincial supervision and coordination function module, establish a platform to construct multi-channel event acceptance methods, handle events according to the standard event processing process, realize unified supervision,

ensure the operation of the process, and let the people participate in social governance, and gain a sense of participation, happiness and security.

For the public, one-click event submission is supported, and for the internal, a mobile terminal is established, so that events can be handled at any time. Through the construction of the management front desk, provide an effective external channel, so that the public can directly report information, and establish the corresponding information function, so that the public can directly communicate with the responsible department, and timely know the progress of incident processing. It also provides a safe and convenient mobile terminal inside the department, to manage the events in the grid uniformly.

The situation elements are presented and multidimensional decision analysis is carried out. It is necessary to comprehensively perceive the operational signs and social governance situation of the whole province. The dynamic information of social management should be studied and analyzed from multiple dimensions to assist leaders in making decisions and realizing the prediction and early warning of urban events in the province.

Department resources should be integrated to facilitate unified command and scheduling. Establish a unified system and standard to integrate and utilize data resources. Efforts are made to change the pain points of the past, which were governed by separate departments, and to gather information for the provincial command center, to realize the transformation from static control to dynamic control and from single management to comprehensive management.

AI technology is used to optimize service processes and develop intelligent business applications. Advanced technologies such as big data and artificial intelligence are used to achieve “intelligent acceptance, intelligent allocation, intelligent supervision, and intelligent return visits”, comprehensively improve the efficiency of social governance and intelligent application, and realize the complementary of “grids on the ground and wisdom on the cloud”.

3.4 Platform Architecture

The platform is mainly divided into three parts: governance center, governance application, and governance foreground. Among them, the governance platform is the bottom supporting part of the whole platform, which lays a solid foundation for the establishment and operation of the whole platform. Governance application is the main body of the whole platform, which is composed of four parts: provincial and municipal standard platform, provincial supervision and coordination, data docking standard, and system docking, which is the main function embodiment of the whole platform. The governance front desk is divided into two application ends, internal and external, respectively to undertake internal and external business management and other functions (Fig. 1).

