THE DESIGN OF COLLABORATIVE MARKING MODE FOR MUSEUM COLLECTIONS *Taking "gugong minghuaji" as an example*

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Abstract – Collaborative tagging is a way of information collection after the popularity of the Internet. Digital resource preservation and management organizations are very interested in this way and have done a lot of research. However, this method is affected by the uneven level of information providers, the difficulty in confirming the accuracy of information, and the risk of unverified information exposure on the platform. In this paper, we will design a collaborative tagging model, which uses the content of user's spontaneous tagging as the basis, through the three stages of self-use tag, collective tag audit and public tag, to supplement the collection information and improve the efficiency of digital resource retrieval.

Keywords – Collaborative tagging; Tag; Information organization; User generated content

Conference Topics – Building the Capacity & Capability, Enhancing the Collaboration.

I. INTRODUCTION

The traditional way of information organization is usually completed by the producer or keeper of information. For example, the keywords in the paper are provided by the author, and the book classification in the library is completed by the keeper after referring to the book content. Many Chinese museums have carried out the development and practice of collection information annotation system, but few of them have achieved large-scale results. One of the reasons is that although the museum collection is very suitable for the use of annotation to describe information, compared with the massive number of collections and information points, the personnel and time that can perform annotation work in the museum are extremely limited. In the absence of task performance requirements, taggers lack the motivation to tagging collections.

With the advent of the digital age, more and more information is open and shared on the Internet. On the one hand, the expansion of information channels allows more users to access the content, and the demand for information retrieval and screening has become more urgent; on the other hand, many users could organize information and hope to supplement or reorganize existing information, while facilitating its own use, it also helps other information users.

Collaborative tagging is that many information users use many social tags to annotate many information resources. In the process of annotation, information users can refer to each other, so with the increase of annotation, the appropriate information users can label the appropriate social tags for the appropriate information resources.

In view of the difficulty of large-scale museum collection information annotation, this paper designs a new collaborative annotation mode by studying the concept of collaborative annotation and related cases. Through the combination of user's annotation information accumulation and content audit, the public tag content in collection information is supplemented. This model can make use of user generated content (UGC) to play the scale effect of collaborative annotation and can avoid the risk of poor-quality control and bad content dissemination in collaborative annotation.

II. Collaborative labeling of collections in museums

Museum is the memory carrier of recording, preserving, and disseminating material cultural heritage. In the process of preserving collections and recording information, the museum always adheres to a rigorous and accurate attitude. This kind of attitude makes the information it publishes have strong credibility, but correspondingly reduces the density and breadth of information. At the same time, it is almost impossible to research and label the massive collection information thoroughly, especially with the limited human and financial resources of the museum. When the museum enters the digital era, the collection information management system is the first to be completed. This system pursues the integrity and accuracy of information and is described systematically by the collectors and researchers in detail. When the information is displayed to the public through the Internet, it is difficult for the public to use the tagging information directly due to the difference of professional knowledge. The reason is that researchers tend to use the traditional taxonomy, while the public prefer to use the Folksonomy to retrieve data. When they try to search for information through simple retrieval words or filtering, they often find that they cannot get the results they need.

In the data service of Museum, collaborative annotation mode can provide effective supplement. It provides a new annotation method, which makes up for the shortcomings of the traditional description of collections from the perspective of experts, making the description more professional and not conducive to public retrieval and utilization. Museums gradually put the collection information on the Internet, which provides the basic conditions for open sharing of collaborative tagging, that is, a platform for collaborative taggers to see the information and output the tagging.

With the development of Internet technology, especially the progress of browser technology, the realization of collaborative annotation becomes simple. Text entry is realized by html5.0 or JavaScript language. The feature of collaborative annotation is to expand the original annotation group, but how to deal with the annotation content is a problem. Collaborative tagging will receive unpredictable information input from users, which needs some means to filter the information. It is not suitable to display the input information to all users in the form of tags. In recent years, with the rapid development of digital work in China's museum industry, many museums have published some of their achievements through websites or other online platforms, and there are many tags in the collection information. However, it is difficult to see the form of collaborative annotation using social resources.

