

RESEARCH ARTICLE | APRIL 20 2023

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AIP Conference Proceedings 2594, 120017 (2023)
<https://doi.org/10.1063/5.0109155>


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Printed or Digital? An Exploration of Digital Transformation in Indonesian Library

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Abstract. The article discusses the digital transformation of media collections in the library. Research that illustrates how processing collection over media, obstacles faced by the Library Service of the Province of South Sumatra. The study used a qualitative descriptive method with the aim of getting a more detailed description of the processing of collections over media. Data collection techniques in the study were carried out by observation, documentation, and in-depth interviews with the head of the library, the head of conservation, the media transfer section, and librarians. The results of the study showed that the processing of media transfer collections consisted of three stages after the media transfer. The main obstacle in processing the transfer of media is the lack of human resources that are competent in the field of media transfer besides that, inadequate facilities due to lack of available budget. Digitizing the library may help library and the users to step toward the sustainable future, because digital libraries are the future. Digital technologies consistently help to reduce paper and energy waste and decrease the overall habit of students in copying pages from the printed books.

INTRODUCTION

In the current era of globalization, the dissemination of information can no longer be stopped, this can be seen from the fast flow of information that flows and develops every day. This information explosion spurred libraries to expand their collections and not only provide printed collections but also collections using electronic means. Users will increasingly depend on collections using electronic means for several reasons such as cost, availability, and speed of collection. Considering that the people's need for information is getting faster, it is necessary here to have an institution that is responsive to the management, storage and dissemination of information, this institution is often known as a library. Information management is not always aimed at the latest information, including rare information, so that the content and scope of it can be used for future generations [1], [2].

But the problem is that the physical condition of the scarce information media has been a lot of concern, both in terms of the physical binding, cover, fragility of paper, and the level of acidity of the paper media as information storage. The challenge is that the physical condition of the scarce information media has been a lot of concern, both in terms of the physical binding, cover, fragility of paper, and the level of acidity of the paper media as information storage[3]. The use of information technology can overcome printed and recorded library materials from the risk of damage due to age, wrong handling, and improper storage methods and space. The transfer of digital media is an effort to save the content or information contained in the library material without removing or changing its original form. Preservation of library materials must be considered so that it runs according to its function, namely as a source of information that can be accessed again. The role that can be played by libraries is that libraries play a role in collecting and preserving collections of library materials so that the priceless works of mankind remain intact. Therefore, the management staff or librarians are required to be able to carry out special maintenance activities, to protect the preservation of library materials from damage[4].

Preservation of library materials in general has two main elements, namely preservation in physical form and preservation of information value. The preservation process in physical form can be done by means of maintenance, maintenance, preservation, and repair. Meanwhile, preserving the value of information is done through letter transfer, language translation and media transfer. Media transfer in libraries is usually carried out on library materials of historical value, ancient manuscripts, rare books, or library materials that have physical conditions that are already fragile[5]. However, the process of transferring conventional media by photocopying will usually further physically damage library materials so that libraries must have a policy of making copies in the form of digital media transfer to preserve the library material information.

Transfer of digital media is an activity to preserve the nation's cultural treasures by transferring forms from the original form to other forms / media. Media switching is a digitalization process, namely the process of transferring media from printed media such as books, magazines, photos, and images into digital data that can be recorded, stored, and accessed via a computer or other digital media. Transferring is an activity to preserve library materials by transferring information from textual to electronic form, without reducing the content of the information at all, provided that the new media used ensures that the results are more effective and more efficient. To reduce the risk of losing information, the transfer of media into electronic form uses computer system.[6]

METHODOLOGY

A qualitative research methodology was used in this study which to make sure theory fits the data in the field[7]. The study was conducted in Provincial Library Agency of South Sumatera in part since the subject is under explored in relations to their challenges, ability, and potential, which facilitated their struggle to serve their stakeholders.

Primary data was taken from observation and interview on site, while secondary data that complete the whole data was taken from documents found from library administration. In-depth interview was completed using the semi structural questions which recorded to keep track for data analysis in later stage. The main interviewees in this study are the head of library, the head of collection preservation section, media transfer section, and librarians. Observation involved monitoring the actual activities in the library and documented the examining with notebook and camera [8].

