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Research on Engineering Standardization of Community Project Site Information Systems

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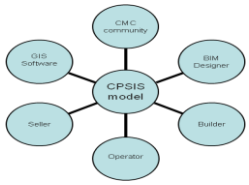

Abstract: **Three-dimensional site model constitute the infrastructure of digital city, and provides support for virtual construction simulation. This paper comprehensive discussed the architecture of information systems, standardized design and standardized management, spatial positioning information, classification and coding, data structures and exchange formats, hardware and software environment, data quality control, system implementation and maintenance, system security and confidentiality. Those technical advices can effectively promote the combination of project management and community administration.**

Keywords: Project sites; Information systems; Standardization

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1. Introduction

Community project site information system (CPSIS) is carriers of a real community in the Internet era virtual three-dimensional digital community. It is a special branch of geographical information systems (GIS) and expands building information modeling (BIM). As a bridge connecting BIM and GIS, the three-dimensional site model promotes integration between the two different products. This construction site model is the foundation within the precincts of the building project management information system for the administration of the community concerned. After completion of the project, the construction modeling will be transferred to the three-dimensional digital space information to the administrative department of community and become community management information system infrastructure. Using computer technology and information technology, community project site modeling achieve a variety of spatial and non-spatial information and attribute information data acquisition, processing, storage, management, query, analysis, application and maintenance of spatial information system update . Engineering site Information systems of construction management and community administration are modernization tool for building community planning, implementation, and operation. Quantitative, scientific, and fast query and analysis for site construction provides advanced information technology and effective support for design and construction.

CPSIS store the entire burden of the various community projects and provide stable comprehensive information, analysis, exchange and functional services. Its construction and the application itself are a large and complex systems engineering. Data source community project site information system is very extensive and complex number, the demand varies. This requires information classification, data formats, technical processes, device configuration, network communications, and so there are a series of mutually supporting standards, norms and conventions, to ensure sharing of information resources, but also requires the systems between different venues to be compatible with each other, building links between the various subsystems within the site to be up and down and all parts connected to each other, historical, current and forecast future project information mutually comparable, so as to achieve the same technology to communicate with each other targets. Current outstanding problems in the community project site information system is self-contained existence among specialty construction unit within the community, redundant construction, there is a more serious quality problems, some systems, some systems, such as the applicability of the poor, not only cause people, repeated construction, a huge waste material, and it is difficult to realize the comprehensive utilization of information resources and share information. Therefore, to achieve a community project site and standardization of information systems is a key issue GIS and BIM integration. CPSIS function is shown in figure 1.

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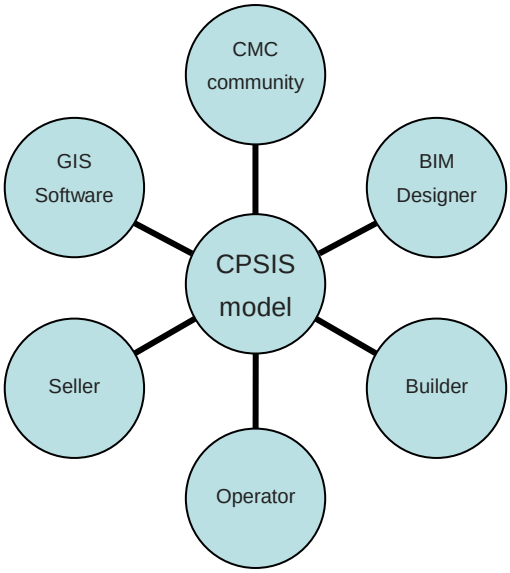

Figure 1. CPSIS function chart.

2. Problems in the development of CPSIS

In the development of community projects in the field of information systems should be noted that some of the problems can be summarized as follows:

(1) Frame structure and construction sequence. From the overall objective considerations, structural engineering site information system should include basic subsystems, subsystems and integrated subsystems three professional. Subsystem is the foundation of the entire infrastructure spatial location of other subsystems and public elements, there must be a global consideration and strict standards for construction first, in order to provide a common basis for other subsystems unified development.