III. Design and practice of collaborative annotation mode for Museum Collections:

"gugong minghuaji" is a high-definition large picture appreciation column of ancient Chinese paintings under the official website of the Palace Museum. It provides high-definition large picture appreciation and multimedia guide contents of ancient Chinese paintings collected in the Palace Museum. In 2020, the number of visits to the Palace Museum's famous paintings will reach 2.73 million times, with more than 420 thousand users visiting, which has a certain user popularity. In the notes of gugong minghuaji, there is not only a general introduction to the information of paintings, but also a mark point in the picture to browse the details of the cultural relics. In addition to high-definition images, the notes of famous paintings in the Palace Museum constantly enrich the research results and multimedia appreciation content by adding audio and video, related papers, and other materials, to meet the needs of users in traditional calligraphy and painting art aesthetics, academic research and other aspects.
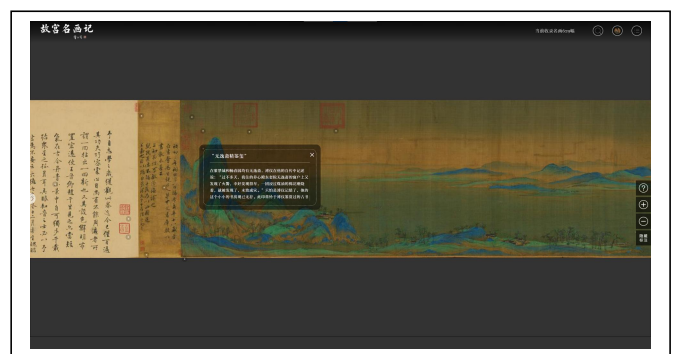

Figure 1 Gugong minghuaj

In the design stage of the project, it is determined that collaborative tagging function they should be added. At last, we decide to use an annotation system to make it realization. According to the different identities of culture heritage experts and general users, two different forms of marking systems are designed. At the beginning of the

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October 19-22, 2021, Beijing, China.

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painting, there is a part of the marked information, which can be regarded as the official information of the management organization. This information is open to all users. For users who want to make a tag, need to register as members first to obtain tagging permission. Then, they can use the annotation tools provided by the gugong minghuaji to intercept the annotation range on the screen, then take a tag on it, or just write whatever they want. The marked information will be saved in the login account, and the user can see the marked record after login. This way of annotation clearly distinguishes the display mode of official annotation and user annotation, and strictly limits the information that users can only see by themselves.

Figure 2 Collaborate Tagging tools of Gugong minghuaji

If the annotation content by user made public, it will not only cause confusion with experts' annotation, but also cause content compliance risk while the annotation content is uncontrollable. However, if it is not made public, the number of public tags will not be supplemented, users will lose the opportunity to display the tagging results, and the platform will also face the pressure of lack of content.

The museum industry has been trying to solve the problem of collaborative tagging through various methods, some of which transfer the direction from user collaboration to artificial intelligence collaboration or supplement the relationship between collections by the way of user organizing content. The Metropolitan Museum of art has completed the tagging of about 275 thousand collections through long-term and large-scale manual labelling. Then, it uses artificial intelligence technology to build object detection model to assist the artificial completion of other untagged collections; Users of the Rijksmuseum can add the collections they are interested into a collection set and manage them like folder. At the same time, these collection set will also appear in

the collection information page for other users to browse. Those above measures alleviate some problems of collection information classification and annotation, but they do not directly use the collaborative annotation function. This makes us turn our eyes to other digital content platforms, looking for the idea of collaborative annotation pattern design.

Video games are typical digital content. Due to their large number and rich types, many categories and tags are required for retrieval and screening. Steam is one of the world's largest comprehensive digital distribution platforms, mainly providing games and various software for users all over the world to purchase and use. Currently, there are more than 90,000 digital programs available online on Steam, of which about 50,000 are video games.

To enable users to find the games they need faster, each game in Steam has its own tags. The initial state of these tags is provided by the game publisher, ranging from 5-20. In addition, Steam supports users to add their own tags to any game, the name of the tag is determined by the user, and the content is not limited. These collaboratively labelled tags continue to accumulate. When the number of tags with the same content reaches a certain number, this tag will become a public tag that can be seen by other users and will even replace the previously marked but less used tags. In this way, the game's tags are continuously optimized to be better matched and increase exposure. These collaboratively labelled tags will not only become public tags, but also be analysed, and the semantics of the tags will be integrated into different types and characteristics, and finally appear in the Steam classification, further increasing the possibility of being retrieved. Another great advantage of this kind of collaborative tagging is that it can realize the realization of multi-language tags. Due to human resource constraints, some tags are difficult to translate into multiple languages, making it difficult to find the category of the tag in other languages. Since Steam is an international game platform, users in various countries mark the game according to their own language, which provides a possibility to implement different languages of the same tag, that is, the tag marked by the user will be classified in the user's Steam setting in the language, it will only be presented to users who browse Steam in the same language.

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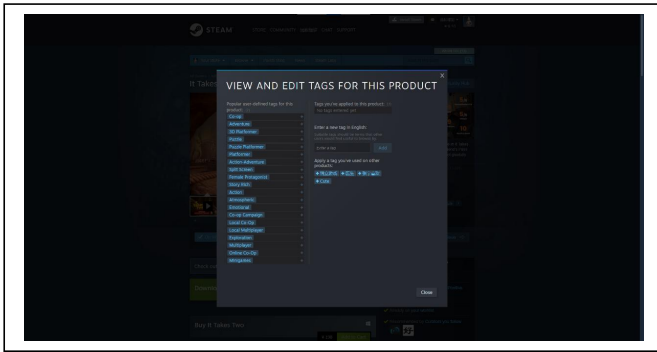October 19-22, 2021, Beijing, China.