Each data went through data analysis stages with four stages in total, which can be elaborated as data reduction, data display, conclusion drawing and answering the research questions.

RESULT AND DISCUSSIONS

The procedure for transferring documents to microfilm or other media is the transfer of microfilm media and other non-paper media with security such as CD Room or Worm. Transferring to digital media is an activity to preserve the nation's cultural treasures by transferring forms from the original form to other forms / media [9]. Media switching is a digitalization process, namely the process of transferring media from printed media such as books, magazines, photos, and images into digital data that can be recorded, stored, and accessed via a computer or other digital media. Media transfer began to be held in the 2000s and the use of library collections began to develop, as well as in the South Sumatra Provincial Library Service which followed the development of library collection format changes from print media to digital media, this development process was carried out in 2017. Library Agency of South Sumatra Province as the research subject was very aware of the need for media transfer as one of the demands of library users and development needs. This is in line with the opinion of the head of the library who stated that:

"Media transfer is very necessary, media transfer means moving from printed media to digital media, which is for the maintenance or preservation of ancient manuscripts so that they are not lost, we transfer them."

In addition, the Head of Media Transfer also expressed his opinion on the benefits of the policy of transferring collections of media from printed to electronic forms. The benefits of implementing transferring according to them are:

"Transfer of media to advance information so that the reading public such as students and the public are not focused on the library. They can access the e-books from their homes on the condition that they become members of the library by using the ID number to enter our server."

An agreement for media transfer activities at the South Sumatra Provincial Library Agency was also raised by one of the senior librarians, who stated.

"One of the main tasks of this library service which is carried out by the conservation sector in this case is carried out by the media transfer section which has to be carried out 5 years ago because now it is the age of using technology."

Based on the informant's statements regarding the transfer of media at the South Sumatra Provincial Library Agency, this study argues that basically the workflow is the same, even though the style of language conveyed by each informant is different, this is because the transfer of collections is carried out based on the Standard Operational Procedure (SOP) be a reference for collection transfer work. Processing of library collections in implementation tailored to the goals, policies and SOPs set by the Head of the South Sumatra Provincial Library Office.

The results of research of the media transfer process at the South Sumatra Provincial Library Service are generally very good, as evidenced by the existence of media transfer collections which are quite helpful for readers where the collection of printed ancient books that cannot be lent to the public can still be accessed by users through media transfer in electronic book form. The number of media transfer collections is quite a lot, especially in ancient book collections, by transferring collections in electronic form stored on CDs can help users, where electronic books on CD are quite easy and are considered more efficient than printed books.

The media transfer section as the research subject in Palembang was formed in 2017 which was previously a sub-sector of deposit services. Based on the data, there were 200 collection titles that had been transferred. The media transfer section is led by a section head who has the task and function of assisting the head of the field of preservation of library and archival materials in preparing materials for the formulation and implementation of technical media transfer policies. There are three librarians who work operationally and are led by one committee. In carrying out its duties and functions, the media transfer section at the South Sumatra Provincial Library Agency used several tools to support work activities.

In overcoming the problem of lack of space, every library certainly carries out collection procurement activities to add to the completeness of its collections. Usually, the growth and development of this collection is not matched by the expansion of the library space. As a result, the available shelves to accommodate the collection year after year are getting crowded, making the library room no longer comfortable. One of the efforts to overcome this problem is by carrying out media transfer activities from the original form to digital form (CD).

In preventing physical damage to library materials, most library materials collected by libraries are library materials in printed form made of paper such as books, magazines, journals, newspapers, theses, theses, dissertations, important archives, and other documents of historical value. Of course, the library material cannot last too long, along with the physical age of the document there are many things that cause damage from a physical point of view, both internal and external factors. Libraries push forward effort to save the information contained in the library material, it is necessary to carry out media transfer activities.

The problem of rarity is adapted by the effort to help the collections that are of historical value and are rare. They must be preserved both in terms of their physicality and content of the information. One of the efforts to preserve this historically valuable and rare collection is by carrying out activities to transform from physical to digital or disk form. In relations to development of information technology, especially computers and other related devices, the sector has had a very positive impact on activities in the library. The presence of information technology considered to be accepted and utilized in the South Sumatra Provincial Library Board.

