

# Research on the National Memory's Digital Exploitation and Utilization With Archival Viewpoint

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The fundamental nature as proof and reference besides its previous limitation of the National memory would be the basis on the exploitation and utilization for the deeper research under the archival scope. The paper starts with defining the concept of the National memory's digital exploitation and utilization, points out the significance of the researching object, analyzes the operation mode of the National memory's digital exploitation and utilization under archival scope in accordance with the reality and based on the professional guidance of archival knowledge to conclude the specific operative procedures and statistic with some methodology such as theoretical guidance and empirical deduction.

*Keywords:* archival scope, national memory, digital exploitation and utilization

## Introduction

In a multi-ethnic country, national memory can be the common memory of all ethnic groups in the broad sense, or the unique memory of individual ethnic groups in a narrow sense. No matter what category of national memory, in the long river of the formation and development of the Chinese nation for thousands of years, it has truly recorded the social history of various nationalities and ethnic groups. There are contradictions, struggles, or conflicts, but more of them are harmonious images of building a better home together.

The development and utilization of national memory will not only provide the contemporary public with conclusive evidence for understanding the development of China's multi-ethnic society, establishing the concept of harmonious social development, and cultivating the sense of patriotism, but also improve the understanding of policy-maker on ethnic issues, and provide a well-founded data reference for maintaining the unity and unity of multi-ethnic countries in political decision-making.

As the basic attributes of providing social services, the inherent evidential value and reference value of national memory should be paid more attention to and excavated. However, due to the existing dispersion of national memory, the preservation of its entities and the development and utilization of information have not been really carried out. In this case, we may change our thinking, put national memory in the framework of the

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development and utilization of archival science, discuss the development and utilization of national memory, and combine the theoretical and practical results of digital development and utilization of archives to achieve the goal of providing social services to national memory.

### **Description and Significance of the National Memory's Digital Exploitation and Utilization**

Since the late 1980s, national memory has achieved a certain amount of research results from various disciplines such as history, archival science, sociology, ethnology, art, language, and philology. However, the basic attribute of the internal connection between archives and national memory<sup>1</sup>, makes the research results obtained from the perspective of archival science more systematic theoretical and practical value.

#### **The National Memory's Digital Exploitation and Utilization**

In short, the digital exploitation and utilization of national memory can be understood as the exploitation and utilization of the object of national memory through digital means. However, considering that the industry has not made a formal definition of national memory at this stage, and that exploitation and utilization are two related working links, in the field of archives management, exploitation often refers to the use of professional methods and modern technologies by the archives department to explore, collect, process, store, and transmit useful information in the collected archives according to the needs of society, so as to facilitate the use of the archives by users, so as to realize the value and role of the archives<sup>2</sup>. Utilization refers to the whole process of archives (offices) providing archives information and related derivatives to users through various logical management methods and tools<sup>3</sup>. Therefore, the author believes that it is necessary to explain the digital exploitation and utilization of national memory. Only after the theoretical definition is clear can it provide a reasonable scope for subsequent research.

According to the existing theoretical definition of archival science, the national memory's digital exploitation and utilization can be understood as: according to social needs, with the help of computer terminals, digitization, Internet, and other technologies, collect, identify, store and excavate important memory information that can represent the national spirit in the development history of national society, and through software and tools acceptable to all kinds of people groups, the whole process of providing services to the society with these valuable information and related derivatives.

#### **Significance of the National Memory's Digital Exploitation and Utilization**

The digital exploitation and utilization of national memory is not only of great significance to the protection and inheritance of national memory, but also plays a positive role in enriching the collection and improving the business level of institutions collecting national memory. Through the digital exploitation of national memory, it can also widely promote and popularize the knowledge of national memory, enhance the sense of identity of the public and cultivate the sense of spontaneous protection. At the same time, national memory resources can also provide a variety of services for research work.

#### **The national memory's digital exploitation and utilization contributes to the rescue, protection, and**

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<sup>1</sup> Basic attribute: the basic attribute of national memory is voucher and reference, which the author has demonstrated in the introduction; the basic attribute of archives is also the same. Therefore, the basic attribute of national memory and archives is interlinked.

<sup>2</sup> Chen Zhiwei, Deng Shaoxing, Liu Yuenan. (2008, September). *Archives management* (pp. 430-446). Beijing, China: Renmin University of China Press.

<sup>3</sup> Hua Lin, Su Xiaoxuan, Ni Lijuan. (2012, June). *Archives logical management* (pp. 180-200). Shenyang, China: Liaoning University Press.

