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## DISCUSSION PAPER

### The AVU

### Open Educational Resources (OER)

### Architecture for Higher Education in Africa

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## 1 PREFACE

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The purpose of this paper is to engage with other participants at the OECD Expert Meeting in order to generate a dialogue around our shared desire to see a collaborative and coordinated strategy for the creation, organization, dissemination and utilization of OERs in general and in Africa in particular. The paper is neither prescriptive nor definite: the realization of the OER strategy it describes is incumbent upon the assistance and collaboration of several parties both within and outside Africa. However, it is important to emphasize that this should be seen as part of a wider initiative requested by African institutions, practitioners and their global development partners in order to resolve a broader challenge that has affected learning, teaching, research and collaborative intellectual activities on the African continent for years – that of increasing access to quality higher education and training programs. In this way, the OER Strategy described in this paper is not an end in itself, but a means to achieving the wider goal of increased access.

In reading the paper one will notice that the AVU is exploring a similar set of questions to those raised by OECD albeit in the narrower context of the OER movement in the higher education sector in Africa:

- How to ensure quality of, improve access to and usefulness for the users of OER initiatives for African Universities?
- How to develop sustainable cost/benefit models for OER initiatives for African Universities?
- What are the intellectual property right (IPR) issues linked to OER initiatives for African Universities?
- What are the incentives and barriers for African universities and academic staff to offer their material to OER initiatives

## 2 THE CONCEPT

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### ***2.1 The African Virtual University's Blueprint for Open Educational Resources: Creating Education from Information***

One of the most promising developments in education and training today is the concept and growing reality of OERs. Since the term was first adopted at UNESCO's 2002 Forum on the Impact of Open Courseware (OCW) for Higher Education in Developing Countries, several organizations, educational and otherwise, have ventured into this previously uncharted domain. MIT's OpenCourseWare Initiative alone has given rise to several OER spin-offs. From Universia, an OCW consortium of over 700 Latin American Universities, to China's Open Resource Education (CORE) and Japan's OCW Alliance, through to the AVU's own pilot of the OCW materials on local servers at Partner Institutions in Kenya and Ethiopia, and the TESSA (Teacher Education in Sub-Saharan Africa) a joint program between the AVU and the Open University (UK), the aggressive expansion of OERs in the developing world,

especially Africa, is now a reality that necessitates further reflection, development, piloting, and monitoring, especially through research networks on the African continent.

The scale and scope of existing OERs presents a considerable challenge to those who stand to gain the most from them: learners, researchers and educators residing in the Developing World. However, launching headlong into a relatively untested OER realm serves neither the learner nor the researcher and educator. The potential result would be either to submerge learners and educators in the ubiquitous digitized information that may have little or no defined meaning or purpose or to perpetuate the unequal participation in the Open Educational Resources movement that is forming worldwide. It is therefore necessary to configure a conceptual framework or ‘architecture’ within which information and meaning converge to meet the higher-educational demands of those learners, researchers and educators in Africa.

The promise of OERs resides not only in the digitized information itself, but also in developing the methodological approaches and mechanisms that manage and ascribe meaning to them. The AVU believes this development is best achieved through a collaborative partnership that focuses on four elements of the OER evolutionary process: Creation, Organization, Dissemination and Utilization. The strategic combination of these elements within an ‘OER Architecture’ will lead to the development of a dynamic, rational and comprehensive OER strategy for African education and training institutions.

### **3 THE STRATEGY**

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As a result of its late ingress into the OER movement, higher education institutions in Africa enter the arena having little to no experience in the OER evolutionary process (that is, in the Creation, Organization, Dissemination and Utilization of OERs) and with an undefined OER trajectory. Consequently, there is a need to mitigate against a very real possibility that African universities and other tertiary institutions may tend to participate as unequal recipients of content with little control over its origination, quality and appropriateness. By involving African institutions in the entire OER evolutionary process, issues pertaining to epistemological, ideological, cultural and social relevance as well as technology related challenges are reduced while enabling these institutions to participate actively so that they drive and own the process in terms of form, content, structure and orientation.

### **4 THE AVU’S OER ARCHITECTURE**

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#### **4.1 Why use the concept of an ‘Architecture’**

The purpose of the AVU’s OER Architecture is to lay out the general components of the nascent OER movement within the higher education sector on the African continent. The architecture is grounded in two experiences: a thorough analysis of the existing theories and perspectives concerning the global Open Content movement and the AVU’s own current experiences in establishing processes, systems and frameworks of design, development, managing and sharing of OERs on the African continent. The combination of these elements constitutes the empirical and theoretical ‘foundation’ on which the AVU OER Architecture is based.

The constituent parts of the AVU OER Architecture (Creation, Organization, Dissemination and Utilization) are held together by several ‘elements’ or ‘scaffolding’ (see diagram below). From this basic framework, the dimensions of the AVU OER Architecture are formed to create ‘knowledge spaces,’ in which meaning and information about ODeL initiatives and methodologies converge. These ‘knowledge spaces,’ however, are neither restrictive nor prohibitive entities; they are punctuated by hallways and paths allowing for the free flowing of ideas from space to space (i.e. between the institutions and individuals within the communities of practice that the AVU OER Strategy is developing in Africa).

