IFIP World Information Technology Forum 2005

GABORONE DECLARATION

We, the participants at The Second World Information Technology Forum (WITFOR 2005), organised by International Federation for Information Processing (IFIP) under the auspices of UNESCO and hosted by the Government of Botswana, gathered in Gaborone, Botswana, 31 August – 2 September 2005, having focused on the crucial role of ICT in accelerating development, reaffirm our commitment to the following major goals, guided by the Millennium Declaration and the WSIS Plan of Action:

- Contributing to the eradication of poverty through the appropriate use of ICT

- Bridging the multiple digital divides of contemporary society

- Addressing the need for creative capacity-building strategies towards ICT innovation

- Encouraging diverse partnerships and promoting collaborative networks

We the participants at WITFOR 2005, building on the experience of WITFOR 2003, and

- o *Aware* of the complexity facing national governments in translating ICT policies and plans into action
- o *Acknowledging* constraints of developing countries to acquire and utilize ICT technology resources
- o *Recognising* the value of demonstrating the potential of ICT through real life examples
- o *Subscribing* to the importance of education, research and cooperation to build a body of knowledge on the use of ICT for development
- o *Conscious* to the importance of ensuring that ICT-related interventions respect economic, social, environmental and cultural rights of all people, with special attention to traditional values of societies and indigenous people
- o *Believing* in equitable and ethical sharing of the benefits of ICT and the minimization of any negative impacts
- o *Fully* accepting challenges of financing ICT infrastructure

Therefore resolve to focus mainly, though not exclusively, on eight thematic concerns:

- o **Building Infrastructure:** Supporting research, development and economic analysis for enhanced ICT infrastructure in underserved areas.

- o **Economic Opportunity:** Exploring appropriate scalable, replicable e-business models that promote sustainable development

- o **Environment:** Using and promoting ICT for environmental protection and the sustainable use of natural resources.

- o **Health:** Using ICT to improve the efficiency and equity of health service provision.

- o **Education:** Promoting innovative and effective methods to exploit ICT to improve teaching, learning and knowledge generation.

- o **Agriculture:** Using ICT to improve sustainable agricultural production systems by disseminating knowledge and information, particularly to rural communities.

- o **Social, Ethical and Legal Aspects:** Promoting socially responsible and ethical use of ICT and taking appropriate legal measures.

- o **Empowerment and Participation:** Encouraging universal access strategies, e-government and e-democracy to enable participation in the information society.

We recommend that action is taken on each of these areas and that sustainable projects are implemented such as those indicated in the **Proposed Projects & Actions** that illustrate applications of ICT to diverse social and development challenges. We further invite national governments, parliamentarians, local authorities, civil society, the business communities and academia to support such initiatives through regional, international and cross-sectoral collaborative networks.

PROPOSED PROJECTS & ACTIONS

This list of proposed projects & actions resulted from the work of the eight Commissions. The list is neither exhaustive nor prioritised, and is meant to be only indicative of relevant action. Further details on these project proposals and useful links can be found on **www.witfor.org.bw**. It is expected that this list will grow over time with other relevant project ideas and examples from around the world that fall within the scope of the objectives of WITFOR.

1. INFRASTRUCTURE

Supporting an enabling and competitive environment for the necessary investment in ICT infrastructure

We propose the implementation of the "Broadband for all" principle in developing countries through the capitalization of existing TV network infrastructure. Commercial interests in satellite and cable networks have been established in many developed countries which already provide broadband Internet access. The digital switchover in UHF (the transition from analogue television broadcasting to digital TV) can arise as a unique opportunity to fill the gap in the deployment of networking infrastructures in developing countries. In this perspective, ATHENA is an example project developed for reducing the digital divide in Europe between western countries and underserved eastern regions. ATHENA is a low-cost, fast and simple-to-deploy terrestrial broadband wireless "backbone" and "access" infrastructure for all urban and rural areas based on the proper reuse and upgrade of the analogue TV broadcasting system to digital one. The deployment of such a multi-service infrastructure based on existing and nationally available TV infrastructure augmented with open communication standards such as IPv6 and DVB in regions, cities or villages, provides not only access to a bouquet of television programs, but also (and most predominant) creates a powerful broadband IP backbone where citizen can access, contribute and share services and content by means of easy-to-operate and low-cost TV-based terminals (e.g. IP-enabled TV set-up-boxes). For technical details, the reader is referred to the WITFOR Web site at: http://www.witfor.org.bw/themes/building_project.htm.