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Figure 3 Steam tagging system

In the collaborative tagging process of the Steam platform, the public display of tags is screened in a way of accumulation, that is, when enough is reached, it will become a public tag, which can effectively solve the inaccurate search results caused by the scattered tags. In the collaborative labelling mode design of museum collections, this filter method can be used to improve the validity and correctness of tagging. However, the role of tags in electronic game platforms is more to guide traffic. If users believe that a game is of a certain type, even if it is not recognized by the game author, it will become a public tag because of the large number of tags. Museum collections not only need to improve the retrieval efficiency, but also pay attention to the correctness of the labelling content itself, so relying only on the number as a filter is not enough.
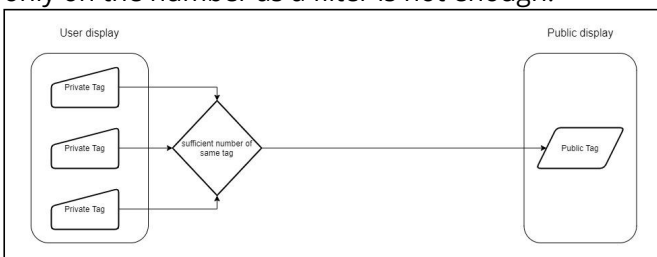

Figure 4 Collaborative tagging model of Steam

In the collaborative tagging model of museum collections, first set up the same mode of screening popular labels by quantity as the video game platform, that is, the concentration of user tags can be regarded as general tags when the concentration of user tags reaches a certain level, and the first level of screening is completed. Afterwards, it is necessary to make full use of the museum's advantages in knowledge resources, to include professional researchers, through the second manual screening of the first-level screening results, to determine the final tag content that will become publicly visible. The necessity of the second manual screening lies in the control of content risks, and the

exclusion of tags that do not comply with network communication laws and regulations and which are obviously inconsistent with the content of the collection. Tags that cannot be public tags can still be displayed on the user's own interface to help individuals record. An annotation that becomes a public tag is not only displayed in the tag of the collection page, but also added to the index of the retrieval system to help users improve the efficiency of retrieval and lower the threshold for the public to use the museum's digital products.
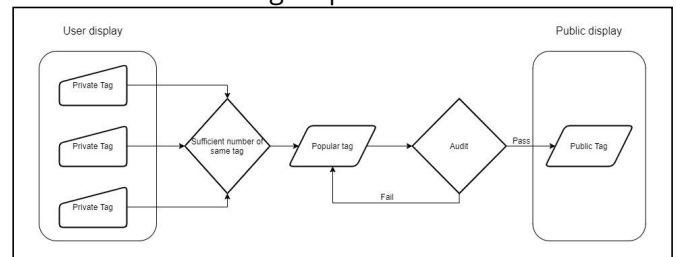

Figure 5 Collaborative tagging model of museum collection

We can use this Collaborative tagging model making a lot of high-quality tagging data. These tagging data are worth to save with other collection information in digital preservation. However, when we make a digital preservation plan, the number of Collaborative tags can show how popular the collection is, and the more popular it is, the more often it could be read in a storage device. We could save these data in a high-speed device.

IV.   CONCLUSION

Collaborative labelling is not only a way of supplementing information to serve users, but also a way of accumulating collection data, information, knowledge, and wisdom in the evolution process. The user's requirements for information are very personalized. How can we understand this personality and provide customized content based on it? Collaborative labelling may be a better overall solution. In a personalized search system, there are different needs and personal interests. In the future, this format can be widely used on network digital platforms, and data of movable cultural relics, immovable cultural relics, and rare ancient books can all be supplemented by this format. The research on this model is far from over. This model also faces some potential challenges. For example, the museum's collection platform has a relatively small user base compared to gaming platforms with a larger order of magnitude. In this case, it may still be possible. There may be insufficient number of tags, or even failure to meet

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the basic requirements of the audit, resulting in no supplementary content; or the audit process is heavily dependent on the reviewer's personal judgment on the information, and there may be excessively strong subjective choices, etc., but in any case, the transmission of information is mutual. Even museums that spread culture should also consider the content from users, and collaborative labelling can help us achieve this goal.

REFERENCES

[1] LI Zhi-yun, XU Shi-jin, WU Gang-shan, DONG Shao-chun. Research on Collaborative Tagging and Its Application in Digital Museum[J]ComputerEngineering,2008,34(6):221-223. DOI: 10.3969/j.issn.1000-3428.2008.06.081

[2] John A, Seligmann D. Collaborative tagging and expertise in the enterprise[C]//Collab. Web Tagging Workshop in conj. with WWW2006. 2006, 2006.

[3] "gugong minghuaji" https://minghuaji.dpm.org.cn/

[4] https://www.metmuseum.org/blogs/now-at-the-met/2019/met-microsoft-mit-exploring-art-open-access-ai-whats-next

[5] https://store.steampowered.com/

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