

# **THE VIRTUAL LIBRARY: ISSUES, PROSPECTS AND CHALLENGES**

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## **ABSTRACT**

The age-long dream of the virtual library system that transcends the boundary of space and time has been brought close to a reality in the 21<sup>st</sup> century. This concept has become realistic as a result of advances in science and technology. Infact, many virtual libraries are already evolving.

The benefits of a virtual library system include inter-alia: accessibility to global information, catalyst for educational development, increased cooperation and efficiency of library services, benefits notwithstanding, the virtual library poses several challenges such as the need for redefinition and extension of library boundaries, huge financial implication, the need for librarians to acquire new skills that will sustain their relevance in the new information scenario etc. This Paper discusses prospects, challenges and other issues associated with virtual library system with emphasis on Nigeria

## **Introduction:**

The concept of the virtual library system is a product of the 1990's; the term "virtual library" was first used in 1990 in the context of the coalition for networked information (Saunders and Mitchel, 1996). One characteristic of this concept is its heavy reliance on technology, which has made it a reality in the 21<sup>st</sup> century.

A virtual library otherwise known as "library without walls" provides equal access to all information available in both print and electronic formats. It is an experience of virtual reality whereby the user enjoys the euphoria of being in a distant library outside his immediate environment without physical movement. The virtual library system owes its development to ICT revolution, which has impacted greatly on library operations and practices. The result of this development is gradual evolvement from print media to electronic and digitized information resources such as CD-ROM, e-publications, and widespread use of computer networks and telecommunication in information service delivery. This development has brought to fore the concepts of "electronic library", "digital library", "paperless library" and "virtual library", which is the focus of this paper.



## Definitions/Concepts

There are many definitions of a virtual library. Terms such as "digital library" and "electronic library" are often used synonymously even though some scholars like Barker(1991) view the three as distinct but inter-related concepts. Oxford Advanced Learner's Dictionary explains the meaning of the word "Virtual" as something that is unreal but made to appear to exist by computer software. Therefore, a virtual library could be a library environment simulated by computer. An example is the "Book House System" developed by Annelise Mark Pejtersen. Gapen (1993) gives an all-embracing definition of a Virtual library as -

*The concept of remote access to the contents and services of libraries and other information resources, combining on-site collection of current and heavily used materials in both print and electronic form, with an electronic network which provides access to and delivery from external world wide library and commercial information and knowledge sources. In essence, the user is provided the effect of a library, which is a synergy created by bringing together, technologically the resources of many, many libraries and information services.*

It is obvious from these definitions that the new innovation is "an effect" on the user's side created by bringing together technologically, the resources of many libraries and information services. The definition also stresses the prospect of inter-organization access service associated with the new innovation cooperation and collaboration between libraries and related institutions in order to expand access to, and delivery of information service beyond the traditional limitation of space, time, efficiency and effectiveness. A particular virtual library provides a link to another virtual library as well as resources within the Internet public domain.

As stated earlier, the virtual library is a technique of virtual reality. Barker(1993), explains the concept of virtual reality in relation to the virtual library system. According to him, virtual libraries depend for their existence upon a rapidly maturing area of technology known as virtual reality or VR technology. VR has often been described as the ultimate multi-media experience, the simplest form of which is known as tele-presence. Such experiences depend on the ability of a computer (and its associated interaction peripherals) to create highly realistic simulations and surrogation in which a user can be "totally immersed".

This can be achieved in two ways: First, the provision of such facilities to support this kind of experience within a library; secondly, the creation of



virtual libraries or virtual experiences, i.e. the ability to browse around a library system without having to go physically into it. A good example of this latter approach can be found in the "Treasures of the Smithsonian surrogation" that has been published on CD-ROM. These are the most advanced systems, which exist only within sophisticated computer systems that are supported by the most advanced telecommunication equipment (to facilitate remote access and sharing). Such libraries can be accessed using 2-dimensional (2D) interface that is based upon the use of conventional computer workstations e.g. Book House system developed by Pejtersen (1992) provides a good example of what can be achieved using this approach. However, greater degree of realism can be achieved through the use of 3-dimensional (3D) interface that involves the use of head mounted displays and peripherals such as data-glove. This facilitates the creation of 'total immersion' environment and interaction based upon pointing operations and gestural communications. Using the equipment of this sort, it is possible to enter a virtual library, browse around its room and shelves, use an index or catalogue, select a book (by pointing to it and touching it) open it and then read it. Of course, the only place where the book exists is in the computer and within the mind of the reader (Realtime Interactivity).