Furthermore these virtual and physical spaces are vital lines of communication within the community of practice in that they are often the site of engagement, exploration, pilot testing and innovation of ideas around OERs and Open, Distance and eLearning (ODeL) methodologies. Indeed, they encourage and generate discourses between those occupying the different spaces, gradually re-shaping new and strengthening old relationships within the AVU’s network of Partner Institutions.

It is important that the AVU OER Architecture provides space for future developments as the OER movement has yet to mature and will inevitably develop beyond its current limits. The growth of OERs in Africa, then, relies on the free flow of ideas, both within the ‘hallways and paths’ of the African OER architecture and among the neighbouring OER architectures globally.

**4.2 The OER Architecture for Higher Education in Africa**



### **4.3 Components of the AVU Architecture**

#### **Creation:**

- Localization and Contextualization OER of content
- Using
- Re-using
- Re-authoring
- Re-purposing of content
- Developing capacity to create OERs “from scratch”
- CoPs – structured communities of ‘users and producers’
- Interoperability and compliance
- Iterative and collaborative processes for OER creation

#### **Organization:**

- Governance, Management and Financing models
- Storage/Portal mechanism
- Tagging & metadata systems
- Repository development
- Institutional development – developing a knowledge sharing culture

#### **Dissemination:**

- Sensitization Campaign at each Partner Institution
- Delivery methods for remote and local access to OERs
- Packaging
- Building and nurturing CoPs
- Scalability of delivery
- Decentralization vs. centralization or a combination of both

#### **Utilization:**

- Mechanisms for accessing and updating OER repositories
- Quality Assurance mechanisms
- Accreditation of materials
- Sustainability of use, reuse
- Business Modeling

For each of the above, it is possible to determine the necessary support (scaffolding) activities that are required in terms of 6 key areas: Capacity Enhancement, Sensitization, Technological Infrastructure, Policy, Research, and Collaboration. For a description of the AVU’s current and planned activities for implementing the OER Architecture please refer to Appendix 1 attached.

## **5 THE OBJECTIVE OF THE AVU OER STRATEGY**

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### **5.1 Africa's participation in the OER movement**

Ultimately, the AVU's intent is to assemble the various relevant OER initiatives under one single OER Architecture aimed at facilitating and expanding the use of OERs in African tertiary education and training institutions. The strategy is designed to promote not only the active participation of AVU's PIs in the creation or development of OERs for both their own use and the use of others globally, but also the effective and sustainable organization, dissemination and utilization of these resources on the African continent by Africans and for Africans and their global partners who will be part of their community of practice.

### **5.2 The Partnership for African OERs – a collaborative approach**

As indicated earlier, the implementation of the AVU's OER strategy is a dynamic and collaborative process with our African and global partners. In addition to the AVU's network of Partner Institutions across Africa and its current OER partners including the Development Gateway, the Open University (UK), WiderNet, ADEA, AFUNET, MIT and the Hewlett Foundation, the AVU invites organizations and institutions with similar objectives to join together to advance OERs in Africa. In so doing, the AVU seeks to find synergy among the various initiatives and harness this in the most effective way possible. The AVU believes that the work being done by OECD, COL (VUSSC), SAIDE, Paris Tech, Universia, CORE, Rice University (Connexions), Yale, and UWC (South Africa) among others, can inform its OER Strategy. Although more work needs to be done on developing the social and business models required for such a collaborative process, OERs will eventually assist African institutions to access high quality materials and expertise that exists across the continent and the globe for the benefit of learners, researchers and educators in the African tertiary education and training sector.

## **6 ESTABLISHING A TRAJECTORY FOR OERS IN AFRICA**

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The AVU's OER Architecture envisions the expansion of OERs as a dynamic, collaborative process engaging practitioners and students at each stage. It anticipates at several levels the challenges inhibiting participation in the effective creation, organization, dissemination and utilization of OERs in the diverse contexts of sub-Saharan Africa, as experienced, for example, by the self-learner in Niger, the researcher in Ghana or the policy analyst in South Africa.

The articulation of the AVU OER Trajectory stems from the AVU-MIT OCW Pilot Project Final Report (September 2005)<sup>i</sup> conducted in East Africa and the AVU's Gap Analysis (July 2005)<sup>ii</sup> which analyzed the open, distance and eLearning capacity of universities at 17 institutions in 16 African countries as well as both formal and informal discussions in which the AVU has participated. These studies and discussions elicited four fundamental challenges inhibiting participation in the OER movement: sensitization, technological infrastructure, capacity enhancement and governance structures.



### **6.1 Need for OER sensitization**

During the AVU-MIT OCW Pilot Project, nearly every workshop participant was ‘unfamiliar’ with both the concept of OERs and the MIT OCW site itself. That said, 90% of those questioned replied positively to the open license concept and 95% of those respondents indicated they would refer the site to others.<sup>iii</sup> It can be assumed then, that one fundamental challenge inhibiting participation in the OER movement is the unequal information flow in Africa on the subject of OERs.

