

Research into Protecting and Developing Intangible Cultural Heritage in Database of Government, Colleges and Enterprises in Cloud Computing

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Abstract

At the critical moment when intangible cultural heritage is on the verge of gradual demise due to modern cultural shock, a “cloud computing” database aiming at protecting and developing intangible cultural heritage and constructed jointly by the government, colleges and enterprises is gradually emerging. Construction of the three parties’ “cloud database” not only meets the government’s demands for protecting intangible cultural heritage, but also satisfies colleges’ demands for teaching resources and enterprises’ demands for technical resources. Thus, it serves for multiple purposes.

Keywords: *Intangible cultural heritage; Government; Colleges and enterprises; Cloud computing*

1. Introduction

“Intangible cultural heritage”, comparative to “tangible cultural heritage”, is defined as each community, group and sometimes individual. It is regarded as various social practices, representation of concepts, demonstration, knowledge, skills and related tools, objects, artifacts and cultural fields that form cultural heritages, including: (1) oral traditions and expressions, including languages as the media of intangible cultural heritages; (2) performing art; (3) social practice, etiquette and festivals; (4) knowledge and practice about the nature and the universe; (5) traditional artifacts. [1] Under the impact of modern culture, farming civilization and nomadic civilization, soil for the living of “intangible cultural heritage” has gradually disappeared, and some heritages passed down by word of mouth, such as knowledge, language and artifacts have already been lost. “Intangible cultural heritage” is on the verge of extinction. How to develop intangible cultural heritage database and protect and inherit precious wealth passed down from our ancestors is a problem troubling us for a long time. For a long time, during the process of constructing intangible cultural heritage database, the government is “single-handed”, which is very obvious and there is few units except the government taking part in this process. Ever since 2006, directly promoted by the Ministry of Culture, China began to construct intangible cultural heritage database and has gradually established the intangible cultural heritage website and database at three levels: national, provincial and municipal. However, it is a regret to see that although some intangible cultural heritages have been preserved when the government “single handedly” constructs the intangible cultural heritage database to some extent, there are still numerous problems in the completeness, preservation and usage of data. Therefore, it is imperative to develop an intangible cultural heritage “cloud computing” database jointly by the government, colleges and enterprises.

2. Database in Cloud Computing

The structure of cloud computing database consists of altogether 3 layers. The first layer is the application layer, mainly in charge of providing users with the service SDK and OSS mechanism. The second layer is the service layer, mainly in charge of providing services for the application layer, and the third layer is the data storage layer, mainly in charge of providing physical storage of data.

On the application level, SDK mainly deals with the mapping relationship between objects and relational data and automatically generates relational structure and index according to the object category of application program. OSS mechanism is essentially the combination of Web services, mainly packaging the service level and providing safety service and data service for the application level, *etc.* The service level is mainly composed of distribution service level and application service level, and the distribution service level is mainly composed of main nodes and sub nodes. When the main nodes and sub nodes operate program, the main node accept inquiry from the application service level and return the results to the application service level. Application service level mainly receives requests from OSS at the application level and the searching request from the data storage level. Data storage level is composed of programs and database while its main function is to store data and process data. Data storage level can adopt physical machine or virtual machine while database instance is used to store and process data.

On cloud computing platform, relational database is used for storage, different from previous storage of local database, which is because servers in cloud computing need to bear the request for visiting from different users and all the data these users need may be heterogeneous. In cloud computing, a lot of requests to store and visit stored data of users from the application level need to be met and all these requests should meet the requirement of highly real-time.

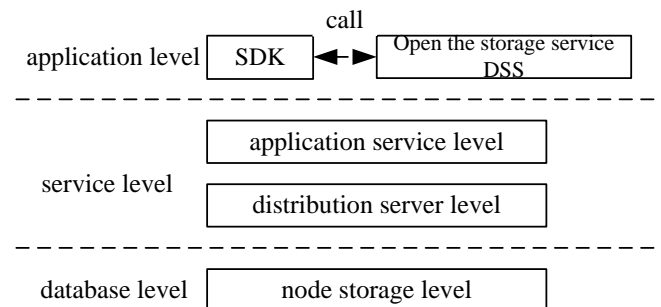


Figure 1. Cloud Computing Database

3. The Involvement of Ways to Transmit Cloud Computing Database and Recognition of Intangible Cultural Heritage

With the development of the Internet technology, modern society has already become an information society with the Internet as the carrier. On the Internet, people cannot only obtain the resources they need, but also utilize the convenience brought by the Internet to daily life. However, the Internet is actually operated depending on the powerful database. The richer and more comprehensive the database is with more information, the easily it is to bring convenience to visitors. During the process of protecting and developing intangible cultural heritage, it is necessary to actively utilize the role of online database to solve the issue of insufficient spread during the process of protecting old material cultural heritages.

