https://dspace.org/

Challenges of building digital repositories in Africa: A case study of best practise

Bakhoum, Nafissatou

2016-06-22
Dakar, Senegal
http://hdl.handle.net/10539/20531

Downloaded from a DSpace repository. https://dspace.org/

3rd International Conference on African Digital Libraries and Archives
ICADLA-3

27 – 31 May, 2013, Al Akhawayn University, Ifrane, Morocco

CONFERENCE THEME:

Digital Libraries and Archives in Africa: Changing Lives and Building Communities

Proposal for paper

Title: CHALLENGES OF BUILDING DIGITAL REPOSITORIES IN AFRICA: A CASE STUDY OF BEST PRACTICE

Nafissatou Bakhoum
Head librarian
"***Biens culturels africains***" Project Manager
IFAN Ch A Diop
BP 206, Dakar, Senegal
Tel: (221) 33 824 16 52 / 33 825 98 90
Fax: (221) 33 824 49 18
http://bca.ucad.sn/jspui

Abstract

Libraries are known to promote change through individual and institutional capacity leading to quality, effectiveness and then to development. Information and knowledge, as a vehicle of power and wealth, are then likely to root out economic marginalization, inequalities, unemployment and other shortages the African continent is suffering.

But, in spite of its outstanding scholarly and cultural heritage and huge progress made in ICT, it is striking that Africa is still lagging behind in the international scheme of knowledge production, which is conducting the world. Deficiencies in education, lack of innovation, of a wide professional militantism and of a strong political commitment are the main causes.

African libraries, therefore become conscious that such weaknesses, instead of being experienced as an additional source of frustration can be turned into an impulse for innovative change.

Even if federating exhaustively valuable African contents in a unique virtual space, has not already become a reality, some African scientific institutions step boldly forward in implementing programs to meet the huge challenge of digitizing scholarly contents and providing online access to them. They are struggling to break with a long period of gathering rich scientific materials, formerly shelved in libraries as treasures, in order to safeguard and valorize them. Then, building digital repositories and promoting open access in a context with limited resources has never been so relevant. They have proven efficient in providing technical infrastructure, quality-based and value-added solutions to the management of collections, especially in heritage libraries.

The objective of this paper is to reinforce, through demonstration, the optimistic view consisting of believing that all is not bleak in Africa, and overcoming challenges depends on how being strategic in addressing core issues. It focuses on two points:

1. Challenges attached to the preservation and valorization of African scholarly contents;

After presenting briefly the context of accumulation of scientific materials in Africa, namely in Afrique occidentale française (AOF), we focus on the benefit effects of digitizing African scholarly contents and how it can impact on the dissemination of research outputs and sustainable development.

2. Promoting access through a digital repository: a case study of best practice.

This part is demonstrative and illustrates that some African academic institutions adapt to innovative change and develop capacities to build worth institutional repositories. This case study is from Institut fondamental d'Afrique noire Cheikh Anta Diop (FAN Ch A Diop).

Key words: **African digital libraries; heritage libraries; Digitization; Digital repository; Open access; ICT; Sustainable development; IFAN Ch A Diop; Senegal; Africa**

Introduction

The issue of safeguarding the collective memory through digitization to support pedagogy and research has become of paramount importance. Creating the sustainable means to make this memory evolutive for future generations makes challenges regarding preservation and knowledge sharing most acute. Then, many initiatives have been developed to generate synergies at a national and regional level in order to raise awareness in the urgent need to implement policies and programs to safeguard and valorize the rich African historical, scholarly and cultural heritage.

But, despite resolutions and recommendations outlining road maps to root out the continent from isolation regarding the internationally networked system of knowledge production and sharing, there are now few relevant African contents freely accessible. And this, in spite of the existing potential and progress made in ICT outputs. In the general African context, with limited economic resources, one can therefore understand why such challenges are of urgent pressure.

Being more strategic and practical in addressing issues, more open-minded in collecting various experiences, successful and even not successful ones, more confident in our real and potential abilities, and more optimistic can prove efficient.

This paper is within this framework of experience sharing and hope entertaining from successful achievements symbolizing a step forward. Its argumentation is in two parts:

1 - Challenges attached to the preservation and valorization of African scholarly contents.

2 - Presenting a case study of best practice: the digital repository of IFAN Ch A Diop.

1 - Challenges attached to the preservation and valorization of African scholarly contents

All over Africa there had been a strong need to settle a scientific institution in charge of the coordination of research, the use of research outputs, the preservation of documentation and archives within a specific historical context.

Then, Madagascar possessed an Académie des Sciences malgaches in 1902, Morocco an Institut des Hautes Etudes marocaines in 1920. French speaking Africa had also its savant society in 1915, the Comité d'Etudes Historiques et Scientiques de l'AOF. In 1918, it was replaced by the Bulletin du Comité d'Etudes Historiques et Scientiques de l'AOF. The Institut français d'Afrique noire (IFAN) was born in 1936 from the works and experience of these two federal organizations.

These scientific institutions, generally libraries, archives and museums, have witnessed an intense period of fertile intellectual production in a specific historical context: slavery, colonization, wars. For this reason, they inherited from foreign research institutions on the continent or collected high value-added historical, scientific, cultural and religious materials. This documentation, generally recorded in various formats: manuscript, printed, audiovisual, iconographic, audible, are worth to be qualified of heritage collections. These scholarly contents in various languages are dispersed throughout the continent and abroad. Such institutions, libraries in particular, can be found in every region of the continent and are bearing an essential part of its collective memory. Witnessing land mark period in Africa's history fortified them as enlightened places of knowledge reproduction by research and its sustainability through learning. They exist in every region of the continent, In West Africa, some can be identified:

- Arewa House (Kaduna, Nigeria)
- Northern History Research Scheme (Université Ahmed Bello, Zaria, Nigeria)
- Centre de Recherche et de Documentation historique Ahmed Baba (Tombouctou, Mali)
- Institut fondamental d'Afrique noire - Cheikh Anta Diop (Dakar, Senegal)

1.1 - The benefit effects of digitizing African scholarly contents

- **Preservation / Safeguarding of the collective memory**

The general climatic conditions of the continent (wetness, inundations, dust) impact negatively on the preservation of library collections, especially on very old audiovisual and printed documents. In addition to inadequate conditions of storage and other factors like rodents, the general African economic context has not ensured long term investments to secure the rich heritage of its scholarly

wealth. After the era of microforms, digitization has proven highly efficient in an academic environment where the digital content is now compulsory and where libraries more and more represent a bridge between remote users and resources. As a new mean to reproduce and vehicle printed materials, digitization has given to African libraries the historical responsibility to safeguard, in the long term, valuable contents for future generations. They should also do it for educational purpose, in accordance with great mutations ICT have brought to the basic functions of the management of collections (selection, organization and access) in the context of elearning.

