Preamble:

International debates and conferences on ICTs in the developed world influenced African states to examine their positions in light of what was being called “the Information Revolution.” In 1995, African states, with assistance from the United Nations Economic Commission for Africa (UNECA), the International Telecommunications Union (ITU), the United Nations Educational Scientific and Cultural Organization (UNESCO), International Development Research Centre (IDRC), and the Bellanet secretariat, helped develop the African Information Society Initiative (AISI) out of the African Regional Symposium held in Addis Ababa. The UNECA Conference of Ministers responsible for economic and social development immediately followed this initiative. Out of this Conference of Ministers emerged a plan of action entitled, ‘The African Information Society Initiative: An Action Framework to Build Africa’s Information Highway.’ The plan stimulated African governments to either speed up or start developing their respective national ICT policies so as to reflect the overall development priorities and vision. As a result, in November 2003, the Ugandan Cabinet approved and finally endorsed the country’s National ICT Policy.

Therefore, all ICT initiatives both in the public and private ICT sectors in Uganda operate within the National ICT policy framework.

In the main body of this paper, the presenter will hint on the major challenges to promoting scholarly communication and publication within the countries of the South, with analytical citations from scholarly information. These will form the major arguments of this presentation in trying to study the factors contributing to the North-South Digital divide.

The presenter will also dwell much on the mechanism through which ICTs have been utilized as enablers in bridging scientific knowledge and local health community knowledge in Africa.
Problem Statement:

The propagation of the North-South Digital divide has been attributed to both external and internal factors based on an African perspective as will be discussed below:

The revolution of the Internet was based in the USA and was only able to spread out to the rest of the world in 1947, just after the second world war. This culminated into dominance of the Internet by the USA and controlled bandwidth which limited access to many demanding users due to lack of affordability.

Secondly, most of the technology that supports the digital infrastructure within African countries is manufactured by western countries like the USA, Canada, France, England, Germany, and Japan. African countries have had to rely primarily on the sources of technology from the western world and have had no other option, leave alone having a less bargaining power for these technologies from the developed states.

Thirdly, the difference in the various approaches to development has also significantly determined the magnitude of the North-South digital divide. In the western world, development approaches are normally determined by the markets under the ideology of liberalism, whereas in the developing world, development approaches are determined by the availability of resources and by the goodwill of the national governments.

Fourthly, African countries for instance have been characterized by civil strife and conflict. Countries like Somalia and Sudan in the Darfou region are still engulfed in conflict. Civil war has greatly held Africa behind, the meager resources are used to procure military technology instead of digital technology like VSATs & GSM / GPRS Network supported technology so as to avail Internet based services that stimulate and promote socio-economic development through scholarly communication and information access.

Fifth, most African countries have priorities which are driven by non-technological sentiments but rather on ideological orientations. Strategies to eliminate poverty in Africa have taken a rather long match and have been dependent on donor aid by the World Bank and IMF if they are to be realized. The World Bank and IMF have provided significant amount of Donor Aid to support development policy formulation and not directly to acquisition of modern ICT equipments.

Although computer-based communication and the use of electronic mail is now increasingly aiding the book professions in developing countries, there are unfortunately still many publishers and libraries in the countries of the South who, for a variety of reasons and constraints, are not yet ‘wired up’ and are therefore unable to take advantage of the new opportunities offered by the Internet. For many institutions lack of funds hinders efforts to provide full Internet access on any significant scale, and the reliability of telephone lines remains a major hurdle. E-mail may be cheap, but accessing the World Wide Web is not (Zell, 2001).
Communications and information infrastructures have improved quite dramatically in most developing regions over the past five years, and a very large number of local Internet Service Providers (ISPs) have also emerged, attracting an increasing number of subscribers. However, Internet access continues to be largely confined to capital cities, and obtaining sufficient international bandwidth for delivering Web pages over the Internet remains a major obstacle in many developing countries, and can make for excruciatingly slow connections to remote sites (Zell, 2001).

These have among other factors propelled the unwanted situation of the North-South digital divide in the world.

**INTERVENTIONS USED TO OVERCOME THE NORTH-SOUTH DIGITAL DIVIDE THROUGH SCHOLARLY COMMUNICATION IN AFRICA:**

*The Case of the Uganda Health Information Network (UHIN)*

With a current population of 24.7 million, Uganda has one of the highest burdens of preventable diseases and the government recognizes that poor health is one of the main development challenges of the country. Improved access to reliable, timely and relevant information and continuing medical education (CME) material by health workers and an expanded flow of information and data are some of the vital elements required for improving health service delivery to the Ugandan population. The Ministry of Health of Uganda (MOH) recognizes the importance of improving the national Health Management Information System (HMIS) and continuing in-service training for the successful delivery and implementation of the minimum health services indicated in its Health Sector Strategic Plan (HSSP).