The concept of the virtual library is no longer a dream but the reality of our time. Many virtual library projects now abound and many more are still underway e.g. University of South Florida (USF) Virtual Library Project, and of course two National Virtual Library Projects in Nigeria.

### **CREATION OF A VIRTUAL LIBRARY**

A lot of processes are involved in the creation of a virtual library. Ikpaahindi (2003) and Ayo (2005) have identified processes of building a virtual (digital) library. While the former dwelt more on the processes of digitization, the latter identified the steps involved in building a virtual library with either the general software or the greenstone digital software. In addition, the following points are worthy of note:

1. Name of the virtual library.
2. Digitization of the Local content after obtaining copyright permission.
3. Creation of Website.
4. Computerization and networking of component units/participating libraries
5. Determination of procedures and policies for cataloguing the content.
6. Training of technical and public services staff in order to enhance their capacity building for of metadata
7. Preparation of metadata



### **The Virtual National Library Of Nigeria [VnlN}**

In the words of McCarthy (1998), the virtual library must maintain the principal characteristics, which have enabled the traditional libraries to contribute so much to the society over the centuries. In essence, a virtual library should be a seamless extension of traditional library functions. Several virtual library projects have been designed to fulfill this role. The application of the concept is the same with slight variations in their services depending on the community a virtual library intends to serve. For instance, with the establishment of the National Library of Nigeria Virtual Information System, members of the global community from any location should be able, through computer network information and services rendered by the library.

1. A worldwide Web gateway that organizes and integrates access to library and information services available from the National Library of Nigeria Information System: the departments, branch libraries and the Internet Public domain.
2. An integrated online catalogue of the integrated library system holdings including National Union Catalogue (NUC), National Union List of Serial (NULOS), and National Bibliography of Nigeria (NBN),
3. An organized collection of full text, multimedia documents from academic, government and commercial publishers that will be of interest to the users.
4. A core set of online reference sources that support general education and research activities particularly in humanities, social sciences and science.
5. A current awareness service (including Selective Dissemination of information) linked to indexes, abstracts, research reports and current affairs.
6. Interlibrary loan whereby documents not available in the library can be obtained for users from other libraries.
7. Online registration of publishers for International Standard Serial Number (ISSN), International Standard Book Number (ISBN) and Cataloguing-in-Publication (CIP) data.
8. A selection of digital publications drawn from National library reports, occasional papers, special collections and archives.
9. Online reference services and library instruction.
10. Document delivery services that quickly bring needed digital and print materials to users.
11. Electronic reserves whereby materials that are off-sight such as rare or reserve materials can be made available to users on request through a secured electronic reserves website. This is an important feature of academic virtual libraries.



## **Advantages of A Virtual Library System**

Globalization of library services engendered by the advances in ICT and the emergence of virtual libraries is perhaps the greatest development of our time.

One of the beauties of the concept of the virtual library system lies in its ability to provide access to a wide range of services to users or members of a virtual library community irrespective of their locations. A virtual library is not limited in space and time and therefore, easily accessible to local and remote users.

Moreover, universal access is a goal, while a book or journal is basically designed for the use of a reader at a time and in one place in the traditional library, a virtual library allows for multiple/concurrent access to the same book at different places. Commenting on these benefits of a virtual library system, Monica Wetz-Wiseman (2000), the project Manager of USF Libraries, States that:

*A virtual library challenges the traditional library assumption of quiet, preservation and security, improved convenience for users, turns the library's focus from the traditional administration centered to user centered with the resultant savings.*

Information is very critical to every type of development. Information is, of course, needed for problem solving, decision-making, self-improvement, national development and international relations. Providing users with the right information has been the objective of librarianship. The need to satisfy the information needs of people for different purposes underscores the inter-library lending programme. However, the emergence of the virtual library system which is within the scope of globalization has made this a reality in the 21<sup>st</sup> century.

The implication for librarians and other information professionals worldwide is that they will be able to communicate not only as a global community, but also create global information market place with opportunities to participate in exchange not only of information, but also employment opportunities worldwide.