(2) Development model. Many building and community management unit has established field of information systems needs of the community, but no adequate technical strength and experience. Therefore, the implementation of BIM technology in the construction unit or community management departments to implement GIS-based, IT does have the power to choose a practical experience in technology and construction industry, information systems company, as a long-term technical support and advisory body, and the use of co-development model for development. Construction unit or community management departments to give full attention to grasp the initiative in the construction of the whole system, in strict accordance with the order of information systems development, technical support companies in particular should be based, needs to do the investigation, design and demonstrate two key work, to form a authoritative text, as the whole development guidelines.

(3) Standardization and standardization. Pay special attention to solve the three aspects of standardization and standardization issues: First, to establish a standard mode of operations of the various departments involved in a community project site to accommodate the use of space information systems office automation tools to achieve the goal; the second is based on local standards, combined with the actual site, to form a unified standard graphical information classification and coding and attribute information index system and other aspects, in order to ensure uniform data and information sharing; the third is the formation of technical regulations and standards system development, carried out in strict compliance.

(4) Hardware and software configuration. According to the construction scale, economic support and capacity building of the target community site information system, based on the completion of the overall design and verification to be determined based on the overall design of the hardware and software configuration and procurement. It shall be paid to the application of network and multimedia technologies. It cannot be purchased equipment, and then the system design.

(5) Combined with the office automation. Community management department initially asked for the establishment of information systems are mainly: computer management data, providing convenient services for all types of queries to retrieve the object, the number of statistics, graphics and information transfer functions, and office automation; only in improving their daily work after efficiency, will have further analysis and evaluation and forecasting requirements. Therefore, the construction of the venue information systems and office automation closely integrated into a whole is very important. In addition to data accumulated by office automation, but also updates a very important way.

(6) The system constantly updated. The date of the beginning of the construction of the system, it is necessary to update it very clear question. Community site information system must be constantly updated in order to have real value. In this regard, there are three major significance update: First data must be constantly updated, otherwise the system would provide misleading information; the second is the upgrading of hardware and software equipment; third is the application of new technology and methods.

(7) The creation of a good management environment. Community site information system is complex system engineering, the traditional community work, the method is an impact and transformation, and involves stakeholders in the distribution and supervision. Environmental impact management system is often much larger than the success or failure caused by technical problems. Therefore, community information system construction site in the organization, information sharing, regulatory departments collaboration, intellectual property, etc., must be given by the higher authorities of certain powers, resulting in a well-managed environment. Otherwise, the successful completion and smooth functioning of a venue information system is very difficult.

3. Standardization

Standardization and regulation reflects a region's economic development and an important symbol of

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technological progress, but also to ensure information exchange and sharing of the premise, especially in the information society, it is particularly meaningful.

Standard CPSIS is rich in content, a wide variety of systems. Community sites mentioned here standardized information system mainly refers to the development, promulgation and implementation of this series. Such a standardization system is to go through study, practice and many departments cooperation can gradually built up, this is neither a construction unit of the task, it is impossible to be independent from a community commitment. For most communities will be undertaken community site information system on standardization issues most pressing problems to be solved as follows.

First, we must understand, absorb and cited national, and local existing industry standards, specifications and procedures; analysis and references to some of the city has been developed yet for the specific circumstances of the local standards, codes and regulations.

Second, in conjunction with local conditions, research and the development of system construction must have some standards, such as: Classification and coding standards community venue information. It includes basic site information, the classification of professional venues and attribute information, coding and indicators. Community sites information quality control standards. Spatial location accuracy and precision of each type of attribute information should have clear quality requirements and test methods. It includes standard terminology and data dictionary. Mainly standardized terminology to clearly define the connotation and denotation of data items, so that each of the elements or professional basis and have a clear definition of quantitative and qualitative indicators.

Data recording format and interchange format standard. Community Venue Information is spatial orientation of public infrastructure standards. Including map projection and transformation, plane coordinates, elevation coordinates, site grid and building zoning standards. Technical processes information systems community site development and construction specifications. In this respect there is a lot of content, such as system design, technical process requirements, digital technology procedures, technical documentation, and so save the rule.

