



UNITED NATIONS
ECONOMIC COMMISSION FOR AFRICA

Fifth meeting of the Committee On Development Information (CODI-V)

**Establishment of an
African University Consortium for Land Information Systems
(AUCLIS)**



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Keywords: land, economic resource, wealth, Africa, consortium, universities, innovation, AUCLIS, LIS

Abstract

The land in a continent as Africa is an economic resource, a basis of wealth promoting growth and human development, and a tool of empowering and governing. Most of native africans are peasants and have their main living and fundmuntal insfrastructures based on land and land resources. Then, land adminastrating and management which are largely tied to the diversity of the local cultural and traditional praticies should be enhanced in a good and scientific manner. For such purpose, african universities will play a major role in promoting a scientific revolution throught innovation and technology development. Certainly, every university has its own scientific community living inside or abroad.

To make progress, it is indisponible to gather universities efforts, create favorable conditions to drain african brains, and encourage research to face many challengies in a world dominated by the knowledge economy. Knowledge does not arise simply from having access to large amount of information but by exchanging ideas to which values have been added by particular experience of each university context. Indeed, a consortium of universities dealing with land information is extremely needed. The so called an African University Consortium for Land Information Systems (AUCLIS) has the aim to establish a mechanism networking universities that furnish education and training in land information systems and land information management. As an academic consortium of researchers, it will provide a series of tools enabling communication, development, and sharing of educational and research experiencies among the community of universities specialised in LIS/LIM across Africa.



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**Consortium Universitaire Africain pour les Systèmes d'Informations Foncières
(CUASIF)**

Moha El-Ayachi

Mots-clés: Terre, ressource économique, richesse, Afrique, consortium, universités, innovation, CUASIF, SIF

Résumé

Dans un continent comme l'Afrique, la terre constitue une ressource économique, un moyen de richesse favorisant la croissance et le développement humain et un outil d'autorité et de gouvernance. La plupart des indigènes sont des paysans dont la vie est basée sur l'exploitation des ressources provenant de la terre et où toutes les infrastructures sont fondées sur elle. L'administration et la gestion des terres qui sont largement liées à la diversité des pratiques culturelles et traditionnelles locales doivent être et d'une façon scientifique bien améliorées. Pour atteindre cet objectif, les universités africaines auront un rôle à jouer dans la conduite d'une révolution scientifique à travers l'innovation et le développement technologique. Certes, chaque université est dotée d'une communauté scientifique riche à l'intérieur ou à l'extérieur de son territoire.

Pour assurer ce progrès, il est indispensable de multiplier les efforts pour créer les conditions favorables d'accueil de nos cerveaux et encourager la recherche et relever les défis d'un nouveau monde dominé par l'économie du savoir. Ce savoir qui ne résulte pas uniquement d'avoir accès à la grande quantité d'information mais par un échange d'idées auxquelles sont attachées des valeurs développées par l'expérience particulière de chaque université. En effet, un consortium universitaire traitant de l'information foncière est extrêmement nécessaire. Le but derrière la création du Consortium Universitaire Africain pour les Systèmes d'Informations Foncières (CUASIF) est fondé sur un mécanisme regroupant un réseau d'universités fournissant l'enseignement et la formation de mise à niveau dans le domaine des systèmes d'informations foncières et de la gestion de l'information foncière. Ce consortium assurera une série d'outils facilitant la communication, le développement et le partage des expériences d'enseignement et de recherches entre la communauté des universités africaines spécialisées dans le domaine des Systèmes d'Informations Foncières.



Establishment of an African University Consortium for Land Information Systems (AUCLIS)

BACKGROUND

In Africa, land is a core resource for rural and urban activities and a primary key for investing and generating incomes. "Africa today is going through a period of great renewal. Important global and regional developments over the past decade have created an enabling environment for the continent to make positive changes that advance its socio-economic development agenda" (Annan, 2006). However, we observe that land is becoming progressively more scarce, conflicts are increased over land and economic opportunities are remaining constrained. Then, we have to anticipate conflict and develop mechanisms for conflict resolution. Effective measures such as better land administration and planning should be taken to avoid conflict spreading out into social tension motivated by ethnic incidents and intrinsic inequalities.

In recognition of the key role of land, the Economic Commission for Africa (ECA) focuses on developing a vision of a successful land policy and reform in a comprehensive framework. The ECA indicates in its business plan 2007-2009 that among the development outcomes expected to emerge from ECA work we distinguish (ECA, 2006, p3):

- ☞ Increasing regional integration and integration into the global economy;
- ☞ Strengthening and better networking of institutions and centres of excellence.