Again, this development is of immense advantage for the developing countries of Africa and Nigeria in particular. It is an opportunity for them to bridge the information divide between them and the advanced nations. The only barrier towards the realization of this goal will be lack of access to ICT technologies. They must rise to the occasion and utilize this advantage towards having access to the wealth of information from developed world. No wonder that Daniel (2003) describes this new concept as:



*a child of necessity consequent upon the need to access the information overload by means of Information and Communication Technologies (ICT) for the survival and sustainable development of human race. It is a way of leapfrogging to bridge the information divide between the information rich northern hemisphere and the information poor southern hemisphere...Networking through the virtual or digital library becomes a ready solution to the age-long problems of leapfrogging from the ocean of wealth of the developed economies.*

Really, Nigeria and the whole of Africa stand to benefit from this development if only they would take the advantages of the golden opportunity offered by ICTS and globalization. On the other hand, it is an opportunity for Africa particularly Nigeria to contribute to the global information by digitizing its local information resources and uploading them on the Web for global consumption. This should cover information on Nigeria itself, its people, indigenous knowledge etc. These materials will be of interest to both foreigners and Nigerians at home and overseas. As of now there is paucity of information about Nigeria on the Internet as observed by Ikpaahindi (2006).

### **Skill Improvements:**

Globalization engendered by advances in ICTS and emergence of virtual libraries has boosted library operations and services thereby making librarians to be more relevant as information professionals than before. This is because in the midst of technological revolution the traditional mission of access and services is still relevant and librarians possess the search skill and strategy for sorting through the Internet for desired information. Users require the support of librarians to exploit the potential of search engines to retrieve all the relevant information needed. Research has shown that there is an increasing demand for librarians in all sectors in Nigeria as many organizations are now establishing libraries to support their services. Today, a host of libraries have undergone automation and networking in line with globalization. What is more, rather than throwing librarians out of job, computerization has only offered them more opportunities. Suffice to say that librarians have begun to adopt new designations to reflect their new roles i.e. Information Scientist, Information Manager, System Librarian, Cyberian, Hybrid Librarian and Digital Librarian.

This development is in contrast to earlier speculation that globalization will undermine librarianship because librarians will be replaced with



machines, as a result of which librarians were said to have developed phobia for ICT. This fear became heightened as a result of the prediction of a paperless society by 2000 AD. A study carried out by Daniel, Oketunji, Okojie and Abdul Salam (2003) on the state of information and communication technologies in Nigeria does not support the contention that librarians have negative attitude towards ICT as many libraries indicated that they found ICT useful and highly relevant to services. In fact, many more libraries are even eager to embrace it. Again, we are now in 2007, the influence of print materials has not waned. Therefore, the advent of virtual library systems will further enhance the skill and efficiency of librarians, improve their status as information workers and enable them to fulfil their roles as purveyors of knowledge. Furthermore, librarians now have the opportunity to work in libraries alongside computer scientists, technocrats, and information scientists as equals. This is indeed a plus for the profession.

There is no doubt that this development will induce more respect and support of policy makers and government functionaries for the profession. Above all, global employment opportunity now awaits seasoned and experienced librarians.

### **Formation of Library Networks**

An important prospect of the new innovation is enhanced cooperation and collaboration of libraries for the purpose of resource sharing and exchange of information in order to strengthen information provision to their users. It should be noted that libraries over the years have cooperated through the mechanism of inter-library loan system so as to meet the information needs of their clientele. For a long time, geographical barriers and low-level technology have impeded the progress of libraries and information centres in this area, as the application of this concept has been restricted to geographical areas. Even with advances in ICTS, it may still be difficult for a single library to go virtual or acquire all the necessary information resources and equipment that will enable it to expand access to information resources and services because all libraries operate within budget, and with limited funds. The inter-library loan system has become a global reality and libraries are challenged to combine efforts and resources in order to satisfy the information needs of their respective clientele.

It is hoped that this development will speed up formation of library networks in Nigeria to enable them contribute positively to national development via information provision. This requires the support of the Nigerian Government, national and international organizations.



### **Catalyst for Educational Development**

The emergence of virtual library systems have provided unlimited educational opportunities world-wide. Students, academics, administrators now have the opportunity to broaden their horizon of knowledge in their respective fields of human endeavour and thus improve themselves in their various callings.