**inheritance of national memory.** The exploitation, utilization, rescue, protection, and inheritance of national memory are all important tasks of the project of national memory overall protection career. We can carry them out efficiently in accordance with the instruction of the archival theoretical and practical resolution under a different order compared to the government archives. As we know, after the government archives are filed from non-current documents, their management needs to orderly and alternatively go through the following several steps in order, they are collection, identification, sorting, storage, cataloging and retrieval, statistics, compilation and research, and utilization. However, given the national memory has a wide range of sources as well as varied forms, not to mention the resources are kept by different and scattered subjects, it is impossible to coordinate the whole work entirely through the archives department alone, as the only management organization. Besides, it would be much time-consuming and unresponsive for the endangered national memories to await if the digital technology to intervene the exploitation and utilization was too slow according to the theoretical archival management order. Thus, in view of the extinguished and perishable nature of the national memories, the exploitation, utilization, rescue, protection, and inheritance work cannot be carried out as the same order as the government archives. In other words, the particularity and exclusivity of the national memory determines the rationality of the synchronization of these work. Based on this, there is a philosophical relationship between action and reaction in the national memory digital exploitation, utilization, rescue, protection, and inheritance. The strength and effect of national memory rescue and protection directly affect the sustainable development of exploitation, utilization, and inheritance work, while the depth of digital exploitation and utilization mining helps to create an external environment full of recognition and respect for rescue and protection, and provides richer and more diversified materials and development expectations for inheritance work.

**The national memory's digital exploitation and utilization helps to improve and update the business ecology of the archives department.** The archives department is not the only collection department of national memory, but considering all factors, it is indeed the most appropriate department to carry out the protection of national memory. The existing theories and practices of archives management provide professional guidance advantages for the national memory's digital exploitation and utilization, which in turn can improve and update the business ecology of archives departments in many ways<sup>4</sup>. First of all, the national memory's digital exploitation and utilization helps to expand the collection carrier, and the archive collection carrier can achieve a qualitative leap by realizing the balance between the traditional paper carrier and other types of carriers through digitization. Secondly, it will help to establish characteristic collections, break the negative chain reaction of business caused by the excessive number of paper government documents and archives in conventional archives, and provide more resource reserves for future exploitation and utilization. Thirdly, it is helpful to change the service mode of archives, shift the business awareness from the era of safekeeping to the era of service, and establish an active style of "going out and welcoming in". Fourth, it will help to change the traditional prejudice of the public against the archives, transfer the rigid image of the archives to the new image of serving the public, and build a channel for the interaction between the archives and the public.

**The national memory's digital exploitation and utilization helps to cultivate the sense of identity and responsibility for the protection of social public heritage.** The development of national memory protection cannot be separated from the support and participation of the public. Compared with the initiative of the public,

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<sup>4</sup> Although national memory is closely related to archives, the author believes that the use of archival knowledge to manage national memory not only brings an opportunity for national memory to survive, but also injects new vitality into the enrichment of archival cause.

the outward development of the business of the collection department is the key. Whether it is archives or national memory, the link of interaction with the outside world starts from the exploitation and utilization work. On the premise of fully considering the audience situation of all social strata, ages, and cultural backgrounds, from a horizontal perspective, the social response of the achievements of the digital exploitation and utilization of national memory can not only sweep away the impression of the closed and isolated archives cause in the past, but also promote the content of national memory to be deeply rooted in the hearts of the people and arouse recognition and resonance; From the vertical perspective, the digital exploitation and utilization achievements of national memory can really enhance the confidence of the public in the use of it. The audience's acceptance speed and adaptability to it will also gradually become stable with the long-term development. From the initial point-shaped tiny interests to the development of the flake business, the audience's psychology will also change from passive indoctrination to active demand. The sense of identity and responsibility for the protection of cultural heritage such as archives and national memory will gradually form in this process.

**The national memory's digital exploitation and utilization will help promote the development of theoretical and practical research work.** The national memory's digital exploitation and utilization is of great benefit to the theoretical and practical research of archival science. First of all, it is conducive to the research in the field of archival exploitation and utilization, which has always been an essential part of archives management. Although there are many theoretical studies on this, the awareness and practice of providing social services are shallow because the archives cause in China has been carried out around government affairs for a long time. Compared with archives, national memory has better grassroots and popularity. Therefore, the digital exploitation and utilization of national memory which originates from the professional inspiration of archives can ultimately promote the research of archives to grow further and further. Secondly, it is conducive to the study of the objects of archival work. In the past, most of the archival work was aimed at non-current government documents, with a single collection and centralized content, which is not conducive to the prosperity of the cultural life of the public. At present, the authentication and protection of national memory, various cultural heritage, and intangible cultural heritage also provide an unprecedented opportunity for the transformation of archival work from traditional to emerging. With the enrichment of the types and contents of archives, the improvement of the quality and quantity of the collection can provide more research resources for the objects of archival work, build modern archives, and revitalize the archives cause. Finally, it is conducive to the in-depth study of archival discipline. The development of archival discipline research does not rely on blindly partnering with the emerging things at present, nor does it risk to generalize the concept of archives to achieve the research objectives, but it can find deficiencies in practice based on the actual development needs, put forward theoretical suggestions and countermeasures for these problems, and finally sublimate to the research principle of "originating from reality, but slightly higher than reality". The digital exploitation and utilization of national memory provides an opportunity for the in-depth research of archives discipline, enabling the academic community to consider not only the implementation of a certain work link, but also the relationship between various work links, and also the theoretical issues such as the development space based on the existing conceptual framework of archives. In addition, besides contributing to the research and development of archival cause and archival discipline, the digital exploitation and utilization of national memory can also provide a large number of available research resources for the theoretical and practical work of other disciplines.

