# Research on the Protection and Renewal of Historic Buildings Based on Building Information Model Technology

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**Abstract:** In the process of research on the preservation and renewal of historical buildings, the first technological change was the emergence of CAD drawing technology. Computer virtual technology was used to help manual hand-drawn drawings to be completed in a more scientific and rapid way. So far, CAD technology has basically achieved multi-field and cross-industry popularization. The second technological breakthrough is the emergence of building information modeling technology, that is, the emergence of BIM technology, which makes the related technology of historical building protection more advanced. The article analyzes the BIM service in the protection of historical buildings, focusing on the sharing of historical building related information with the help of BIM technology and integrated management, which provides some scientific basis for its protection and renewal.

## 1. Introduction

Researchers in the protection of historical buildings can only rely on their own hands when doing drawing work, a long time ago. While the work efficiency is relatively slow, these drawings are not easy to preserve for a long time. Afterwards, the development of computer-related technology led to the birth of CAD technology, and manual drawing finally turned to computer drawing. It is no exaggeration to say that this technological change is definitely a revolutionary breakthrough in the field of historical building protection. The BIM technology currently under development will trigger the second change in the protection of historical buildings. BIM technology can not only directly help the design and protection of buildings, but also change the birth of buildings and their management methods., It will have a profound impact on people's architectural thinking mode. And by integrating a single BIM using computer network related technologies, it can help the protection and renewal of historical buildings become more convenient, and then realize the third change in the protection of historical buildings.

## 2. Possibility of constructing a comprehensive platform for the protection of historical buildings

In the various plans of urban development, the protection of historical buildings occupies an extremely important part, and protection research on these historical buildings can also help contemporary architecture to develop better. However, judging from the results of current historical protection work, there is still a big gap between the work in this field and contemporary information technology. For example, many historical buildings related information is still recorded and recorded in paper documents. Some information is stored in a single sub-document, but these electronic documents are not placed in a standardized database. Therefore, when relevant researchers want to use these materials, they need to query and search. There are still relatively large constraints [1]. In addition, traditional surveying and mapping methods and building protection methods have gradually been unable to meet the needs of current workers for the protection of

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ancient buildings. Obviously, the plane observation information cannot allow workers to have a sufficient and comprehensive understanding of the ancient buildings to be protected. On the one hand, there is such a severe industry situation. On the other hand, it is the emerging technology that is constantly developing. The introduction of modern information technology into the research of historical building protection and update is an inevitable industry development trend.

### 2.1 Digitization and information of historic building protection.

The protection and renewal of historical buildings at the current stage has begun to use digital technologies and methods in the process of development, and BIM technology can coordinate and manage these digital technologies, and the digitization and informatization of historical buildings has become faster. In the process of continuous development of BIM technology, its own role has long been beyond the scope of the basic model, and has contributed a lot to the development of the construction industry, even in the scope of engineering, BIM technology has also been applied. In terms of the widespread use of BIM technology, it is very suitable to use it in the protection of historical buildings. From the perspective of the technological development of the times, BIM technology transforms 2D drawing information into 3D models, making the appearance of buildings more intuitive, which is important for the protection of historical buildings that are still under single internal management. Said that the agent will be of great help [2]. BIM technology gathers some information related to historical buildings together, helps this information to be better used in related protection work, and updates the entire building information through the continuous addition of new parameters. This application has given a broader cooperation platform for the protection of historic buildings, and the level of related protection technology has also been generally improved. Therefore, it definitely has a very broad application prospect and bright in the protection and renewal of historic buildings. The future development of the future.

### 2.2 Analysis of massive data of historical building protection

In the process of historical building protection, the integration of various digital building information into the network for management is already the closest combination of architecture-related knowledge with computer science and technology. In recent years, computer technology has been developing rapidly, and various more detailed computer technologies have been continuously developed, such as cloud computing related technologies. This opens up the possibility of innovation in the service model of historic building protection and related technologies. Modern computer technology is more inclined to integrate scattered computing or information processing tasks into a certain computer system, and then design various functions to provide users of the entire building protection system with computing, storage and other services. Take the related technology of cloud service as an example. It is a variety of services developed based on the underlying technology of cloud computing. In the platform of the entire system, various computing tasks that should be performed by users are shared to the service terminal. Suppliers of related technologies provide remote computing support, and this more reasonable allocation of computing resources can help the resources in the entire system to be used more efficiently. Of course, these more mature and intelligent computer technologies have pointed out the future development direction for the digital protection and update of historical buildings. In the protection of buildings based on BIM technology, related work will only be carried out more efficiently. And can have real-time protection and higher-level protection of dynamic protection.

## 3. Historical building management information system based on BIM technology

In the process of protecting historical buildings, because of their different locations, a database with more powerful functions and higher storage capacity is needed. Some advanced protection technologies used in the protection of historical buildings include virtual restoration technology and building simulation technology. At the same time, relevant workers are required to purchase building materials and calculate protection costs. Some mathematical models are even used in

predicting the remaining life of historical buildings.

### 3.1 Historical building protection model based on BIM technology

In the process of protecting historical buildings in the city, the main principle followed is to protect them from the historical and cultural aspects they represent, and to achieve the goal of reuse as much as possible through a series of measures. However, in the process of this protection, it is still necessary to continuously broaden the overall view of the relevant workers, and conduct research from the ecological, cultural, economic value of historical buildings and other aspects, and link them with the sustainable development of the city. Get up, explore the value of deeper historical buildings, and put forward effective digital protection strategies on this basis [3]. With the help of BIM technology, a dynamic historical building information model is established, and its value is continuously explored and recorded, helping this information to play a greater role in the process of historical building protection, and indirectly improving the city's current social, economic and Core competitiveness in the process of cultural development.

### 3.2 Construction of historical building spatial database and data analysis technology

In the process of protecting and renewing historical buildings, the establishment of relevant spatial databases and scientific analysis of the stored data are an extremely important part of the relevant protection work. And these tasks need to use scanning technology, CAD drawing technology, virtual reality technology, PS processing technology and so on. In the process of protecting historical buildings, it is necessary to carry out the database of individual buildings and related maintenance files in accordance with relevant standards and methods. Taking this collected building information as the main research object, researchers and artificial intelligence will cooperate closely to conduct more accurate and comprehensive research on all building information, and obtain some rules from it, which will provide more effective building protection in the later period. in accordance with.

## 4. Conclusion

In the process of protecting and renewing historical buildings, it is necessary to make full use of modern information technology to help establish a series of databases related to historical building information, and implement the entire historical building protection work with the help of related service platforms and technologies. Furthermore, it is necessary to make good use of the characteristic functions of building information model technology to help the various parameters of historical buildings to be more intuitively and dynamically presented in front of all participants in the protection work, and to visually observe and dynamically observe the buildings. Tracking makes relevant protection work timelier and more reasonable.

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