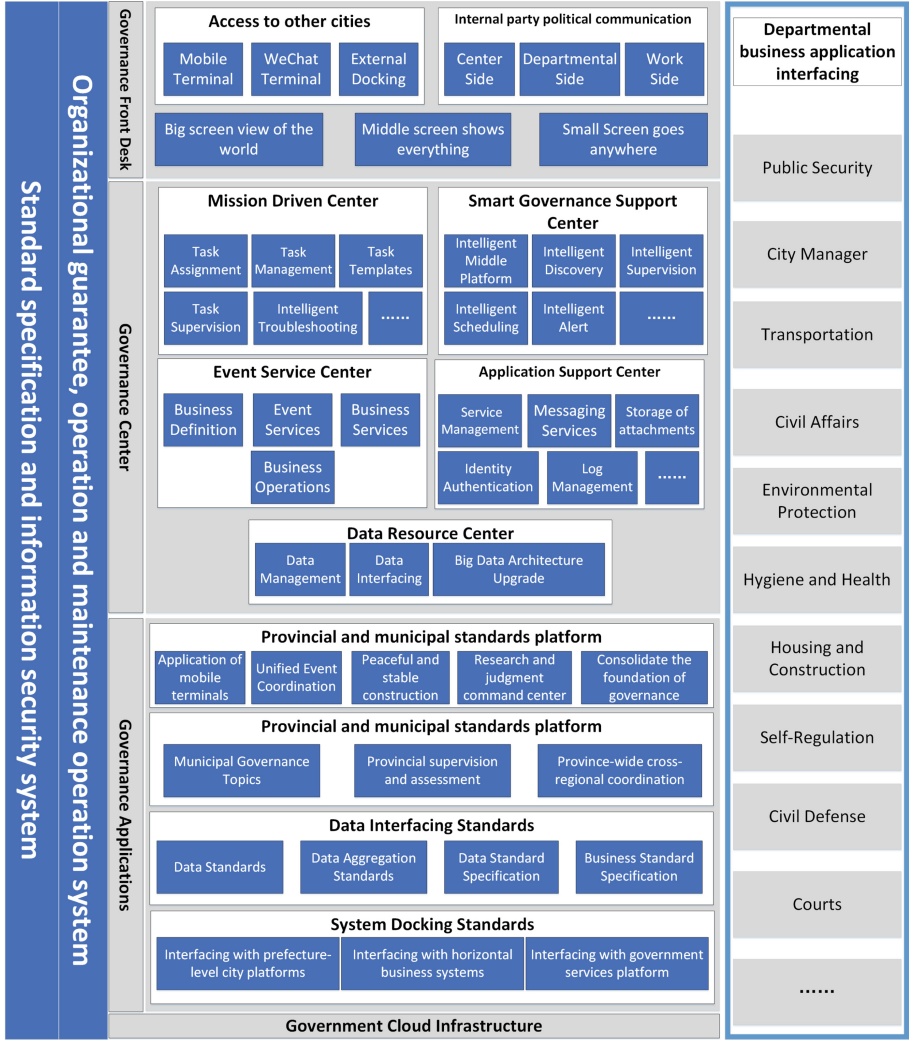


Fig. 1. Platform Architecture of Social Governance Modernization

4 Architecture Design

4.1 Govern the Middle Desk

The construction of the modern management platform of municipal governance cannot be separated from the foundation of the basic general capability, which is mainly the business general capability and the information general capability. To realize social governance at the municipal level, data and business need to be connected horizontally and vertically, social governance mechanisms and constitution need to be recurred from top to bottom, and solid support (framework)

center needs to provide the base for information construction. Regional governance involves the data and business system, facing the source, type, quantity, level, standard, etc. a lot of “problems”, requires the support center to provide data resources, application support, the event service, and driving tasks such as supporting capacity, to realize from different levels, up to support the flexible application of rapid development, deployment, make the business from all walks of life to realize agile innovation.

The support base is the foundation of the basic framework of the modern management platform of municipal governance and provides universal capability support for upper-level data turnover, business application, and service sharing. It provides a unified standard and normative system and management starting point for social governance management personnel in the municipal area to coordinate the standardization and implement the platform level by level, reduce the repeated construction, reduce the cost and increase the efficiency of the upper business application construction. It builds a data and business hub for the municipal governance command center and promotes efficient and convenient data docking and business flow coordination between the center and various commissions and bureaux.

The main functions including data statistics, management, and docking, to apply the middle convergence ability of application development-oriented common components, in a unified interface to support all kinds of the upper application, focusing its various functions only when it is applied in building business applications, and no longer need to consider the general foundation ability construction, to avoid the redundant construction investment, promote the application of a rapid change in innovation. It significantly reduces the cost of application construction, shortens the construction cycle, completes the further abstract integration of the common business capabilities of digital applications, and provides a comprehensive, real-time, and scalable platform that integrates business definition, business services, and business operations.

At the same time, the task configuration module provides flexible and diverse attribute configurations for different types of tasks. According to the regular tasks such as site inspection, personnel visit, and room information collection and verification, different information collection, task frequency and task receiving objects can be formulated to form task templates.

4.2 Governance Application

Governance application is divided into four modules: provincial and municipal standard platform, provincial supervision and coordination, data docking standard, and system docking.

Provincial and Municipal Standard Platform Module. The provincial and municipal standard platform module builds the provincial and municipal governance modernization platform, which mainly includes four modules: consolidating the governance foundation, unifying event coordination, research and command brain, and a mobile terminal application.

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The tamping governance module has the functions of intellectual governance support, map service, comprehensive governance foundation, knowledge base system, and so on. Wisdom for support is based on data gathered in the center of the data resource, adapts the processing large data architecture, combined with the artificial intelligence algorithm model, assigns energy to the upper business application, to realize found less blind area, comprehensive regulation, scheduling optimization recommendations, early warning and high automatic, classification, distribution boards, release the command center of human, avoid artificial defects.

Map service is the basic implementation of municipal social governance and the essential spatial geographic information system for the core business. It is necessary to superimpose functions and construct scenes on the GIS engine to better support the command center for municipal governance-related work.