At present, objective limits of human resources, materials and financial resources has

caused that only a limited amount of excellent intangible cultural heritages can be protected, and the phenomena of “seniority” and “key protection” have led the demise of a large amount of unrecoverable intangible cultural heritage. The re-secularization of intangible cultural heritage and constant improvement of “cloud computing” database need powerful social force as the support while the unique social status of colleges and enterprises cannot be ignored. More and more colleges begin to pay attention to the current survival of “intangible cultural heritage” and shoulder the historical mission of inheriting and innovating “intangible cultural heritage”, which is mainly decided by the social functions of colleges. Colleges mainly have three social functions: namely teaching function, service function and culture inheriting function. Herein, culture inheriting function cannot only demonstrate the full set of equipment and obvious advantages in talents of colleges as well as high theoretical quality, but also fully utilize college resources to study traditional culture and protect intangible cultural heritage. All these inherent advantages determine that colleges are able to shoulder the historic mission of inheriting and innovating “intangible cultural heritage” and can play the role of providing talent support in constructing database. For enterprises, the uniqueness of intangible cultural heritage decides its hidden value. “The state shall encourage and support enterprises to make use of intangible cultural heritage’s special advantage, and reasonably utilize and exploit representative projects of intangible cultural heritage to develop cultural products and services with local characteristics and market potential.” Developing local intangible cultural heritage features, the organic combination of industrial heritage protection and business together by means of different industries market, through professional operation of the market, both to realize the market value while protecting intangible cultural heritage, based on their own business’ advantages of material resources and technical resources, with the non-material cultural heritage database construction, in order to achieve mutual benefits.

4. Practical Path to Construct Intangible Cultural Heritage Database Based on Cooperation between the Government, Enterprises and Colleges

(1) Improve the Government’s Incentive Mechanism and Give Play to the Linkage between Enterprises and Colleges in Constructing Database

At present, the construction and improvement of China’s intangible cultural heritage is mainly led and managed by the government with the participation and guidance of experts while few civil organizations or social communities participate in it, lacking professional guidance. Correspondingly, there are various issues in the construction of intangible cultural heritage, such as uneven types, less information and single function. Although some colleges have undertaken the job of construction regional intangible cultural heritage, for example, Lanzhou University has undertaken the job of constructing intangible cultural heritage in Gansu province, not all the colleges in China have given the full play of their roles in developing and constructing intangible cultural heritages of China. In addition, enterprises are mainly to marketize and commercialize intangible cultural heritages while their roles in constructing potential intangible cultural heritage have not been fully exploited.

The government should conduct its work under the unified resource management concept, formulate long-term plan, and organize and coordinate schools and enterprise to participate in its work step by step so as to complement each other and form a concerted effort to establish guarantee for establishing China’s intangible cultural heritage database. Also, it should effectively guide schools and enterprises in their work to cultivate talents in inheriting cultural heritage, enhance work ability and give policy support. In terms of schools, at the preliminary stage of constructing database, the government should make full use of colleges’ advantages in human resources and geographical advantages,

especially in gathering and collecting information of intangible cultural heritage. In terms of the norms of constructing database, the government should make full use of colleges' resources to mobilize experts and scholars to participate in establishing database. At the later stage of establishing database, in view of the diverse forms as well as rich and lively contents of intangible cultural heritages, the government should make full use of colleges' human resources and establish two-dimensional and three-dimensional techniques on the platform of intangible cultural heritage to show them from multi aspects like sound, video and multimedia. In terms of enterprises, the government should improve relevant supportive policies and give full play of enterprises' advantageous resources in constructing database so as to make intangible cultural heritage come into lives of the public and enhance the spread and effectiveness of constructing database.