Furthermore, virtual library exists to support universities' distance learning programmes. Virtual library systems have thus added more effectiveness to the distance learning programmes. It is more or less a sustainability mechanism for distance learning as students and lecturers who are off-campus have equal access to information resources and services as those on campus. The prospects in this connection are increased academic related activities, upsurge in the number of educated elites, and widespread literacy. This scenario has minimized geographical barriers to education and thus paves way for education without stress.

In Nigeria, the National Virtual Library for Tertiary Institutions has been launched within the National Open University of Nigeria (NOUN) which emphasizes the use of ICT to spread knowledge around Nigeria as a means of accelerating educational development of the country. It is also meant to support tertiary education particularly university system. It is, therefore, essential for all universities to create bibliographic records for the virtual library for the purpose of resource sharing. In addition, all libraries especially the National Library of Nigeria and public libraries should be well equipped to ensure its success. With distance learning programme and the virtual library system in place, the World Summit on Information Society (WSIS) agenda of building an inclusive information society towards achieving the millennium goals by year 2015 will be brought close to a reality. In fact the potentials of the library in the spread of knowledge has placed it in the position of dynamic engine for Knowledge and Information Society.

### **Online Reference Service**

The development of the virtual library system has provided opportunity for online reference service based on the questions and answers type of assistance provided in the traditional inter-personal reference. It involves submission of questions and having them answered by a library staff member through some electronic means i.e. e-mail, chat etc. it is a service that encompasses many electronic aids all having in common the use of Internet (Washington State Library).

This development has enabled reference librarians to provide answers to enquiries from all parts of the globe through e-mail or chat. Furthermore, it is easier to refer an enquiry to the person best qualified to answer it.



## **Collection Development**

Collections are work matter for libraries and the systematic management of these collections is what makes a library a social institution (Travica, 1997). The advent of the virtual library has begun to transform the collection development of libraries.

A lot of electronic publications abound to which library can subscribe to in addition to converting some of the texts into digital format. This has enabled libraries to develop hybrid collections towards meeting the demands of their clientele.

Furthermore, it will enable libraries with small budgets to rationalize their collections at the same time render high quality services to their clientele. This can also be an opportunities for libraries with specialized collections to focus on the development of such collections as this will add more value to them, and could be a source of revenue generation for the libraries as users will be willing to pay to have access to such collections.

## **CHALLENGES**

### **Redefining Library Boundaries**

A major challenge posed by the development of the virtual library is the need to redefine libraries in the context of the unfolding scenario. Atkinson (1990) observes that: All libraries are local in the sense that libraries are built and sustained in response to the need of a defined user group normally affiliated with a particular institution or residing in a particular geographic region. Expounding on the above view, Branin (1998) points out that the virtual library is redefining and extending the traditional definition of a library, and has rendered the definition of the library with respect to 'locality' 'particular institution' or a 'particular geographic region' inappropriate. Therefore, librarians must overcome the prevailing perspective of locality in library organization and management since the clientele is no longer necessarily confined to a particular institution or geographical area. This presents a new opportunity for drawing much broader boundaries in defining a library's organization and scope of responsibility. The foregoing underscores the need for libraries to rise to the challenge of globalization. Library practice must conform to global standards

### **Financial Implication**

A huge sum of money is needed to create a virtual library since it relies heavily on technologies, which are foreign based. Consequently, the costs involved are enormous. For developed economies, this challenge poses little or no problem whatsoever as it can be overcome with time. But this is not the case with developing African countries particularly, Nigeria with low level ICT, unfavourable exchange rates, hyper-inflation and widespread poverty.



The big question now is how strong is the economy to sustain virtual library projects in Nigeria? Quite a number of automation projects have failed in the past because of poor funding. Therefore, it may be difficult for a group of libraries to go virtual unless the government, national and international organizations render financial assistance.