Media Transfer Purposes

Transfer of library media activities regarding the development of collections in digital form that are accessed easier and media transfer activities are one of the things that must be carried out at the South Sumatra Provincial Library Office. Libraries must transfer the media due to the urgent need of the 16,140 collections many collections that have been damaged. To anticipate this, a transfer is carried out. Theoretically, the purposes of media transfer are:

- a. Preserving the information content that is recorded and transferred to other media.
- b. Preserving the original physical form of library and archive materials so that they can be used in the fullest possible form.

The guidelines for making e-books for media transfer published by the National Library of Indonesia also mention the purpose of media transfer, which is as follows [10].

- a. Ease of access, allowing people or library users to be able to access information, without having to come to the library, can be accessed online.
- b. Long distance service, meaning that users can enjoy unlimited service, anytime and anywhere, without being hindered by space and time.
- c. Preserving and maintaining collections that are rare, obsolete and need to be handled, because the original form of collections that need preservation can be replaced with digital formats.
- d. Preserving the nation's cultural treasures, by documenting manuscripts in the archipelago into digital format, for purposes of research, user education, publishing, and exhibition programs.
- e. Build a new social community, which is stored in the media portal of the Indonesian National Digital Library, which can be used by different people, including those who use social networks and other new technologies.
- f. The purpose of building a digital library is to promote intercultural understanding and awareness in the national scope, provide learning resources, encourage the availability of library materials and information that contain local cultural values (local content), and support scientific research.
- g. As well as enabling cooperation between related institutions / agencies in the use of shared information sources (e-resources).

The South Sumatra Provincial Library Office implements a policy of transferring archive media into new media according to the conditions of the library. The conditions in question include the media collection itself, both physical and the information contained in the collection. Then the regulations imposed by libraries and the government in implementing the media transfer process.

Considerations in selecting the collection to be transferred include:

- a. History and culture (Indonesia Heritage) as well as local content (local content)
- b. Unique collections and rare collections.
- c. Collections that are frequently searched for by users.
- d. Collections that are out of copyright and have received permission to digitize them.
- e. Restrictions on access to the original collection, considering the collection's, high historical value, vulnerability or location, and its already fragile physical condition.
- f. Make it easy for people to be able to access online.

The criteria for selecting materials to be digitized include:

- a. Priorities: collections of Indonesian manuscripts, rare books, ancient maps, pictures, historical photos, magazines, newspapers
- b. Collection with high or moderate demand.
- c. The relatively unknown collections, because they are accessed digitally, are expected to increase demand.
- d. Criteria: Theme: the priority is the history of the formation of the colonial era, independence, and others. And the level of usability.

Figure 1 shows the physical hardware that librarian used in digitizing materials from printed to digital form. This computer available to staffs in the library and the level of technology is relevant to the requirement. A simple monitor, keyboard and wired mouse connected to the internet access equipped with Windows operational system is available to process library collection into digital collection.

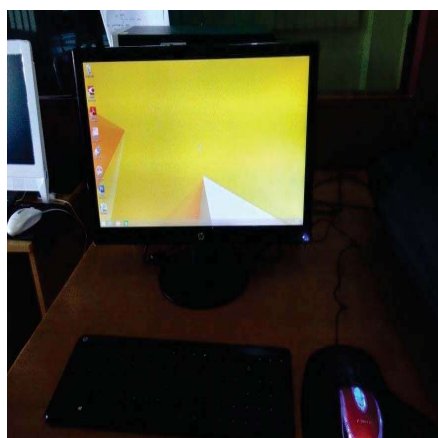


FIGURE 1. Media transfer computer

Means of Transferring Media

The tools used in carrying out the media transfer process are:

1. Hardware

The hardware used in helping librarians carry out media transfer activities are all the components of the device and the means used as the main media for media transfer activities in general consisting of computers, scanners, hard drives, and servers. Printer as shown in Figure. 2. is used to print label that will be pasted to digital material cover. All hardware used is functioned properly, both importing, editing, storing, and publishing which are more directed towards the direction of preserving digital collections. This illustrates that information technology hardware has a very big role in carrying out preservation activities because most tasks and activities are carried out through hardware.