### **Operation Mode of National Memory's Digital Exploitation and Utilization From the Perspective of Archival Science**

From the perspective of different disciplines, the functions of information resources provided by the exploitation and utilization of national memory are different. History searches for traces of the development of an event based on the national memory of a certain era background, sociology explores the local social composition of that time by analyzing the national memory, ethnology compares the national literature with the national memory to sort out the national development, art study evaluates the film and television works by using the national memory restoration, and linguistics analyzes the national memory to verify the books and literary works. Without exception, these disciplines regard national memory as a resource that can be used in the research process, and use the evidence and reference value of national memory to prove the rationality of the research object by looking for a certain aspect of this resource that is consistent with their own research.

The evidence and reference of national memory are closely related to archives. As a memory tool of human society, archives are closely connected with national memory. Without archives, history will be a blank, and national memory will also be interrupted; The strength of national memory function and whether it has national cohesion are closely related to archival work<sup>5</sup>. Archives science can give new life to the theory and practice of national memory research in many aspects, regardless of the theoretical analysis and demonstration of the relationship between the two in Ren Hanzhong's *National Memory and Archives*, or Huang Fengping's *Strive to Protect National Memory, Actively Inherit National Culture—Practice and Thinking of Yunnan's Multi-ethnic Archives Work* demonstrates the rescue and protection of multi-ethnic memories from the theoretical and practical level, and then Zhao Zhihong's *Preserve National Memory, Inherit National Culture, Serve National Regions—On the Characteristic Functions of Urban Construction Archives in National Regions* uses national archives resources to serve local construction. All these reflect the great potential of the research on national memory from the perspective of archival science.

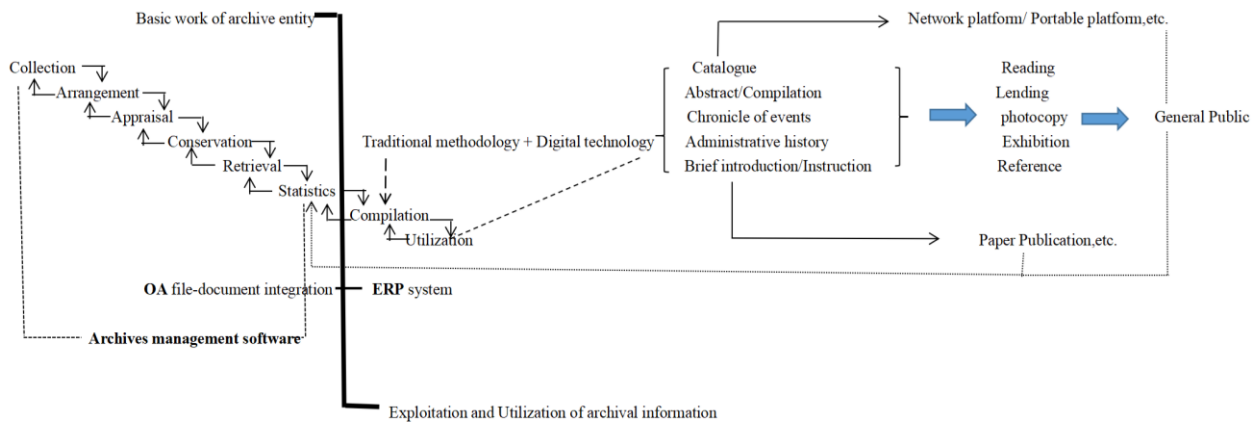
Archival education attaches importance to the theoretical research and practical guidance of compilation, research, exploitation, and utilization. As a resource in the eyes of many disciplines, the exploitation and utilization of national memory will provide more abundant materials for the research of different disciplines. Therefore, based on the reality of multiple crises such as the risk of national memory loss and insufficient theoretical research, the digital exploitation and utilization of national memory integrating the professional knowledge of archival science should be implemented without delay.