The basic subsystem of comprehensive governance refers to the relevant standard documents of the national grid and comprehensive governance. The comprehensive information resources required by national standards and user requirements are unified, unified, and shared, and the basic comprehensive governance application is made by adapting the information. This System provides comprehensive governance information management tools for social governance-related users, meets the requirements of national policies and reduces costs, and increases efficiency. It makes the basic data clear at all levels for the municipal governance command center and provides basic capability support for the upper-level business, application, and decision-making of municipal governance.

The knowledge base system brings together the whole domain knowledge, and center management platform, and it can be finished through the base application report knowledge, knowledge audit, shelves, shelves, knowledge for knowledge, work order transfer knowledge, knowledge retrieval, knowledge view, and knowledge correction, reference, department, yellow pages, operational management, and knowledge service bulletins, etc., the public can complete knowledge evaluation and knowledge collection through basic applications.

Unify the event coordination subsystem, and manage events in the whole process and life cycle around governance events. Provide full-function and intelligent applications for business staff of social governance to bring better user experience; For the municipal governance command center, open up the cross-regional, cross-departmental and cross-platform event coordination process, track and handle governance events one by one, and promote the steady development of the modernization of social governance in the municipal area.

The research command brain has five modules: command scheduling, emergency response, decision research and judgment, risk prevention and control, and situational awareness.

The command and dispatch system needs to comprehensively integrate all kinds of social governance resources within the jurisdiction, and visually present them on GIS map to complete the construction of an urban resource cloud map in the province. In addition, various AI applications can be used to communicate with field staff on the urban resource cloud map, and direct remote command and scheduling can be carried out to achieve rapid coordination and efficient disposal of governance events.

The emergency disposal system supports incidents, the judgment of events, emergency plan, emergency disposal, report, and feedback, the emergency plan review scenarios, such as emergency events associated with the linkage department coordination, distribution of the situation, and disposal of feedback, check on the results, etc., realize the emergency disposal process of effective linkage between the various departments.

The decision research and evaluation system makes use of the municipal governance theme database formed by the aggregation and association of the data resource center, combined with intelligent algorithm analysis, and makes a large screen visual display according to the theme and the key index data of each theme.

The risk prevention and control system combines the huge and complex data gathered with artificial intelligence capabilities and algorithm models to form the intellectual governance support ability [15], which runs through the whole process of governance events in actual business scenarios, to realize the early warning and control of various hidden dangers and risks in the province.

A situational awareness system combined with the regional governance-focused application scenario, makes the data resource center of the standard library data and subject library data, according to the intelligent algorithm, do special visual display, let the command center can lead the whole situation of intuitive perception district social governance, from different levels and different dimensions grasp the overall situation of the province city run.

The mobile terminal provides two types of mobile application scenarios: staff end and public end, to meet the different needs of staff's daily work, public appeal reporting, information consultation, and so on.

The staff end is mainly equipped for grid workers and carries the reporting functions of community buildings, population collection applications, and various events. It will gradually cover all communities and all kinds of management services according to the actual situation. The other part is the department end, which provides mobile applications for handling events by functional departments so that the staff of functional departments can get rid of time and space restrictions, look at and treat events in real-time, deal with and give feedback in real-time, and improve the efficiency of event processing. At the same time, the central end is set up to provide mobile terminal office applications for the staff of the command center, so that the staff can get rid of the time and space restrictions, pay attention to the event demands from various channels and the disposal process of distributed events in real-time, and improve the overall efficiency of event circulation.

The business of the public end for the masses mainly has three modules: problem reporting, receiving feedback, and service evaluation. The people will give a brief description of the problems they find and then report them. Firstly, all the cases accepted are merged to form the case acceptance module, and then all the cases are assigned. Different cases are assigned to different departments for processing and carrying out case supervision at the same time. If the case does not pass the review or needs to be modified, it can be reassigned. People can receive news from the relevant departments on the official account and give certain feedback. The department manager accepts the command center administrator from the case and reviews the case, or decides the case back, in the process of disposal of the right time for pressing the case, then the command center administrator reviews the results of the case, and offline verification check, if the case is unqualified, back pay equal attention to, if qualified, the case will be closed and included in the statistics. People can also evaluate the service of the relevant departments of the government after the relevant problems are dealt with, and complain if they are not satisfied with the service process (Fig. 2).

