DEVELOPING A NATIONAL INFORMATION INFRASTRUCTURE AGENDA FOR UGANDA

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Abstract

This paper presents an analysis of the process and outcomes of developing a National Information Infrastructure Agenda (NIIA) Project. The National Information Infrastructure Agenda (NIIA) for Uganda emerged out of a year long[1] project entitled "Developing an Information Infrastructure Agenda for Uganda (DIIAUP)"which was funded by InfoDev (World Bank) and conducted under the auspices of the Institute of Computer Science (ICS), Makerere University. This was a planning process that addressed the uncoordinated strategies in implementing and sustaining ICT enabled development in Uganda. Six sectors with the highest development impact for Uganda, namely, Agriculture, Education, Health, Commerce, Information & Communication Technology and Government were chosen for the study. The NIIA report, therefore, focuses on strategies that Uganda should adopt in its efforts to integrate ICT in all sectors for development.

This project is an illustration of the university intervention using research and professional expertise in the area of information technology complimented by a multidisciplinary approach, in developing policy guidelines and plan (process activities) to facilitate national access to relevant developmental information and services.

Key Words: *Information, Infrastructure, Development.*

1. NIIA Context

The term information infrastructure refers to both physical infrastructure and services or applications for generating, transmitting, processing, storing and disseminating information in all forms-voice, text, data, graphics and video. The Agenda includes specific policy and program proposals and recommendations which set clear national guidelines and activities to follow in harnessing information for development.

In Uganda as in most developing countries, the ICT revolution presents a double challenge. The countries must assign qualified people to keep abreast ICT developments while they assign scarce human, organizational and financial resources to meet the needs of rural and marginalized people. The NIIA is a strategy that endeavours to respond to this double challenge by optimizing the ICT trend watching function that serves all sectors at the national level.

1.1 Opportunity to be addressed

The basis of this development was that Uganda presented an outstanding opportunity to explore and develop an information infrastructure agenda in respect to two factors:

- First, the overwhelming majority of Uganda's 23 million (81%) people live in rural areas. A large portion derives income from small scale agricultural production. Thus with a large percentage of a rural population, living in a land locked country, with limited diffusion of information technology applications, Uganda presented a timely opportunity to develop and propose an agenda of information infrastructure initiatives that would have a development impact. The potential impact in respect to rural connectivity, rural health, rural education, diffusion of improved farming methods, and provision of government services was very large. Accordingly, six sectors with

[1] *Started April 2000 - June 2001*

the highest development impact for Uganda, namely, Agri culture, Education, Health, Commerce, Information & Communication Technology and Government were considered.

- Second, the significantly liberalised telecommunications policy environment (one of the most liberalized in Africa) combined with a strong "pro-development" stance of government, established an excellent environment for the implementation of information infrastructure initiatives.

1.2 Replicability

The uniqueness of this applicable project within the African region presented an immense replicability potential opportunity. Other than South Africa, no country in sub Saharan Africa had at the time prepared a national information infrastructure agenda (NIIA).

1 The impact of the NIIA project is exhibited in both the process and the outcomes.

2 The project process using wide stakeholder consultations paved the way for a cohesive forum of diverse ICT stakeholders that replaced the hitherto fragmented approach and often antagonistic attitude among key stakeholders.

3 The project management, overseen by a steering committee and implementation committee, and, its consultative process reflected a strong public/private partnership which included government, the private sector, university faculty, development agencies and do nor community.

4 The sector approach for individual development sectors and their aggregated contribution to national ICT enabled development, highlighted sector benefits and their mutual dependency in impacting change.

5 NIIA formulation process energized sector initiatives for ICT intervention in the six development sectors highlighting and creating intra and inter sector awareness for information needs.

6 The most outstanding contribution of the NIIA remains the core input provided for the recently approved National ICT policy. The stakeholder forums for consultation and validation of the NIIA formed a cohesive body and consensus on emerging policy considerations which were submitted as core input for expansion of the National ICT policy.

7 The project also identified fourteen (14) projects with potential for the highest development impact in their different sectors. Proposals were developed by the sector experts for future possible implementation. Some adaptations of these proposals have been implemented in both the public and private sectors. Notable among these is the proposed coordinating agency for IT in government funded by the World Bank under the Ministry of Finance.

The paper discusses the process and output aspects of the NIIA as an illustration of universities taking a leading role in ICT enabled development.

1.3 Objective

The project objectives were as follows:

(i) to develop proposals for a wide range of information infrastructure policy and program initiatives which contribute to *info*Dev program objectives like:
   - Reducing poverty and exclusion of low income social groups;
   - Improving education and health; and,

- Increasing efficiency, accountability and transparency of government.

(ii) Provide a framework for coordinating existing information infrastructure initiatives.

