Application of mapping geographic information in emergency mapping

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Abstract. With the continuous development of geographic information surveying and mapping technology, emergency surveying and mapping puts forward higher requirements for surveying and mapping work. Whenever an emergency occurs, emergency investigation and geographic mapping provide effective and reliable information for the emergency situation. In addition, emergency surveying puts forward higher requirements for mapping geographic information. Analyzing the application of surveying and mapping geographic information technology in emergency surveying and mapping, such as the application of data collection technology and virtual reality technology, can effectively enhance the role of geographic information technology in emergency surveying and mapping, and improve the ability of emergency response. This paper mainly analyzes the application of geographic information in emergency surveying and mapping and related technical fields, and explores the main application trends of emergency surveying and mapping.

1. Introduction
In the new era, all walks of life not only have emerged new opportunities, but also face new challenges. In the information age, information is crucial to the development of the industry. Only by ensuring the integrity and accuracy of data information can we provide powerful data guarantee for production and service activities. Surveying and mapping geographic information is an important work to obtain spatial information, and the acquisition effect of data information directly affects the work quality of related industries. Rich data information and access to information have higher requirements on the quality of data samples, which is also an important reason for the inclusion of big data technology. The effective application of big data technology in surveying and mapping geographic information can provide technical support for the effective use of data information, which has a positive impact on the development of the industry and social progress. We will promote the integration of the modern information industry and the emergency response industry, and promote the deep integration of the traditional emergency response industry with the next-generation information technologies such as geographic information, 5G, big data, cloud computing, the Internet of Things and artificial intelligence.
2. Literature

2.1. Surveying and Mapping Geographical information is the basis of emergency surveying and mapping

Emergency surveying and mapping is a special form of surveying and mapping geographic information, which has uncertainty, threat and limitation. The emergency management department should make the most effective emergency plan according to the actual geographical situation and emergency situation of the area [1]-[3]. By improving routine surveying and mapping missions in more detail, relevant departments can use geographic mapping information directly when needed in an emergency. No matter from the technical level or from the practical application level, this technology belongs to the basic content of emergency mapping.

2.2. Demand for emergency mapping is highly dependent on the quality of mapping geographic information

Surveying and mapping geographic information is mainly for visual display of geospatial information, and detailed record of building (structure) information, road information, information of mountains and rivers and terrain information. For the most primitive mapping methods, manual measurements are required. At present, our country spaceflight, aviation, remote sensing and so on the rapid development of science and technology, surveying and mapping tool has gradually into people's lives, provide great convenience for surveying and mapping work, aerial photography as can provide disaster prevention and control department with landslide, mud-rock flow, forest fires, reservoir dam real-time dynamic monitoring and early warning of geological disasters such as auxiliary [4]. In addition, surveying and mapping methods are divided into two kinds: manual drawing and mapping tool drawing. The tool mapping method has high accuracy, at the same time, in emergency situation, emergency mapping has high application efficiency [5]. It can be seen that this technology is an important part of emergency surveying and mapping, and the surveying and mapping geographic information is just like the foundation stone of a high-rise building, which is of vital importance to emergency surveying and mapping and directly determines the quality of emergency surveying and mapping. In any emergency situation, the biggest test is the timeliness, scientificity and feasibility of emergency surveying and mapping, and the most effective information is the geographic information in surveying and mapping. Therefore, the quality of emergency mapping depends on the quality of mapping geographic information.

3. Application advantages of mapping geographic information technology in natural disaster mapping

3.1. Reduce the working pressure of surveying and mapping personnel and save time and energy

The primary application advantage of surveying and mapping geographic information technology in natural disaster surveying and mapping is that it can reduce the working pressure of surveying and mapping personnel and save time and energy.[6].
3.2. Improve the timeliness of mapping information for natural disasters
When surveying and mapping geographic information technology is applied to the mapping of natural disasters, surveying and mapping personnel need to analyze and adjust the measured results according to the actual changes of the local geographical environment. In particular, it is necessary to analyze and detect the geographical changes by means of immediate control and satellite monitoring [7]. Comprehensive analysis is needed in this process the weather changes, changes in geographical environment and related human factors, natural disasters in the adverse factors in surveying and mapping work, and to solve, avoid the surveying and mapping results of the final effect, or was a reflection on surveying and mapping results in a timely manner, which can guarantee the natural disasters of surveying and mapping the timeliness of information.

4. Strengthening measures of surveying and mapping geographic information with the support of big data technology

4.1. Focus on developing new working methods of surveying and mapping geographic information
Under the background in the era of big data, surveying and mapping geographic information relevant departments and units should change the traditional ideas, set up new ideas of surveying and mapping thinking, according to their own big data technology characteristics and application requirements, provide maximum of hardware, software, support, strengthen the promotion of the new type of surveying and mapping work modes, so as to significantly improve the work of surveying and mapping geographic information level, ensure the quality of geographic information acquisition, so that the value of geographic information has been significantly improved [8]. First of all, we should change the previous concept of surveying and mapping geographic information work in the work, realize corresponding innovation from the concept, take surveying and mapping technology and information technology as the basis, realize industrial upgrading and strengthen information construction, so as to promote the mapping geographic information work to the direction of big data development. Secondly, big data technology, as a new technology with large development space, must require surveying and mapping geographic information units and relevant departments to strictly abide by the application standards of big data technology and further improve it according to the actual situation [9].
4.2. Strengthen the introduction and good application of advanced technology