We propose to deliver value added digital services at places that do not have online Internet connectivity. Presently there is poor Internet coverage in many countries of the developing world and hence there is poor availability of appropriate digital information access and exchange. This project will exploit the concept of delay-tolerant networks, using all available means (e.g., transport infrastructure) to extend the reach of ICT in rural areas. Digital data, such as letters, audio, pictures, as well as e-Governance applications such as civil registration, land records, tele-medicine, e-agriculture, astrology and complaint registration are some of the applications for which such a service can be used by rural people. As an example, GramPatra has been implemented in India to address the quest for the last mile infrastructure in

underserved rural areas. GramPatra provides an email interface without towers and transmissions cables for the development of various applications appropriate for rural areas. For technical details, the reader is referred to the WITFOR Web site at: http://www.witfor.org.bw/themes/building_project.htm.

We further propose a research project to raise interest in Broadband over PowerLine technology with a view to initiating research into the use and applicability of powerline technology in developing countries to provide the last mile infrastructure. Broadband over PowerLine technology is an exciting alternative to connecting to the Internet via other media such as modem, xDSL or wireless. Though this technology is not commercially available yet, it could be deployed before other broadband technologies due to the relatively low cost and wide spread of its local loop. Moreover, its high speeds will provide Internet access, video on demand, local phone, and long distance phone services to customers.

2. ECONOMIC OPPORTUNITY

Promoting the use of e-business models to stimulate the investment of the private sector and support of governments for small and medium enterprises

We propose the creation of electronic trading hubs to enable rural communities to efficiently trade with larger consumers in the urban areas. The electronic trading hub (e-trading hub) would enable retailers in urban areas to place information regarding demand and the prices they are willing to pay for the day. The rural communities would access this information and know when, where and how much to supply. Suppliers could also place information on their products and how much they can supply so that consumers are informed of what is available. The rural communities would be able to access this information via mobile phones and via the Internet through their own Internet facilities at community access centres.

We further propose to create electronic market places (e-market places) for community based tourism projects in order to enable them to access new markets for their uniquely packaged products. The assumption is that such community based tourism projects already exist, albeit in their own unique forms that are mainly understood and accessible locally. Our aim is to create e-market places for the projects.

Linked to these projects will be a research process based on the premise that the nature of the projects must be multi-disciplinary where information, information technology and the integration thereof within the communities must be researched to benefit the communities in total. The following research questions would be addressed:

- *In what way and form will a rural-urban e-trading hub facilitate the generation and enhancement of economic opportunities in rural communities?*
- *In what way and form will e-market places generate and enhance economic opportunities for community based tourism in rural communities?*

Refer also to http://www.witfor.org.bw/themes/economic.htm.

3.   ENVIRONMENT

Using and promoting ICT as an instrument for environmental protection and the sustainable use of natural resources

Currently there is insufficient capacity world-wide to implement effective cross-boundary, interoperable environmental and risk management applications. Some areas, for example Europe, are currently making a significant investment in building such capacity.

We propose creating a project-based collaboration between developing and developed countries to be based on two major activities: a capacity-building activity and a research activity, focused on environmental information infrastructures.

The capacity-building activity would enable developing countries to use ICT better in environmental applications. It would be based on joint conferences, seminars and short courses.

The research activity would lead to implementation of a large-scale environmental information network, initially in southern Africa, based on existing and emerging standards. This activity would be strongly related to regional and global initiatives and would be the seed for participation by Africa and other parts of the developing world in world-wide information infrastructures.

The outcome of the proposed activities would improve interoperability between countries' information systems and create a universal framework for environmental decision-making. Refer also to http://www.witfor.org.bw/themes/environment.htm and http://www.witfor.org.bw/themes/envi_project.htm .

4.   HEALTH

Using ICT to improve the efficiency and equity of health service provision

We propose to strengthen health information systems within the developing world by building collaborative networks to share experiences, practices, knowledge and products amongst the developing countries themselves as well as the developed countries. We further propose to promote open standards and to undertake research on information systems and application of Open and or Free Software and proprietary software in the health sector. Furthermore we propose to improve communication among health workers by providing health workers with e-mail and Internet connectivity. Refer also to http://www.witfor.org.bw/themes/health.htm.