The AVU’s Gap Analysis report outlined four prominent conceptions by African academics regarding the promotion of Open Educational Resources:

- lack of support from the relevant governing bodies exacerbating already poor participation brought about as a result of lack of human and infrastructure capacity,
- lack of clear quality assurance mechanisms that would result in unclear standards in OERs, (“if its free it must be rubbish”)
- lack of business model and the resultant potential for open content to be a ‘white elephant’ whereby significant start-up costs diminish enthusiasm, and
- ambiguous intellectual property rights policies leading to lack of faculty participation.<sup>iv</sup>

Should these concerns be neglected, the opportunity cost of non-participation in the OER movement inevitably increases.

### **6.2 Insufficient technological infrastructure**

Though OERs may theoretically be ‘open’ and ‘free’, the reality in the developing world, especially Africa, belies this perception. These resources are neither open nor free to those unable to access the basic, yet necessary infrastructure: computers (with affordable software) and the internet. Results from the AVU-MIT OCW survey showed that 55% of students and 45% of educators still access the internet through Internet Cafes.<sup>v</sup> In many cases where there is a minimum connectivity, educators will pay a colleague or graduate student to source for the materials which everyone can share. Practical answers, such as store-and-forward email, extensive use of CD-ROMs, caching technology, pulling web pages through email and, most recently, the mirroring of OER websites on local area networks, have evolved to alleviate the stress on poor (or poorly managed) bandwidth. These solutions though are embryonic and have yet to be fully leveraged to realize the full potential of OERs. The proposed advent of the marine fiber optic cable around the continent of Africa will take three to five years to benefit African tertiary institutions due to costs and other related causes. Increasing access to affordable bandwidth is therefore a key component of the AVU OER Architecture.

### **6.3 Need for capacity enhancement in OERs**

The AVU’s Capacity Enhancement Program (ACEP)<sup>vi</sup>, an initiative aimed at evolving and improving the open, distance and eLearning (ODEL) infrastructures and capabilities in 19 African countries, is set to commence in January 2007. An initiative similar to this, whereby the development of skills and improvement of infrastructure are furthered through the combined efforts of leading organizations and learning institutions, is envisioned in regard to OERs. The program will encourage African participation in the OER movement in a manner that is beneficial to teaching, learning and research. Within this conceptual framework it is



appreciated that each teaching/learning community will have its own approach to such a development effort. The higher education sector in Africa is not a homogenous entity. The OER capacity enhancement program will therefore encourage and incorporate the advice of those who seek to participate in its design.

#### **6.4 Lack of institutional policies and structures governing OERs**

The proliferation of OERs in Africa has assumed no concrete structure; often it is individual-institutions or initiatives based and oriented along project-based criteria with little regard to the sustainability or future role of OERs. It is therefore necessary that the institutional governing bodies articulate a broad reaching governance and policy framework for OERs.

The AVU's Gap Analysis further concluded that as a result of the lack of any clear governance 'regime', "librarians are in some cases afraid of breaching intellectual property rights [IPRs] and could be erring on the side of limiting the use of available resources too much."<sup>vii</sup> In response to this finding, the AVU's developed an IPR Guide for e-Learning Content Developers (August 2005)<sup>viii</sup> which recommended a consortium approach to IPR governance in sub-Saharan Africa so as to improve the flow of information across the AVU PI network. The importance of having "all members of the consortium agree on the IPR management and exploitation" was underscored in this report.<sup>ix</sup> Mechanisms such as those established by the Creative Commons may be of great assistance in this regard.

## **7 THE PROCESS OF IMPLEMENTING THE AVU OER STRATEGY**

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A strategic planning workshop was held by the AVU ODeL Initiative in January 2006. In this workshop, a draft AVU OER Architecture was devised. The workshop allowed the staff of the ODeL Initiative and the Digital Library to develop an overview of the AVU Architecture and steps towards its implementation.

At the World Summit for the Information Society in Tunis, a focused OER meeting was convened by the AVU so as to consult with the partner organizations which the AVU envisions participating in the realization of the AVU OER Architecture. The meeting was concerned with leveraging the collective strategies and available resources of each participating organization in a logical and well articulated fashion.

A fully articulated and costed AVU OER Strategic Plan has been formulated as a result of the formal consultative meetings in Tunisia, Kenya, Nigeria and Ethiopia as well as the AVU's involvement in several online and informal discussions. The AVU has received funding from the William and Flora Hewlett Foundation to implement phase 1 of the OER Strategy and the AVU will take a lead in implementing the AVU OER Strategic Plan through undertaking a series of activities with all participating stakeholders. This participation may eventually form the basis of a governance mechanism for an "OER Partnership for Africa" for which meetings would be held on an ongoing basis to discuss key issues regarding the implementation of the OER Strategic Plan.

The key activities for Phase 1 of the implementation of the AVU OER Strategy are summarized below:

**Activity 1: Implement the OER Architecture Sensitization Strategy**

Sensitization is a key component of the AVU OER Architecture. The inputs here are sufficient to develop the strategy itself, to develop some of the sensitization materials for the initial phase of the strategy and to disseminate these materials. The development of further materials that can contribute to the sensitization process are included in other activities below.