The Uganda Health Information Network (UHIN) started in 2003 in Rakai, and Mbale districts as a collaborative project between Uganda Chartered HealthNet (UCH), SATELLIFE Inc., USA, and with the Makerere University Faculty of Medicine through grant funding from Connectivity Africa of the International Development Research Centre (IDRC) of Canada. The first phase of the project ended in October 2004, and the second phase ended in March 2006. The main objective of UHIN is to help improve healthcare service delivery to the population by improving health workers’ access to health and medical information, and supporting data collection and analysis through the use of handheld computers, also known as Personal Digital Assistants (PDAs) interfaced with the local GSM/GPRS cellular telephone network via Wireless Access Points (WAPs). This initiative is therefore based on addressing the information needs in the health sector. The Health workers located in the remote health centres use the Hand held computers to quickly collect health data that would have been ordinarily collected by paper and transported by road to the district headquarters for collation and analysis.
The presence and effective use of the PDAs facilitates the collection of data electronically and is transmitted within seconds to the district headquarters over the cellular based (GSM) network established by UHIN.

With this innovative development in ICTs, Uganda has become the first country in the world to develop and test a functional information processing network currently right from the remote health centers to the district levels. Increased functionality has been possible due to the increase in cellular coverage and continued improvement in technology. The introduction of GPRS services by the telecommunication providers allows faster access of online connectivity at a monthly cost of Ug.sh 20,000- (US$ 11.10) down from over Ug.sh 200,000- (US$ 111.10) per access point.

This mechanism therefore, allows a health worker in a remote area to be currently informed in the new developments in disease prevention, health education, drug prescriptions and diagnosis from health managers to receive and update data that they need to be able to make informed decisions at a minimal cost.

**The Underlying key assumptions in bridging the scientific source of knowledge with the Local health workers / communities:**

- The underlying problems that UHIN strives to address are poor access to information, data exchange, appropriate, timely and non residential in-service training. UHIN focuses on addressing these problems and its activities are designed to lead to a better health care service delivery by creating an enabling environment for practicing health workers in the districts to make more informed clinical decisions through the provision of timely and relevant health information and Continuing Medical Education (CME) material.

- By improving the flow of information and data critical to the health care system, UHIN endeavors to improve clinical decision making at all levels of the system and the quality of health service delivery to the population. The network improves management of health systems through improving data quality at the point of collection, reducing delays and loss in data transfer, allowing rapid aggregation and timely analysis of data, and finally allowing rapid feed-back to colleagues and managers.

- An assessment to determine the impact of improved access to relevant and timely health information, and flow of data resulting in enhanced quality of clinical decision making and health service delivery to the population is one of the key undertakings of the project.
SUGGESTED RECOMMENDATIONS:

The following recommendations have been forwarded based on what the paper presenter who also happens to be a key stakeholder of this project believes would be the appropriate development strategies for the future of this project:

- The presence of formidable partnerships with scholarly institutions and associations is very crucial for effective scholarly publication and communication between the developed (North) and the developing (South) nations of the world to enhance greater information access and sharing for development.

- If African states have to benefit from scholarly communication, there will be need to identify and invest in user-friendly and cost effective technology and to develop appropriate mechanisms before hand to enhance technology sustainability.

- Up to-date and efficient software is equally important. Proprietary software may be too expensive and lack compatibility with other systems. Open source software may not be readily available. In addition, software may be unsuitable for national or local conditions because it implements a North American or European solution and fails to accommodate local considerations. It is unlikely to be available in languages, and especially English, although some library systems and other software do provide user interfaces in a variety of languages (Gonzales 2003).

- Use of scholarly information demands high levels of literacy and the development of information literacy. Those who do not have the opportunities to develop the necessary panoply of skills are unable to use digital scholarly information effectively. They lack the codes to open the digital library. Advanced skills are required to manage systems and to be able to create and make available information. Without those abilities, scholars remain consumers, their creations are locked out of contemporary scholarly communication (Byrne, 2003).

In a nutshell, scholarly communication and publication is a viable approach to reducing the North – South Digital divide. What needs to be done is to iron-out the anomalies associated with scholarly communication and publication so that both the North and South can merit from the benefits of untimely and unrestricted access to development and scientific information in the world. The UHIN model can be replicated else where in the world, provided the project implementers and their respective governments can agree to work as a team and the presence of an enabling environment to facilitate a smooth transition of their respective project models.
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Byrne .A, (2003), *Digital Libraries: Barriers or gateways to scholarly information?*, IATUL CONFERENCE, Ankara, Turkey., Pg. 1-5,


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