As an example, already before WITFOR 2005 the European Commission's 6th Framework Programme's Information Society Technologies (IST) program decided to fund the implementation of the **BEANISH project** (Building Europe Africa collaborative Network for applying IST in the Health Care Sector). The overall goal of BEANISH is to build networks of research and development between and within

countries in Africa and Europe on practical applications of ICT in the health sector. The concrete objectives are linked to:

- Strengthening Health Information Systems in Africa
- Collaborative development and application of Free and Open Source Software for Health
- Sharing "best practices" and capacity across countries.

Linked to this project is a research and capacity building project. This aims at creating a research network around globally distributed collaborative, especially open source application software development. A proposal is being made on extending BEANISH to Asia (**E-BEANISH**), to build collaborative networks of networks. Refer to http://www.witfor.org.bw/themes/health_project.htm.

5.   EDUCATION

Developing ICT-enhanced education to achieve "Education for All" targets

We recognize the acute shortage in developing countries of qualified teachers, and propose to use ICT and other innovative methods to accelerate teacher education and improve their competence. We suggest the use innovative ways of ensuring provision of ICT facilities to students and educational institutions in developing countries, especially those in remote areas.

We propose the dissemination and sharing of open educational resources, free technologies and free knowledge. In particular, we propose that developing communities be enabled and empowered to drive processes of using and developing free knowledge resources, adapted to local contexts in collaboration with the global community. Refer also to http://www.witfor.org.bw/themes/education.htm.

We propose the sharing of best practices and experiences, as well as collaboration and partnerships, both north-south and south-south, in the use of ICT to promote education. An example is the proposed SADC-wide professional development project enhancing the integration of ICT to teaching and learning in pedagogically meaningful ways. The project pilot phase starting in Botswana and Mauritius is funded by the Government of Finland and seeks wider support for full-scale implementation. It aims at creating a model fostering sustainable development and collegial support to innovative learning and knowledge-creating communities of teachers. The project will be comprised of researchers and practitioners belonging to educational institutions and authorities from developed and developing countries, and is open to new partners. The objective is to create an organisational structure combining efficiently relevant educational authorities with flexible task forces. The project also allows research into integration of work, learning and institutional process. Refer to http://www.witfor.org.bw/themes/edu_project.htm.

We encourage the dissemination of the Stellenbosch Declaration "ICT in Education; What works?" based on 40 years of experience in IFIP's Committee on Education. Refer to www.ifip.org/home/TheStellenboschDeclaration

We further recommend the use of existing initiatives in ICT certification in different areas and levels, e.g. teachers ICT licence, basic ICT user licence, ICT professional licence etc.

6.   AGRICULTURE

Using ICT in the dissemination of knowledge and information, particularly to rural communities, to reduce poverty by improving agricultural production and sustainability

We propose a project to enhance the basic knowledge, managerial and financial skills and sustainability of agricultural production systems.

Agriculture consists of a variety of diverse sectors, some of which have the potential to contribute substantially to poverty alleviation and the development of sustainable agricultural production systems. There is growing interest in crop production, horticulture and vegetables, aquaculture, rangeland systems and livestock production systems. The success of these depends on the dissemination of basic knowledge and skills to rural farmers and the packaging of information in an acceptable and accessible way.

The agricultural needs depend on the ecological region, the existing infrastructure, capacity and availability of natural recourses and capital. The skills that need to be addressed include a variety of managerial aspects and the creation of financial awareness in order to make farming commercially viable. Although complex models are available to manage intensive agricultural systems, little progress has been made in terms of ICT and modelling of rural or small-scale agricultural systems. The current developments are focussed mainly on livestock production systems since these tend to be more dominant and popular in rural areas.

In this regard **we propose** to firstly address the managerial and financial skills of traditional livestock farmers with a system based on the principles proposed in the Cattle Farm Management System (CFMS). The great advantage of this approach is that it can easily be adopted as part of the recently introduced Botswana livestock identification and tracking system that was introduced four years ago, which ensures traceability. It is now widely accepted that livestock identification and traceability are essential prerequisites to ensure safe products and reduce the incidence of food-borne diseases. A number of other developing countries have introduced compulsory livestock identification systems, but it is accepted that more can be done to improve the dissemination of information and knowledge as proposed in the CFMS or alternative systems.