Again, the view that creation of a virtual library will facilitate cost effective access to information may sound unrealistic for Nigeria because of the poor economy. For instance, a user especially, a remote user needs a personal computer with Internet access for online services. Unfortunately, these are not within easy reach of Nigerians. Alternatively, a user without a personal computer may recourse to cyber-cafes where he has to pay in order to access a virtual library via the internet. Worse still, many Nigerians particularly graduates are worse off financially due to unemployment and cannot afford to pay in order to have access to information in a virtual library. The high cost of computer and Internet access will make accessibility to information very expensive. This problem can only be overcome with improvement in the economy and library service across the country. The scheme being embarked upon which brings about 50% reductions in the prices of computer are a welcome development. Other measures that will lead to improvement in the economy and empower Nigerians economically should be vigorously pursued.

### **ICT Skills:**

While it is true that the emergence of virtual library system has a lot of prospects for librarianship, it is equally true that if librarians fail to keep pace with the new epoch, their role as Information Professionals may be usurped by non-professionals. The presence of cyber-cafes around the cities of Nigeria is an eloquent testimony to this fact. The emergence of the virtual library has placed greater demands on the ability of librarians. Advanced ICT skills are now required of them in their profession. This has become a pre-requisite for their employment worldwide.

Therefore, the new age calls for professional repositioning in view of the new roles it offers. This is a great challenge, which librarians and other information professionals must brace up to for them to continue to be relevant in the Information Age. They need to attune themselves to the use of the new technologies particularly the Internet. There should be more emphasis on capacity building through training on the use of ICT in libraries. In addition, librarians must constantly update their knowledge in respect of software resources, which could guarantee easy accessibility to their information resources and therefore, enhance service delivery. Nurse (2001) has listed skills required for the operation of a virtual library as: Introduction to Personal Computers, Windows 98, PowerPoint, Spreadsheet, Electronic



Mail, Advanced Internet Searching Skills, Scanners, Basic Imaging Technology and CD-ROMS. In addition, digitization and electronic cataloguing skills are equally essential.

Interestingly, librarians worldwide have realized this fact; hence many libraries are undergoing computerization and networking and are also spending money on training of staff in ICT. But regrettably, the low level of ICT development and the poor state of the economy in Nigeria constitute impediments to the progress of libraries in this wise. As a way forward, the Federal Government of Nigeria now places much premium on ICT development in the country. Therefore, the governments at the Federal and State levels need to support automation project of libraries so that they can co-operate and collaborate effectively with the National Virtual Libraries when they take-off.

### **Document Level Literacy Skills**

It is a well-known fact that the Internet is replete with both credible and false information; hence the need to establish the authenticity or credibility and the relevance of every piece of information retrieved from the Web. Users of the Web, most especially, students are confronted with the task of ascertaining credible information. Thus, finding accurate and credible information requires document-level literacy with a view to forming conclusion about its authenticity and relevance to the needs of users. The skills required are integration, sourcing, corroboration and search (Akinyosoye, 2003). Although students and researchers mostly need these skills, librarians too as information providers need these skills to be able to perform their job more effectively and efficiently, most especially, surfing through the Internet for authentic information.

Web design has a role to play in enhancing document-level literacy skills. Ironically, the way some Webs are designed does not facilitate the utilization of the skills. Akinyosoye (2003) has offered some useful tips towards the design of educational Websites that will facilitate the utilization of document-level literacy skills. This information is equally useful for librarians now that librarianship has evolved to encompass Web design and other ICT related activities. It is hereby suggested that library schools should incorporate document-level literacy skills and Web-design courses in their curricula.

### **Ownership/Licensing and Costs**

A new aspect of acquisition in the new age is ownership control through licensing. This may be problematic in the new age. This is because publishers use licensing to restrict the fair use of information resources and can also limit resource sharing by charging prohibitive high prices. In the virtual library environment, access to information, especially electronic



information resources does not always imply ownership only that library has negotiated the means by which patrons gain access to resources and information—a paradigm shift from ownership to access (Lim, 1996). This in turn has created a new role for librarians that of negotiating access right through contract and licenses.

A further issue to be considered is the ability to access earlier issue of an electronic subscription. With printed subscription, libraries may own and may continue to access those issues they purchase during the lifetime of the subscription. With electronic subscription, libraries pay for access to the journal rather than ownership so that at the end of the subscription a library may no longer have the right to access a title. This brings to fore, associated problem of inter library lending which by implication is restricted. This problem associated with the virtual library can deprive users the benefit of a broad based networked virtual library.