The exploitation and utilization of national memory can make appropriate innovation based on the existing working mode of archives-relevant management procedures, which is consistent with the development nature of national memory itself. In order to facilitate identification, the author uses diagrams to illustrate.

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<sup>5</sup> Ren Hanzhong. (2004, October). National memory and archives. *Hubei Archives*, 10, 04-05.

Operation mode of archives exploitation and utilization



OA stands for Office Automation  
ERP stands for Enterprise Resource Planning

Figure 1. Operation mode diagram of archives exploitation and utilization.

As can be seen from Figure 1, the exploitation and utilization of archives is at the last link of the whole management process. The eight steps are linked and interact with each other. Compilation and utilization forms a unified part of the exploitation and utilization of archive information. At present, the operation mode is “traditional mode+digital means”. Through some existing compilation and research methods, archive information resources are developed in different themes, contents, and styles. The exploitation results are mainly divided into traditional paper publications and information products relying on digital platforms. As the needs of the public have not been analyzed in depth, the way to provide utilization is relatively simple. The subsystem of backstage management is equipped with a module designed to convert to statistical utilization data. The statistical information fed back through various utilization channels will eventually form a class of data packets, which will be returned to the whole system with other relevant management links in the previous sequence, forming a complete digital management process.

National memory’s digital exploitation and utilization mode

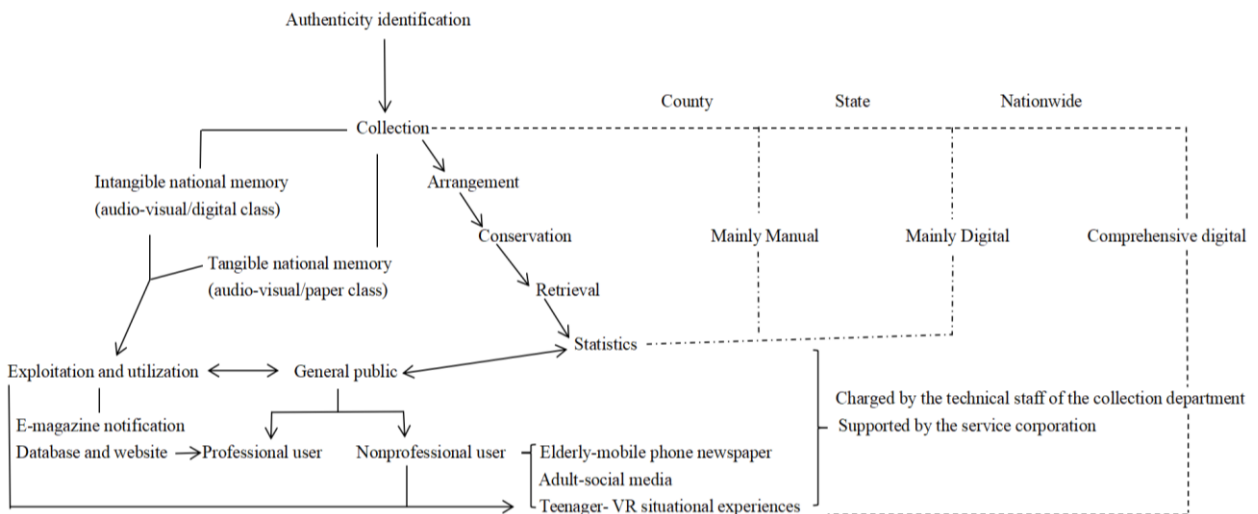


Figure 2. Operation mode diagram of national memory’s digital exploitation and utilization.

It can be seen from Figure 2 that the order of each link in the archives management process is different in the digital exploitation and utilization of national memory, which is determined by the particularity of national memory<sup>6</sup>. However, given the endangered situation that national memory is easy to disappear, the way to protect it for a long time should consist of two parts, they are exploited and used rapidly stably, and arranged and conserved regularly securely. The operation of arrangement and conservation is affected by the region, and there is a big gap between the working methods and efficiency. Yet, the technical requirements for the exploitation and utilization work for ordinary non-professional users are not particularly complex, and are not easily disturbed by external policies, funds, business capabilities, and other factors. Therefore, considering the current development level, its actual promotion potential is large. Based on the objective conditions at this stage, the local archives department can take the lead in carrying out the exploitation and utilization work within its capabilities according to the region where the national memory is located.