The actual ideological battle tending to restore scholarly communication within the control of researchers and librarians place open access and digital libraries in the heart of the movement. With endless capacities of storage and open source infrastructure and tools which foresee sustainable solutions to quick obsolescence of support, format, and computer system, building repositories have never been so hopeful. In a context with limited financial resources, they can lower investments formerly devoted to expensive software and concentrate efforts on building sustainable human capacities. Current scholarly production is also concerned namely dissertations, thesis, and articles which constitute the wealth of universities. Then, self-archiving becomes particularly strategic in the eLearning system, now a big challenge in African universities.

Another advantage of digitizing the collective memory of African people is its contribution to strengthening historical and cultural identity. In so doing, Africa will be able to bypass its status of active consumer of contents from the North and become a content provider by positioning itself in the international scheme of knowledge production and sharing.

- **Information Dissemination /Sharing**

The development of ICT has settled a digital environment and enabled a so current social use and management of digital information that automation of library activities have become compulsory. Libraries and the homogeneous notion of collections are now delocalized and dematerialized, and the link between the content of a document and its support disrupted. Without replacing the classic activities of a library, ICT have opportunely and without transition imposed themselves. Consequently digitization brings solutions to the limits of printed documents, in providing endless copies and an instant and broad sharing through networks. Works that would be unknown, particularly orphan works and those in the public domain, usually shelved in libraries as treasures, can now be safeguarded for the posterity and released for the benefit of pedagogy and research worldwide. In fact, digitization serves the concept “Education for All” by increasing opportunities of learning and training, and therefore impacting positively on the quality of educational practices. Because, when they are applied

to learning, ICT really contribute to maintain sustainability in developing capacities with regard to local challenges. In this respect, new trends in African universities are to settle eLearning training programs (i.e. Professional Master Degrees) to cope with shortage of expertise in key economic and technological sectors.

1.2 - The impact of African digital libraries on research and sustainable development

- **Impact on the dissemination of information**

African libraries experience crucial problems related to shortages in financial means to run adequate policies regarding their collections from acquisition to delivery. They receive generally the smallest percentage of the budget in their institution and sometimes, no budget at all. While libraries evolving in a better economic context and up-to-date technological environment worry about drastic cuts in their acquisition budget, others with no budget at all, deal with real hardships to survive.

But the inexistence of substantial financial means does not prevent African libraries from struggling to build new capacities and be creative in front of the scarceness of resources. With the development of ICT, information access, use and retrieval moves from the librarian to researchers, who now use online sources and develop new methods of work to be independent. Being considered as a disintermediation and a loss of competence, this professional mutation proves, on the contrary, strategic for the redeployment of African libraries. They should therefore take advantages of the opportunities of digitization and open source tools to position themselves. Open source tools enable them to display their catalogue online, use social media, implement virtual libraries in compiling selective up-to-date open access contents per discipline, and direct researchers towards open access journals. They also enable them to build institutional repositories.

Then, African libraries must be reactive to socio-economic limits to information access which constitute a real barrier to develop research in Africa. Besides their traditional mission of preservation and knowledge dissemination, they are expected to impulse a new dynamic. They should encourage digitization programs and the current use and appropriation of digital content within their scholarly and professional environment. And at a wider scale, in the global contents production system, librarians must be key actors and build new abilities, both theoretical and practical, to survive professionally.

- **Impact on research**

Digital libraries are of strategic importance for Africa, because technological infrastructures, open source tools and open standards enable digital repositories to be implemented, administrated and deployed locally for a worldwide audience. Tough, there is a big social disproportion between the North and the South, and at a regional level, achievements of many digitization projects in Africa demonstrate that, with a strong political will, financial backing and managerial abilities, it is possible for the continent to contribute efficiently to the construction of a better world.

Very few researchers in low-income countries can follow current subscriptions to research journals because for-profit journal publishers barred access to key scientific information, except for those who can afford to pay. For this reason, initiatives in support to researchers from the South are of paramount importance. In this respect, The World Health Organization and the World Organization for Food and Agriculture, in partnership with publishers decide to provide free access to research outputs for developing countries through programs like HINARI, AGORA and OARE. This is also of measurable impact, because according to the 2010 UNESCO World Report,"… the developing world's share of articles in science, medicine and engineering rose from 30 % in 2002 to 38% in 2010."[1]

But, however valuable scholarly contents coming from the North may be, the challenges of African digital libraries are most significant with research performed in the continent. The historical, cultural and socio-economic context in which the African researcher is immersed endows him with other abilities to address local problems successfully.

Even if Africa is poorly represented in the world scientific community, all is not bleak in the continent. In new trends related to information access, librarians and researchers are conscious they should develop capacities to adapt to innovative changes. But they cannot face this challenge solely. Political backing and substantial investments from governments and funding agencies, targeted to build and sustain local capacities in science and technology in all sectors are vital.

