

RESEARCH ARTICLE

Analysis on the Development Research from Digital Surveying and Mapping to Information Surveying and Mapping

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Abstract: The continuous improvement of modernization level has also gradually improved the surveying and mapping technology. Similarly, the rapid development of science and technology has provided a good environment for the widespread use of information-based surveying and mapping technology. For the surveying and mapping industry, the development of information surveying and mapping technology has good social significance. The development of surveying and mapping technology has undergone many changes. At present, it has gradually moved from digitization to informatization, ensuring the quality of surveying and mapping work to the greatest extent. In view of this, the paper discusses the development of digital surveying and mapping to informatized surveying and mapping, hoping to serve as a reference for related work.

Keywords: Digital surveying and mapping; Information surveying and mapping; Subject of surveying and mapping; Development

Citation: Ruike Bai, 2019. Analysis on the Development Research from Digital Surveying and Mapping to Information Surveying and Mapping. *International Journal of Geology*, 4(1): 13-17. <http://doi.org/10.26789/IJG.2019.01.004>

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1. Introduction

Surveying and mapping work serves all walks of life, and only accurate surveying and mapping data can effectively ensure the development of various tasks. In recent years, the surveying and mapping work has continued to develop, especially under the impetus of new technologies, the surveying and mapping technology has advanced by leaps and bounds, and certain results have been achieved. Traditional surveying and mapping work relies on total stations, tablet computers and other equipment, which has comprehensively improved the digitization of surveying and mapping work. However, with the rapid development of modern technology, new and faster information technology has become the mainstream, effectively improving the previous surveying and mapping work. In the information revolution, continuous innovation and development of surveying and mapping technology has effectively promoted the rapid development of various industries. It can be said that the entire surveying and mapping industry has undergone tremendous changes. Information-based surveying and mapping can provide people with more efficient information services comprehensively, conveniently and quickly on the basis of previous digital

surveying and mapping, effectively promoting the overall economic and social development.

2. Basic Concepts and Significance of Informatization Surveying and Mapping

2.1 Concept of Information Mapping

Surveying and mapping work is used in various industries, and the surveying and mapping work plays a very important role in the process of China's economic construction and social development, and has played a role in promoting the development of the industry. Driven by information technology, China's economic level and social development level have entered a new stage, and China's competitive soft power has been effectively improved internationally. Nowadays, the application of information surveying and mapping is more and more common. The development of information technology is developed from the basis of digital surveying and mapping. Through continuous improvement of Zhu Zihua's related theories and methods, the accuracy of digital surveying and mapping can be ensured to the greatest extent. At the same time, it can also fully implement equipment updates^[5]. The rap-

id development of the network has provided an efficient platform for the development of information surveying and mapping. At the same time, the network platform is also an important guarantee for information technology. Through the realization of network transmission, it can provide services to the public and promote the modernization of the surveying and mapping industry. Surveying and mapping is an important work in China, and it occupies an important position in the development of the national economy. Through good surveying and mapping technical services, it has promoted the rapid economic development in an all-round way, and has brought China's social development and economic improvement to a new level. The powerful data provided by the surveying and mapping work, which also effectively enhances China's soft power in international competition. With the rapid development of information technology, the surveying and mapping industry has formed a new model with information support as the core. What we call informatization surveying and mapping is mainly developed on the basis of digital surveying and mapping. The content and form of the traditional digital surveying and mapping have made the traditional digital surveying and mapping more abundant and diverse. Through the information revolution, the equipment of the surveying and mapping industry has also been greatly updated, forming a new technology and equipment with the network platform as the entry point. The network is an important guarantee. Without a network, information technology cannot be formed. Through an efficient and fast network system, it can greatly increase the speed of information transmission, ensure transmission security, and provide surveying and mapping data services for the development of all walks of life. Information-based surveying and mapping is a modernization. The inevitable requirement of development is an important step in China's modernization drive.

2.2 Significance of Information Mapping

Information surveying and mapping technology plays an important role in people's lives and various production management. In management work, it is necessary to provide accurate information in a timely manner to provide help for management and command, ensure that management is in place, and improve management efficiency. Only the scientific and reasonable use of surveying and mapping technology can provide people with accurate location references. In daily life, people need to have an accurate understanding and judgment of their own location, and they also need strong information surveying and

mapping support. People's judgment and identification of spatial location can only be achieved with the participation of surveying and mapping technology. Take control of your position in a timely and effective manner. Information-based surveying and mapping is an important direction for the development of surveying and mapping technology, which can meet people's different needs from many aspects. At the same time, with the development of marketization in China, economic construction also needs good information surveying and mapping support. Especially in China's current economic construction and social development, only continuous innovation and development of modern surveying and mapping technology can reflect the advanced nature. Information surveying and mapping is also a social technology. The sign of progress has a certain positive guiding significance for the improvement of China's economic construction level. In the specific process of carrying out various tasks, it is necessary to make full use of the advantages of information technology, through continuous exploration, and quickly develop the application space, so as to advance the long-term sustainable development of information surveying and mapping work^[6].