The implication of this development is that libraries have to develop new policies and procedures for collection usage and review collection development policies that no longer fit the new environment. Again, in the words of Atkinson (1991), librarians must try to influence the economic and ownership policies, which are being developed for the new information system that can continue to value both community access to information and fair compensation to the owners of information.

### **Electronic Cataloguing**

This is another problem associated with the new innovation. Cataloguing virtual library resources entails additional work for librarians. This follows that libraries wishing to go virtual must work out procedures and policies for cataloguing materials. The virtual library provides access to a broad range of Web-based resources i.e. local and networked digital resources, some of which are not covered by the standard classification schemes, which in the print based library, are standardized methods for describing resources for easy retrieval of information relevant to users' enquiries.

Therefore, the challenge will be to bring order to selected set of resources, a responsibility that cataloguers and indexers have had. But as collections expand to include some other items such as archives and museum collections and more, the challenges of providing users with bibliographic tools for identifying, selecting and accessing relevant resources increase in complexity because tools for vocabulary control, standard and uniform description of resources will become very vital.

Again, in view of the diverse nature of Web-based resources, users are faced with a wide range of systems with different search interfaces and capabilities so that it is harder for a user to retrieve information easily. Against this backdrop, it is essential for users to be able to view the Web-



based resources through a single interface usually the library catalogues. This brings to the fore the concept of metadata meaning structured data about data which is a format for describing an Internet or digital resources. Several metadata are being developed to cope with the situation e.g. Dublin Core, Digital Object Identifiers (DOI) etc. Therefore, instead of the catalogue being the unitary tool for accessing the majority of materials in a virtual library, it will be just one repository of metadata among many.

However, in line with Cathro's (1999) view, which emphasizes the need for integrated access to diverse materials through services, which allow relevant metadata to be searched simultaneously, standards such as Z39.50, have been developed accordingly, to enable users to search across multiple databases simultaneously.

### **Preservation and Conservation**

The issue of preservation in the virtual library environment is a complex one as it differs from traditional print based library, where there are long established standards and guidelines for storage and preservation of print materials for long-term survival.

However, some research initiatives have been directed to the preservation of digital information resources. This involves the need to protect materials from corruption such as may occur through exposure to computer virus. The integrity of the data should not be compromised; therefore there is the need to subject all materials to the scrutiny of up to date virus detection package. For data stored digitally, emphasis will be on proper storage practice coupled with the refreshment and migration of data stored. In digital preservation, the integrity of the intellectual data is much more important than the physical integrity. Therefore, effective storage system must be backed up with effective recovery system. For example, some storage media such as CD-ROM can get damaged at which time the information must be moved to a fresh copy of the same media. In doing this, there is need to ensure that the digital files are not altered intentionally or accidentally.

### **Observation and Conclusion**

It is very clear from the foregoing that advances in information technologies have paved way for the emergence of the virtual library concept in the 21<sup>st</sup> century as many virtual libraries are already evolving. In spite of its numerous advantages, it poses some challenges, which can be overcome over time.

African countries and Nigeria in particular must endeavour to bridge the digital divide between them and developed nations in order to sustain their relevance as part of the global village. One strong factor militating against



ICT revolution and development of the virtual library in Nigeria is high costs of equipment. The depreciating value of Naira is not helping the situation. Thus, a lot of money is needed to procure ICT gadgets from advanced countries. The Nigerian Government should embark on measures to arrest the ugly trend in order to facilitate easy procurement of necessary equipment by institutions wishing to do so.

All said and done, it will be a fallacy to assume that virtual library system will completely phase out or undermine traditional libraries. The traditional libraries will continue to play an important role in information services because perfect virtual library cannot be attained in a short space of time. For one, control of books through licensing in the new age would restrict access to some of these bibliographic resources. For another, some materials are not permanent on the web and they may not always be available for consultation. It can, therefore, be argued that virtual library exists to supplement and complement traditional library, but it can never be a substitute. Burke (2001) contends:

Electronic sources are excellent for data, which must be timely and is subject to frequent change, such as stock market data, health reports, and population statistics. It is also valuable for the ease with which information such as full-text articles from newspapers and journals can be delivered. Printed resources may continue for a long time to be the most efficient form of delivering ideas and theories as opposed to data in subject areas as philosophy, history and literature.

In view of the foregoing, it is only logical for libraries to maintain a hybrid of collections since libraries cannot become virtual overnight.



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