On the other hand, ECA will partner with African universities and research institutions as well as civil society organizations working on development issues (ECA, 2006, p6). It considers universities as its natural partners that will complement its work in capacity development and knowledge management.

In the initial step to achieve this mission, ECA gathered from December 4-8, 2006 in Addis Ababa experts from and outside the continent. It was stated that "economies in Africa are dependent on land-based resources, especially agriculture, livestock, tourism and mining. The management and administration of this land resource requires accurate and current land information to support appropriate policy decisions. The collection, storage, updating and dissemination of land and land-related information such as sizes of land parcels, ownership and type of land rights held, among other sets of land information, is fundamental to good land management" (Mwathane, 2007). An African Consortium of Universities dealing with land issues will have a major role to complement the ongoing efforts to develop continental framework for land policy in Africa.



INTERNATIONAL TENDENCY IN LIS EDUCATION

The land information management systems are facing challenges due to the evolution of technology and to institutional changes induced by political and economical development at national, regional and international levels. These changing criteria will affect land based educational strategies at each level. So it is necessary to assess carefully the nature of skills required for the information era. Universities should focus on developing profiles that facilitate efficient interaction between teaching, research, and practicing.

In today's surveying education process, the technical skills should be reinforced by management skills so as to provide specialists with keys of interpreting and managing data to help problem solving and decision making. Management discipline are necessary skills permitting the ability to deal with new problems in a scientific way. The new Information Technology paradigm are progressively integrated in the learning and teaching processes. The traditional approaches based on campus activities are being to be enhanced to more open atmosphere such as virtual academy in a form of distance learning or Internet. The course delivery on a virtual campus is an international tendency that has the aim to support the sharing action of knowledge and research results (Enemark, 2001).

Another characteristics of the new millennium is the focus on lifelong learning process that permits developing individual capabilities by renewing and updating professional skills. In this regard, universities will achieve their missions in an interactive act with users and professionals.

THE AFRICAN UNIVERSITY CONSORTIUM FOR LIS

The main and specific objectives

We agree with who assumes that the university is the catalyst of any developments and a bridge to the future. An alone university with a unique experience cannot contribute in developing local competencies without interacting with its environment. Adopted curricula will not induce to evolution and cannot provide either students or professionals with new and modern concepts in land information management unless it interacts with universities of similar profiles within and outside the country.

The general objective is to bridge some of the university diversity in various african countries by fostering collaboration and building a consensus around issues affecting education quality. As an umbrella network of several national universities dealing with land information systems and land management in Africa, it will provide support to the core functions of universities. In the era of the



knowledge economy and where land information is a currency, the consortium will enable creating benefits to users in a social and scientific interactionism based on land local knowledge.

Specific objectives behind creating the AUCLIS can be identified as below:

- ☞ Building a pool of educational experts who will design and develop harmonized and normalized curricula in LIS.
- ☞ Promoting the introduction of new technologies that enable improving education in land monitoring, land redistribution, land consolidation, and land assessment.
- ☞ Strengthening the use of new methods and approaches of educating such as e.learning.
- ☞ Developing paradigms facilitating the creation of adequate interface's unites between educational and professional systems at the level of each country and over the continent.
- ☞ Acting as advisor to African governments by promoting and developing special studies and researches.
- ☞ Supporting the African university capacities and overall efficiency in major areas of interest linked to land information and land management namely natural resource management, facilities management, and transportation networks.
- ☞ Developing an African strategy for providing continuous professional education for administrative and technical managers in land management and land administration.

Areas of interest and activities

The universities can flourish through the consortium and develop improved curricula to stimulate academic standards across Africa. They should act as the basic enhancer of the education profiles in land information management systems which are linked to surveying and mapping as well as to social sciences. The Consortium, by cooperating efforts, will have the duty to widen a new educational paradigm composed of two interoperable levels. The first level concerns the fundamental programmes including technical studies related to measurment science such as geodetic sciences, mapping, surveying procedures, and photogrammetry. The second level should encompass land information management studies supported by spatial information and spatial planning. Such a paradigm can be described in the following components (Figure 1):

- ☞ Land and Cadastral Systems: Cadastral systems, land consolidation, land registration, cadastral mapping
- ☞ Land Information Systems: digital data acquisition, cadastral and land data processing, digital mapping, design of LIS based GIS, LIS development

- ☞ Land Management (eGovernment): modern techniques of delivery of land administration data, data accuracy assessment, and legal aspects of LIM.
- ☞ Land Valuation and Planning: methods of land evaluation, urban planning, land consolidation, risk management, and land valuation.
- ☞ Land Reform Strategies: legislation governing land reforms, techniques and methods for realization of land reform, financing of land reform and organizational aspects related to land reform.
- ☞ Spatial information managements: policy formulation and development of National Spatial Data Infrastructures for LIS/LIM initiatives.