To support such a policy, African scientists should be trained to implement open access journals where they can use social networking tools to communicate peer to peer without the services of a publisher, and librarians also be trained in self-archiving to develop digital repositories. This can have a great impact on research in Africa. The reason is that the latent demand for research

[1] UNESCO Science Report 2010
http://www.unesco.org/new/en/natural-sciences/science-technology/prospective-studies/unesco-science-report/

information and the unexplored potential offer of the rich African scholarly capital in terms of contents and expertise could be met. As a privileged partner of research, African libraries can embark researchers in the long-term and fruitful struggle consisting, on one hand, of persuading authors to give instant worldwide visibility to their work. On the other hand, of training them to the use and appropriation of open source tools and standards in order to build progressively, through collaboration, an authentic African scientific common.

Knowledge being a precious resource in the competitive scholarly world, researchers delivering wider and easier access to their work gain visibility for themselves and their universities.

- **Impact on sustainable development**

Generally based on free and open source software, digital repositories are not so expensive to build and sustain. The challenges are being more and more oriented to connectivity and skillful human resources. In using Internet as a powerful technology to share knowledge instantly worldwide, how much the volume and however the digital content format, this alternative contribution to scholarly communication is hopeful for the future of research and constructive.

Information access being most crucial in developing countries, providing online access to African scholarly contents can narrow the gap of ”knowledge divide”. In serving the interests of the whole society, the impact of digital libraries can be of various forms. But it is worth focusing on the impact on human resource which is the locomotive of the knowledge economy, and whose capacity to adapt to innovative change is a step forward development. As a consequence, science and technology research outputs must be made freely available, especially in the African context where they mostly ensure a quality-based and value-added sustainable well-being. As universities provide knowledge and knowhow and libraries facilitate information access and sharing, both are expected to play the leading part. If African decision-makers are willing to equip them with an adequate technological environment and enable them to build managerial abilities in ICT, they will be more efficient in the collaboration between research, industry, business communities, and other informal sectors. In fact, deficiencies in education, particularly insufficient scientific knowledge, lack of enough technical skills, are the main causes of chronic and interwoven problems of urgent pressure the continent has always been challenged, among them: public health, food security, safe drinking water, energy supply, illiteracy.

The unprecedented opportunities in knowledge dissemination, nourished and entertained by awareness regarding the wealth symbolized by the African scholarly heritage, vehicled and sustained by open source technical support, are hopeful for the continent. On one side, they accelerate the endless process of knowledge production, transfer, dissemination and use, in a moving educational context where eLearning has proven almost compulsory. On the other side, such opportunities make research evolutive, and interact more quickly and efficiently with non academic sectors developing innovative activities to fight against poverty.

2 - Promoting access through a digital repository: a case study of best practice

- **The institutional context of IFAN Ch A Diop**

IFAN Ch A Diop was founded in 1936, but its origins dated back in 1915 with the creation of the Comité d'études historiques et scientifiques de l'AOF by Clozel, the General Governor of AOF. Its objective was to coordinate research and publication, to disseminate its outputs and to ensure its continuity. In 1918, this institution was replaced by the Bulletin du Comité d'Etudes historiques et scientifiques de l'AOF and from 1930, the idea of funding an institute of black Africa is born and continued to gain support until 1936. It has then played an essential part in the history of the building, accumulation and dissemination of knowledge in Afrca, especially West Africa in a colonial context. As an institution dependent on the federal government of AOF, it contributed to create a great place of expression for African knowledge. But the essential function of IFAN as a colonial project was signified by Albert Charton, the General Inspector of Education, in his address at the inauguration of the institute in 1936 ," Science is an auxiliary of colonization, Africa should possess a science, [..] so that France knows its Africa, throughout its resources, its human reality. Africa should reveal to itself, so that the educated natives, through a better acquaintance of their country, love their soil, which will make them our collaborators and associates as well."[2]

IFAN's function as heritage conservation was materialized by the creation of an ethnological museum to safeguard objects of African cultures. But the scientific pluridisciplinary mission was emphasized by Theodore Monod as Director in 1938. The institute of Dakar became a federal centre at the head of a regional network of local units called Centrifans. They were progressively settled in Saint-Louis, (Senegal), Abidjan, Niamey, Porto Novo and Abomey, Conakry, Ouagadougou and Bamako. As a

[2] ADANDE, Alexandre (1996)
« Témoignage sur la genèse de l'IFAN » *Bulletin IFAN 2*, 1996, pp. 27-33

federal structure, IFAN has then promoted the professionalization of research, in organizing the accumulation of scientific materials, the building of knowledge and the dissemination of the rich African scientific common all over Africa and particularly in AOF.

After independence period, its sphere of research was narrowed with new assignments:

- to produce, arouse and promote scholarly works dealing with Africa in general and black Africa in particular;
- to ensure scholarly publishing and dissemination;
- to gather in its museums, archives and library scholarly collections and the documentation required for learning and research on black Africa;
- to develop partnership and exchange throughout the world;
- to contribute, by its learning and research outputs, to the "africanization" of curriculum and the enhancement of Africa historical and cultural identity.

Through a Project entitled: "***Biens culturels africains. Sauvegarde et valorisation des patrimoines documentaires audiovisuels, iconographiques, sonores et textuels de l' IFAN Ch. A. Diop***", in partnership with the University of Toulouse-II Le Mirail and the financial support from FFI (Fonds francophone des Inforoutes), IFAN has successfully settled an institutional repository. With a dual objective, this work ensures the safeguarding of audiovisual, iconographic, audible and printed materials as well as providing access to them.

The organization of research

Departments of Research	**Laboratories/Services/Museums**
Sciences Humaines	*Laboratoire de Sociologie * Laboratoire de Géographie * Laboratoire d'Histoire * Laboratoire de Préhistoire et de Protohistoire * Laboratoire d'Anthropologie physique *Laboratoire du Genre
Langues et Civilisations	* Laboratoire d'Islamologie *Laboratoire de Littérature et Civilisation africaine * Laboratoire de Linguistique * Laboratoire d'Anthropologie culturelle
Biologie Animale	* Laboratoire de Zoologie des Vertébrés terrestres * Laboratoire de Zoologie des Invertébrés terrestres * Laboratoire de Biologie marine * Laboratoire de traitement des eaux usées
Botanique et Géologie	* Laboratoire de Carbone 14 * Laboratoire de Botanique * Laboratoire de Géologie

Information Scientifique	* Service de la Documentation * Service des Publications * Service Audiovisuel * Service des Archives *Unité de Micro-informatique éditoriale
Musées	* Musée d'Art africain * Musée de la Mer de Gorée * Musée historique de Gorée.