**Activity 2: Organize the Vice Chancellors' Conference in Nairobi, Kenya - November 2006**

Capitalizing on the AVU network of Partner Institutions this conference will afford the AVU a unique opportunity to sensitize the senior management of African Universities initially within the AVU network with regard to the potential benefits of the OER movement.

**Activity 3: Implement the AVU OER Research Agenda**

Two Sabbatical Fellows will liaise with two AVU staff to ensure the appropriate implementation of the OER research program. Facilities for research including a space for research, resources and facilities for research will be made available for each Sabbatical Fellow, should they wish to undertake their research in Nairobi, Kenya at the AVU headquarters. This is an opportunity for African scholars to be part of a physical and virtual community of practice in the OER movement and in the process generate knowledge that is grounded in the African experience to be utilized by Africans.

**Activity 4: Implement the AVU OER portal**

In terms of the creation and organization of OERs, the AVU intends to work with key partners to design and implement the AVU OER portal. Two workshops in Nairobi, Kenya, at the AVU headquarters will be held to support this activity. The TESSA program (described below) is a key element in the implementation of the OER Portal.

**Activity 5: Establish a dynamic Collection of African OERs**

The process of tagging and uploading existing materials currently under development and others as yet to be developed, for inclusion in the AVU's OER Collection, are the key output of this activity.

**Activity 6: Design and implement a "Knowledge Series" for OERs in support of Open, Distance and eLearning in Africa.**

Commissioning of four expert authors to write a series of OER monographs that cover the Creation, Organization, Dissemination and Utilization of OERs in the African context

**Activity 7: Design and implement a conference for OER practitioners in Africa**

As a follow up to the research in OERs undertaken by the Sabbatical Fellows and in support of an OER community of practice in Africa, the AVU will organize an OER practitioner's conference in 2007 that will be preceded by an online conference/forum.

**Activity 8: Facilitate training workshops to enhance capacity in the creation, and utilization of OERs for higher education in Africa.**

A key output of the project is to enhance the capacity of African academics in the creation and utilization of high quality, autochthonous OERs in a sustainable manner. A series of workshops are planned to achieve this.

**Activity 9: Conference and Workshop Participation.**

The AVU seeks to implement a targeted conference attendance strategy, aimed at maximizing exposure of its staff to global trends in the field of OERs and, secondly, to share with as diverse an audience as possible, the AVU OER Architecture.

## **8 INTEGRATING THE OER ARCHITECTURE INTO THE AVU'S CURRENT ACTIVITIES**

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### **8.1 The AVU OER Strategic Plan**

The AVU OER Strategic Plan outlines the activities, outputs and outcomes required to implement the OER Architecture. This plan will commence with the AVU spearheading iterative activities such as providing facilities for comparisons in research, retreats, conversations, sabbaticals and other 'breaks in rhythm' that enable intellectual discourses as far as the OER movement in Africa is concerned. These activities have been structured so that they can encourage exploration of ideas and opportunities for trying things out; envisioning possible futures and possible trajectories; creating alternative scenarios in research on OERs and pushing research boundaries, and developing simulations of what can work in African initiatives on OERs. The AVU OER Architecture is pivotal in building a reflexive, transformative and emancipatory educational discourse by independent and indigenous African communities of practice supported by localized virtual and physical structures of learning and teaching that will benefit the entire AVU network of Partner Institutions (PIs).<sup>x</sup>

The AVU OER Strategic Plan also provides a contextual framework within which the AVU's member PIs might become active participants in improving the authenticity and interoperability of OERs whilst enhancing Open, Distance and eLearning (ODEL) theory and praxis overall as an effective and transformative means for expanding access to tertiary education and training in Africa.

To achieve this, the AVU OER Strategic Plan will support the AVU's PIs with the training and skill development required to become actively involved in the various processes inherent in the creation, organization, dissemination and utilization of OERs. The ultimate goal of the strategy (among others) is to establish and strengthen communities of practice across the African continent that are engaged in basic and applied research and development in support of the OER movement.

### **8.2 The Teacher Education in Sub-Saharan Africa (TESSA) program**

A key activity of the wider AVU OER Strategy is the TESSA (Teacher Education in Sub-Saharan Africa). This is a Research and Development program, that will result in the creation

of ‘open content’ multimedia resources and course design guidance for teachers and teacher educators working in Sub-Saharan African countries.

TESSA seeks outcomes that represent the very highest quality standards able to set a global benchmark for work of this kind. The consortium members involved in the TESSA program will seek an ethos of mutual accountability, co-operation, productivity and transparency in achieving this.

The TESSA program aims in the period 2005–2008:

- to create a bank of ‘open content’ multi-media resources in on-line and traditional text formats that will support school based education and training for teachers working in the primary education sector
- to develop ‘open content’ support resources for teacher educators and trainers who will be planning, implementing and evaluating the use of the resources developed above
- to effectively extend and widen the take-up and use of the TESSA resources and ideas across Sub-Saharan Africa
- to implement research activities that will promote the improvement of teacher education generally, in particular school based teacher education in Sub-Saharan Africa

A key part of the implementation of the TESSA program is the development and implementation of an OER Portal (see section 5.3 below).