Third, administrative acts and regulations provide a well-managed environment. Although this is not entirely standardized information systems community site content, community governance issues involved, but in the construction and application of the system are very important. Practice has proved that, in a certain sense, the development of the most difficult venues community information system is not technology and capital, but the management and coordination. To meet the information system, the participating units must regulate the construction management mechanism and procedures, issued a series of regulations to make it simple, structured, orderly, logical and standardization, can vary only follow a program mode; clear and coordination between the units involved in data acquisition, exchange and paid (or unpaid) use the obligations, rights and responsibilities; intellectual property rights must be promulgated several regulations defining community site information system and its resources, the use of right, the right to publish revised rights and development rights. Many engineering lessons show that the introduction of community information systems community site construction management and related work, the adjustment of the existing management mechanism, straighten, standardization and institutionalization aspects of the work, information sharing and collaboration among all units involved in various community work personnel, the impact of the traditional ways of working methods and the distribution of benefits, both executives at all levels need careful guidance and patience, but required norms, regulations, executive orders to be guaranteed.

The general concept of community venue information systems, including the definition, content, functionality, frame structure and construction sequence, construction and development model, hardware and software configuration guidelines, and office automation combined system update mechanisms, systems and management of the environment and so on, there is the same term different meanings, different terminology same meaning confusion. For example, the frame structure for the community in terms of information systems field by studying the various subsystems of community venue information systems may contain their relationship; they are grouped into three levels of the base layer, the professional level, integrated layer. From the construction of the development model to consider, in the framework of the overall design, which belongs to the sub-base layer, the main venue is the basis of the information subsystem should give priority to development and advance construction; professional layer often contains multiple specialized subsystems, different communities, the need to build a number of subsystems, which developed the order may be different. The general plan, cadastral, pipe network and other subsystems first subsystem developed in other professions, and then gradually expand; integrated subsystems site content should have considerable development in the previous two after, you can proceed with the development. Thus, the problem of community venues involved in the concept of information systems should be studied, and as uniform as possible.

Community site for information systems terminology, especially with the emergence of new technological developments words, there is inconsistency in the use and understanding, research and community venues selected terminology used in information systems major, their close, community site gives information systems applicable to the interpretation, maintaining its consistency with the common interpretation. This is not only theoretical significance, but also has practical value, is community venue information systems standardization a basic work.

4. Standardization of design

Site information system engineering community design to achieve three main objectives, both to improve the

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usefulness of the system, reduce system development and application costs and improve the life cycle of the system. The need for a feasibility study and determine the target system before making the system design, and the overall design of the system according to the determined goal. System design, there are two main methods: prototyping and life-cycle method, the latter is more suitable for the development of information systems characterized by community site.

Content community site information system design, including user requirements and user needs analysis survey report preparation, system logic design, standardized design, hardware and software configuration, system development plan, budget and organizational implementation. Among them, the community site information system logic design and GIS in general, as its part of the overall logical structure includes hardware, software, databases and personnel. Community site database information system is divided into basic information databases and professional information database categories. Standardized design includes positioning control, graphical data classification and coding, attribute data index system, data tiering scheme, the data file naming rules, statistical unit, technical processes and quality control, describing databases. The overall design is subject to verification and approval of the competent authorities.

Community Information System subsystems designed site includes subsystem logical structure between database design, function module design, user interface design, compatible subsystems sharing. To ensure the quality of information system design community site, the design should be evaluated, including advanced, completeness, reliability, scalability, portability and effectiveness of the system of prediction and assessment.

4.1. Database design

It is based on the results of the logical design to physical design. Space physics community information systems designed primarily to determine the physical structure of the system, the use of technical means, conditions and resources needed and the steps and the progress of the implementation time. It includes database physical design, standardized design, hardware and software configuration, system development plan, budget and organizational implementation. The database is an important part of community project site core information systems. Under normal circumstances, the funds workload and consumption database design and construction will account for most of the overall system design, development effort and money, and can reach 60% to 70%. The quality of the database design, not only affects the speed and cost of the system construction, but also affects the system application, maintenance, management, and data updates.

Community site database information system according to their information content can be divided into two categories: basic information databases and professional information database. Basic information database is a database space; its main content is a large-scale community-dimensional digitized data, complemented by other basic social and economic information engineering. Professional information database can be space database can also be location-based relational database space is mainly used professional information data (three-dimensional models or statistical data) to build a database. According to their different professional content can be further subdivided into several sub-libraries, such as planning and management information data sub-libraries, municipal pipeline information shards, cadastral information data shard, property management information data shard, traffic management information data sub-database architecture management information data shard, landscaping management information data shard, water management information data shard, environmental management information data shard, civil management information data shard, EMIS data sub-library, health management information data sub-libraries, etc. .