Chart1: The organization of research at IFAN

- **The diversity and richness of collections**

From investigations and inquiries undertaken in many fields, in all over the countries of AOF, IFAN succeeded in collecting scientific materials in Africa's fauna, flora, its people, societies, myths, tales, history. This information deposit in a form of a collection of animals, ethnographic and archeological objects, in a form of manuscript, printed and audiovisual documentation representing historical sources has been developed. All this knowledge and experience on Africa consisting of an indigenous knowledge represent an evidence of the wealth symbolized by our historical and cultural heritage.

Laboratories/Services/Museums	**Resources**
Documentation	*67369 monographies* *2972 titres de périodiques* *1151mémoires et thèses* *741Cahiers de l´École William Ponty* *5339 cartes* *5 784 dossiers documentaires* *2590 documents du dêpot légal*
Audiovisuel	** Fonds photographique* *47379 photographies (positifs)* *602 albums anciens* *1359 diapositives* *285 photographies provenant du Dépôt* *860 cartes postales anciennnes* **Supports vidéo* *122 cassettes VHS* **Supports sonores* *48 cassettes audio* *150 disques anciens de 78 tours* *94 bandes magnétiques* *38 bandes folkloriques*
Publications	*Publications Périodiques* *Bulletin du comité d´Études Historiques et scientifiques de l´AOF 1918-1938* *Bulletin de l´IFAN Série A (Sciences naturelles) plus de 120 num. et serie B(Sciences humaines),plus de 120 nos,a partir de 1954* *Notes africaines depuis 1939* *Publications non périodiques* *Mémoires de l´IFAN de 1939 a 2001(92 numéros)* *Catalogues et documents de 1939 á 2001(22 numéros) Initiations et Études africaines de 1939 a 2001 (37 nimeros)* *Hors-série : publications en langues nationales et étrangères produites en fonction des subventions ,plus de 65 titres*

Géographie	*42 cartes topographiques* *1499 cartes thématiques* *Photographies aériennes sur le Sénégal* *Images satellitaires (landsat,spot)*
Préhistoire Protohistoire	*50.000 collections archéologiques*
Littérature et Civilisations africaine	*775 cassettes en littérature orale*
Islamologie	*1400 manuscrits*
Musées	*Musée d'Art africain : 9272 pèeces et d'objets d'art, d'archéologie et d'ethnographie (masques, statues en bois, poteries, textiles, vanneries, métaux, etc.)* *Musée historique : 504 collections d'archéologie et d'histoire* *Musée de la mer : 6000 espèces de poissons ,de mollusques de polychètes , d'oiseaux,d'instruments de pêche traditionnelle et de maquettes d'habitat.*
Zoologie des invertébrés terrestres	*400 000 échantillons d'insectes provenant d'échanges et de récoltes faites dans plus de 30 pays d'Afrique*
Zoologie des vertébrés terrestres	*1700 reptiles , 3250 oiseaux,2500 mammifères , 4500 poissons d'eau douce et saumatre*
Biologie marine	*160.000 échantillons composés de poissons ,de mollusques , de crustacés ,de mammifères marines et de tortues marines*
Botanique	*300 000 échantillons d'herbiers et de diaspores classés par famille, genre, espèce, sous-espèce et variété.*
Géologie	*250 roches sédimentaires ,volcaniques, métamorphiques et plutoniques*

Chart 2: IFAN Collections

- **The justification of the Project**

After inheriting such valuable scholarly collections, and having capitalized over 70 years of experience and expertise on learning and research on issues related to black Africa, IFAN has felt the need to bring a rupture. Conscious of the stakes related to the valorization of its scientific patrimony, IFAN has decided to fit within the contextual framework of Open Access and OER (Open Educational Resources) movement by devising its own content creation and sharing model.

Many factors have given birth to the implementation of its institutional repository.

- Internal factors

- inexistence of reliable indicators regarding collections, physical deterioration because of inadequate conditions and methods of preservation;
- quick obsolescence of audiovisual materials, particularly drives to access contents of old disks and magnetic bands;
- shortage in equipments and lack of specialized training for the staff;
- lack of communication and interaction between departments and laboratories;

- urgency to harmonize methods of work in the management of collections (storing, cataloguing, indexing, disseminating) through a common application;
- moral obligation for IFAN to safeguard its heavy heritage and root it from vulnerability to loss.

➢ External factors

- moving academic environment, where reforms of curricula and the development of eLearning impose new challenges to research institutions for an efficient contribution to the development efforts of universities;
- urgent need for IFAN to position itself by adopting ICT as a value-added factor in the management of scholarly information and dissemination of knowledge;
- necessity to display its rich contents in a digital showcase (institutional repository) and to deploy a community virtual space for exchange and collaborative works;
- Obligation for IFAN to position itself in a competitive global world, by becoming a content provider and then enhancing its support to pedagogy and research worldwide.

- **Methodology**

Initial objectives	**Associated activities**
To realize an inventory of collections, to specify homogeneous units to be digitalized and their scholarly interest	*complete inventory of collections *identification of corpus from units : Library, Publications, Archives, Manuscripts and Audiovisual *commission of an expertise on audiovisual materials *drawing up of a unique sheet for the common bibliographic description of collections *setting up of thematic and geographical thesaurus *searching out copyright holders for specific collections *intellectual Property right : devising a license to access digital collections
To equip IFAN with technological infrastructure and tools for the implementation of its institutional repository	*technical feasibility study *redaction of articles and conditions (technical specifications) *invitation of tenders to apply *renovation of the working areas: building work, electricity supply, etc. *Internet network wiring *purchase of servers, computers, scanners, drives, disks, softwares, etc
To equip IFAN with an open source application using international standards	*configuration of two linux servers: storage and web server *choice of the open source application: Dspace *installation of Dspace application and associated tools on linux servers *definition of technical choices : format, resolution, name identifying system for digital files
To train staff	*training workshop on digitization, safeguarding and management of digital collections for staff *training to the management of workflow in Dspace and to the administration of the platform *specific technical training with regards to challenges related to institutional repositories

To safeguard and valorize collections	*feed continuously the storage server for safeguarding purpose *devise an OAI repository *devise a web interface (a portal) for content access and retrieval *devise an up-to-date web site which constitutes a showcase of IFAN rich scholarly contents in various format, with virtual exhibitions, and many other value-added services.
To communicate and disseminate in order to duplicate such an innovative experience at a national and regional level	*organize scientific communication around the IFAN institutional repository: conferences, exhibition, publications, etc.