2. DIIAUP Methodology

A field survey for information needs was conducted by the six sector experts in three areas of varying infrastructure endowments, namely: Kampala, (for sizable), Mubende(modest) and Kibaale (non-existent) infrastructure.

The findings were presented for consultations with stakeholders. Focus Group Discussions (FGD) were held with a wide stakeholder's representation and sector experts.

Contribution of stakeholders' participation was during the following phased activities:

- Project Validation Workshop;
- Focus Group Discussions; and,
- The National Symposium.

This consultative process was aimed at eliciting ideas and build consensus on the priorities for Uganda's emerging information infrastructure.

3. Project Outputs

The NIIA report that was the output from the study presented the emerging information infrastructure agenda under the following sections:

- Highlights of basic ICT policy objectives;
- Harnessing ICT for growth and poverty reduction;
- Impact of ICTS on government service provision;
- Strategic proposals and policies for promotion of ICT in Uganda;
- 14 Priority ICT projects; and,
- Recommended strategy (key policy issues).

The two most outstanding tangible outputs of the agenda were:

- Basic ICT policy objectives, and,
- 14 Priority ICT projects across the development sectors.

3.1 Basic ICT Policy Objectives

The highlights of the basic policy objectives provided a framework for the proposed agenda implementation.Uganda recognises priority development areas, actors and roles in which public, private, non-profit and government sectors must work together in alliances, namely:

- Sustainable development, poverty reduction and wealth creation can occur by establishing the conditions for growth of digital societies and economies.
- Broadening access, understanding and education concerning the digital societies and economies, thereby, enfranchising social groups, especially in rural areas to participate in the ICT enabled development.
- Government takes critical decisions to revise and expand legislation regarding ICT to enable lower cost access while extending the range and scope of services and protecting financial security and privacy of users.
- Optimal use and sustainability of environmental resources.
- Stimulate the production and dissemination of in- country information in both the private and public sector.

- Enable the building and establishment of an appropriate infrastructure that supports ICT development.
- Addressing the information needs of the marginalized (women and youth), the poor, illiterate, minorities, the aged and disabled, especially in remote areas.

3.2 The 14 priority projects

The 14 (fourteen) projects were identified and developed through stakeholders' consultations as having the highest development impact within their respective sectors. The following characteristics were emphasised in determining priority for development:

- These projects will have a far-reaching development scope as they focus mainly on the rural areas where 80% of Uganda's population live and work.
- It is important to note that there are several projects that could make a big development impact. The 14 priority projects have been selected because they also have "a quick win" impact, as they are implementable within a two year span. They will demonstrate especially to policy makers the impact of ICT as a catalyst to development, particularly in rural areas.
- Emphasise sensitisation, training, demonstration, consensus building and validation as key activities undertaken to ensure stakeholder ownership and implementation.
- The projects also have inherent sectoral policies and strategies that can be applied in the development and promotion of ICT enabled development. This sectoral policy framework provided mechanisms for implementation of the national ICT policy effort which was then under draft by Uganda National Council of Science and Technology (UNCST).
- Focus on poverty alleviation and marginalized groups by increasing efficiency, accountability and transparency of government.
- The projects demonstrate a direct relationship with ongoing sector strategies and policies for long-term sustainability.
- Have inherent synergies for promoting, and sustaining environmental protection.
- The project and policy will therefore not only be for government to implement but, should encourage and solicit a wider implementation base among all stakeholders, namely:
    - Private Sector;
    - NGO; and
    - Donors.

Emphasis was on:

- Wide rural outreach in service delivery;
- Focus on poverty alleviation, marginalized groups;
- Increasing efficiency, accountability and transparency of government;
- Projects were harmonized, unified and complementary, using 'best practice' methodologies, stakeholder buy-in and private sector coverage;
- Projects were selected in part because they have a high development impact that emphasizes:
    - Training and maintenance;
    - Tele-medicine and health;
    - Distance learning;
    - Agriculture extension and diffusion of improved farming methods;
    - Data collection and management;
    - Reduce exclusion of marginalized /vulnerable persons (women, youth and disabled);
    - Contribute to poverty eradication/reduction;
    - Increase improved service delivery;
    - Improved rural connectivity;

- o Improvement in rural Health; and,
- o Reduce disparity in education between rural and urban schools.