Community information systems field has a close link between the database and the data sub-libraries and community venues each subsystem information systems. In addition to basic information database as a major part of the basic information subsystem, but it is also connected with the professional subsystem, to provide them with the relevant basic data. A variety of professional databases or data sub-library except as a major component of the corresponding subsystem, but also may be other subsystems called. Therefore, we should consider the needs of the various subsystems, following the principle of shared database, the database community venues unified information system design and construction, not only according to the needs of each subsystem design and construction of each database, otherwise it will increase the redundant storage of data I degrees.

4.2. Community Project Site Information System standardized design

Community information systems standardization project site is designed in accordance with existing national standards, industry standards and local standards, the actual situation for the community, the system objectives and user needs, develop and standardization of documents, as an integral part of the overall design.

Community information systems engineering site content and standardization of design include:

(1) Positioning control information system mainly refers to the various community venues and the location of the plane and elevation control system control system information, both of which should be uniform, and can be converted to a defined positioning control system. Unified positioning control is all kinds of information spatial orientation, mutual stitching and registration prerequisites.

Flat-screen control system is one of the most basic spatial positioning systems for the identification of natural and socio-economic factors of flat address space, flat position correctly reflect the true relationship between the various entities in the community.

Now the control system can be used in the plane can be varied, in addition to latitude and longitude, there are

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national uniform Cartesian coordinate system and the independent coordinate system. Independent coordinate system is determined by the communities themselves to a particular point of origin of the Cartesian coordinate system, which coordinates and unified by the known parameters of translation and rotation operations can be converted to each other.

Site design community information system, control system should select a plane as a unified control plane foundation of the entire system. If you use an independent coordinate system, it should also determine the transformation parameters between the coordinate system of national unity. A variety of geographic information community site for the construction of information systems, professional engineering drawings and other relevant data should be normalized to the unity of the plane system.

Height Control system is another important venue spatial positioning system for the identification of natural and socio-economic factors in relation to the height of a starting elevation plane. Elevation control system and control system combines plane, three-dimensional space can be used to accurately reflect the true relationship between the various entities in the community.

Elevation also coordinates national unity and independence of elevation of the points system. Elevation line between independent and unified national system through a known elevation correction parameters, can be converted to each other. Site design community information system, an elevation system should be selected as the elevation of the entire system of control basis. If you use a separate line elevation, should it determine the elevation of the transformation parameters of national unity between the elevation systems? All drawings and other data and elevation related to this unity should be normalized elevation system.

Information systems engineering sites in the community often need to press a specific area of a polygon or polyhedron construction information retrieval and analysis, such as the behavior of various types of construction workers in the field to monitor the construction, analysis of the economic activities of the participating units and so on. That should provide boundaries, name, type and code of various polygon or polyhedron regions to form a unified control system area polygon or polyhedron.

(2) Classification and coding of graphic data based on existing standards unified graphical data to determine the classification and coding. Graphic data classification code should include basic information and all kinds of professional information graphics data classification and code. Note the different scale classification and coding conversion relationship between the national standard. Professional categories of data classification and code, such as planning and management, municipal pipelines, transportation, land management, property management, environment and disasters, public facilities, public security, socio-economic, etc., where the existing standards should be the implementation of national standards or industry standards otherwise, you can develop a temporary classification and coding scheme, lists the temporary classification and coding scheme, the table lists the temporary classification code, and then be promulgated national standard to be converted accordingly.

Graphic data code is used to identify the main elements, such as roads, road intersections, neighborhood, municipal engineering pipeline, parcels, land, buildings, public facilities, etc., should write code. Identification code of the road, road intersection, neighborhood, municipal engineering pipeline area should comply with the relevant provisions of the rules of the coding structure, combined with community features and applications of geometry habit, first determine the positioning partition code (ie azimuth yards), and then were to determine the various types of feature code structure entities, thus constituting elements of these types of community venues identification code. This work requires a detailed list of community venues List All code should be inclusive information systems.

(3) Community information systems field attribute data attribute data especially professional information should design unified index system standards. Standardized design attribute data index system consists of two aspects: one is designed for the property item attribute information made by certain types of graphics data; the second is to determine the property value index for each property item. Property item is designed and tightly integrated business management content, generally should have a standard, but for different communities, different levels of user management, you can choose how much of their projects. Are generally based on existing industry or local community standards to determine this, the standard item attributes and attribute values of this system involves classification or index value.