(2) Promote the Systematization and Standardization of Constructing Database based on Human Resources of Colleges

The construction of standardized and normalized database is the important basis and premise for information resource sharing. At present, there is still large room for improving the standardization and normalization of China's intangible cultural heritage database, which is specifically reflected on the diversity of index system and searching system based on database management system as well as the database formats. Besides, there is no unified standard of data indexing and strict control over quality with poor compatibility and interoperability of database as well as incomplete and non-standard metadata. All these problems have affected the sharing of database resources and restricted the role of database. In order to enhance the sharing and unity of intangible cultural heritage database, colleges should study and define the metadata standard of different categories resources according to the properties of information and resources to improve the rate of sharing resources and data and shorten the cycle of constructing database. Meanwhile, based on the existing resources, colleges should establish perfect "cloud computing" digital resources standard and norms and make full use of the international metadata standard and the latest standard and norms of establishing digital libraries, *etc.*

Meanwhile, colleges can actively create "intangible cultural heritage" campus culture with regional characteristics while combining the characteristics of colleges. By conducting and passing on-campus cultural activities themed "intangible cultural heritage", such as inviting heir of "intangible cultural heritage" to schools, publicizing knowledge about "intangible cultural heritage", establishing communities associated with "intangible cultural heritage", conducting contest about knowledge and skills in passing down intangible cultural heritage and parties as well as hiring heirs of "intangible cultural heritages" as instructors, colleges can enrich students' extracurricular life, fully motivate their activism and guide college students to understand, protect and inherit these heritages and motivate their responsibility and sense of mission to inherit "intangible cultural heritage" so that insightful students can get involved in protecting and regulating intangible cultural heritage. Colleges aim at cultivating talents in protecting intangible cultural heritage and give full play to their role in constructing "cloud computing" database.

(3) enhance the Communication and Real-timeliness of Constructing Database based on Enterprises' Social Resources

In order to arouse the public's pride and recognition of their traditional ethnic culture and expand the professional protection of intangible cultural heritage into the public's daily life, it is necessary to utilize enterprises' social resources. Enterprises play an indispensable role in the innovation and inheritance of special cultural brands because they cannot only realize the economic value of intangible cultural heritage, but also make these valuable heritages to come into lives of the ordinary public. Therefore, in establishing "cloud computing" database, we need to give full play to enterprises' advantages in resources, and pay attention to make the constructed database become

attractive and real-time in communication so as to give full play to the actual function of database.

At present, the construction of intangible cultural heritage database is mainly based on the construction of catalogue with relatively few literature materials, which are only limited to the pure list lacking attraction and functionality for the public. Enterprises should combine the practices of protecting and developing intangible cultural heritages to demonstrate the dynamic cultural resources of intangible cultural heritage like sound, image and techniques more comprehensively into database. Meanwhile, with political support of the government and schools, they should publicize and develop intangible cultural heritages more in-depth to help refine “cloud computing” database and make it comprehensive and attractive as well as disseminate it.

Figure 3 describes the effect of protecting intangible cultural heritage on two platforms, and it can be found in the figure that the efficiency of acquisition on cloud computing platform is 20-40% higher than non cloud computing platform, indicating that cloud computing platform is effective.

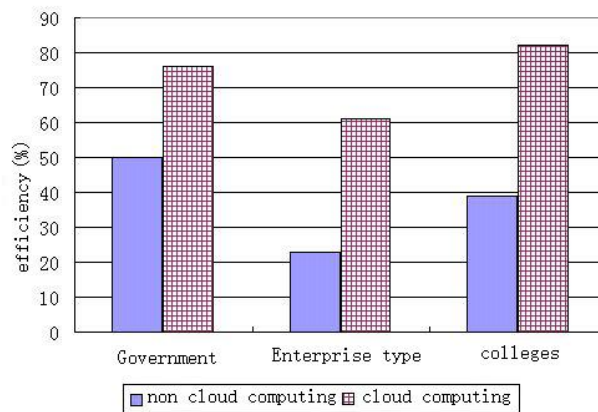


Figure 3. Comparison Effects of Two Platforms

5. Conclusion

On the platform of cloud computing, intangible cultural heritage can be developed and protected more extensively so as to improve the efficiency of protection, realize the pluralistic form of supporting value and form soft power of folk culture.

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Subject Source

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