Construction and Design of Resource Management System of Packaging Design Information Big Data Platform

Guangchao Zhang¹*, Xi Deng¹, Qing Zhang¹
¹Hainan University School of Art & Design, Haikou, Hainan, China
*Corresponding author e-mail: zzc110028@163.com

Abstract. The resource management system of packaging design information computer big data platform integrates the function of data search and integration, and its construction and design is helpful to promote the sustainable development of packaging design industry. Based on this, this paper first analyses the requirements and characteristics of the resource management system of the packaging design information computer big data platform, and then studies the application practice of the resource management system of the packaging design information data platform.

Keywords: Resource Management System, Information Big Data Platform, Packaging Design

1. Introduction
With the continuous improvement of people's living standards, people's pursuit of consumer experience is getting higher and higher, both from the product itself and its packaging design have put forward higher and higher requirements. In addition, as an important part of the product supply chain system, packaging bears the connection and handover between upstream and downstream products, so it plays an important role in the whole life cycle of the product[1]. With the development of packaging design technology, especially the rapid expansion of big data platform resources, it has laid a solid foundation for the establishment of information resource data platform of packaging design.

The resource management system of packaging design information big data platform needs to integrate the function of data search and integration. At present, most of the packaging design platforms only have a single function of data search, which makes the resource management function of the data platform relatively weak, and it is difficult to achieve information sorting and sharing. Therefore, it is of great practical value to study the construction and design of resource management system of packaging design information big data platform.

2. Resource Management System of Packaging Design Information Big Data Platform

2.1. Definition of resource management system for big data platform of packaging design information
With the rapid change of information big data, the massive information data makes people put forward higher requirements for the rapid transmission and processing of information[2]. The current information data platform has been unable to meet the actual needs of information dissemination and
sharing of product packaging design, so the construction of a new data platform resource management system is imminent. As a comprehensive data platform resource management system across science and field, packaging design information big data platform can realize the rapid processing of data in several aspects as shown in Figure 1.

![Figure 1](Image)

**Figure 1.** Fast data processing of packaging design information big data platform

The big data platform of packaging design information is based on the theory and method of information design subject. After collecting and combing information, the processed information will be presented by interface, so as to realize the comprehensive management of data and information resources.

### 2.2. Characteristics of big data platform for packaging design information

Packaging design information big data platform resource management system is an important carrier and means of packaging design information dissemination, and have a very high processing efficiency for packaging design information[3]. In addition, the big data platform of packaging design information also has the following characteristics as shown in Table 1, so as to meet the needs of timely processing, visual display and data interaction of packaging data.

**Table 1.** Characteristics of big data platform for packaging design information.

| Characteristics | Objectives                              | Descriptions                                      |
|-----------------|-----------------------------------------|---------------------------------------------------|
| Intuition       | Accepted and handled by people          | The presentation of packaging data is more intuitive and clear |
| Timeliness      | Update and feedback in real time         | More effective                                    |
| Interest        | Give the audience interesting experience| Fully consider the user's interest and sensory experience |
| Interactivity   | Information screening, selection and feedback | Pay attention to the interaction with the audience |

It can be seen from table 1 that through the construction of the characteristics of the packaging design information big data platform, the platform can realize the simple and intuitive interface display, the interaction of multiple media and the data statistics of the interface.

### 3. Architecture of the Packaging Design Information Big Data Platform Resource Management System

#### 3.1. Demand analysis of resource management system of packaging design information big data platform

First of all, in the business requirements analysis level of the system, it mainly includes data query requirements, analysis requirements and management requirements. With the continuous development of technology, its demand is also rapidly updated, from the traditional paper data processing to the Internet model and then to the current big data analysis model. Secondly, through a variety of technical means, the data of packaging design can be displayed in a virtual way to meet the display needs of large-scale packaging design.
3.2. Packaging design information big data platform resource management system architecture

In the overall architecture design level of the system, based on big data and information technology means to achieve a comprehensive mining, display and management of packaging design information. Firstly, the overall framework platform is established based on the software and hardware supporting environment, efficient database management and mature development framework model. Secondly, the integration port of the system is built on the big data framework platform of packaging design to realize the centralized display and unified processing of data.