FIGURE 2. Printer for producing media label

The selection of the scanner used when the document to be transferred is still in good physical condition, so that when the scanning process is carried out, even though the position of the book is upside down (face down), it does not have an impact which at that time will also exacerbate damage to the collection. The findings show the scanner used in the South Sumatra Provincial Library Office is a Hand-helper with the Contex HD Flex brand, namely scanning the scanner by manual use through hand movements. Figure 3. Shows the scanner on the table of the library in a typical working day where it is used to scan printed material and transfer them to the computer. The advantages of Hand-held scanners are that they are very cheap, do not damage objects and are flexible, they are slow and require a skilled librarian.



FIGURE 3. Scanner context HD Flex

2. Software

One of the tools that need to be prepared is software. Many software tools are used to manage digital documents. Some of the software available in the South Sumatra Provincial Library Office:

- a. Adobe Acrobat to produce documents in PDF (Portable Document Format) format
- b. ABBYY FineReader and Flip @ one to convert PDF to e-book format.

Process of Transferring Media

Media transfer is the process of managing from paper to electronic form which can then be managed using information technology. The process of transferring media at the South Sumatra Provincial Library Office is carried out using a scanner. The process of transferring media began in 2017.

The transfer of collections was carried out based on the standard operational procedure (SOP) which is the working reference in the transfer of the collection. This SOP is prepared to provide guidance, or the stages of implementing the media transfer process and is expected to make it easier for librarians to carry out the media transfer process. This is supported by the statement from respondent who carried out the media transfer process that:

"I actually don't know how the transfer process is and everyone certainly doesn't know but with this SOP I can find out the media transfer process is easier and faster".

In addition, the head of the South Sumatra Provincial Library also stated that:

"The guidelines used in the media transfer process in this library refer to the guidelines for making e-books and media transfer standards issued by the national library of the Republic of Indonesia. In the guidebook issued by the national library, it explains all the ins and outs of the initial stage to the end of the digital media transfer process".

The data shows that this media transfer processing uses guidelines, namely SOP (standard operational procedure) or media transfer processing workflow issued by the national library of the Republic of Indonesia. With this SOP (standard operational procedure), it is easier for librarians to transfer library materials.

The process of processing the transfer of collection media carried out at the South Sumatra Provincial Library Service, namely:

a. Media Pre-Transfer Stage

The first activity prepared is more in the nature of administrative preparation, including: inventory and selection of library materials, surveys of the physical condition of library materials, evaluation, and analysis of metadata, as well as determining the digital file format and selecting the method of taking digital objects (capture). At this stage, tools and materials need to be prepared before media transfer activities begin, including the hardware used by

librarians, such as computers, disc media in the form of CD / DVD and scanning tools in the form of scans. The better the hardware specifications used, the better the quality of the work and the faster the work can be completed. The scanning tool used by librarians at the South Sumatra Provincial Library Service is Contex HD Flex.

The software or applications used by librarians in editing scanned files is another important tool. They used ABBYY FineRead, Flip @ once, Adobe Photoshop CS6 or other versions of Photoshop and image processing application such as Adobe Acrobat to convert files with image types to full text PDF form as well as Flash Page Flip to combine image type files into an electronic book (e-book).

The next tool is brainware who is a thinker as a human resource who operates hardware and software. In this case, the brainware referred to is the librarian with the knowledge of transferring the collection media.

The last tool in that need to be prepared is the library material, is several collections that will be transferred to provide. In this case, the library material in question is a rare library material that is 50 years old or more. In its provision, rare collections can be obtained through the scope of the South Sumatra Provincial Library Service. This activity is related to the existence of a policy from the head of the media transfer section, so there is a need for correspondence to the deposit sector or to the reference service sector to obtain rare collections for transfer.

b. Media Transfer Stage

After making sure the preparatory stage is complete, the next step is to take the media transfer into digital format, which includes calibrating the equipment to be used, especially for testing the sharpness of the resulting color, taking digital objects, whether it's using a digital camera, scanner or other tool. other conversions, make corrections to digital objects (editing) after the object retrieval process, the process of changing the file format (conversion) which was originally a master file format, then lowered to its derivative format, the file compilation process, namely reuniting image files into a single format electronic books, the process of changing the image format (image) into written character format (text), so that the information contained in the collection can be searchable, the process of entering a bibliographic description of library materials and its digital files (uploading digital content), activities the last one was done n create multimedia packaging in offline form presented on CD or DVD media.

c. After Media Transfer

The final stage (post digitization), at this stage it is more about checking and controlling the quality of digital files, both in terms of the accuracy of the resulting colors, the completeness and sequence of the digital files, and providing completeness to the presentation of multimedia packaging in offline form. At this stage, it is divided into two activities including repairing or returning the collection to its place of origin and storing or distributing the results of media transfer.