### **8.3 The AVU OER Portal**

The AVU is in the process of developing a comprehensive OER Portal that will support the creation, organization, dissemination and utilization of OERs for (among others) its network of higher education institutions across Africa. The Portal can be envisaged as a series of ‘modules’ that seamlessly interlink to form a complete “Do It Yourself” (DIY) OER environment for the novice and the experienced practitioner.

In keeping with the OER Architecture referred to above, the functionality of the OER Portal will consist of the following:

#### **Module 1: OER Creation**

- Online guides and support (self paced training) for those wishing to learn how to create and share high quality OERs
- Authoring tools (FLOSS) to assist in the creation or re-authoring/contextualization of OER materials
- An online communications facility to support community of practice for those who wish to share their knowledge and learn from each other. This will be categorized for those seeking online assistance from the community, those engaging in research, and those wishing to discuss particular topics (moderated)
- A workflow management function for those who wish to co-develop OERs (perhaps in the form of academic program modules etc)

- A built in Learning Management System that will enable individuals and groups to create academic program modules (or complete programs)
- A function to assist in attributing the license for the OERs created (creative commons module)

### **Module 2: OER Organization**

- A comprehensive and powerful ‘back end’ data base of OERs (featuring a Learning Object Repository of African Resources)
- A powerful indexing service that will link to other OER collections (LORs, OCW collections, Digital Libraries etc) that allows federated searches.

### **Module 3: OER Dissemination**

- An easy to use search tool that is aimed at educationalists and students who are looking for specific OERs in support of their academic programs (development and implementation) and/or research.
- A development and indexing protocol that allows for dissemination across a range of bandwidth environments (and therefore media types – e.g. multimedia ‘versions’ of resources for use in high bandwidth environments, and in the future – mobile environments)
- The ability for the entire system to be mirrored at several sites across Africa and allow for automatic updating/synchronizing of each site remotely.

### **Module 4: OER Utilization**

- Online guides and support (self paced training) for those wishing to learn how to utilize OERs effectively in their teaching and learning
- Policy Development support tools for Open, Distance and eLearning (ODeL), Intellectual Property Rights (IPR), Financing and Business Models etc.
- An online communications facility to support community of practice for those who wish to share their knowledge and learn from each other including the possibility of uploading re-authored (peer reviewed) materials

### **8.4 Development Partners and Collaboration**

The AVU is working with key development partners across Africa and at the Open University (UK) in designing the initial modules for the Portal. The emphasis is strongly on ensuring the entire system and the tools located within it are built using Free/Libre Open Source Software (FLOSS). While it is envisaged that the OER portal will be managed by the AVU, it is by its very nature a collaborative and dynamic environment. The modular (FLOSS) structure of the Portal is aimed at ensuring updates (from a variety of sources/partners) for existing modules, and the creation of new modules as the need arises. This necessitates the articulation of clear protocol for the ongoing development process similar to that adopted by the FLOSS community.

## Language Versioning

The Portal will initially be developed in English. It is intended that the system (as well as the resources/tools contained within it) will eventually be versioned to support French, Portuguese, Arabic and a variety of African Languages where appropriate. It is hoped that in doing so a rich diversity of OERs will eventually be available for use in support of Higher Education programs across Africa.

## Support Activities

The AVU intends to host a series of regular workshops and conferences on OERs – targeting their creation, utilization, dissemination and organization respectively - and the support mechanisms required to ensure the success and expansion of the OER movement in Africa. Sensitization activities will form a key part of the wider AVU OER strategy. In addition a series of publications arising from the various activities (including research) will be published to OER Portal.

### **8.5 The AVU Digital Library**

One of the key objectives of the AVU digital library is to fill the gap created by a lack of adequate learning resources in our PIs. Currently, the AVU's digital library provides the PIs with a combination of open access resources and proprietary databases. However, the cost of proprietary databases is prohibitive and this poses a significant challenge to both maintaining and expanding the collection. Another related challenge is the rigid licensing structures that are inherent in these databases due to restrictions imposed by national and international copyright laws. The wider use of OERs may overcome these two challenges in that they are, theoretically at least, open and 'free'.

The AVU digital library seeks to shift from relying on the proprietary databases, towards utilizing OERs, thereby making a larger contribution and having a greater impact on overcoming the challenges of access to relevant information in African institutions of higher learning which are imposed by lack of financial resources and in some cases the challenges imposed by bandwidth and connectivity.

It is envisaged that the AVU Digital Library will ultimately be subsumed into the OER Portal structure and will be managed by the AVU as a central storehouse of appropriate and high quality resources that will support education programs in Africa. This will include providing access to the OER collection as well as creating awareness among the potential users and carrying out evaluations to assess the efficacy of these processes. In addition, the network of the PI librarians with whom the AVU has been working to date is effectively placed to champion the use of the OERs in each of their respective institutions and countries.

