Design and Implementation of Traditional Residential Protection and Development System Based on View of Landscape Information Chain

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Abstract. As one of the typical building types adapting to the special terrain in mountainous areas of China, traditional residential buildings not only have a long history, but also have unique cultural and artistic value. However, in recent years, with the development of economic globalization and urbanization in rural areas, the protection of traditional residential areas in mountainous areas, especially the traditional residential types in mountainous areas, has become more and more urgent. Under this background, this paper uses the principle of "landscape information chain" to develop the traditional dwellings in Guanzhong DiQu Mountains in the whole process on the basis of full literature research and field investigation, combined with the local natural environment, social environment and economic environment. As an information chain, traditional dwelling houses in mountainous areas have studied the origin, formation, development, maturity and change of traditional dwelling houses in mountainous areas, analyzed the characteristics of different stages of the development of traditional dwelling houses in mountainous areas, evaluated and analyzed their corresponding values and existing problems, and put forward the corresponding development and protection of traditional dwelling houses in mountainous areas on the basis of inheriting local culture. Protect. Restoration and reconstruction of houses and destruction of cultural landscape.

1. Introduction
Local traditional residential architecture form due to the influence and restriction of the local unique natural environment, social environment, economic environment, historical and cultural environment conditions, forming a traditional residence in mountainous area of Guanzhongdiqiu unique residential patterns and historical and cultural heritage, also obvious difference in the architectural style of the other cities and regions. This paper queries on massive data to understand the cultural background on the basis, based on landscape information chain from the perspective of the traditional dwellings in Guanzhongdiqiu mountain of research[1], analysis in extraction of Guanzhongdiqiu mountainous traditional residence culture gene based research on Chushan culture connotation and meaning in traditional houses behind. The use of "landscape information chain" theory is conducive to explore and comb out the changing process of the cultural context in Guanzhongdiqiu mountainous traditional residence architectural features of the development process, is advantageous in respect of local history and traditional culture based on the reconstruction of mountainous traditional residence culture landscape [2].
2. Key technologies involved in the system

2.1. Struts Technology

Struts technology is to further enhance the Servlet, which is currently the framework for the development of Web technology is widely used in the framework of one of the three technology. Struts is not a new framework for the system, it is just the original framework for a certain improvement and update[3]. Just upgrade to the struts and Struts2 completely different from before a product Strut1, between both framework or from the technical differences are large, it is based on traditional struts, webwork, in two traditional technology based merger integration and is a new Struts2 framework technology. All the Struts2 technology system, the most important technology is the interceptor, the interceptor is used to deal with all the user's request, all user requests must pass the filter. With a large number of JSP and Servlet technologies applied to the Web based applications, Java developers groups believe that the better model should be used to enhance the maintainability and reuse of Web applications. Early in the JSP specification has enumerated two kinds of feasible JSP application architecture[4], Model1 and Model 2 respectively. Because this design allows business of course, can be far away from the API Servlet, so Struts 2 update network system products. The schematic diagram of Struts structure is shown in Figure 1:

![Struts Structure Diagram](image)

Fig. 1. Schematic diagram of Struts structure.

2.2. MVC design pattern

Model view controller is a software design pattern to get up early, and it is widely used now. In recent years, J2EE company Sun platform design as the standard design model, in the application development, more and more developers welcome. Figure 2 illustrates the relationship between the MVC components. The client is mainly used to send to the server a request, after the request is sent to the client web server using the HTTP protocol to the user's request to send data to the user, users through the browser can related to view and browse. The background database is defined as the data layer[5], which is mainly responsible for the related operation between the database and the database. The following on the MVC model for a detailed analysis and introduction:

(1) view layer (View)

View layer is mainly used to react to the server side to send back the data and then displayed on the interface to the customer. Can be a lot of other small programs to accept the server program and data
display. The view layer is only responsible for displaying the data returned by the server or the control layer, while the other task is to hand over the other two layers for processing.

(2) model layer (Model)

The layer first receives the request of the view layer, and then logically processes the request of the view layer, and then returns the result set according to the condition after connecting the background database. Because of the model layer, the program has a high degree of extensibility and reusability[6].

(3) control layer (Controller)

The control layer is mainly combined with the front two layer view layer and the model layer to complete the user's request and access. Its main function is to help the container select views and models, so that the system can quickly deal with the relevant business logic.