### **Development of National Memory's Digital Exploitation and Utilization**

Because of the close relationship between the national memory collection and the exploitation and utilization, the digital technology will start from the collection stage. The national memory information formed in the collection stage will be processed as the original data and updated through the digital means of the subsequent exploitation and utilization stage. Part of the digital technology needs to run through the two working stages to achieve the sublimation of the original data. Therefore, the author intends to discuss the digital operation of collection and exploitation and utilization respectively.

#### **Collection of Digital Exploitation and Utilization Materials**

The types of national memory are diverse, and the results are varied according to different criteria. In order to facilitate the carrier classification of digital data collection, the author divided the national memory according to the relatively shallow criteria. The national memory can be categorized into intangible national memory and tangible national memory.

**Digital collection of intangible national memory.** Intangible national memory generally refers to all objects that belong to the category of national memory, and the types involve blowing, playing, and singing, oral stories, handicraft skills, traditional folk customs and customs or activities. Based on this range, except for a few paper carriers containing music scores, dance scores, and historical records, the rest of the information content of the matching objects may disappear quietly in the near future if it is not recorded by a series of material carriers.

As a reliable way of recording national memory, material carrier is different from most of the documents and archives naturally formed in the traditional sense, which are written on paper. The formation of material carrier of national memory depends on human external forces, which is the embodiment of the important role of digital technology. For the intangible national memory, the recording means other than digital technology, such as handwritten stenography and sketch copying, are too cumbersome and extensive to accurately and completely record the content. Therefore, digital technology should be the most ideal recording means for the intangible national memory.

The digital technology needed in the process of information collection often needs to first carry out data

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<sup>6</sup> Although national memory is closely related to archives, the author believes that national memory should not be completely applied by the theory and practice of archives management. The use of archives knowledge to manage national memory not only brings an opportunity for national memory to survive, but also injects new vitality into the enrichment of archives cause.

shooting by relevant equipment, and then convert these vivid contents into digital code without distortion and store them properly, and then implement data standardization through the technical software with calibration and balance to ensure that these collected national memories are resources for further use.

Generally speaking, digital cameras, digital video cameras, and even mobile phones are used for static data shooting. Besides the previous three kinds of equipment, digital recording pens and more professional digital peripheral accessories are also used for dynamic data shooting.

The formats of data resources produced by these mentioned devices are different. For example, pictures taken with professional SLR digital cameras can be directly edited in JPEG, TIFF, GIF, FPX, and other formats except in RAW original format<sup>7</sup>. This requires further format conversion or processing. Generally, there are two simple and easy ways to convert the digital image format, one is to operate through special image format conversion software such as Adobe PhotoShop, and the other is to select a viewfinder shooting mode with unified standard format through the setting button in the digital camera. After the image format conversion is completed, the image definition, pixel size, left and right inversion need to be processed as well, these works can also be achieved through Photoshop. The digital recorder records voice data in the form of ACT, REC, VY1, VY2, VY3, VY4, SC4, DVF, MSC, WMA, MP3, WAV, etc. Now the audio playback software has strong compatibility, and almost all of these audio files can be played smoothly. However, due to the fast speed of the recording object, improper positioning, poor quality of the recorder itself, and too noisy recording environment, some of the audio files' content is ambiguous and the sound quality is poor. This kind of problem needs to be solved by audio processing software such as Adobe Audit, GoldWave, NGWave Audio Editor, All Editor, Total Recorder Editor, etc. If there is less operation for more professional multi-functional audio editing functions, some audio editing software such as Sony Sound Organizer can also be used with simple interface and simple operation. Its functions are sufficient for slowing down the voice speed of recorded audio, increasing the volume of voice, and filtering the noise in the outfield.

**Digital collection of tangible national memory.** The tangible national memory refers to the physical objects such as fixed, immovable, and tangible sites, buildings, works of art, manuscripts, and books, which belong to the category of national memory. Based on this scope, part of the information of the matching objects has been based on paper carriers such as architectural sketches, historical records, design drawings, historical manuscripts, books, and materials, but there is still some information content that reflects the overall cultural style of rural towns, building groups or the existence form of works of art and other important backgrounds that need to be collected with the help of digital technology.

The digital acquisition technology of the tangible national memory is the same as that of the intangible national memory. The static tangible national memory usually uses digital cameras and mobile phones to take pictures, but the dynamic information formed by the interpretation and interpretation related to the static national memory also needs digital recording pens and other devices to realize the content storage.