Chart 3: Methodology for the implementation of IFAN repository

- **Results**

IFAN technological infrastructure has been implemented, administrated and deployed locally.

➢ The network wiring of the Project

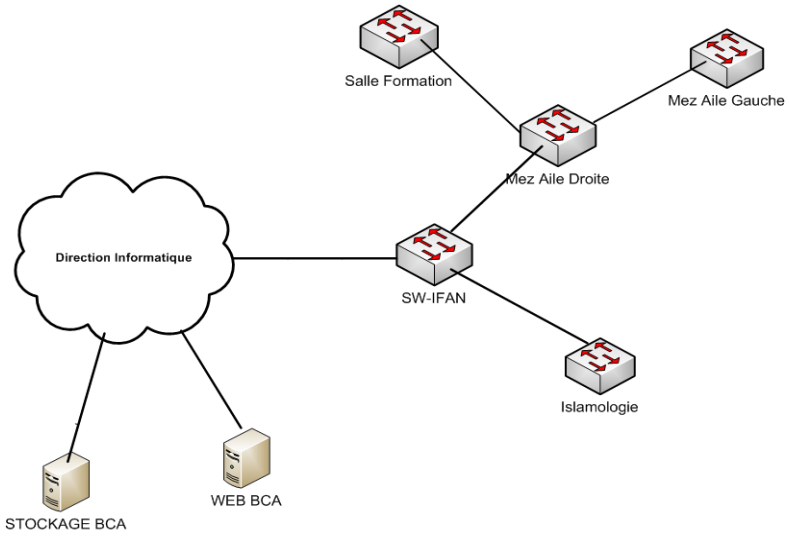

Figure 1: ***Network wiring of the Project***

Two linux servers running in an open source environment have been purchased

- A storage server of 3 To (Tera octet) extensible to 6,48To
- A web server of 2.5 Tera ocktet

- The main functions of the digital process

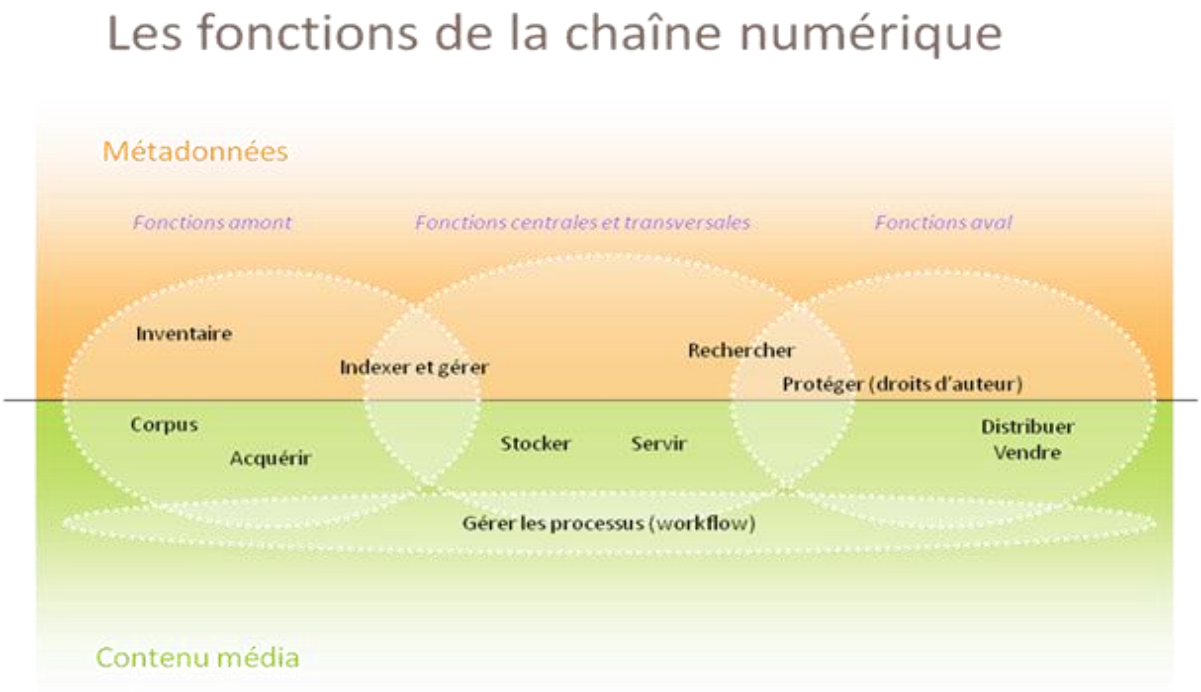

Figure 2: ***Main functions of the digital process***

The main functions consist of an upstream process: inventory of collections, selection of corpus, acquisition (scanning, metadata filling) safeguarding and downstream process: serving (data retrieval interface, copyright, distributing / selling)