We further propose a supporting research project to develop a model that could accurately predict the performance of grazing animals and pasture production under variable rainfall and temperature conditions. Such a model could assist governments with rangeland management, strategies for research and development and livestock marketing, and would link strongly with the proposed CFMS for traditional livestock farmers. Refer also to http://www.witfor.org.bw/themes/agriculture.htm and http://www.witfor.org.bw/themes/agriculture-project.htm .

7.   SOCIAL, ETHICAL AND LEGAL ASPECTS

Increasing awareness of the social, ethical and legal dimensions of ICT

We propose the building of a collaborative virtual community to bring together all civil society stakeholders and initiatives in developing countries directed at ICT and socio-economic development. This project will be in pursuit of the Millennium Development Goal to "*develop a global partnership for development*". The purpose of the project is, first and foremost, to bring together and facilitate collaboration between grassroots and community based civil society actors and initiatives and then to facilitate collaboration between these local networks and existing global networks.

We further propose the development and implementation of a digital online network and forum for indigenous knowledge. The aim of this project is to create an Internet based digital network for the conservation, development and dissemination of indigenous knowledge. The purpose of the digital network would be to bring together existing digital resources and to implement specific community based projects to record and promote indigenous knowledge (languages, narratives, rituals, artefacts, etc). The project will be community driven and may initially focus on existing resources and on indigenous *cultural* knowledge that is easy to record and catalogue with minimal technology, such as aboriginal narratives.

We further propose building a regional policy framework and capacity for controlling cyber crime in developing countries. The aim of this project is to study the problem of cybercrime in developing countries (with an initial focus on Africa) and produce resources to deal with it effectively. This will include the development of a policy framework, the harmonization of legal frameworks and the building of capacity in investigating and prosecuting cyber crime. The project will aim to build on existing international treaties and conventions such as the Council of Europe Convention on Cyber Crime.
Refer to http://www.witfor.org.bw/themes/social.htm and refer also to
http://www.witfor.org.bw/themes/social_project1.htm,
http://www.witfor.org.bw/themes/social_project2.htm, and
http://www.witfor.org.bw/themes/social_project3.htm

8.   EMPOWERMENT AND PARTICIPATION

Encouraging e-governance and e-democracy initiatives

We propose initiatives focusing on empowerment and participation in line with the objective of utilizing ICT for accelerated development with particular emphasis on the needs of developing countries. Empowering citizens enables them to participate in the information society and acquire knowledge that improves their socio-economic well being. This objective becomes concrete in devising appropriate universal access policies and strategies as well as in developing cost-effective community user information systems.   E-governance programmes contribute to

improving the quality and expansion of the reach and accessibility of the services offered to citizens. On a closer inspection e-governance and e-democracy are complementary processes in nature. Since such activities prioritise and target the special requirements of marginalised groups, the main concern should be sustainability and affordability of systems.

The following project themes are being proposed as priority areas for concretizing the empowerment and participation of citizens:

1. Capacity building in public institutions, especially local government institutions, to put in place e-government applications in order to enhance the provision of e-services. The projects would include equipment support and specialized skills training.

2. Scaling-up of community ICT centres based on evaluated and replicable models, with the aim of increasing public access to electronic information.

3. The establishment and/or scale-up of empowerment centres with the goal of enabling youth in disadvantaged circumstances to be absorbed into the mainstream economy or tertiary education system. The projects would focus on out-of-school youth and would provide computer literacy training, career and social guidance. Initially the projects could seek to the extent possible, to use existing facilities, such as schools, community multimedia centres, community telecentres and others. The projects would also explore public-private partnerships.

4. The development and/or adaptation of applications and tools for the creation of locally relevant content, taking into consideration cultural and linguistic diversity. Due cognizance of the major economic activities of the target groups should be considered, such as agriculture, small scale trade, etc.

Refer to http://www.witfor.org.bw/themes/empowerment.htm and http://www.witfor.org.bw/themes/empowerment_project.htm .

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