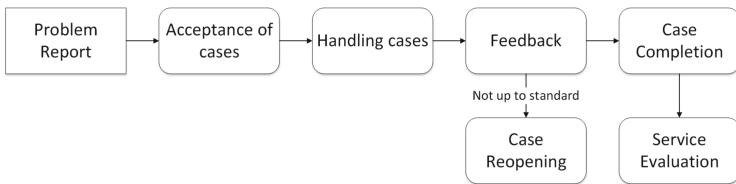


Fig. 2. Case processing flow chart.

Provincial Supervision Coordination Module. The provincial supervision and office coordination function module is constructed to facilitate the supervision, analysis, and coordination of social governance work in various cities, including supervision and assessment, data analysis, and cross-domain coordination. It mainly includes three parts: provincial supervision and assessment, municipal governance topics, and provincial cross-domain coordination.

The supervision and investigation part is mainly based on the needs of provincial departments, municipalities, and staff from different dimensions of assessment and statistics, and provides performance evaluation functions. It can quantitatively reflect the workload and work efficiency of provincial departments and social governance in various cities from multiple angles and dimensions according to the performance assessment rules and provides ability support for the realization of data-oriented and intelligent assessment.

The special topic of municipal governance shows the running situation of a map of social governance of the whole province from three aspects: urban management situation, market supervision situation, and comprehensive governance situation. From the perspective of business analysis of social governance,

enhancing the capability and level of social governance as the goal, according to the “user-centric” principle, with the whole life cycle of the operation objects as the breakthrough point, concerns for the convenient degree, etc., at the same time around with the focus of social governance and innovation characteristics, grasp key, find brand and characteristic. To continuously help the government to timely find the problems in social governance business, and promote the closed-loop management mode of the whole process of social governance.

System Docking Module. Connect with existing municipal governance platforms in various cities, break the barrier of the provinces and cities system data and work order, unify construction of the province’s event linkage docking module, establish unified standards and specifications for business connection, need docking information including business gathering information and delivery business cooperation at the provincial level and other systems to submit the business information together.

The provincial municipal governance platform should connect with the horizontal business system at the same level, break through the barriers of data circulation, achieve seamless integration of information, and conduct all-around linkage of business.

It connects with the government service platform, converges the data such as certificate handling and document handling to the municipal social governance data sharing and exchange platform, and forms the municipal social governance data standard through the cleaning and transformation of the aggregated data, which can be shared and called by other platforms.

Data Docking Standard Module. The provincial data docking standards and specifications have been formulated, and the municipal platform has been connected to the provincial platform according to the standards to realize the data sharing and exchange of the whole province. Meanwhile, the horizontal department systems related to political and legal business (including public security and government services) are also connected according to the corresponding data standards.

First, establish a unified standard for data [16]. The platform provides data verification and transaction processing mechanisms to ensure the integrity of data. The data should follow a unified specification, and uniform coding and the data set is maintained in a unified format. The consistency of the same index in different applications in the system should be ensured. The consistency of the same index data in different dimensions and granularity should be ensured. The recorded information must be accurate and cannot contain exceptions or errors. At the same time, the platform should be able to complete the collection and exchange of data triggered by all departments in real-time in the case of good network conditions.

After that, the data access standards of various government information systems will be established, including databases, files, messages, service interfaces,

etc. The database access mode adopts the form of a front exchange information base and the data sharing exchange platform to connect. In this mode, the information exchanged between the department's government affairs application system and other departments application systems is transferred through the department's front exchange information base. The file access mode adopts the file exchange mode to exchange data with the data-sharing exchange platform. In this mode, the department saves the relevant data into XML and Excel files (Xls, Xlsx, or CSV format), and then sends the files to the municipal data sharing and exchanging platform through FTP, HTTP, etc., or obtains exchange information from the municipal data sharing and exchange platform. The message access mode connects the department to the data-sharing exchange platform in the form of a message service interface. In this mode, the department application system directly sends the exchange information to the data-sharing exchange platform by calling the message service interface or obtains the exchange information from the data-sharing exchange platform, without reading and writing the database. In the service interface access mode, the RESTfulAPI or WebServices provided by the department are quickly connected to the data-sharing exchange platform and the service bus provides services for external applications. In this mode, the department needs to provide an explicit RESTfulAPI or WebService invocation interface.