![MVC Diagram](image)

**Fig. 2. Structure diagram of MVC design pattern.**

2.3. **J2EE technology introduction**

At present, there are three versions of the Java 2 platform, which is used in small devices and smart card Java2 platform, Micro Edition (J2ME) Java2PlatformMicroEdition, suitable for desktop Java platform, Standard Edition (Java2PlatformStandardEdition, and J2SE), is to create a server application and service of the Java 2 platform, Enterprise Edition (J2EE) Java2PlatformEnterpriseEdition. J2EE is a system architecture that uses Java2 platform to simplify the complex issues related to the development, deployment and management of enterprise solutions.

J2EE technology foundation is the core of the Java platform or Java 2 platform, standard edition, J2EE not only consolidate the standard edition has many advantages, such as "write once, run anywhere" the characteristics, convenient access to a database JDBC, CORBA technology and can protect data security model in the application of Internet and so on, and also provide the full support of XML technology and the EJB (Enterprise JavaBeans), JavaServletsAPI, JSP (JavaServer pages). Its ultimate goal is to become a business developer can significantly shorten the market time of the system structure[7].

J2EE architecture provides an intermediate level integration framework to meet the needs of the application that does not require too much cost but requires high availability, high reliability, and scalability. By providing a unified development platform, J2EE reduces the cost and complexity of developing multi tier applications, while providing strong supports for the integration of the existing application and fully support Enterprise JavaBeans, good wizard support package and deploy applications, add a directory support, so as to improve the security mechanism, improve the performance.
J2EE uses a multi-tier distributed application model, the application logic is divided into components according to the function, each application component according to their layer distribution in different machines. In fact, the sun J2EE design original intention is to solve the disadvantages of the two layer model (client/server), in the traditional mode client served as too much the role of bloated, in this model, first deployment time is relatively easy, but hard to upgrade or improve, extensibility is not ideal[8], and often based on a proprietary protocol?? is usually some kind of database protocols. It makes reuse of business logic and interface logic very difficult. Now J2EE multi-tier enterprise application model will be divided into two layers of the different layers of the model into many layers.

Fig. 3. J2EE framework.

2.4. Data warehouse technology

Concept of data warehouse. Famous expert w. inmon data warehouse, in his book building, data in the data warehouse (DW) is defined in terms of subject oriented (subject oriented) and integration (integration) and relatively stable (non-volatile) reflect the change to support management decision of historical changes () of the data set. As a decision support system and an on-line analytical application data source, the data warehouse is studied, and the information is obtained from the database to solve the problem. Data warehouse procedures, the data usually contains historical information[9], the system records the enterprise from the past at a point in time (such as the beginning of the data warehouse applications), to present the various stages of information. With this information, we can make a quantitative analysis and prediction of the development process and the future trend of the enterprise.

Data warehouse system as an information release platform, data obtained from the business processing system, mainly in the star type model and snowflake model data organization and provides the user for acquiring information and knowledge from the data. In function, the data warehouse system should achieve at least data acquisition (data acquisition), data storage (data storage) and data access (data access). In general, a complete data warehouse system is a hierarchical architecture consisting of four. Data source is the base of data warehouse system, and it is the data source of the whole system. Storing data and management is the core of data warehouse system. OLAP (on-line analytical processing, on-line analytical processing) server needs to be the effective integration of data analysis, based on multi angle, multi-level multi-dimensional analysis model, and to determine the trend. Front end tools, including a variety of reporting tools, query tools, data analysis tools, data mining tools, as well as a variety of data warehouse or data mart application development tools. Traditional customer relationship management platform is becoming more and more difficult to meet the growing demand of the enterprise because of the lack of real-time update mechanism and software and hardware support. Indicators based on mobile application of CRM system can allow management personnel or directly under the leadership of momentarily observe employee sales call plan, plan completed, sales staff and customers held meetings, plans to complete the sale of the new, these data can be automatically generated and push the work of employees report, can help managers convenient to staff's work has a comprehensive understanding and the formation of the quantitative evaluation.
3. Research on the related concepts and theories of landscape information chain