## 9 CONCLUSION

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The purpose of this document has been to describe the interest and need that has been expressed in order to develop an OER Architecture and strategy for implementation for the expansion of OERs in Africa. It is a result of a realization that the AVU, along with its Partner Institutions stand to gain much from the expansion of the OER movement in order to increase access to higher education and training. Each stakeholder stands to gain more however if the creation, organization, dissemination and utilization of OERs in Africa is accomplished in a coordinated, collaborative and holistic fashion.

As noted in the Preface the AVU is exploring a similar set of questions to those raised by OECD albeit in the narrower context of the OER movement in the higher education sector in Africa. These are worth reiterating:

- How to ensure quality of, improve access to and usefulness for the users of OER initiatives for African Universities?
- How to develop sustainable cost/benefit models for OER initiatives for African Universities?
- What are the intellectual property right (IPR) issues linked to OER initiatives for African Universities?
- What are the incentives and barriers for African universities and academic staff to offer their material to OER initiatives

The specific areas of action the AVU is engaged in with regard to these questions are articulated in Appendix 1.

What is being presented here are initial suggestions for the way forward based upon an analysis of the potential for OERs in Africa. It is hoped that others will contribute their experiences in refining the AVU's OER Architecture. There are challenges in implementing the OER Architecture for which the AVU would like to work collaboratively with the global OER community to find solutions. The AVU strongly believes that working collaboratively to achieve this is the most appropriate approach to take in a resource constrained environment such as that found in most African universities.



## 10 GLOSSARY OF TERMS

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AAU	Addis Ababa University
ADEA	Association for the Development of Education in Africa
AFUNET	African University Network
AVU	African Virtual University
AVU-DG	African Virtual University – Development Gateway Partnership
AVU-MIT PP	African Virtual University - Massachusetts Institute of Technology Pilot Project
CORE	China Open Resource Education
COSL	Center for Open Sustainable Learning
DG	Development Gateway
MIT	Massachusetts Institute of Technology
ODeL	Open, Distance and eLearning Initiative (The African Virtual University)
OECD	Organisation for Economic Co-operation and Development
OERs	Open Educational Resources
OpenContent	This term refers to any kind of creative work including articles, pictures, audio, and video that is published in a format that explicitly allows the copying of the information
MIT OCW	Refers to the Massachusetts Institute of Technology's OpenCourseWare initiative that has made over 1,700 courses freely and openly available online
PI	Partner Institution (currently the AVU has 53 PIs in 28 countries in Africa)
RIF	The Research & Innovation Facility (The African Virtual University)
SAIDE	South African Institute for Distance Education
UNESCO	United Nations Educational, Scientific and Cultural Organization
UoN	University of Nairobi

## **11 APPENDIX 1: SPECIFIC ACTIVITIES FOR IMPLEMENTING THE AVU OER STRATEGY**

The ‘initial focus of the AVU for the enhancement of the OER movement in Africa concerns the **sensitization, policy development and research** in the **creation** of OERs. This focus follows from simple logic: those who do not know what OERs are will not (in fact, cannot) participate in the OER movement. Therefore, the development of formal sensitization, policy development and research activities (such as workshops, conferences and information sessions) and informal structures (such as virtual community of practices and research networks for OER practitioners and those seeking to support them) is essential.

### ***11.1 Defining Open Educational Resources for Education in Africa***

Currently, a simple, yet prohibitive element within the global OER movement is the lack of a clear definition of what OERs are, thereby precluding collaboration and undercutting the efficiency of OER initiatives. The AVU will seek to define OERs as they concern education in Africa. A concrete and coherent definition will lead to a clearer agenda for the development of a research framework that is so essential for supporting the OER movement in a collaborative and coherent fashion.

### ***11.2 Establishing a Global Research Network (GRN) on OERs***

Based upon a clear and recognized definition of OERs for education in Africa, the GRN will work towards building established research networks and communities of practice. Through its research, it will both reinforce existing best practices while also providing the space for future innovation. A virtual space capable of handling both short and long term needs is currently under-review. Please see Meraka Institute/AVU Global Research Network document for further review.

### ***11.3 Policy Development: The Development of an “Educational” Intellectual Property Rights structure for Africa***

The AVU’s Digital Library will work towards the development of an appropriate Intellectual Property Rights structure that seeks to promote the free and open use of OERs in education. Quoting directly from the introduction of the summary report of the African Copyright and Access to Information Alliance (ACAIA) conference in Kampala, Uganda:

“Participants from across Africa and elsewhere in the world resolved to form the ACAIA with the aim of promoting access to information and knowledge for education, research, training, library services among others. From the discussions and lively debates, it was very clear that African countries need to review their copyright environment to include the limitations and exceptions allowed in international agreements but also guarantee access to information by preserving the public domain.