3. Relationship between Digital Surveying and Mapping and Information Surveying and Mapping

3.1 The Relationship between Digital Surveying and Mapping and Informatization Surveying and Mapping Technology

At the technical level, the two are related to a certain extent. At present, digital surveying and mapping technology is used in the construction and development of many fields. With the development of information technology, the content and technical form of digital surveying and mapping technology have changed. On this basis, technological innovation has been realized and the information content has been improved. Digital technology fundamentally uses ground triangulation and distance measurement. The development of informatization has improved the digital capabilities, realized the innovation and replacement of surveying and mapping technology, and gradually transformed the measurement graphics method to the automatic measurement mode. The information technology revolution has comprehensively improved the measurement accuracy and ensured the automation level of the surveying and mapping technology. Better promote the evolution of digital technology innovation.

3.2 The Theoretical Relationship between Digital Surveying and Mapping and Informatization Surveying and Mapping

In theory, both information surveying and digital surveying and mapping belong to surveying and mapping. The materials used between the two are basically the same. In information surveying and mapping, digital related surveying and mapping materials have been extensively improved. The use of digital surveying and mapping can establish an information material system. The use of can lay a good foundation for informatization surveying and mapping work. In addition, from the perspective of the collected data, digital collection can provide certain convenience to information processing, thereby effectively ensuring the transmission capacity of information, and data processing and storage are more convenient in the later processing of it^[7]. In terms of standards, the two have a high degree of unity and follow the same principles. Information-based surveying and mapping can transmit digital information on the network, and comprehensively process the information on the network platform to ensure the rationality and science of the surveying and mapping work. sex.

4. The Difference between Digital Surveying and Mapping and Information Surveying and Mapping

4.1 Differences in Information Collection Technology

Although the two are related in terms of technology, there are also certain differences. The data obtained by digital surveying and mapping focuses on digital features, and the degree of information collection is not highly dependent on technology. Data collection can be carried out through various equipment. Generally speaking As long as the output result is displayed in digital form, the application can be fully guaranteed and the digital guidance function can be realized. Informatization has very strict technical requirements. Only with good technical guarantee can the transmission of digital information be realized. The network is the basic platform of informatization technology. That is to say, informatization surveying and digital surveying and mapping are actually very different from each other. , The data obtained by informatized surveying and mapping technology is more accurate and faster, and the quality and level of surveying and mapping are higher.

4.2 Product Differentiation

Regardless of whether it is a digital product or an information product, it must ultimately serve economic construction and social development. From the perspective of the product form of the two, there is a certain difference between the two, and there are essential differences in quality and speed. Digitalization Surveying and mapping rely on automated surveying and mapping technology to obtain data. In the actual application process, data transmission and use can only be realized through the local area network. The scope of influence is not large, limited to a small space, and the degree of product sharing is not high. Informatization is different. Its product range is broader. Although informatization surveying and mapping relies on automated technology to generate results, it can realize product sharing and application across the entire network, greatly improving the practicability of product results and providing better services. Development of all walks of life. In essence, digital surveying and mapping products are only in stand-alone form, while information products are in online mode, which can aggregate and organize resources across the entire network, with higher overall efficiency and faster speed.

5. The Development Process of Digital Surveying and Mapping to Informatization Surveying and Mapping

The traditional digital surveying and mapping relies on automatic technology. In the process of use, there are many limitations. The obtained surveying and mapping data is only processed and stored in a single machine within a certain range. In other words, digital surveying and mapping mainly rely on storage technology. Data processing, through data extraction and then processing on demand, so that the relevant data forms a practical demand mode to meet the surveying and mapping needs of different users. The overall data collection speed of digital surveying and mapping is not high, the processing efficiency is low, and users with special requirements cannot meet the overall requirements. need.

New changes in technology have triggered innovations in surveying and mapping technology. Today, with the rapid development of informatization and networking, information technology has also entered a new stage of development on the basis of digital technology. The result of equipment improvement and perfection, through information technology innovation, has effectively improved work efficiency and further reduced the limitations of digital surveying and mapping. The continuous improvement of the network level and the continuous acceleration of

transmission efficiency have promoted the development of information technology and the concentration of information networks has increased. The higher the information-based surveying and mapping development, the surveying and mapping methods have been greatly improved, the overall work process has been improved, and sophisticated services can be provided to users in all industries, effectively meeting the needs of the healthy development of society and economy.