(4) Data various databases or data sub-library should be based on the specific circumstances and needs of users, the use of a layered approach to storage. Hierarchical data stored in favor of multi-channel management and rapid data retrieval and analysis.Data hierarchical principle is: the same type of data in the same layer; close to each other on the same layer as the data; a user frequently used data on the main layer, or else, on the secondary layer; some for display auxiliary control feature point model name or location annotation, line, or the data plane, should be placed on the auxiliary layer; hierarchical information data base is fine, a variety of professional information and data is generally placed in a separate layer or less the layers in.Based on these principles, develop a unified data tiering scheme, uniform provisions of the layer name, layer number, and data content.

(5) A community venue information system contains a large number of data files. In order to ensure effective management of data files and easy retrieval queries, so that confusion does not occur, should be certain rules for file naming. File name should clearly reflect the code of the database, as well as the stage name of the data layer, layer number, model number, and data processing and so on. To prevent the file name is too long, can be divided into two levels of management, is about the database code, model number or model name code as the home directory

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name, the rest of the file name as the main directory.

(6) Statistical data is an important source of information community site information systems. The current limitations of statistics by historical factors, most can pinpoint the lack of signs, or in large blocks of flats statistics. Such information only for statistical analysis and calculation, spatial orientation and space can not be analyzed. Certain statistical data based on specific statistical unit can be spatial orientation, but because of different statistical data does not match the statistical unit and can not be analyzed. Therefore, the available statistics are often not fully meeting the requirements of modern spatial information systems. Statistics is community venue information systems indispensable part, especially a lot of professional information and data were collected using statistical methods, based on community needs characteristics, design a unified spatial orientation statistical unit, and a corresponding increase in the statistical unit in statistics code data items. Statistical spatial positioning unit may be regular grid, can also be based on certain conditions delineated polyhedron, depending on the content of data. Spatial orientation statistics unit should be stable and standardized.

(7) Technical processes and quality control for a community venue information systems, quality inspection and quality at every stage of the whole process and building control systems should be standardized. Standard technical process is built on the basis of practice, the optimization process technology, is an important means to ensure system-building process and system quality. The system can also write the technical implementation of large-scale programs to develop the control and guidance system works according to design. Quality control standards should be multifaceted, system design, data sources, data collection, and data processing until the complete system development, should have strict quality control indicators and inspection measures. Quality control index different systems are not the same, but there must be a set of criteria for controlling.

(8) Site information description data is data that describes the content, quality, condition, and other characteristics of the data; it simply is data about data. Description of the data is different from the data dictionary. The latter mainly from the data storage perspective to describe the data, and the scope of the former description is much broader. As described in a field, a description of the data not only to describe the stored information, but also to explain the origin and reliability. Data can describe the data, data, data sets series implemented on three levels. A description of the data is the data, there is no difference in form and other data that can exist in various forms of data exists, it is a necessary part of the community site information system data.

In the current information age, describing the data becomes increasingly important. That brought a lot of information data processing, management, use and sharing, a range of issues, describing the data to facilitate the user directly or through the use and understanding of data network, so that these issues have been alleviated to some extent. Community site information with other kinds of information, like the number of its data set, the complexity and diversity is growing rapidly, and the three-dimensional space model data is generally established by the different construction units, and made available to a variety of users, a lot of data also used multiple times by multiple users, so users are not familiar with the data to provide appropriate documentation on the data that is necessary to describe the data.

Venue information describing the data is collected and organized according to certain standards, describing the data standards by defining common terminology, definitions, elements, subsets and expansion methods, specification describes the content of the various data sets, making the site better information data application and effective retrieval of data to establish that he can better organize and manage data, users get information about the data set in order to find the data to meet their needs. Venue information describing the data generally include the following: Data set identifier information, data quality, data sources and handling instructions, data summary, data spatial reference systems, data classification, data distribution, and other information, such as related to describe data.

Establish a database and retrieval system in accordance with the standards community site information system can be implemented publish information community site, query and consulting services business.

5. Content and coding of site

Community Project is a community site information and spatial distribution of all the various elements related to model information, property information, and collectively the mutual spatial relations. The so-called factor refers to indicate the presence of floor space within the community a range of real-world phenomena with a common set of characteristics and relationships or a certain entity and its objectives.