The proposed development of an African Alliance that has as its aim to promote the appropriate use of IPR is a necessary but not sufficient step to increasing awareness about OERs. In an effort to ‘pre-empt’ the paradigm shift both that the OER movement and the ACAI Alliance seeks to establish, sensitizing appropriate members of the public (ie: those residing within

educational institutions) to a re-conceptualization of IPR in education is a necessary element in the OER movement. This will require several steps, a few of which are listed below:

- Establish National Affiliates (as liaison)
- Delegation representing ACAIA at Jamaica 2006 – Fourth Pan-Commonwealth Forum on Open Learning
- Regional Expert Workshops on Open Access and Content for Relevant Government Officials/Agencies
- Establish Protocol : IPR for Education in Africa”

#### **11.4 Collaboration and Sensitization in the Utilization of OERs**

Ongoing debate exists with regard to the linkages between the OER movement and FLOSS movement. It is certainly desirable to have Open Educational Resources accessible via Open Source Software and Operating Systems. However, while there are several promising nascent open source learning environments or LOR/KMS/CMSs, none has, as of yet, established itself as the preeminent leader in the field. While the ‘creative destruction’ that the FLOSS community inspires is in general a positive element, competitively increasing the functionality of each system, it does so with equally counter productive outcomes in the short term: the lack of any clear interoperable standard and the increasing functionality of the systems potentially alienate the very audience it aims to attract. Creative destruction in this scenario, though financially beneficial in the long term, may not provide the stability and consistency needed in the short term. It is therefore necessary to establish clear best practices (ie: those that conform to recognized standards both within Africa and among the global community) that do not take away from the positive elements in the creative development of open source technology for open, distance and eLearning. Until this is established, it may be necessary, in an effort to increase access to higher education and training in the immediate term, to establish environments that utilize common software and hardware. This view has been reiterated by a recent study by the Bridges.org:

*“FOSS use in small, independent, remote computer labs (where technical skill are often low) has proven more difficult. Familiarity and experience with proprietary software are more widespread and lab managers are more likely to find help from a friend or colleague if they use the most common applications.”*

This is not to imply that the AVU will not continue to support the FLOSS movement and to look at FLOSS solutions for open content management. On the contrary, a significant part of the AVU OER Architecture is dedicated to research into appropriate technological solutions. However, attempting to establish a thriving OER movement that relies on an inherently unstable FLOSS environment may be counter productive in the short term.

Sensitization on the effective use of OERs is extremely important as it constitutes a major support mechanism for increasing access to higher education and training. The sensitization we speak of here is one less concerned with a specific software program as it is with the general support for the use of OERs as an integral part of establishing quality Open, Distance

and eLearning Programs. Workshops, short courses and conferences with key individuals concerning the appropriate use of OERs will ensure that OERs don't just enhance access to information but, more importantly, to quality education. Together, with the expansion of existing programs (such as MITOCW, TESSA and ACEP), the AVU seeks to develop an online course for current and potential OER practitioners which provides training on the use of OERs: their adaptability, appropriateness for specific subjects, availability and their adequacy in education. The AVU, in collaboration with key stakeholders, will develop this online course in accordance with existing learning environments.

### **11.5 Technological Infrastructure Development**

The AVU managed "Partnership for Higher Education Bandwidth Consortium" has brokered aggregated bandwidth for participating AVU Partner Institution's at a greatly reduced cost. This will enable those PIs participating to offer Open, Distance and eLearning programs far more effectively than they would have been able to otherwise. Still more effort must be made to explore alternative, cost effective and flexible mechanisms to those universities who may not benefit from the economies of scale the bandwidth consortium provides.

One solution to this is satellite updatable software mechanisms which would increase access to high quality media rich OERs without relying on downloading them from an external source. Both the eGranary and MITOCW projects have investigated and continue to investigate alternative means to increasing access to these materials. A further, though not necessarily scalable or sustainable, solution is the expansion of exportable hard-drives to more of the AVU's Partner Institutions; such as the model utilized by the recently piloted by the AVU-MIT OCW Project. The AVU intends to investigate with its technology partners the use of WorldSpace and similar data broadcast technologies (such as MindSet) to assist in the cost effective dissemination of OERs.

Identifying regions, or, 'hot spots' that are characterized as having both the least access to educational resources with the most adequate technological infrastructure, will increase the relative benefits of OERs. This does not mean not concentrating on areas that have access to educational materials and adequate technological infrastructure, rather, it suggests that the relative benefits of introducing IT and OERs to areas that do not, will be relatively and economically more effective. The fear is that by introducing OERs to educational institutions already adequately equipped with educational resources, we do not increase access to education; rather, we increase access to more information that has, economically speaking, a relatively more useful purpose where educational access is poor. By introducing these resources and technology intensively in areas that are most educationally impoverished, we lessen the gap between the educational 'haves' and 'have nots'. Thus, a conscientious study identifying specific regions which suffer from lack of educational resources but have otherwise sufficient means through which to receive content is necessary.

### **11.6 Research into Dissemination Best Practices**

Of the three areas previously listed, each follows a different methodological route to increasing dissemination of OERs. They do so by exploiting the economic (Bandwidth Consortium), technological (satellite data casting) or demographic elements (identifying 'hot spots') exploitable in increasing access. Further research into all three should be rooted in the work of those elsewhere in the world that have already investigated the process in each

category. This is achievable through the implementation of the Global Research Network and the establishment of a comprehensive knowledge sharing system for OERs. The work of the OER Topic page on the Development Gateway has much potential here.