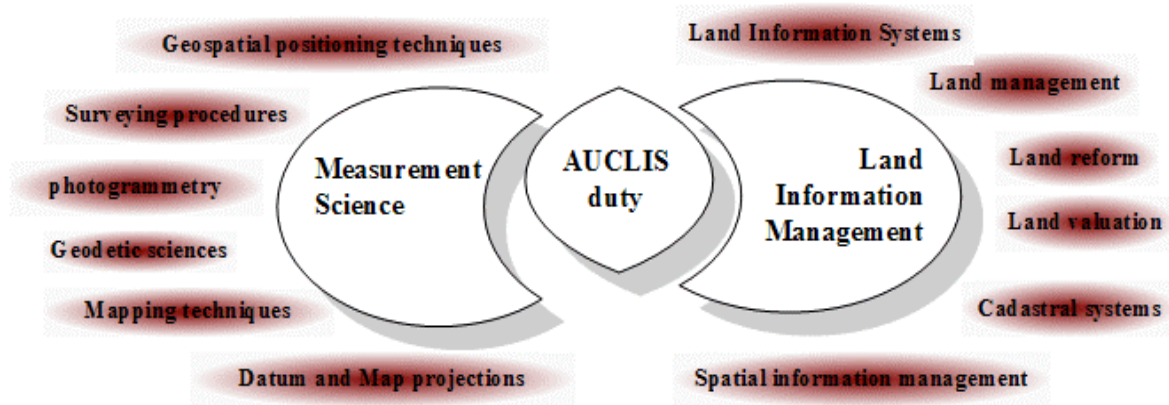


Figure 1: Educational paradigm for enhanced LIS

The consortium will ensure the achievement of activities that include the following topics:

- ☞ Developing tools for reality checking by analyzing pilot tests and compiling developed experiences.
- ☞ Organizing seminars, symposia, and periodical meetings to ensure the dissemination of developed experiences and curricula.
- ☞ Developing a harmonized course accreditation system to facilitate mutual recognition of qualifications and to share continuing education strategy in LIS/LIM for professionals.
- ☞ Strengthening the capacity building (both human and capital resources) in African universities.
- ☞ Developing a mechanism for sustaining the consortium by involving the local as well as the international funding organizations.

Brief presentation of the consortium initiators

☞ *Morocco¹: School of Surveying Education - Institute of Agronomy and Veterinary Medicine*

The school belongs to the Institute of Agronomy and Veterinary Medicine Hassan II, which is a polytechnic institute with five schools educating in different fields. One of them is the School of Surveying that represents the educational level within mentioned land management matters. It was established in 1970 and funded within the framework of a Canadian cooperation. There are two departments within the school: the Department of Geodesy and Surveying and the Department of Mapping and Photogrammetry. The school has launched its process of reviewing and reforming its curriculum. This initiative focuses on a new educational profile to be in accordance with the new curricula architecture: Engineer / Master / Doctorate. The School has a wide relationship with various institutions, ministries, private companies, and public agencies. It also organized several continuous education sessions for technical staffs for agricultural offices, non-governmental organisations, and private companies.

☞ *Zimbabwe²: Department of Surveying and Geomatics - Midlands State University*

In 1998, the Ministry of Higher Education and Technology began a policy of devolution, which was aimed at expanding access to higher education by converting teachers and technical colleges into degree granting institutions. The State University in the Midlands Act of April 1999 transformed the devolution project at Gweru Teachers College into Zimbabwe's third state university (Midlands State University). The mandate of the institution includes the advancement of knowledge, the diffusion and extension of arts, science and learning, the preservation, dissemination and enhancement of knowledge that is relevant for the development of the people of Zimbabwe through teaching and research and, so far as is consistent with the objects, the nurturing of the intellectual, aesthetic, social and moral growth of the students at the University. The university's mission involves the interfacing with the community at local, regional and global levels. The university is committed to a culture of problem solving through quality research, teaching and training, work related learning and strategic partnerships with the University's stakeholders for the immediate and ultimate benefit of humanity. The university is also committed to the enhancement of the quality of people's lives through new ideas and skills for sustainable utilization of resources.

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To date, the University has established seven faculties, as follows: Arts, Commerce, Education, Law, Natural Resources Management and Agriculture, Science and Technology, and Social Sciences. The Department of Surveying and Geomatics falls under the Faculty of Science and Technology. The department is involved in teaching and research in Surveying and Geomatics and it will be the focal point for AUCLIS. The department is currently offering an honors degree in Surveying and Geomatics at the undergraduate level.