The development of information-based surveying and mapping technology is a major advancement for mankind and an inevitable development of technological innovation. It can be said that under the impetus of technological leading forces, the information revolution has effectively changed people's cognition. Network transmission, through efficient processing and analysis, extracts effective information, enriches the application of data, and effectively applies surveying and mapping products to a wider market. The update of digital products to information-based surveying and mapping products makes products diverse and rich in forms. Diversified products provide users with better services.

5.1 Geodesy

5.1.1 Reference System of Geodesy

The construction of geographic space contains many factors, and the relationship between each factor is relatively complicated. Therefore, it is necessary to use modern surveying and mapping methods to obtain relevant data. The geodetic reference system and framework provide a certain calculation basis for this work. Based on the establishment of the GPS geodetic control network, the actual geodetic coordinate system can be fully utilized. Therefore, China has gradually changed from centripetal coordinates to geodetic coordinates.

5.1.2 Satellite Navigation and Positioning Technology

The use of GPS technology can provide real-time positioning services, thereby laying a good foundation for the development of surveying and mapping disciplines. Precise data can realize positioning and navigation, thus completing long-distance positioning operations. Facing a larger area based on the base station, the observation error can be corrected in time to make the user data dynamic.

5.1.3 Refinement of the Earth's Gravity Field and Geodetic

The satellite gravity method is one of the main methods

of the earth's gravity field model. It mainly uses low-orbit satellites to complete the mutual tracking between the two satellites, and then obtains the earth's distance by measuring the distance between the two satellites. Gravity field coefficient: Install a gravity gradient instrument in the earth's orbiting satellite, and obtain the gravity field coefficient after measuring the gravity gradient^[8]. At the same time, in order to be able to effectively fit the obtained geodetic datum with GPS, it is also necessary to give full play to the precision and resolution advantages of the geodetic datum.

5.2 Cartography

5.2.1 Automatic Synthesis of Cartography

As the basic feature of informatization surveying and mapping work, the comprehensiveness of information plays a very critical role. China implements anthropomorphic mapping based on the computer model, which objectively reflects the characteristics of the human brain, which can improve work efficiency, and at the same time realize the accuracy of mapping, and provide a reliable basis for automatic map mapping.

5.2.2 Spatial Data Distribution Technology

The data distribution operation can use the method of combining the network system and the map system to establish a network basic system to complete the distribution operation. Moreover, in the process of implementing data distribution tasks, the virtual space of data distribution can also obtain visual dynamic feedback. As a collection of data, space can promote the development of technology and provide a good environment for it.

6. Research and Development from Digital Surveying and Mapping Disciplines to Information Surveying and Mapping Disciplines

6.1 Establish a Modern Surveying and Mapping System

Digital technology has achieved a brand-new development. In today's networked informatization, it is necessary to have a new understanding, with information technology as the core, fully establish a modern surveying and mapping system, within the framework of the system, effectively promote digital surveying and mapping to informatization surveying and mapping. Only in this way can we achieve the goal of healthy and healthy develop-

ment of surveying and mapping technology. The modern surveying and mapping system is the foundation for the development of the surveying and mapping discipline. No matter how the technology develops, its system concept remains unchanged. In terms of geographic information acquisition, the surveying and mapping discipline provides conceptual support for spatial location and gravity elevation, ensuring information and data in many aspects of information surveying and mapping. Reliability and practicality.

6.2 Research and Development of Photogrammetry and Remote Sensing Measurement Technology

Whether it is digital surveying and mapping or information surveying and mapping, the information and pictures collected come from photogrammetry technology and remote sensing technology. In surveying and mapping, we can't do without clear pictures and accurate data. We can get all kinds of data and pictures we want and all kinds of images and data through photogrammetry technology or remote sensing technology, It can not only meet the needs of digital surveying and mapping, but also achieve the goal of high efficiency in information input and processing. Through the effective processing, processing and output of digital surveying and mapping and information surveying and mapping, it can ensure the display of geospatial modeling products and better serve economic development and social people's livelihood.

7. Application of Surveying and Mapping Technology

Surveying and mapping technology is developed on the basis of digital technology, and its performance in actual work is as follows: Specific application in GIS and GPS. GPS technology can achieve precise positioning, and control the measurement error within 1cm to achieve dynamic positioning operations, which can also shorten the working time; GIS technology is a technology that integrates space science, computer science and informatics. In the information process, accurate and standard spatial information can be provided, thereby effectively promoting the informatization and scientific development of management work.

8. Conclusions

Digital technology provides people with a good foundation. In the new development stage of informatization surveying and mapping, digital mode is inseparable. Only by fully integrating the advantages of the two and giving

full play to their respective strengths can they provide a more comprehensive service to the society and users in a fully networked operating environment. , Accurate information service products, especially in the construction of geospatial information, functional information and other data, information technology is better. It can be said that informatization surveying and mapping has comprehensively promoted the progress of digital surveying and mapping, and effectively realized the leap-forward development of China's surveying and mapping disciplines. Meet the needs of the whole society.

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