Whether it is intangible or tangible national memory, at this stage, the existing paper carrier information is usually taken a similar approach to archive storage, that is, after simple classification and arrangement of these information, they are directly stored in the warehouse of the archive department. However, at present, the pattern

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<sup>7</sup> Strictly speaking, RAW is not an image format and cannot be edited directly. RAW is the recording of the original data of the camera's CCD or CMOS when converting optical signals into electrical signals. It simply records the image data without any processing inside the digital camera and stores it.



of “paying more attention to storage and less attention to utilization” has not been completely reversed. Therefore, many extremely valuable and valuable paper carriers of national memory still lie in the darkness of the warehouse. However, changes are coming soon. The purpose of “providing use and serving the society” will become the main tone of archival work. National memory, as a characteristic collection, will inevitably embark on the road of digital construction. Based on this, the digital collection of paper carriers is of great urgency.

The digital collection of the national memory of the paper carrier can be realized in two ways, one is to take a digital camera to re-photo the paper original, and the other is to use a scanner to scan the paper original. The former is only applicable to places where the conditions and equipment of the custody institution are limited, and the number of paper originals is small, and the original itself is of good quality and preservation status. Although the digital picture formed by this kind of remake can record the information content, it has poor reproducibility and is easily affected by many factors such as external light, shooting level, shooting angle, etc. According to the author’s visit to the collection institutions, the provincial archives departments almost complete this work with the help of scanners. Compared with the fact that ordinary scanners have weak functions, slow scanning speed, and low efficiency, most professional institutions use large-format book and magazine scanners to complete the digital collection work. This kind of professional scanner has the function of batch scanning. It uses the pedal to control the scanning. Through the 10.5, 32, 40, or 50 megapixel sensor, it can scan two single pages at the same time, and save multiple pages of PDF, TIFF, or single page of JPG/TIFF/PDF/PNG file format at the same time, saving time and effort. Professional scanners work fast and efficiently, but in view of the long history and fragile nature of the paper carriers of national memory, especially historical materials, manuscripts and atlases, the operation in the scanning process often needs to do a lot of careful work, such as gently inserting the cut rice paper between the folded pages and then preparing the scanner.

### **Development of Digital Exploitation and Utilization**

After the systematic digital collection of national memory, the information data formed are convenient for docking with the exploitation and utilization work. The collection stage provides the material for the exploitation and utilization stage, and the analysis of the needs of the public will help the exploitation and utilization find the right direction. There are many kinds of social public. Here, the author defines the users into two types and only discusses them from professional and non-professional aspects<sup>8</sup>.

**Exploitation and utilization for professional users.** In my opinion, the professional users of national memory resources consist of two parts: administrative decision-makers and scientific researchers. These two groups of people tend to be professional, meticulous, rigorous, and standardized in the use of resources. The use requirements require both processed summary and reference, as well as unprocessed original information. Professional users can ask for national memory resources through active inquiry and waiting for reception. In addition, compared with the exploitation and utilization of traditional sample publications, there are great limitations in terms of time and space. Digital national memory resources can adapt to the lifestyle of “mobile office and convenient learning” of modern people in today’s society. While receiving the latest information at home, obtaining the required resources at the fastest speed is the key to promoting and popularizing digital

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<sup>8</sup> The author, as a university teacher, has the needs of professional users when facing national memory resources in the process of scientific research, while as the general public, has the needs of non-professional users when facing national memory resources in the process of receiving cultural information. Therefore, this article only discusses the needs of the public from these two categories.

development and utilization.

Based on this, the author believes that the electronic magazine notification and database website sharing in the current digital exploitation and utilization are two more suitable methods for professional users. The digital technology required for these two methods can be learned and mastered by anyone who is familiar with computer software operation technology if by the chance the support of outsourcing technology companies cannot be found. In this way, we can reduce the negative impact of the weak technical strength of the archives department, which is restricted by the regional development level.

Electronic magazines have the characteristics of both print magazines and websites. They present information content that integrates images, words, sounds, videos, games, and other dynamic combinations to readers, which is not only malleable, but also has a distinctive theme. However, the publishing of electronic magazines is not only complicated in terms of editing layout, but also involves issues such as the selection of publisher's qualifications and the protection of intellectual property rights. At present, these issues are beyond the control of the competence of the archives department. Therefore, the author believes that we can start with the primary electronic magazines, and edit the national memory materials with different themes according to the needs of professional users through some simple and understandable electronic magazine production software such as ZMAKER, IEBOOK, and POCOMAKER, etc. For example, the electronic magazine with the theme of the development of local opera in Yunnan, not only contains the historical memory material information related to the development of the opera, but also displays in the magazine in various forms such as pictures, text, video, singing, etc., providing a lot of first-hand information for professional users studying this unique art.

As a communication tool, the database website can be used by the archives department to create a general database or thematic database according to the national memory resources it has mastered. With the help of HTML and other tools, it not only uses the website to display culture and transmit information, but also provides users with social services through various channels through the website's communication and interaction platform. Many commonly used website production software do not require operators to master SQL language or data programming skills, such as FrontPage, Dreamweaver, etc. Developers can first design a logical content framework based on the needs of users, and then build a single page or an integrated website according to the holdings of existing national memory resources.