Content community site information is divided into two basic categories of information and professional information. They have respective features. The former mainly for space, uniformity, accuracy and basic; the latter is mainly for professional, statistical and spatial orientation of. Is a common feature of both are time sensitive, their relationship is expressed as the former public space positioning the latter the base platform. Communities need to clear the site information classification and coding of importance, principles, tasks and methods. In general, the model codes and code information have the points. Given the content of the information community site is very extensive and complex, requiring the establishment of classification systems and indicators of community information site, in order to control further classification, coding and use of various types of model information.

6. Spatial data structure and interchange format

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Spatial data structure refers to the organization and encoded form data in the computer. It should be suitable for computer systems to store, manage and process the data model of floor space, is the space field and abstract description of the distribution entity relationship is an understanding of the data and interpretation. Spatial data is encoded spatial data structure in a computer implementation. Currently, two main methods of expressing information system spatial data field are a vector representation and the grid representation. Point, line, surface three vector coding method entities have coordinate sequence method, tree index coding method, the topology of the coding method, each method has its advantages and disadvantages; value method of raster data has made the central point an area dominated law, the importance of law. To improve accuracy, you can reduce the size of the grid cells of the grid, but the resulting substantial increase in the amount of data that needs to be to make up for the use of compression coding method. Commonly used methods of coding chain coding, RLE, octree coding, etc., they have their own advantages and disadvantages.

Due to hardware and software platform information systems community site used may vary greatly, recording format of the data will vary. To be able to exchange data between systems, the need for format conversion. Several common graphics, image data exchange format Bitmap (BMP), Graphics Interchange Format (GIF), Tagged Image File Format (TIFF), Drawing Exchange Format (DXF), all kinds of commercial software has its own external format, and have a number of other popular formats and conversion capabilities between.

7. Data quality control

Database is a community venue information system most basic and important part is the biggest part of the investment proportion. Data quality has a direct impact on the function and application of the system. Not only to measure the quality of the data according to the technical specifications, but also from the point of view of the data using the data quality issues.Quality control data includes status data, positional accuracy, attribute accuracy, logical consistency, data integrity, time accuracy.

Factors affecting data quality are: the quality of data sources, including a variety of geographic information data error, architectural models, and property surveys and statistical data errors caused by erroneous documents and data, etc; data quality in the process of building a database issues, including pretreatment digitized before, the precision digitizer, mining point system and operator error, scanning digitization resolution and vectorization accuracy, data conversion, such as format conversion, projection conversion error, etc; analysis process incoming data quality issues such as a calculation error, overlay analysis or other cause, such as error analysis.

After the data quality inspection, shall submit data quality reports, as part of the description of the data, for users to understand the data reference. Data quality control content and process, test methods and data quality indicators, the main content and format of the data quality report should also consider the standardization work was one aspect.

8. Implementation and maintenance

Implementation of the system is under the guidance of the system design, the design in accordance with the objectives and content determined stages, step by step process to complete the system development, system implementation, including the introduction of hardware and software, database creation, the main stages of application management system development. CPSIS implementation flow chart is shown in figure 2.

