

Enhancing ICT Development in Africa: a framework for collaboration between NEPAD and African Research and Education Networks

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Abstract

This paper presents a collaborative approach between NEPAD and Research and Education Networks towards the realization of Centers of Excellence for ICT Development. Centers of Excellence that focus on the development of a critical mass of ICT expertise in R&D and innovation are key to moving Africa into the next phase of ICT development. The framework for the NEPAD Centers of Excellence is based on a model that brings together academia, private sector, government and civil society as stakeholders. Research and Education Networks (RENs) have a key role to play in the establishment of Centers of Excellence both through the underlying infrastructure and services that they provide as well as through their linkages to a wide pool of diverse expertise. The collaborative approach places NEPAD in the position of facilitating the creation of an enabling environment for RENs and the Centers of Excellence. This includes advocating for good policy-making in research, education and ICT development and working with the relevant legal and regulatory authorities on mechanisms that facilitate cross-border networking. The establishment of Centers of Excellence for ICT Development is complementary to the establishment of RENs in that while the RENs provide the physical networks between institutions, the Centers of Excellence provide human and institutional networks.

Keywords

NEPAD, Research & Education Networks, Centers of Excellence, ICT Development, Africa

1. Introduction

The development and growth of the Internet and ICTs in Africa necessitates the development of requisite capacity to sustain the growth and propel it further. There is need to develop specialized capacity on the continent that will be able to proactively respond to the challenges of incorporating ICT into everyday life for the majority of Africans. The emergence of Research and Education Networks (RENS) in Africa is an important cornerstone for facilitating future developments in ICTs and the use of the Internet in Africa. RENs will provide opportunities for

collaboration, research and development and innovation both within the continent and internationally.

The NEPAD e-Africa Programme is working towards the establishment of Centers of Excellence in ICT Development to further the continent's socio-economic development. The proposed centers are complementary to existing initiatives in that while most of the existing initiatives are focused on (technical) capacity building through training, the NEPAD Centers of Excellence would focus on (institutional) capacity building through research and development (R&D) and innovation. They would extend the scope of ICT activities beyond the technical level and also look at issues of applications and content, thus requiring broad participation by a variety of research and education institutions. Broadband connectivity between institutions is an important element of this initiative as it would enable Africans to collaborate both within the continent and with other global institutions - leveraging broad knowledge and expertise from numerous organizations, sharing information, sharing workload, and producing results that individual institutions would be hard-pressed to accomplish within a reasonable time or for a reasonable cost.

This paper proposes a collaborative framework between the proposed NEPAD Centers of Excellence and the Research and Education Networks in Africa. The Centers of Excellence initiative is complementary to the achievements towards the realization of RENs in Africa and provides motivation for a proactive approach to leverage the infrastructure and connectivity for the benefit of the institutions and the continent at large.

2. Overview of NEPAD

The New Partnership for Africa's Development (NEPAD) is a long-term vision of African-owned and African-led development with the objective of eradicating poverty in Africa and placing African countries, both individually and collectively, on a path of sustainable growth and development, thus halting the marginalisation of Africa in the globalisation process [1]. The anticipated outcomes are economic growth and development and increased employment; reduction in poverty and inequality; diversification of productive activities, enhanced international competitiveness and increased exports; and increased African integration.

For the infrastructure sector some of the objectives of NEPAD are to enhance regional cooperation and trade through expanded cross-border development of infrastructure and to build adequate knowledge and skills in technology and engineering for installing, operating and maintaining infrastructure networks in Africa. Within the ICT sector, the development of research capacity is an objective that will lead to the establishment of African programmes as well as technological exchange programmes capable of meeting the continent's specific needs. This links to one of the objectives for the education sector which is to promote networks of specialised research and higher education institutions. The NEPAD framework calls for the establishment of a network of training and research institutions to build high-level manpower and specialized technical capacity.

The NEPAD Planning and Coordinating Agency was formally established as a technical agency of the African Union in February 2010, replacing the NEPAD Secretariat which had been in

existence since 2001 [2]. The mandate of the NEPAD Agency is to facilitate and coordinate the implementation of continental and regional priority programmes and projects and to mobilise resources and partners in support of their implementation. It is also required to conduct and coordinate research and knowledge management, monitor and evaluate the implementation of programmes and advocate on the AU and NEPAD vision, mission and core values. The establishment of the NEPAD Agency is a reflection of renewed commitment from Africa's leadership towards the implementation of the NEPAD vision.

The NEPAD e-Africa Programme is a unit of the NEPAD Agency, established after the dissolution of the NEPAD e-Africa Commission, in line with the integration of NEPAD into the processes and structures of the African Union. The NEPAD e-Africa Programme retains the operational mandate of the e-Africa Commission which is to develop policies, strategies and projects at the continental level, manage the structured development of the ICT sector in the context of NEPAD and develop broad strategies and a comprehensive action plan for ICT infrastructure and the use of ICT applications and services on the continent.

3. The NEPAD ICT Centers of Excellence

The overall goal of the NEPAD ICT Centers of Excellence initiative is to increase the socio-economic benefits afforded by the Internet and ICTs in Africa. The specific objectives are:

- To increase regional and continental collaboration between African universities and research institutions in the field of Internet and ICT Development
- To develop high-level capacity and expertise in Internet and ICT Development for R & D and innovation
- To establish African resource centers and knowledge repositories and increase the use and generation of scientific knowledge in ICTs for Africa's development.
- To increase collaboration in the field of ICTs between African institutions and global institutions

The NEPAD ICT Centers of excellence are envisioned as virtual or physical institutions which:

- bring together a set of essential functions to support the successful delivery of ICT programmes and projects;
- can bring diverse people and groups together and create teams of people that use best practices around a specific focus area to drive results or solve difficult problems.
- focus their efforts to build expertise and achieve excellence so that they can become a (national/regional/continental) resource in a particular area.
- enable collaboration, learning, the sharing of knowledge and act as catalysts for innovation and new strategies.