Whether it is the notification of electronic magazines or the sharing of database websites, it is necessary to find a secure and reliable platform with a wide audience. Since the amount of professional users is smaller than that of the public, it can be spread through two ways according to the classification of professional users: one is for administrative decision makers. The administrative departments that connect the national memory information are often concentrated in the field of cultural undertakings. Therefore, a special agent can be selected from each department as the receiving window, and the electronic magazine and database website can be regularly pushed through the mailbox of the special agent selected by each receiving department, and then transferred from the special agent to a certain range or comprehensive transmission of their respective departments. At present, many administrative departments, such as financial budget, audit, and verification have carried out the statistical data in this way, so it is feasible. The second is for scientific researchers. Scientific researchers are scattered among various colleges and universities, research institutes, and cannot purposefully implement the previous form of information notification. Therefore, it is necessary to widely propagate and build the website. E-magazine can exist as a small module branched on the database website, and the designed database website (including independent web pages) can also be officially published on the Internet by applying for a

domain name, obtaining an IP address, and binding a server. The author suggests that whether to apply for a new server can be determined according to the size and content of the database. Small-scale database can be directly bound to the existing website servers of the department of collecting national memory archives and operate as a sub-net within the official website, which is also convenient for propagation and utilization; However, if the number of national memory resources is huge, it is also necessary to build a new independent website.

**Exploitation and utilization for non-professional users.** Non-professional users of national memory resources refer to all groups except administrative decision makers and scientific researchers. In fact, to some extent, professional users also have the demand for non-professional requirement, and non-professional users also have potential demand to transfer into professional users. In different scenarios, there is a certain amount of invisible conversion between the two. Compared with professional users, non-professional users have faster, more casual, and broader utilization goals, so easiness to understand is the primary requirement. The randomness of the use of national memory resources by non-professional users has led to a passive way of receiving information. Therefore, the exploitation and utilization of national memory needs to take the initiative to send out the cultural wealth of the collection with the help of digital technology in order to provide users with a new experience.

It might be difficult to provide multiple experiences without carefully categorizing the type of user in the exploitation and utilization stage, the author hereby classifies non-professional users into three categories according to the national age criteria, they are elderly users, middle-aged and young users. The acceptance of digital information by different types of users is greatly different due to the background of education, this is a normal situation that cannot be ignored in the current society. Although the elderly non-professional users are more willing to accept the traditional paper carrier information, digital information is the trend of the times that appeared and dominated inevitably.

For the elderly non-professional users, national memory resources can be provided through mobile newspaper. The commonly used software for making mobile newspaper includes RabbitPre, MAKA, eqshow, weplus<sup>9</sup>, etc. The operating principle is similar to that of electronic magazine, but the display platform mainly relies on WeChat to spread widely. The content of mobile newspaper can cultivate users' sentiment on the one hand, enhance users' national cultural identity on the other hand, enrich the retirement life of elderly users, and keep the information synchronized with the surrounding public of all ages.

For young and middle-aged non-professional users, national memory resources can be shared by registering WeChat public service number and regularly updating the notification information. There is no threshold for the registration of WeChat public platform, which is divided into subscription number and service number. Generally speaking, subscription number is suitable for non-enterprise users. The national memory collection department can choose whether to authorize or not to the WeChat subscription number according to its own conditions and service intention. The authorized subscription number is exclusive, unique, and regarded as the registered trademark. Besides, the regular standard of only one piece of information notified per day is completely capable to commit for most operators. Such reception frequency also meets the daily reading requirements for most users, which is appropriate for users to develop the habit of reading and enhance users' sense of social responsibility.

For young non-professional users, the cultural edification of national memory resources is of great significance to cultivate national self-esteem and establish the concept of patriotic honor. Adolescent users'

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<sup>9</sup> These software are listed according to the survey in the market of mainland, China.

acceptance of national memory resources is more likely to be affected by the attractiveness of the information content. Therefore, when exploiting and utilizing the works, it is necessary to take into account the simple, positive, lively, and interesting style. In order to make the process of learning information more vivid, the use of digital situational experience will be a feasible attempt. For example, open activities of theme types such as the filing of national memory, invite young users to visit and experience, take a real national memory as the display object, the developer will demonstrate it on the spot, the experienter will operate it in person, and the completed works will be given to the users in the form of awards, etc. All of these can greatly enhance the enthusiasm of the whole people for participation and achieve better social response.