3.1. The origin and concept of the principle of "landscape information chain"

At present, scholars at home and abroad have made great achievements in the study of cultural landscape, but the basic concepts of landscape, cultural landscape and landscape culture have not yet reached a consensus. Moreover, at present, the domestic and foreign scholars are still in the preliminary stage of the study of cultural landscape, domestic similar research is not only behind the natural landscape, but also with the international research level has a large gap. Famous British historical geographers Darby (Darby) "recovery" continuous landscape section theory that any kind of cultural landscape is by superposition of culture in different historical periods, historical and cultural landscape is historical and cultural layer overlay, historical and cultural landscape of the research is to "recover" the cultural layer of continuous cross-section, to restore the original historical and cultural information. Inspired in Darby) proposed "continuous landscape section restoration" theory, Professor Liu Peilin in 2005 carried out in Linxian County, Shanxi Qikou mountainous traditional residence planning, put forward the theory of the protection of cultural heritage and cultural tourism planning "landscape information chain" (landscape information chain), Liu Peilin first proposed the concept of cultural landscape gene and the establishment of the rule of recognition of cultural landscape gene, succeeded in the identification of the traditional settlement landscape[10]. On this basis, from the perspective of "genetic map", we divided the cultural landscape of traditional settlement landscape in China, and discussed the related issues of using GIS technology to build the settlement landscape management model. The theory combines the related urban planning theory, gene theory, first proposed is to solve the problem of the cultural tourism planning, at present, the theory in the north and south of China has been used and the planning and protection of cultural to obvious effect, also can be used in history and cultural city, the ancient villages and towns, traditional settlements, cultural landscape protection and regional tourism planning and development. The study of the traditional folk houses in mountainous areas in China, using the concept and methods of landscape genes, has played a very good role in the planning, development, utilization and protection of the traditional folk houses in mountainous areas. In this paper, the theory is applied to the protection and development of traditional residential areas in mountain areas, to promote the scientific and reasonable protection of traditional residential culture.

3.2. Identification of landscape genes

There are many factors that influence mountainous traditional residence landscape formation, the natural environment factors dominated, sunshine time, precipitation will influence to the roof of the gradient and color selection, topographic differences lead to mountainous traditional residence of the spatial distribution of different forms and the different physiognomy in mountainous traditional residence spatial distribution of different levels. Cultural factors also affect the formation of traditional folk houses in the mountain area, and the characteristics of the residential areas are influenced by the cultural factors. The application of the principle of "landscape information chain" first need to accurately identify the landscape genes, to define the impact of the larger landscape genes. The study of traditional residential culture landscape in mountainous areas, the identification of landscape genes, need the correct identification method, only in this way can we accurately find out the area of residential landscape in this region contains the cultural gene.

Liu Peilin put forward four principles, namely, the inherent uniqueness principle, the principle of external uniqueness, the principle of local uniqueness and the overall advantage of the principle of. We should according to the four principles combined with mountainous traditional residence of specific landscape features to identify the local landscape gene, the inherent uniqueness is mountainous traditional residence is different from the other town and settlement of China cultural characteristics, is the most essential difference, external uniqueness principle is show significant features in the external shape, local uniqueness is and surrounding areas most of the cultural landscape can distinguish the salient features and overall superiority is the mountainous traditional residence is different from the
salient features of the other regions of the vernacular architecture, the settlement environment. In the identification of landscape genes, these four factors are closely related and mutually reinforcing.

3.3. System development environment

When the framework of the system has been determined, in order to improve the system efficiency, reduce development costs, improve the stability of the system, so that it is more easy to maintain, it is to choose the right development tools for development. The system use MyEclipse as a development tool, due to its open source framework and strong third party plug-in integration capability can be very good implementation of the server, database and development tools between the integration and system maintenance and function expansion. Application server uses advanced technology, powerful server, it can be used with other application servers, and can be a good support for integration standards. The system database is used to improve the efficiency of data access. The stability of the system is to refer to some edge faults of the system. For example, the system has been running well, but occasionally some strange problems, but can not find the reason, after the restart or reinstall after the return to normal, which is the stability of the test system. From the system itself, there will not be any reason for the problem, there must be some problems in a certain area, and the problem is often in the design. If we want to ensure the stability of the system from the design point of view, we need to design personnel to fully consider the relationship between the various modules of the system, reduce the coupling degree, so that the problem of isolation. Inside the module is the same, the biggest problem is in the use of memory, but this is the problem of coding. In short, the stability of the system needs to be a professional experienced designers, a reasonable division of the system, detailed design to be thin enough to avoid problems in the development stage.

3.4. System database design

Due to the complexity of information structure, the application environment is diverse, and the database design is mainly used in a long period of time. Using this method and design personnel of experience and level directly related, people after years of efforts to explore, and puts forward the database design methods. These methods use the ideas and methods of software engineering, puts forward the design criteria and procedures, all belong to the normative design method.

