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# Design and Realisation of Digital Non-Legacy Based on Web Technology

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**Abstract**: With the rapid development of computer network technology, web system has been widely used with its unique display method. Based on B/s architecture, this paper proposes a web - based display system for intangible cultural heritage. Firstly, the collaborative instruction sharing and interaction between the client and server side is achieved through B/S architecture, and the XML data transmission format and Ajaxpolling mechanism are adopted to achieve the network sharing and transmission of 3D model data. It also implements an interactive interface design based on Java Web technology to facilitate users' social interaction, and the interactive interface achieves the expected goal in all functions, with excellent security and practicality, and can provide a good virtual interactive platform for online communication for the society.

**Keywords:** JavaWeb,intangible cultural heritage, digitalisation;

## 1. Introduction

Java Web technology is the developer to use the Java language to address the challenges of the Web Internet domain. Built on the Java EE architecture, the technology is popular in the industry because of its diverse deployment options and mature architecture. the cross-platform nature of Java makes it ideal for distributed development on heterogeneous networks, making it easy to deploy, manage, and maintain. In addition, the Java language is known for its outstanding performance and robustness, as well as its comprehensive and rich functionality.

Based on Java Web technology, it is possible to digitally collect, organise and process the relevant heritage within the scope of intangible cultural heritage, using multimedia methods such as text and video to provide a more systematic and comprehensive record of intangible cultural heritage. Among them, WanjalaST et al [1] proposed an architectural framework for implementing a micro front-end to address the challenges encountered in caly implementation such as inconsistent layouts and lack of a clear implementation strategy without introducing performance issues; and Lijun Zhuang et al [2] constructed a forum webpage system for internal campus based on the adoption of Java Web technologies. The system follows the B/S design pattern,

and the interface design integrates JSP and CSS technologies to achieve beautification effects, establish a database, and other modules to achieve; Nan Wang et al [3] selected Web technologies for development, and the raw design of the interaction jie surface for the implementation of the cultural and creative design platform.

## 2. Collaborative Approach Based on B/S Architecture

This paper is based on the design of an interactive system for intangible cultural heritage network with B/S architecture. The system utilises the B/S architecture to achieve command sharing and interaction between the client and the server, and efficiently transmits 3D model data over the network through XML data format and iaxpolling mechanism [4]. The system combines virtual reality and network database technology, and uses VRML (Virtual Reality Modelling Language), Java, MySQL and ASP to construct a virtual reality display platform on the Web side. Among them, the application server layer is developed in Java, while the client contains applets embedded in HTML pages, VRML reader plug-ins, and related components of HTML pages [5].

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## 2.1 XML 3D Technology Transfer

XML, as a standard for data format description language, has been widely used in a variety of different data exchange domains. In order to achieve data exchange between systems, each system converts its internal data structure to XML-based data structure according to industry standards [6], which results in an optimised model for data exchange. The XML transfer technology requires 'six steps and three phases'. The first stage is Data preparation and modelling, XML file processing; the second stage is Data transmission, Data receiving and processing, Three-dimensional rendering and interaction, and the third stage is Optimisation. interaction, and the third phase Optimisation and expansion, as shown in Fig. 1.

| | Phase | Key steps | Technology/tools |
|---|---|---|---|
| Phase I | Data preparation and modeling | Create a 3D model | 3ds Max、Maya等 |
| | | Export to XML file | Customize export scripts or plug-ins |
| | XML file processing | Parse XML file | XML parser (such as DOM, SAX, etc.) |
| | | data check | XMLSchema or OTD |
| Phase II | Data transmission | Select network protocol | HTTP、FTP、WebSocket |
| | | Data compression and encryption | Gzip、AES |
| | Data receiving and processing | receive data | sockets |
| | | Parsing and reconstructing data | XML parser, custom conversion script |
| | Three-dimensional rendering and interaction | 3D rendering | OpenGL、DirectX |
| | | User interaction | Custom interaction logic and event handling mechanism |
| Phase III | Optimization and expansion | performance optimization | Cache technology, algorithm optimization, etc |
| | | Function expansion | Support more formats, increase real-time communication and so on. |