☞ **Kenya³: Department of Geospatial and Space Technology (GST) - University of Nairobi**

The Department of Geospatial and Space Technology (GST), formerly, the Department of Surveying is one of the five departments in the School of Engineering. The department started offering the degree programme in 1964 as the Department of Surveying. The department re-engineered its undergraduate programme in response to modern technological developments and introduced a programme in geospatial engineering, which took effect from the academic year 2004/5. The programme covers the following as the broad core areas of study: Geodesy and geodynamic; Positioning and Navigation; Topometry and Measurements; Geoinformatics and Visualization and land & Infrastructure management. In addition to the undergraduate programme, the department now offers a Masters degree in GIS.

SUSTAINABILITY, CONTROL QUALITY AND MONITORING OF THE CONSORTIUM

The consortium should be supervised and the control quality should be achieved by members of the consortium elected and organized in Technical Committees, an Advisory Board, and a Steering Committee. The Technical Committees are from educational staff from African universities involved in LIS/LIM. They have to coordinate the consortium activities and address specific technical issues raised by the Steering Committee and Advisory Board (Figure 2).

The Advisory Board will be formed from LIS/LIM experts members of African universities. It has to ensure that the running of the consortium meets the requirements of the potential membership and fit with the formulated goals in LIS/LIM. It has also to supervise and assess the financial and technical matters of the consortium. The Steering Committee have to supervise the consortium scheduling of activities and ensure the best management of its structures such as technical committees.

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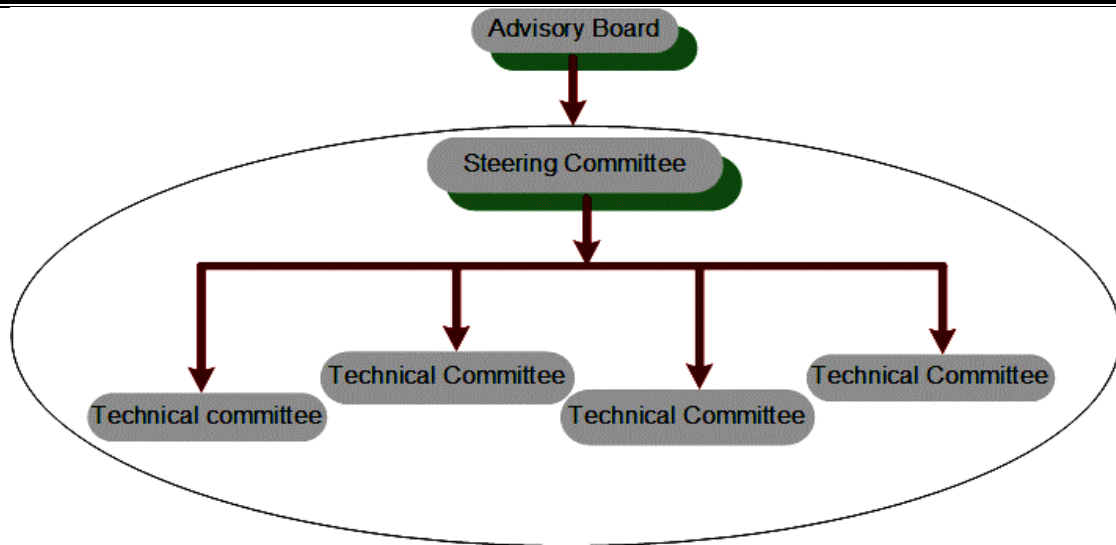


Figure 2: African University Consortium for LIS

To achieve this goal, it is necessary to initiate a pilot study aiming to identify issues of similarity in the nature of teaching the surveying engineering, the nature of land information related topics and the nature of qualification required to attend the academic education. This step will enable the consortium to establish an educational threshold that facilitates the mutual recognition of academic qualifications across Africa. The second step concerns the cooperation with the professional organizations at each country to identify the professional qualification needed to be licensed for practicing. This permits to define an appropriate code of conduct and ethics. Once an individual gains the academic and professional levels of competence, he will be awarded to practice in other countries. This permits to foster exchanging academic staffs and professionals to face the lack of human resources needed to operate in a country.

CONCLUSION

Universities, according to their role as incentive institutions for development, will contribute in scientific researches to enhance legal, institutional, and technical aspects of land administration and management. Scientists and researchers within an appropriate framework will define and describe existing properties status, land right reality, tenure security, boundaries mapping, and educational profiles to develop basic conditions of transparency, sustainable management, and equitable access to productive resources. An inter-university cooperation through a consortium will enhance the quality of academic outcomes linked to land information management.



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