The business standard specification is shown in the following table (Table 1).

Table 1. The business standard specification.

Number	Standard Name	Introduction
1	Social governance assessment and evaluation criteria	Establish a set of scientific and perfect assessment standards for provincial departments, cities, and staff in social governance
2	Event coding specification	Formulate coding rules and norms around the coding of municipal social governance event catalog, event list, and work order
3	Event List Directory	Form an event list according to the field, category, and directory around the social governance events in the municipal area

The data standard specification is shown in the following table (Table 2).

Table 2. The data standard specification.

Number	Standard Name	Introduction
1	Encoding specification for social governance data resources	Standardize data integration access and update strategies for social governance projects, customize update interfaces for various types of data, standardized data collection methods, and stipulate quality inspection methods
2	Social governance data integration access specification	Standardize the data elements of the basic information resource database of urban parts database and housing database
3	Data element specification of social governance infrastructure	Standardize the data elements of the basic information resource database of urban parts database and housing database
4	Social governance data governance specifications	Mainly include the requirements of data extraction, data cleaning, data conversion, and data loading
5	Social governance data quality specification	Determine data quality indicators and verify and monitor data quality problems; the basic technical requirements such as the technical methods of data quality inspection, data verification rules, data quality indicators, and data quality evaluation are stipulated
6	Social Governance database design specification	The name, table structure, metadata, characters, views, SQL encoding and applicable objects of the application database designed for each business topic of the social governance project will be standardized to ensure that each database can achieve unified and complete support for the application requirements of all data resources
7	Video front-end point basic information data specification	The basic information specification of front-end point location includes location information, jurisdiction information, time information, and camera information. Image information annotation area setting; Camera latitude and longitude and camera national standard coding code

5 Conclusion

Based on the comprehensive analysis of the current problems in social governance, this paper puts forward the coping strategies of unifying standards, establishing application channels, improving technical support, national governance, and intelligent support, which has reference significance for further improving the comprehensive governance ability of society. At the same time, it makes use of a modeling and simulation system (MBSE), puts forward the main construction contents of the platform, system construction model based on the current mainstream to detailed analysis and design of the system, adopts the design idea

of platform and modularization, based on the unified complete system of technical standards and specifications, designs the social comprehensive governance management system which has been a realization, realizes real-time collection, transmission, storage and management, land, material, situation, matter, organization information, and designs and implements the collaborative workflow and evaluation mechanism.

Through the construction and application of the social comprehensive management system, this paper solves the following problems in the current social comprehensive management work: (1) Improve the communication between stakeholders of comprehensive social governance, and help the modelers to understand the complex structure of comprehensive social governance. (2) By enabling the system model to observe the social comprehensive governance business from multiple aspects and providing the ability to analyze the impact of social comprehensive governance business change, the complex social comprehensive governance business model will be constructed. (3) To improve the analysis quality of complex structures of integrated social governance by providing an unambiguous and accurate system model of integrated social governance that can assess consistency, correctness, and completeness. (4) Enhance knowledge capture and information reuse by capturing information in a more standardized way and making efficient use of the built-in abstraction mechanism inherent in model-driven methods. It is helpful to standardize and optimize the comprehensive social governance process and improve work efficiency. (5) Improve the ability to analyze and understand the business of comprehensive social governance by providing clear and unambiguous concept expression. Once you have learned MBSE, you will have mastered the method of constructing the complex structure of comprehensive social governance efficiently and standardly.

In the future, we will make MBSE modeling technology combined with social comprehensive treatment more closely, and more in-depth research, striving to provide more powerful support for comprehensive social governance through modeling and simulation technology.

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