Fig. 1 XML technology transmission roadmap

## 2.2 Web Technologies in Non-Heritage

Web technology plays an increasingly important role in the protection and inheritance of non-heritage. Through digital recording and storage, Web technology can effectively preserve the detailed information of non-heritage items [7], avoiding the problems of damage and difficulty of preservation of traditional recording methods. At the same time, the virtual exhibition and online experience function enables the global audience to experience the charm of NRL culture in a real-life situation, which greatly broadens the dissemination channels of NRL. Intelligent management and analysis through the construction of non-heritage database, the use of big data and artificial intelligence technology, for the protection and inheritance of non-heritage to provide a scientific decision-making basis [8].Web technology breaks the time and space limitations of the traditional non-heritage inheritance, the inheritor can through the network platform for remote teaching, the students can learn non-heritage skills at any time and any place, reducing the cost of learning, and improve the efficiency. In addition, the Web platform also expands the audience scope of non-heritage, enhances the interactivity and sense of participation, and helps to enhance the international influence of non-heritage. However, Web technology in the application of non-heritage also faces challenges such as data security, copyright protection and technology popularisation. It can be seen that with the continuous progress of technology and the expansion of innovative applications, such as artificial intelligence intelligent creation, blockchain decentralised storage and IoT intelligent monitoring, Web technology will inject new vitality into the inheritance and development of NRL culture, and promote the dissemination and sharing of NRL culture on a global scale.

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### 2.3 Web Database System Design

Firstly, establish the overall planning of the client display system. Based on the characteristics of intangible cultural heritage, the positioning of consumer groups, and the purpose of the virtual display system, an overall planning of the interface is carried out. This planning covers the detailed division of functional modules, the setting of product categories and the determination of product display methods, and at the same time integrates the theory of human-computer interaction in order to improve the user experience. Subsequently, the visual style and colour scheme of the virtual display are established to ensure that they not only conform to the unique attributes of the products, but also accurately reflect the characteristics of the products and the preferences of the target consumer groups, and that the design style should be in harmony and unity with the image of the real products [9]. In addition, the local design concept of the display interface is proposed, and the design should be closely centred on the overall design framework, covering user registration, login and logout processes, user communication, product release and modification, quantity, pictures and other key interaction links. In the early stages of system planning and design, it was important to clearly define the core components of the system and its modular structure. The whole system adopts a structured design concept. Therefore, with the continuous optimisation of the system's hardware and software environment, the subsystems and branch systems need to be gradually improved and expanded to ensure that the system modules achieve the development goals of layer-by-layer progression and compact structure [10], as shown in Figure 2.

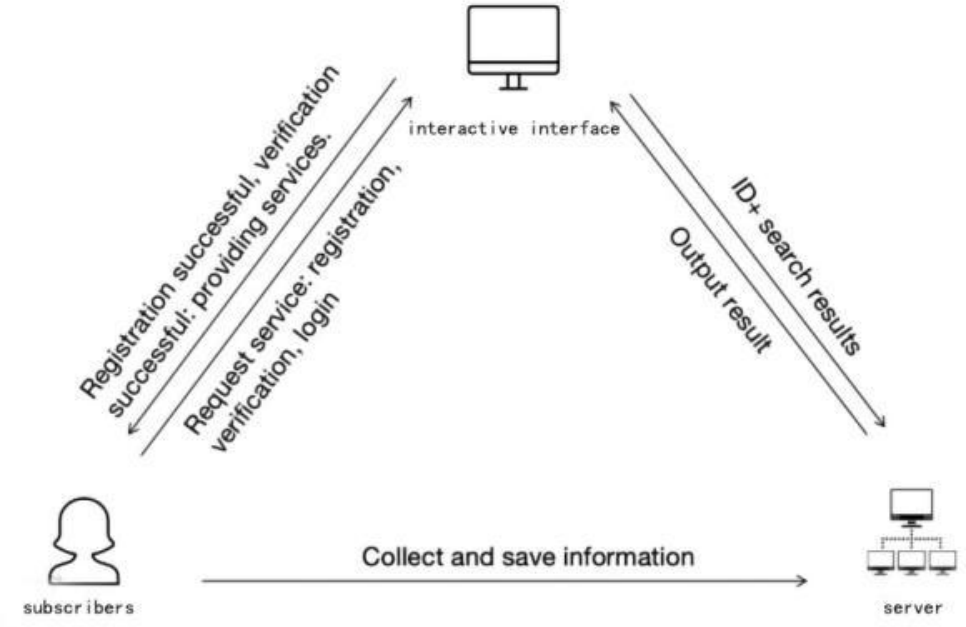


Fig. 2 System framework process

## 3. Conclusion

In this paper, a virtual interactive platform for intangible cultural heritage is designed using Java Web technology. Firstly, a systematic analysis of the browser/server (B/S) architecture was carried out, and the functional modules were planned based on the actual needs, aiming to create an interactive interface that meets the needs of the society [11].Java Web technology provides a strong support for the digital display of intangible cultural heritage by virtue of its encapsulation, inheritance, and polymorphism, as well as its support for the advantages of code reuse. The interactive interface constructed by this technology can effectively serve museums, scenic spots, libraries and other places, promote efficient communication and information sharing, and accelerate the informatisation process of intangible cultural heritage.

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