Standard design method is more famous in New Orleans (Orleans New) method. It divides the database design into four stages: Requirements Analysis (analysis of user requirements), conceptual design (information analysis and definition), logical design (Design Implementation) and physical design (physical database design). Subsequently, L.R.Palmer and other advocates of the database design as a step by step process, and the use of some auxiliary means to achieve each process. Database design method based on E-R model, design method based on the 3NF (third normal form), based on abstraction and specification of the design method is support the concrete realization technology and method in the different stages of the database design.

The standardization of data can help to eliminate the data redundancy in the database. Standardization has several forms, but 3NF is generally considered to be the best in terms of performance, scalability, and data integrity. In simple terms, the 3NF standard database design principles are: a table only includes its own basic attributes, when they are not their own attributes to be decomposed. The relationships between the tables are connected by foreign key. It has the following characteristics: there is a set of tables specifically to store the associated data through the key link. For example: the 3NF database that stores customer information and its associated contact information is likely to have two tables: UserInfo and LinkMan. LinkMan table does not contain contact customer information, but the table will store a key userid and the key point to the userinfo table contains the customer information, the line[11].

4. Expression forms of landscape information chain

4.1. Landscape information source
"Landscape information elements" not only landscape genes, like biological genes, landscape genes in the entire landscape of the information chain is the most original, the most basic. Because of this particularity, so the landscape gene has the potential to be further mining, refining, screening in order to accurately identify and distinguish. "Elements of landscape information" is a regional history and cultural memory, is a area which are different from other area where the characteristics of, is we are the premise of planning, development, "elements of landscape information" although is the inherent cultural elements, cultural spirit, but attached on the different cultural landscape, and is part of the core of the cultural landscape. Only accurate mining out "elements of landscape information" we can on an area of accurate positioning, to reading materials, appreciation and understanding of the history and culture of this area, the guidance in the area of project design and development, rehabilitation and reconstruction of the destruction of the cultural landscape, the different regions unique "personality".

4.2. Landscape information point
Points is the basis of all graphics, but also the basic unit of different things. In the process of cultural landscape study point will be affected by the specific environment, the characteristics of the local terrain, topography and local social and cultural, production and life of the impact of change. A single point through reasonable combination and arrangement became an independent landscape, and the surrounding landscape can be distinguished. "Landscape information" is information landscape element through the specific performance of the landscape out of the external form, can also be called the "landscape", a "landscape information point" can contain single or multiple "elements of landscape information." Mountainous traditional residence landscape information is local representative of the landscape, such as a historical and cultural mountainous traditional residence information, including the mountainous traditional residence of the historical streets, bridges, ancient temples, traditional shops, arch, wide square, road node, such as a specific object in the landscape. By the same token, a military culture locations include War sites, shelters, bunkers, turrets, cemeteries and other more specific object in the landscape. A well-developed fishing area is expressed through a variety of Fisheries elements, such as docks, fishing villages and so on. These "landscape information" are a regional landmark landscape, contains the local cultural gene ", represents the local unique culture, with a strong recognition, sign and history, is people's perception and identification of a region of the main reference.

5. Conclusion
Mountainous traditional residence formed under the specific natural and social environment, known as "the private collection of treasures", strengthen the research of gene resources of mountainous traditional residence landscape, has a very important significance and broad prospects. Mountainous traditional residence have the cultural characteristics of the response to a regional characteristics of local history and culture, social customs, traditional architectural style, has the very high cultural value, historical value, artistic value and scientific value, is carrying the enrichment of the cultural landscape of mountainous traditional residence culture value is treasure of the Chinese nation are handed down from generation to generation. Currently in mountainous traditional residence protection and development research has made some progress, after many experts, scholars and local residents in the real life of continuous exploration, deposition and practice. From the perspective of different disciplines and the development direction of the research, and puts forward the protection and development method of the different mountainous traditional residence. In this paper, the traditional residence in mountainous area of Guanzhongduqu as an example, based on the principle of "landscape information chain analysis the traditional residence in mountainous area of Guanzhongduqu's geographical location, climatic conditions, topography and history, architectural culture and the social culture, site layout, architectural features and residential decoration culture. The historical and cultural value, social economic value, architectural art value and science and technology value of the traditional folk houses in Guanzhongduqu mountain area are analyzed.
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