- The global scheme of the digital process

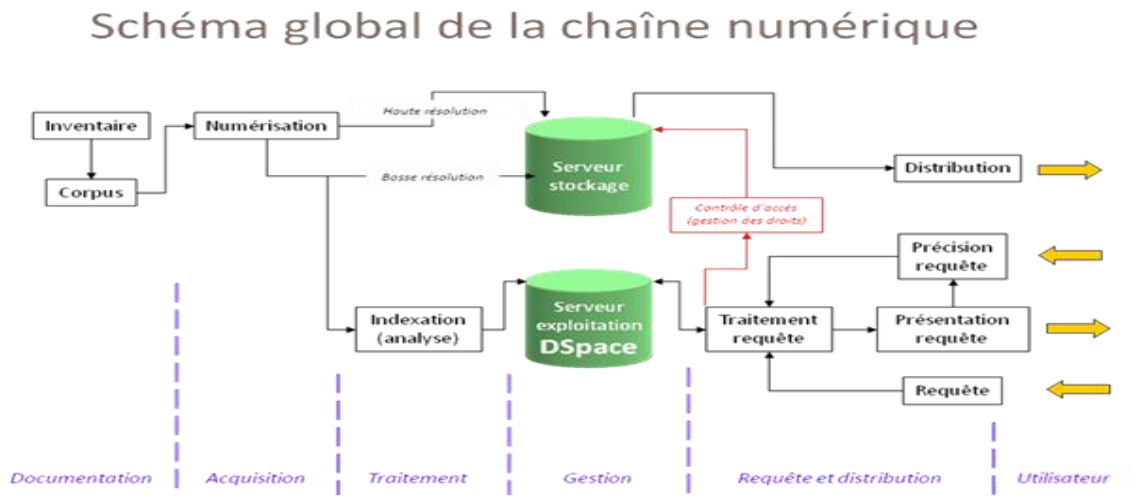

Figure 3: ***Global scheme of the digital process***

- The process of submitting a document in the Dspace Sheet

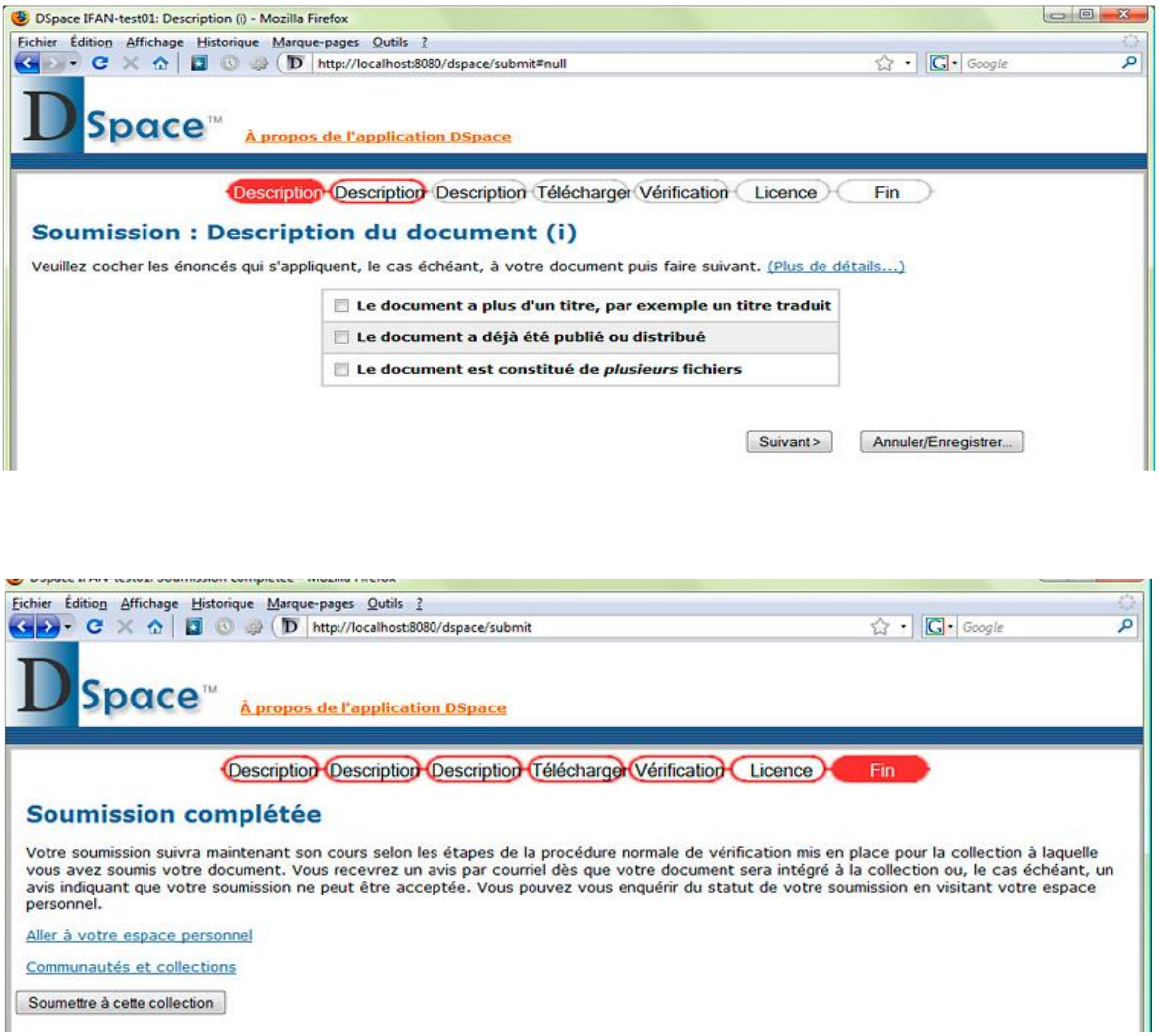

Figure 4: ***Process of submitting a document in the Dspace Sheet***

A unique sheet is implemented for the bibliographic description of various collections : manuscript, printed, iconographic, audiovisual.