Challenges Faced by Librarians in Processing Media Transfer Collection

In principle, there is no single organization that does not face problems in carrying out its duties and functions. In carrying out its mission it is not always smooth, without meeting any problems at all. What distinguishes them is the type, time, level of complexity and weight of the problems for each of these institutions.

The problems that exist in the South Sumatra Provincial Library Service are human resources who are the main elements in achieving the success of the library. It makes a clear contribution for the success of the library's goals. Human resources in libraries can consist of librarian functional officials, other functional officials (lecturers, archivists, computer administrators), and administrative staff. They are the main pillars in library activities. The progress of a library depends on the quality of the human resources involved. In accordance with the main mission of the South Sumatra Provincial Library Office, the human resource is important to be developed as one of the parts of library infrastructure. This fact brings the challenge through constant improving facilities, infrastructure, and competence in human resources. This is the strength of the library because human resource plays an important role in activity to preserve information in the form of library materials.

However, based on the observations, the staff or human resources of the South Sumatra Provincial Library Office were not yet able to fully carry out the mission of its main activities. Due to the lack of competent librarians in the field of media transfer, the Provincial Library Office of South Sumatra is currently managed by four staff employees who could carry out the media transfer process including two structural staffs, one librarian functional staff and a media transfer director. Therefore, there is a lack of processing power in carrying out the media transfer process.

Moreover, building a collection in digital form, of course, requires a lot of initial funds, especially for preparing the infrastructure such as: purchasing computers and other related devices, scanners, electricity networks, staff

training and so on. All of this requires a large budget. Securing the funding is a challenge for the library which must make a priority scale of the activities it carries out. Besides that, there is a need for gradual stages to transfer the document into digital form, meaning not all at once but in a gradual manner, according to which type of collection is prioritized. The budget for media transfer depends on existing local authority funds. It also takes a long time to process the media transfer. Furthermore, when doing so, they must meet the targets you are instructed to do. Such as paper is already brittle, paper is eaten by insects so that the information inside is lost, paper is too thin so it can easily get stuck during the scan process and there is writing that is missing so it is difficult to read Thin collections take 3-4 days while thick collections are completed within 7-8 days.

On the challenge of facility. The facilities and infrastructure in the South Sumatra Provincial Library Service are inadequate because the scanner used is still manual. The ideal tool that must be fulfilled is a Personal Computer: LCD Widescreen (min 15 ") Pentium Dual Core E2200, 8 GB DDR2, 320 GB HDD SATA, DVD ± RW, VGA 128MB, 500 GB internal hard drive audio. Notebook: Widescreen LCD 15 ", Processor Core i3 2.13 GHz, 4 GB Memory, 500 Gb Hard Disk Software: Microsoft Windows XP Professional Eos utility system Digital Photo Professional Adobe Photoshop CS4 Total Image Converter Adobe Acrobat Professional 9 Microsoft Office Standard 2007 Anti Kaspersky Virus 2009 Cool Edit Pro 2.0 Autoplay Media Studio 8 Flip PDF Professional. The choice of equipment for capturing digital objects, either by using a scanner or digital camera, must be considered not only in terms of the characteristics of the object to be digitized, but also the intended use of the digital object. If the desired digital object is limited to access digital files, there is no need to use a scanner or high-resolution digital camera, on the other hand, if what you want is a digital master file, the scanner or digital camera you choose must be of a high resolution. The data from the interviewee was revealed by the Head of the South Sumatra Provincial Library stated that:

"The first obstacle faced is funding because the library does not have an adequate budget to carry out media transfer activities. The budget for media transfer is limited. In addition, another obstacle faced is time. To make an approach it takes a very long time. Another obstacle is the limited facilities and infrastructure as well as human resources".

Similarly other interviewee also stated on the challenge in the area of human resources.