### **11.7 Capacity Building in the Organization, Management and Financing of OERs**

Organizing OERs in a manner most capable of increasing access to higher education and training presents a considerable challenge. Partly as a result of the lack of any clear definition of OERs and, consequently, due to the poor, imprecise meta-tagging process that accompanies that lack of definition, OERs are currently inadequately organized. Though the organizational aspects are to an extent reliant on the creation and utilization dynamics that precede it, to expedite the usability of OERs, there must be both a definition of what an OER is (as suggested in 5.3) and the types (ie: OpenCourseWare, etc) that currently exist so as to facilitate the development of an effective organizational mechanism. This is essential not just for the development of a system to house the OERs, but also for issues such as quality assurance and management of OERs. While considerable work is being undertaken with regard to developing Learning Object Repositories and Content Management Systems the identification of specific themes and nomenclatures within the organization and management of OERs requires further discussion. Furthermore there has been little work done either in Africa or globally on the business modeling required to sustain OER initiatives. The AVU would like to set up series of events that will facilitate discussions leading to the identification of the most appropriate organization systems and mechanism for OERs. Two such events have been undertaken already:

#### **Roundtable on the Status of Learning Object Repositories in Africa, (part of the IDLELO Conference February 23 Nairobi, Kenya)**

The roundtable meeting on the status of Learning Object Repositories in Africa forms the starting point for identifying common themes and patterns within OERs management and organization in Africa. Several topics of discussion were designed to lead to the development of a common agenda. Some key questions, such those that follow, will help to establish a clear framework for both management and organization in OERs:

- Purpose of repository
- ‘Owner’ of repository
- Licensing status of content contained in repository
- Technologies on which repository is created

#### **The AVU ODeL Seminar (part of the eLearning Africa Conference, May 24-26 Addis Ababa, Ethiopia)**

The AVU organized a Seminar during the eLearning Africa Conference held in Addis Ababa in May 2006. The Seminar, entitled “Supporting Open, Distance and eLearning (ODeL) in African Universities” explored, among other things, the relevance the role of the OER movement has on increasing access to higher education in Africa. Apart from activities related to reifying the concept of OERs, the seminar promoted the discourse concerning OERs. Intellectual property rights and financing models for OERs.

An email list including all attendees from both the Nairobi and Addis Ababa conferences (as well as from other fora) will be circulated in an effort to stimulate discussion, partnership and ultimately progression in developing a mechanism for organizing OERs in Africa.

## 12 APPENDIX 2: A CASE IN POINT - THE AVU-MIT OCW PILOT PROJECT

The AVU, in collaboration with the Massachusetts Institute of Technology OpenCourseWare (MIT OCW), undertook a project in June 2005 that sought to increase the usage of OCW materials in African institutions of higher learning. In light of the low number of website hits on the OCW website received from sub-Saharan Africa (accounting for less than 0.8% of the total global hits) the objective of the pilot project was to identify what factors affect the access to and use of MIT OCW materials in this region.

The pilot project consisted of installing local mirror sites of the OCW materials at the University of Nairobi, Kenya and Addis Abba University, Ethiopia. These installations were supported by sensitization workshops conducted at each site. At the conclusion of each workshop, two separate questionnaires were distributed to students and faculty. The survey results indicated that while there was strong support for the open license concept, several challenges inhibit educators and learners from accessing and using the MIT OCW website.

The three main challenges preventing those in Africa from accessing the materials effectively were:

- a general lack of familiarity with OERs, such as OpenCourseWare;
- insufficient technological resources including access to both computers and a fast internet connection at affordable rates; and
- low computer literacy and a need for capacity enhancement (30% of respondents to the survey were either “unfamiliar” or “very unfamiliar” with personal computers).

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<sup>i</sup> AVU-MIT OCW Pilot Project Final Report, African Virtual University – Research & Innovation Facility, (9/21/2005).

<sup>ii</sup> ODeL Gap Analysis Report, The African Virtual University – ODeL Initiative, (26/7/2005).

<sup>iii</sup> AVU-MIT OCW Pilot Project Final Report, African Virtual University – Research & Innovation Facility, (9/21/2005) pg. 16.

<sup>iv</sup> ODeL Gap Analysis Report, The African Virtual University - ODeL Initiative, (26/7/2005), pgs. 6-8.

<sup>v</sup> AVU-MIT OCW Pilot Project Final Report, The African Virtual University – ODeL Initiative, (9/21/2005) pg. 18.

<sup>vi</sup> For further information see: African Virtual University’s Capacity Enhancement (ACEP) Phase I, The African Virtual University, ODeL Initiative, (9/9/2005).

<sup>vii</sup> ODeL Gap Analysis Report, African Virtual University - ODeL Initiative, (26/7/2005), pgs. 6.

<sup>viii</sup> IPR Guide for AVU Consortium e-Learning Content Developers, African Virtual University, (1/8/2005)

<sup>ix</sup> IPR Guide for AVU Consortium e-Learning Content Developers, African Virtual University, (1/8/2005), pg. 10

<sup>x</sup> Wenger, Etienne. Communities of Practice: Learning, Meaning and Identity, Cambridge University Press (2003), pg. 237