Below is a list of the fourteen priority projects showcasing ICT as a strategic tool for development:

a) Projects Cutting Across All Sectors

1. National ICT sensitisation(awareness)/training;
2. Establishment for an ICT Co-ordination Agency in Uganda ; and,
3. Multi-sectoral telecentres (school based).

b) Agriculture Sector

4. Agricultural Management Information Systems (AMIS); and,
5. Early Warning and Food Security Centre.

c) Government Sector

6. Developing District Data Banks in Uganda; and,
7. Electronic Governance for individual government institutions.

d) Health Sector

8. Sustainable Opportunities for Telehealth in Uganda.

e) Education Sector

9. Teacher Internship Project (TIP); and,
10. Nurturing and promoting of ICT talents amongst students.

f) Business Sector

11. Kikuubo E-Business Focal Point Centre; and,
12. Central Electronic Procurement Solutions Centre (CEPSC).

g) ICT Sector:

13. Establishment of a Computer Equipment Assembly Facility; and,
14. Establishment of an ICT Software Development Centre.

4. The Project Outcomes

The NIIA project process and outcomes provided the necessary precursor to the harmonious formulation of policies that guide ICT enabled development in Uganda and the cautious implementation. For the first time a forum of multisectoral stakeholders was convened to discuss information needs and strategies for harnessing ICT for development. The strategy was refined using single/ multi sector focus groups.

The Policy recommendations and strategic activities of the NIIA have since formed the core input to the approved national ICT policy and ongoing master plan formulation.

The Ministry for Works has been informally mandated with the coordination of the ICT sector development. The recommendation put forward to form the national ICT coordinating agency headed by the President or Prime Minister is yet to be implemented.

Under the Ministry of Finance, Government is in the process of revamping Uganda Computer Services to form the National IT Authority (NITA-U) assisted by the World Bank. This is aimed at optimizing scarce resources and expertise through a central support unit for all the IT developments and standards in government operations.

The Uganda Law Reform Commission has since embarked on the formulation of Cyber laws and regulations to guide cyber transactions. The draft is undergoing a validation process by stakeholders.

A follow-up to the proposed 14 priority projects has shown that some of the proposals have been adopted and implemented by organizations in both the private and public sector. (See Table 1 at the end). This was for further validation of the priorities identified in the report, although in some cases, implementation followed without having consulted the NIIA output. Projects adapted form or are in line with the NIIA project proposals are seen in Table 1 attached.

5. Conclusion

The development of the NIIA for Uganda is an active research exercise initiated and enlisting a joint multisectoral expertise by the university to identify information needs and propose short and long term practical solutions and recommendations for information enabled development in the country. The project is a practical illustration of the university intervention in ICT enabled development. The output and the process of the NIIA development have been a catalyst in the promotion and implementation of ICT in key development sectors. The NIIA has since been the springboard for ICT policy guidelines and activities to facilitate access to information for development through ICT in rural areas. There is still a big gap to be addressed but the process has been started as evidenced by various interventions ranging from the now approved government policy framework to sector projects. By actively involving all sectors, awareness for the potential of ICT intervention in development has increased since 2001. Constraints to development in rural health, education, agriculture and access to government services are prominent on government agenda and sector projects.

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Table 1: NIIA Project Proposal

NIIA project proposal	*Adaptation*	*Proponent*	*Focus/objective*	*Duration*	*Impact*
1.ICT sensitization programmes in government		*Uganda information network,*	*Create an ICT literate government that are able to understand and guide policy for ICT in development*		*Greater awareness and participation in ICT issues by government*
2. Peer networks for teacher training/ mentorship.	*School-based Telecentres VSAT pilot*	*SchoolNet Uganda*	*Create a pool resource for orientation and teaching skills using ICT tools*	*2 years completed. Evaluation to be done by the Natoma Group on behalf of the ICT for education division of the World bank Institute*	*Will assess:The viability of a nationally distributed VSAT network operating within a network of schools in a developing country.*
3.Rationalising ICT in government	*National IT Authority – NITA-U*	*Ministry of Finance/ World Bank*	*Government*		*Appreciation of the distinct role of IT in government and its coordinated implementa-tion. More IT systems in government – IFMP2 – Finance, MIS -Foreign affairs.Integrated Resource Management System (IRMIS) Payroll – Defence.*

4.Development of local sector content	Content development	Uganda Communication Commission (UCC) through RCDF	Create content at district level for planning purposes		
5.Sustainable Tele health in Uganda	Uganda Health Information network (UHIN) funded by IDRC	SATELLIFE, Uganda Chartered Heath Network. MAK in collaboration with Ministry of health.	Establish network to connect all 214 health sub-districts, 56 districts and regional and national referral hospitals.	8 months pilot started October 2003 in Mbale and Rakai districts. - Project is 3 years. -2 yr roll out	Expanding the current health information system and providing a nationwide access to health and medical information through the use of hand held computers connected through the GSM cellular telephone network.
6. Software development incubation centre	Uganda ICT Incubations Centre	Uganda Investment Authority (UIA)	Support and nature increase in the entrepreneurship in the ICT sector.		-Planning completed- Premises to house centre identified-HR requirements specified
7.District databanks		Uganda ICT network	Pilot districts		