The African Union Conference of Ministers responsible for ICT (CITMC) at their third meeting in Abuja in August 2010 reaffirmed their commitment to the establishment of Centers of Excellence for ICT [3].

3.1. Collaborative Framework

The framework for the NEPAD Centers of Excellence is premised on adopting a model that brings together academia, private sector, government and civil society as stakeholders so that the activities of the Centers are informed by and inform policy, address public and private sector needs for research and innovation, contribute to the body of knowledge on African ICT development and inform African programming and spending on ICT projects and interventions.

The role of NEPAD in this collaborative arrangement is to foster the development of an enabling environment that allows RENS and hence the Centers of Excellence to flourish. One element of this enabling environment is the regulatory and policy environment for cross-border networks. The NEPAD e-Africa Programme has prior experience in this regard, having worked with countries in Eastern and Southern Africa on the Kigali protocol which provides for open and non-discriminatory access to broadband infrastructure and which paves the way for cross-border terrestrial networks to be deployed [4]. The Kigali Protocol is currently being revised to include the remaining regions in Africa. NEPAD will also play a role in providing affordable bandwidth through its terrestrial and submarine network infrastructure which will be implemented in line with the Kigali Protocol and be available on open, non-discriminatory basis.

Another element concerns the requisite policies for education, research and ICT which are required for the success of the Centers of Excellence and the collaboration with the RENS. NEPAD will work towards sensitizing, advocating and recommending in consultation with all stakeholders, the relevant policy frameworks that will strengthen research initiatives in ICT and ICT-related development. This includes highlighting the importance of public funding for research initiatives as well as the promotion of public-private partnerships for research and development. NEPAD will also provide linkages between the Centers of Excellence and grassroots communities that stand to benefit from ICT projects and Internet development. This will be accomplished through a community informatics network that is under discussion.

Within this framework, the Research and Education Networks also have important roles to play on several fronts. The first role for the RENS is to provide broadband connectivity between institutions that would enable collaboration, access to and sharing of information. This opens up opportunities for the establishment of regional repositories of information and knowledge, for sharing of high-performance computing facilities, for collaborative research spanning multiple geographic areas, among others. The AfricaConnect Project is an important landmark in the evolution of RENS in Africa as it will provide RENS with increased capacity for Internet access and connectivity to resources and other institutions globally [5].

The second role for the RENS is that through the infrastructure and associated hardware over which broadband connectivity is supplied, institutions would have the opportunity to create test-bed environments for researching various issues relating to technology deployment in the continent. This would include design, development and testing of applications and services such as those required for e-health, e-learning, e-commerce, etc. In this way, member institutions of the RENS could also be member institutions of the Centers of Excellence.

Lastly, through measurements on the networks, the RENS would provide data and statistics that could be used for academic research as well as for informing regional and continental policy making with respect to ICT and Internet Development.

Through this collaboration synergies can be created between the RENs, NEPAD and the proposed Centers of Excellence. Whereas the RENs provide the physical network, the Centers of Excellence provide the human and institutional networks that leverage the physical networks to enhance ICT development in Africa.

4. Conclusion

The NEPAD Centers of Excellence initiative is aimed at developing research capacity in ICTs and Internet development in line with the objectives of the NEPAD vision. Key to the success of this initiative is the ability of research and education institutions to have affordable access to broadband ICT infrastructure, national and intra-regional connectivity as well as connectivity to other global institutions. The Research and Education Networks (RENs) in Africa are an important part of the collaborative framework that will make these Centers of Excellence a reality.

References

- [1] NEPAD, “The New Partnership for Africa’s Development Framework Document”, [http://www.nepad.org/system/files/NEPAD%2oFramework%20\(English\).pdf](http://www.nepad.org/system/files/NEPAD%2oFramework%20(English).pdf), Abuja, 2001
- [2] African Union Commission, “Decisions, Declarations, Resolutions, Assembly of the African Union, Fourteenth Ordinary Session”, <http://www.africa-union.org/root/ar/index/Assembly%20Dec.268-288,%20Decl.1-3,%20Res%20E.pdf>, Addis Ababa, Ethiopia, February 2010
- [3] African Union Commission, “Third Conference of African Ministers in Charge of Communication And Information Technologies, Abuja CITMC Declaration” <http://www.africa-union.org/root/AR/index/2010%20%20Abuja%20Declaration%20Final%20verision%2010-8-2010%20ENGLISHRev110810.doc>, Abuja, Nigeria, August 2010
- [4] NEPAD, “Protocol on Policy and Regulatory Framework for NEPAD ICT Broadband Infrastructure for Eastern and Southern Africa”, http://www.eafricacommission.org/files/english_protocol.pdf, 2006
- [5] B. Pehrson, “Feasibility Study on the AfricaConnect Initiative”, <http://www.feast-project.org/documents/FEAST-Final-Report-2010-03-22.pdf>, March 2010.

Biography

Dr. Towela Nyirenda Jere holds a PhD in Electrical Engineering (Networking and Telecommunications) from the University of Kansas and an ACCA Diploma in Financial Management and is currently the Programmes Manager (e-Africa Programme) with the NEPAD Planning and Coordinating Agency.

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