In addition, the data management system module of packaging design information big data platform realizes the extraction and management of packaging design data information based on metadata. The packaging design resource database provides the description, mapping and associated query of the data relationship of the platform[4]. The functional architecture of the packaging design data management system is shown in Figure 2, including the collection, storage, access, query and management of packaging design data.

![Figure 2. Functional architecture of packaging design data management system](image)

4. Application Practice of Resource Management System of Packaging Design Information Data Platform

As an important part of the current social economy, packaging design is an intuitive display of the materialization of social forms, so it has a direct relationship with social culture. In addition, packaging design is closely related to people's daily life, so the change of packaging design indirectly promotes the innovation and development of people's social life.

4.1. Sorting of packaging design data

Packaging design includes the shape and style of packaging structure, and the design of supporting structure is mainly to meet the needs of product transportation, not only to reduce the use of materials, but also to make the transportation and storage process more convenient. In addition, the structure of packaging design generally includes the following table 2.

| Structures                  | Characteristics                  | Main forms                              |
|-----------------------------|----------------------------------|-----------------------------------------|
| Tubular structure           | Single overall structure         | Plug in bottom locking, automatic bottom locking and wall sealing |
| Horizontal structure        | Folding and bonding              | Drawer type, book type, handbag type    |
| Heteromorphic structure     | Special means to change the structure | Surface modeling                       |

Table 2. The general structure of packaging design
4.2. Design orientation of packaging design information data platform
First of all, at the user orientation level, based on the user's query demand for packaging design information, a multiple resource sharing system is constructed to realize the interactive management of platform resources. Secondly, in the aspect of style orientation of packaging design information database, because packaging design information involves a lot of packaging classification, in order to improve the interactivity and convenience of use of the interface, the interface design of the platform should be based on the principle of simplicity and easy operation.

4.3. Framework of resource management system of packaging design information data platform
The framework design of packaging design information data platform resource management system should highlight the core elements of packaging design, that is, the key design of core elements such as color, symbol and text[5,6]. First of all, at the symbol application level of the packaging data platform, in order to ensure the coordination of the interface, the size design of graphic symbols needs to be based on the visual experience of users. Secondly, in the aspect of color application, in order to make a large number of data information on the database interface can be divided in an orderly way, the primary and secondary information of the interface should be transmitted through color. In addition, at the text application level of the platform, through highlighting and focusing on the display effect of different interfaces, it is necessary to design the font pertinence to ensure the level and richness of the interface.

5. Conclusion
In summary, the construction and design of packaging design information big data platform resource management system is not only the requirement of big data and information age, but also the inevitable path to promote the sustainable development of packaging design industry. Through the demand analysis of the resource management system of packaging design information big data platform, the characteristics and functions of the platform system are constructed, and the practical framework of the resource management system of the data platform is finally designed from the core element level of packaging design.

Acknowledgments
This paper is supported by the general program “Research on the Framework of Packaging Design Resource Sharing Platform in Big Data Environment” of Natural Science Foundation of Hainan Province in 2019, Item Number: 619MS027.

References
[1] X. m. Luo, Y. Chen, Construction of big data knowledge map of China's packaging industry. Journal of Packaging, 2018, 10 (4) 88-93.
[2] G. Li, R. Han, Development trend of intelligent packaging equipment from the perspective of "industry 4.0". Journal of Packaging, 2018, 10 (1) 34-41.
[3] F. J. Feng, Q. L. Jia, H. Liu, Analysis of packaging science knowledge map based on Journal PTS. Journal of Packaging, 2016, 8 (1) 94-98.
[4] Y. Xiao, J. Hao, Y. Liu, Research on the framework of big data analysis platform from the perspective of information analysis. Information Science, 2016, 34 (9) 83-89.
[5] J. J. Wei, Multi-dimensional visual experience: the transformation of presentation media and communication methods in information design. Science and Technology Information, 2013 (5) 202-203.
[6] J. F. Situ, C. R. Luo, L. Xie. Research on the platform construction and service of foreign open access journals. Information journal, 2013, 32 (7) 165-170.