### **Case Study on the Digital Exploitation and Utilization of National Memory**

**Southwest China ethnic minorities database query system of the institute of history and language of the central academy of Taiwan<sup>10</sup>.** The data of this system are compiled from the cultural relics, documents, and photos collected by the early researchers of the Central Academy of Taiwan (1928-1943) in the course of field work. These data are used to promote academic research results to the public through the establishment of databases and the construction of search websites, and serve as academic exchange bridges for relevant academic circles. The national memory data collected by the research team were displayed through the “Southwest China Ethnic Villages Network”. The overall website layout is reasonable, the content is sufficient, and the information is detailed. The whole website is divided into seven modules. The first six modules are based on the same website platform, and their contents constitute the Southwest Ethnic Minorities Academic Information System. It not only combs the research results of the member teams of the operation system, displays the research history achievements of the Institute, shows the research ideas of the research team, but also explains the ethnography of the 26 ethnic minorities in the southwest, and lists the summary of achievements in relevant research fields. The last module forms an independent database, which explains and analyzes the collected and processed national memory data of various types in detail from field photos, national cultural relics to national documents, and provides comprehensive information services for various social users.

**Special database of Yunnan provincial archives<sup>11</sup>.** The database is built under the official archives information website of Yunnan Province as a sub-net. In addition to the exploitation and utilization of government documents and archives in the collection, the Yunnan Provincial Archives also actively carries out the utilization services of various types of archives such as family marriage archives and folk physical archives. In recent years, the characteristic database built by relying on the exploitation and utilization of its own holdings has become a new professional highlight. At present, there are five characteristic databases, they are the Yunnan Army Anti-Japanese War dead soldiers name list, the Southeast Asia Chinese mechanic name list, the Yunnan Local Hereditary Headman database, the Yunnan Local Military Academy database, and the Ethnic Minority Thematic database. The list of the dead soldiers of the Yunnan Army in the Anti-Japanese War includes three items, they are the names, native places, and troops of the dead soldiers. The names and photos are included in the Southeast Asia Chinese mechanics database. The list of Yunnan Local Hereditary Headman database includes the names of successive hereditary headman, their administrative offices, nationalities, hereditary lineages, and the dates of establishment. The directory of the Yunnan Local Military Academy database contains the directory of students, the resumes of officers, the names of officers, and other contents. The special database of Local Ethnic Minorities

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<sup>10</sup> [http://applyonline.ihp.sinica.edu.tw/source/source\\_4.htm](http://applyonline.ihp.sinica.edu.tw/source/source_4.htm).

<sup>11</sup> <http://www.ynda.yn.gov.cn/ynda/2740158898278236160/index.html>.

contains the ethnic profiles of Bai, Naxi, Lahu, Wa, Lisu, and Jingpo, as well as the contents of archives in different carriers or forms. Among the five databases, the archives of ethnic minority thematic databases are of various types and are highly readable, and the digital exploitation and utilization of the remaining four databases are still in the initial stage, which also reflects that the archives department has a long way to go as a department with more collection of national memories and more systematic and professional means of data information development.

**National archives academic information network of the department of archives and information management in Yunnan University.** At this stage, the network has not been officially put into operation due to factors such as unbound servers. However, the rapid service platform built around the network has been released and operated for some time. These platforms include Yunnan University Information & Archives and National Archives E-journal. Based on the achievements of the department of Archives & Information management in Yunnan University, the academic research on ethnic archives in the past 40 years, the running team from the back stage have continuously notified the well organized, designed, and compiled ethnic memory data information to users with the help of digital technology based on WeChat platform as well as the theoretical and practical guidance whipped by the consultant from the inwards and the users from the outwards. The team strives to build an academic service information network based on the ethnic minorities in the border areas, which will promote rigorous, accurate, and interesting ethnic memory resources to the public and can be recognized and accepted by the industry. Long-term operation of this information network requires a large number of original national memory materials. In combination with these precious materials collected by the archives department, the author believes that the digital exploitation and utilization of national memory should be carried out on dots, while various institutions work separately, and should also eliminate the isolation between institutions, focus on integrating the advantages of institutions, and cooperating with each other, realize the desire of digital exploitation and utilization of national memory in order to provide practical and reliable services for all sectors of society.

### Conclusion

From the current situation, neither the archives nor the national memory can achieve the full digital coverage of the entire management process, and the exploitation and utilization of national memory scattered throughout the country will inevitably be affected by the level of the archives management in different regions and thus have different effects. Therefore, it is the right way to implement the overall management of national memory by stages, steps, and modules. As an important part of the whole management system, the exploitation and utilization of national memory not only undertakes the data results formed after information collection, but also undertakes the service task of transforming these data results into popular works that are easily accepted by general public through digital means.

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