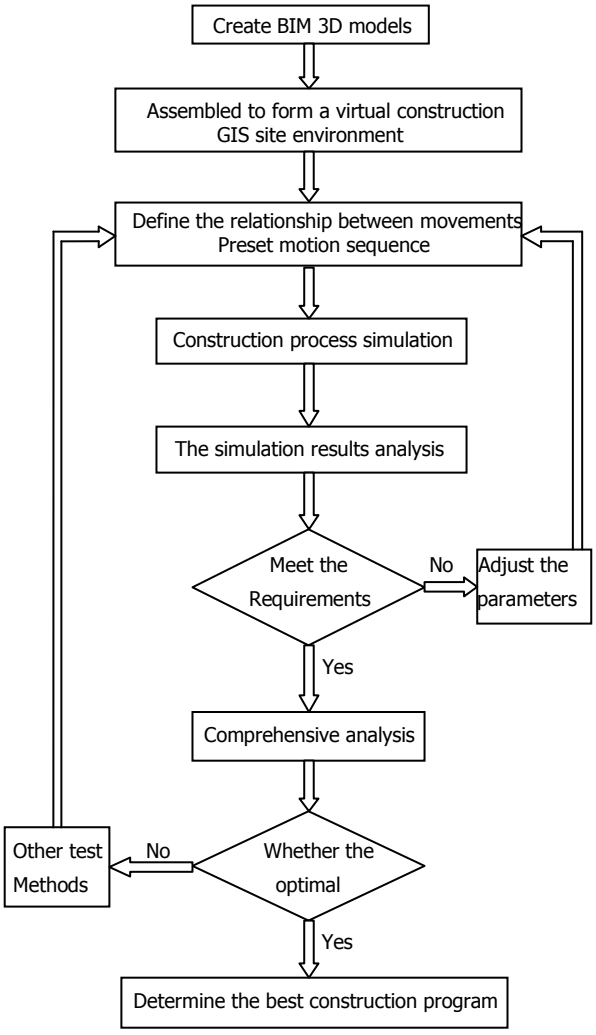

Figure 2. CPSIS implementation flow chart.

Hardware and software selection and introduction of key implementation steps: Configure → purchase program (including development) → installation→ commissioning and training of personnel at the appropriate time.

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Application management system developed on the site means that information systems infrastructure software platform, using other tools it offers, such as the macro language for secondary development, the establishment of community information systems engineering site user interface, to achieve a variety of management functions. Including interface design, module development, testing, and the FBI, commissioning and other steps to revise and improve.

After commissioning and comprehensive information systems community site, users pay to use and maintain. After the community venue information systems changed into operation, to establish a database, software, hardware, maintenance and update mechanism.

9. System Network, Security and Privacy

Development and use of CPSIS should pay attention to security and privacy issues network communication systems. Need to study the network communications, information highway, the general concept of a distributed information system network engineering site, focusing on understanding the communication network composed from architecture and physical structure in two ways. The former is described from the functional structure of a communication network, also known as the logical constitution of the network; the latter from the communications network to achieve the technical aspects described structure, also known as the physical network configuration. Communication network design must consider three main issues, namely, business demand, network construction and building a network design goals. In the design of network construction plan, you should consider the network topology, type and capacity of the physical channel, layers of network protocol standards, hardware and software, each network node, network management, network maintenance measures. Architecture community project site information system used can have a centralized program, file sharing LAN / WAN solutions, distributed processing several options and client / server solutions. Network design should be considered different communities, different systems, different user needs to choose different solutions.

Site information systems usually have a large number of confidential data processing and exchange on the computer and its network in the media storage, wired or wireless communication transmission line, if you do not take effective measures, such confidential data and the whole system is likely to suffer intrusion, resulting in losses. Endanger the safety factors are hardware and software reliability, user errors, as well as various kinds of natural disasters, such as trespassing or destruction.

To protect the system security, the need to take comprehensive measures in the legal, administrative, technical aspects. From a technical standards and norms, security and confidentiality of data transmission, there are two encryption methods, namely road encryption method and the end - to - end encryption; there are three encryption algorithms that stream ciphers, block ciphers and public key cryptographic algorithms. From the aspect of security in terms of data storage and access of files, encrypt stored data protection methods have file encryption, database encryption and other cryptographic protection; data access control methods have access qualification, access protection, database access protection and the prevention of sabotage and other information; data integrity identification methods, including password authentication, key identification, communicating parties authentication, message authentication and so on. Digital Signature sub-confidential and confidential, Key generation, storage, distribution, injection and destruction required uniform regulations.

On a system's physical security and security management, the former involves system equipment installation requirements, protection, equipment safety requirements, electromagnetic interference and radiation, and recording media protection and network security; the latter include regulatory agencies, access control, key management, technical document management, emergency planning and backup computer virus prevention and removal, as well as the establishment of the relevant rules and regulations, etc., should also be regulated item by item.

10. Conclusion

BIM provides an object-oriented 3d engineering entity model, its data accuracy level of is mm, however GIS deal with terrain and physiognomy, provides the perfect spatial analysis tools, its data accuracy is above dm. They are indispensable content for digital community. Normalization and standardization of CPSIS has become more and more important, related to the healthy development of GIS and BIM. A unified information system architecture engineering site, standardized system and standardized management, design, spatial positioning information, classification and coding, data structures and exchange formats, hardware and software environment, data quality control, the system implementation and maintenance, system security and confidentiality fully explored in this paper. Surfing digital city, trading and accepting services in 3D virtual building, virtual construction based on community project site information system, those new technologies will bring about changes to the traditional life and work.

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