"The first obstacle is human resources because to transfer media, they have to have a lot of energy like a computer scholar, because here librarians may have training at the central national library to know a little about the implementation of media transfer."

The data shows that the obstacle faced by librarians in processing media transfer collections is a lack of human resources, many librarians in the South Sumatra Provincial Library Office who do not know about media transfer processing, only four librarians responsible to process media transfer and also facilitates the infrastructure. This fact proved to be inadequate.

CONCLUSION AND RECOMMENDATION

The aim of this study is to explore the process, challenge, and contribution of media transfer of library collection in the research subject to gain understanding in infrastructure and stakeholder's communication. Based on the results of the research, the media transfer process at the South Sumatra Provincial Library Service showed that the number of media transfer collections in the deposit service is quite a lot, especially in ancient book collections with a total of 1,008 books with 200 CDs. , and by making a collection of media transfer in the form of an electronic book stored on a CD is very helpful for the user, where the electronic book in the form of a CD is quite easy in the process of finding information and is more concise and feels more efficient than printed books [11].

The process of transferring media in the Library Office of South Sumatra and South Sumatra Province includes three stages, including: the first stage of pre-transfer of media, namely the stage which requires librarians to provide facilities and infrastructure to support media transfer activities; the second stage of media transfer, namely the collection stage being scanned with a scanner until packaging it into other media in the form of electronic media (PDF, e-book and CD / DVD); and the third stage after media transfer, namely the stages the collection is then repaired (in the volume again) and stored in its original place [12].

The research subject faced some challenges along the process. They experienced by the librarian of the media transfer section at the South Sumatra Provincial Library Service. Some of the challenges are, the lack of human resources so that the work procedure for media transfer becomes obstructed, the lack of budget provided for the media transfer section, the state of the collection to be transferred provides a long time. Like a collection that is weathered, torn, and too thick, and the lack of adequate facilities and infrastructure, such as the lack of good hardware (computers and scanners). Computers or scanners that are used during media transfer activities are usually damaged or the scanner will heat up if it is used for too long, a maximum of two hours of operation[13].

This research recommends overcoming human resource challenge by providing training for staff and employees as well as increase human resources who have a library education background and place the librarian's work position according to his profession (expertise)[14]. However, the phenomenon that has occurred recently is not the case. It is necessary to provide good hardware in the transfer of collections because the more documents that are transferred provide the more specific the need for a good device. For this reason, whether the work can be completed quickly or not is influenced by whether the hardware used is good or not. The provision of facilities at the library, especially in the South Sumatra Provincial Library Service needs to be considered, especially the provision of internet network facilities and local networks so that librarian and library work activities in enjoying library services do not experience barriers to accessing the information that has been provided [15], [16]. The installation of a local network or internet network in the media transfer section at the South Sumatra Provincial Library Service needs to be accelerated so that users can access media transfer products at the South Sumatra Provincial Library Service.

It is also necessary to provide good hardware in the transfer of collections because the more documents that are transferred provide the more specific the need for a good device. For this reason, whether the work can be completed quickly or not is influenced by whether the hardware used is good or not. The provision of facilities at the library, especially in the South Sumatra Provincial Library Service needs to be considered, especially the provision of internet network facilities and local networks so that librarian and library work activities in enjoying library services do not experience barriers to accessing the information that has been provided [17]. The installation of a local network or internet network in the media transfer section at the South Sumatra Provincial Library Service needs to be accelerated so that users can access media transfer products at the South Sumatra Provincial Library Service.

It would be very beneficial if the government took a policy to be more concerned about the existence of media transfer collections so that the channeled budget funds could meet the needs for the preservation of Media Transfer in the Library Office of South Sumatra Province. From here the authors state to policy makers to pay more attention to the procurement of budget funds that are in accordance with what is needed and be professional in using them, especially with the Covid-19 challenge [18].

The sustainability benefit is also arisen from this study. The benefit of the digitalization of the printed material from the collection help library users in the long run. The future development will be seen as library users can legally access digital form of a book from the cloud and decrease the likelihood of copying a certain part in the book. Copying pages from printed books has been widely performed as standard behavior for university student when they need to prepare for assignment or assessment. This non-eco friendly manner will decrease in the future starting with digitalizing printed book into digital form.

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