- The organization of contents in the Dspace model of IFAN

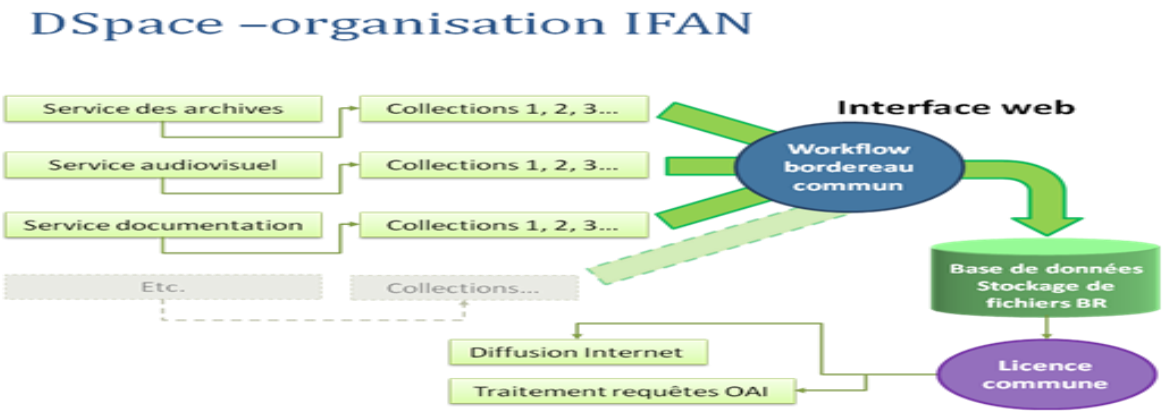

Figure 5: ***Organization of contents in the Dspace model of IFAN***

- The organizational scheme of the IFAN digital repository

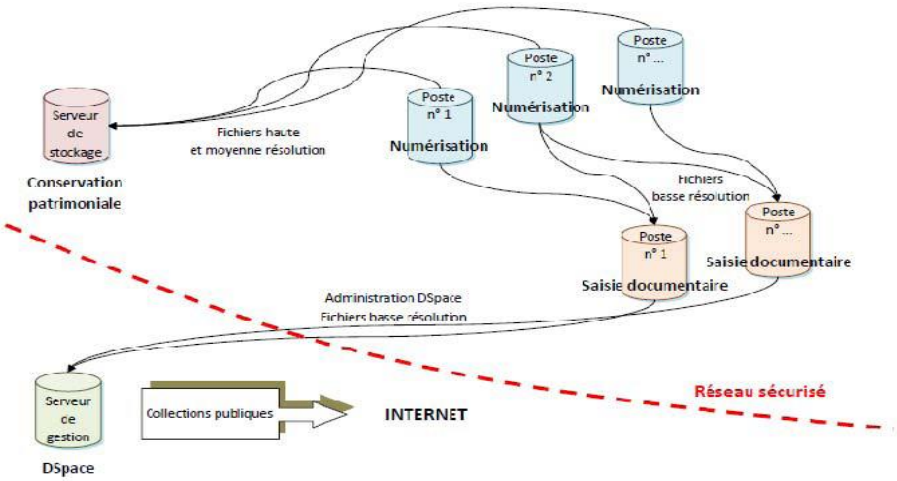

Figure 6: ***Organizational scheme of the IFAN digital repository***

➢ The Web interface of IFAN "***Biens culturels africains***" repository

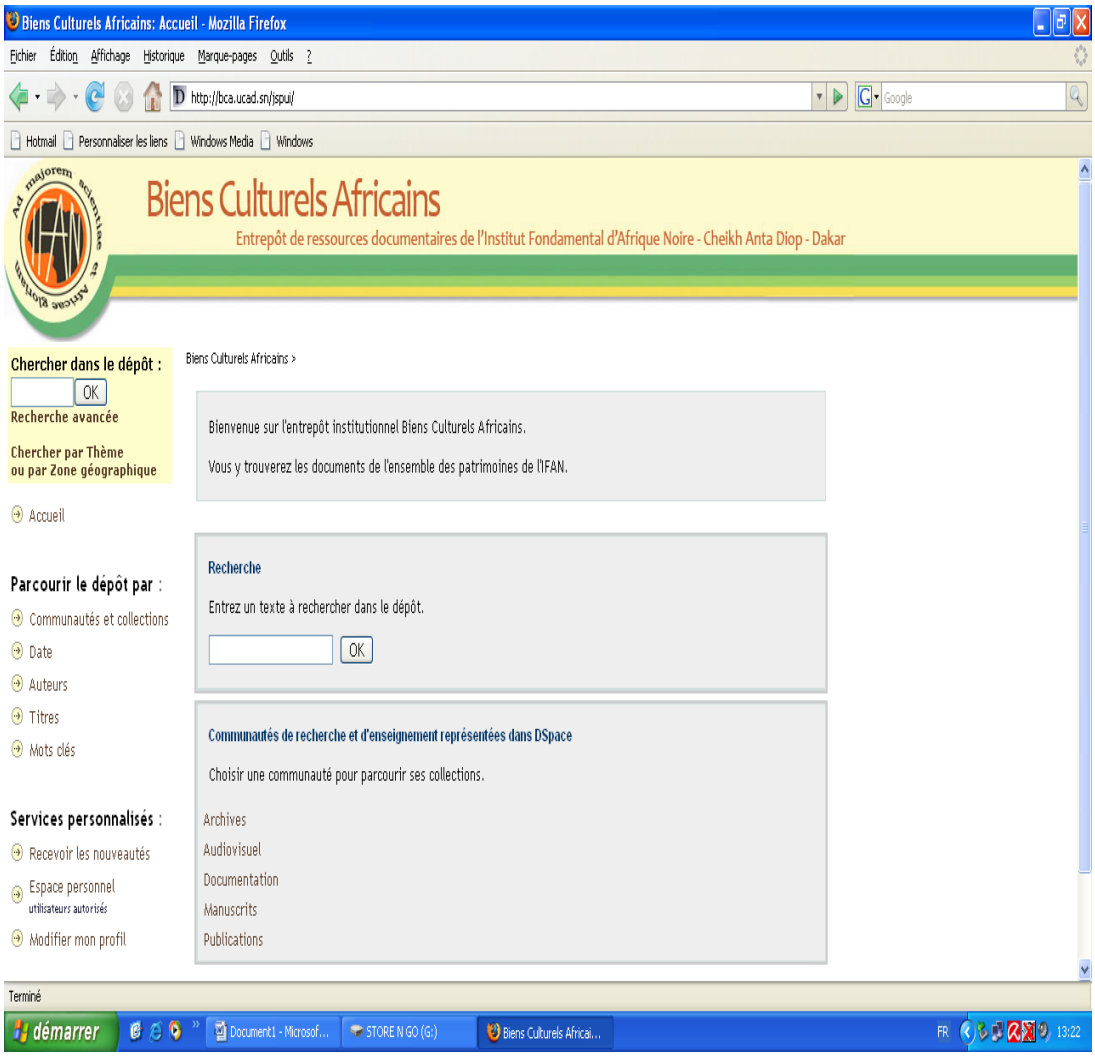

Figure 7: ***Web interface of IFAN "Biens culturels africains «digital repository***
Available at: http:// bca.ucad.sn/jspui