With the development of The Times, mobile communication technology is also making continuous progress. Soon, mobile communication will enter the 5G era. 5G technology can provide more powerful technical support for the wireless transmission of data information, and further improve the transmission speed and security of data information. Therefore, in the application of big data technology to optimize surveying and mapping geographic information, we should pay attention to the timely introduction of 5G technology and other advanced technologies, so as to improve the performance of big data system, better complete the collection, collation and analysis of geographic information, and then provide sufficient power for the development of the industry. The emergence of big data technology has brought a good development opportunity for the surveying and mapping geographic information industry, and also made the industry face new tests. Relevant departments must pay more attention to the surveying and mapping geographic information work, accurately understand the standards and requirements of big data technology, and combine the characteristics of the surveying and mapping geographic information work. To provide government departments and social institutions with higher value of big data mapping geographic information services.

4.3. Applications in digital map making

Surveying and mapping personnel in the application of surveying and mapping geographic information technology to complete the data collection, the next step is to do the analysis and mapping of the collected information. First of all, mapping personnel need to use data storage technology to store the obtained geographic mapping data in a layered form in the geographic information system. The map form that people see in life is actually the result of several maps superimposed. If the relevant users want to obtain the geographic information data related to the map, they can search the data information on the map of the corresponding layer to help the users get the data they want in a short time. Secondly, surveying and mapping personnel can effectively analyze the location of spatial data in GIS. After thorough geographical data analysis, the query results can be displayed on the corresponding output equipment, which can effectively improve the efficiency of data use and facilitate surveying and mapping personnel to analyze data and images.

4.4. Innovative service mode of surveying and mapping geographic information

In order to better build smart cities and meet the construction needs of smart cities, it is necessary to innovate the service mode of surveying and mapping geographic information, so as to make it more suitable for the construction of smart cities. Surveying and mapping geographic information service mode based on modern science and technology can not only significantly improve service quality, but also improve service efficiency, optimize resource allocation, and truly achieve energy saving. Surveying and mapping geographic information service mode can meet the needs of urban residents, and even go ahead of urban residents by providing more advanced services to urban residents and completing the effective transmission of knowledge products. Surveying and mapping geographic information service pattern will not directly affect the data information analysis, however it indirectly help urban residents, in-depth analysis of surveying and mapping geographic information products fully show the characteristic of the city of wisdom, to help urban residents learn about the current hot issues happened to unearth hidden urban residents demand, and then according to the user's actual situation, work out their own content. For example, when a hot emergency event occurs in a city, the surveying and mapping geographic information service mode is used to monitor the event, and then all the collected data are sorted out, analyzed and processed, giving full play to the role of computer information technology, so as to work out a solution. When dealing with hidden events and potential events, the surveying and mapping geographic information system is used to carry out daily monitoring and planning of the city. At the same time, remote sensing means are used to excavate the potential information of the events, and to judge whether there are geological disasters, fires and other events, or whether the current industrial structure of the city is unbalanced. In the process of
customized events, the mapping geographic information service is used to provide personalized services according to the actual needs of users, and the correct geographic information is provided.

4.5. Application of surveying and mapping geographic information products
Because the current topographic map, database and other important surveying and mapping geographic information products have not been fully used, resulting in low surveying and mapping work efficiency. Surveying and mapping geographic information products include all kinds of data and information geography products, among which the data products meet people's demand for the use of geographic information through simple adjustment and support users to make simple adjustment on the basis of the original data. At the same time, data products mainly adopt information means, including basic information data, navigation data, electronic data, etc., which can provide users with more convenient services. Secondly, the formation of information products is based on data products. According to the content, location, scope and nature of the object, it can meet the decision-making and application needs of customers. This requires designers to base on user experience, enrich the types and functions of geographic information products, promote the complementarity of information products and data products, and explore geographic information in depth. In addition, relevant personnel should develop solutions to meet people's needs in the innovative surveying and mapping geographic information service mode. Therefore, it will inject a strong impetus into the construction of smart city and provide users with more direct and effective geographic information services.

5. Conclusions
By introducing emergency surveying and mapping and the use of related technologies, this paper reflects the importance of surveying and mapping geographic information for emergency surveying and mapping work. Surveying and mapping geographic information technology mainly includes remote sensing data acquisition, UAV technology, ground laser radar technology and data acquisition technology, ground instrument acquisition technology and so on. Data processing technologies such as integrated technology and omni-data platform can effectively provide emergency departments with technical support for emergency situations, improve the feasibility of emergency planning, make timely response to disasters and accidents, minimize property losses, ensure the safety of citizens, and effectively improve the efficiency of government work [10]. The application of surveying and mapping geographic information technology in emergency surveying and mapping has raised the requirements for emergency personnel, who need to have a certain emergency capability. In addition, it is necessary for relevant departments to strengthen data collection so that the plan can achieve the desired effect and ensure work efficiency. The emergency department can use emergency information quickly, accurately and effectively through effective information exchange with relevant personnel and timely information support to the emergency department.

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