The IFAN digital repository runs on linux server, and operates with OAI-PMH protocol and Dublin core metadata. It is implemented with Dspace, an open source application. Research can be done from a specific collection or by author, date, title or key words.

- **Difficulties**

The settlement of IFAN institutional repository has been an exciting adventure because of a lack of experience regarding the implementation of digital repositories. But this deficiency has been quickly overwhelmed and turned into strength due to obligations of success in front of the huge challenge that represents online access to such contents for Africa. Some difficulties have been experienced during all the stages of the Project:

- fitting activities within the previous chronogram, which induced on delays of realization;
- coordinating and evaluating on a regular basis the work of different teams;
- configuring linux servers for the first time : computer specialists were more familiar with commercial options;
- settling Dspace applications on linux servers : there was any prior experience at a national level;
- difficulties to devise a thesaurus as a reference of keywords to be used in the system;
- difficulties in defining technical choices in the implementation of the Dspace sheet for the description of metadata;
- frequency of bugs in the system.

- **Prospects**

- making the repository more dynamic with the integration of social media for a wider interactive dialogue between scholars, and a various range of services related to open educational opportunities for faculties, staff, students, pupils and other literate communities;

- settling a policy to sustain the technological and human resources: long-term safeguarding and preservation of collections, continuous capacity building, evaluation of impact, and development of management and marketing skills for a good governance;

- fostering international visibility by referencing the repository near great search engines (harvesters) and making it interoperate with similar digital repositories;

- widening the partnership network to reproduce such an experience over the continent, and profit from other experiences;

- integrating new ICT-based methods for strategic changes in the relation between IFAN and its public;

- leveraging the digital repository for standardized research and pedagogical effectiveness.

Conclusion

Huge progress in Internet connectivity is being witnessed in Africa. Launched in December 2012, in Banjul, The Gambia, Africa's ACE undersea cable is said to be now operational: "Africa Coast to Europe Submarine Cable (ACE) will ultimately extend over 17,000 km from Brittany in France to Cape Town in South Africa, at depths close to 6,000 metres below sea level, linking Europe to Africa with high-capacity broadband connectivity. This will give all countries in Africa the opportunity to access the international broadband network at a lower cost. This will increase high-speed Internet in Africa, thus reducing the digital divide and triggering social and economic development"[3].

These efforts to democratize access to information have settled a digital environment which encourages discovery and appropriation of open source technological tools. Far from being a mere a phenomenon brought into fashion, implementing successful digitization programs has become a reality in Africa. It contributes, in a measurable way, to shape a new generation of librarian by empowering him with skills in information access, retrieval, use and production. It is also a strategic solution in the advocacy against barriers to perform and foster research in the continent.

After accumulating various scientific materials on Africa, IFAN has become conscious of the necessity to break with this long period by displaying its scholarly heritage and positioning itself as a content provider. Its example, among others, demonstrates that building capacities on open source tools can support efforts to sustain rich African scholarly collections and promote local contents in indigenous knowledge and know-how.

Federating such initiatives in the African digital library (ADL) will indeed rank Africa among the most fertile contributors in the global scheme of scholarly communication.

[3] Africa's ACE undersea cable now operational
http://en.starafrica.com/news

References

ACE undersea cable now operational

http://en.starafrica.com/news
(Accessed January 28th, 2013)

Bakhoum, Nafissatou (2007). "Quelles alternatives pour les Bibliothèques scientifiques africaines face aux défis du XXIè siècle ". Paper presented at the 73th IFLA General Conference and Council, Durban, South Africa, 19-23August 2007, p.13

http://cfi.ifla.free.fr/conferences/durban/programme.htm
(Accessed November, 06th 2012)

Bakhoum, Nafissatou; Ferrante, Eric (2010). Rapport final "Projet "*Biens culturels africains*", 2010, 52p.

COBESS / Eifl.net (2010). Atelier national sur l'Accès Ouvert aux publications scientifiques et techniques au Sénégal (Open Access) UCAD II, Université Cheikh Anta Diop, Dakar, Sénégal, 9 – 10 février 2010

http://www.eifl.net/open-access-2010-senegal
(Accessed December, 14th 2012)

Dione, Bernard; Savard, Rejean Eds. (2008). *Managing Technologies in Developing Countries: Open source vs. Commercial Options*. Proceedings of the IFLA Pre-Conference Satellite Meeting, Dakar, Senegal, 15- 16 August, 2007. IFLA Publications; 132, 217p.

Jacquesson, Alain; Rivier, Alexis (2005). *Bibliothèques et documents numériques : concepts, composantes, techniques et enjeux*, Paris, Editions du Cercle de la Librairie, 2005, 573p.

Ndiaye, Papa; Bakhoum, Nafissatou. Eds. (2010). L'IFAN face à la virtualisation de son patrimoine documentaire. Actes du Colloque international, Université de Toulouse II-Le Mirail, Toulouse, 26 – 28 novembre 2007, 214p.

TWAS Newsletter, vol.23, n°2, 2011, 51p.

UNESCO Science Report 2010
http://www.unesco.org/new/en/natural-sciences/science-technology/prospective-studies/unesco-science-report/
(Accessed October, 10th 2012)