

BUILDING INFRASTRUCTURE FOR ICT DEVELOPMENT IN TANZANIA

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1. Introduction

The deployment and use of ICTs provide a variety of strategic opportunities for economic growth and development. ICTs can change the structure of economic and physical relationships and provide economic players with new ways of interacting and doing business. Hence causing a ripple effect that leads the way to general economic growth. That is why ICTs are considered as an efficiency enabler and thus an Integral part of many priority sectors rather than a competitor. The collective legacy of ICTs is built on empowering people with the ability to communicate instantaneously, which is known to facilitate the development process by increasing:

- 1) Efficiency:- the ratio of output to cost.
- 2) Effectiveness:- which determines the quality of output and services.
- 3) Equity; i.e. - the distribution of development benefits throughout the society.

2. How is this possible?

- ICTs is a package of available technologies put to use in an efficient, imaginative and inspiring way for every person in the world: Government, Public, Private, Businesses or an individual. They offer virtual team working technologies. They offer just in-time ways for product development, delivery to the market, training and knowledge management. As a result: geography, distance and time no longer limit the marketing strategies, production cycles or customer interfaces.

- ICTs multiply time, shorten distance, and eliminate hierarchy and geographical boundaries. This always leads to reduced costs of operations.
- ICTs is both a business opportunity and in itself constitute development!
- ICTs provide empowerment to people, but these ICTs by their nature, put greater emphasis on application of intellectual knowledge rather than physical qualities.

3. Infrastructure Requirements for ICT Development:

There are three infrastructure pillars required to foster development of ICTs in any country.

a) Human Capital Infrastructure:-

The availability of sufficient competent people to design, implement, manage and use ICT applications and services is most critical to applying ICTs for economic and social development. Hon. Prof. H.R. Mgombelo will cover this subject later on.

b) Legal and Regulatory Infrastructure:-

Successful adoption and diffusion of ICTs is significantly dependent on having legal and regulatory environment and framework that promote rather than hinder the deployment of ICTs. This issue will be covered by Co. A. N. Nalingigwa and later on by PSRC.

c) Technical or Technology - based - infrastructure:-

International experience has shown that deriving benefits from ICTS is impossible without the appropriate technical/Telecom infrastructure to provide the platform for delivery of applications and services.

Let me underscore at the outright that the term Technical Infrastructure adds to the traditional physical infrastructure covering electricity power supply, public transport, secure premises and associated basic amenities.

My role this afternoon is to provoke your boldness as well as solicit your comments on the type of ICT Policy document Tanzania should have to empower the country to continuously develop the technical (Telecom) infrastructure which will empower our people to build the ICTs culture of deploying ICTs in their day-to-day business and social activities as a way of life.

The key stakeholders involved in deploying ICTs infrastructure include:

- Public Telecommunications Network Operators, e.g. TTCL
- Private Network Operators
- Internet Service Providers (ISPs)
- Web Content Providers (ASPs)
- Equipment Manufacturers
- Hardware/Software Vendors and Suppliers
- E-Commerce Trust Providers
- Professional Services Providers/Proprietary System Providers
- Technical and Industrial Research Organisations
- Customers!

Everybody

“Networking means connecting people to people and people to information, it does not mean connecting computers to computers”¹. With this understanding, ICTs require a network which has two parts: one part is owned by the customer and the other is owned by the provider!

4. Where Do We Stand Now:

Our ICT Policy should be based on a firm and educated comprehension of what is already in place and what future we want to build for our citizens.

(a) From the Provider Point of View:

Tanzania’s Public Switched Telephone Network (PSTN), a hybrid backbone (i.e. analogue and digital) network using fibre optic, microwave and satellite-based links is now over 95% digital, which paves the way for allowing the provision of new services enabled by ICT.

What is required is to have an infrastructure that has capacity, speed, extensive coverage and necessary reliability in line with the new paradigm in the industry that converges the services offered on the PSTN (a circuit-switched technology) on the packet-switched data networks, especially those using the Internet Protocol (IP)

¹ Wendy D. White –*Growing the Internet in Africa, Internet Society News, 1994, Vol. 3 No. 2 p. 28.*

technology. Operators and providers of voice, data and even broadcasting will have to make the requisite upgrades to accommodate these requirements.

We have a liberalised market segment with local players, actually champions fully licensed to provide public data communication services including Internet bandwidth and access services to the Internet. Available e-readiness studies suggest that there is a large unsatisfied demand in the country for Internet access.

Tanzania now has over 30 PoPs: Located in over 15 regions - Dar es Salaam, Arusha, Moshi, Tanga, Dodoma, Morogoro, Iringa, Mbeya, Singida, Tabora, Shinyanga, Mwanza, Musoma, Moshi, Mtwara, and Zanzibar.

In the name of competition and independent effort, the local champions struggle with isolated initiatives of connecting their Points-of-Presence (PoPs) to the global Internet backbone. As a result, Tanzania lacks cheaper and high capacity connections to the global Internet.

Therefore, the limited international Internet bandwidth is scarce and extremely expensive. The lack of a national Internet Exchange Point (IXP) also means that much of Tanzania's local traffic is routed via international routes. This is an inappropriate use of a scarce and expensive resource that increases the cost of local Internet access for users.

The sector is open for private investment!

(b) From the Customer Point of View:

A customer or user accesses ICTs from a Local area network (LAN) of some sort. ICTs environment dictates the type of network technology we choose to use as well as the pace at which we should install and deploy them. In this respect, a LAN is a building block of ICTs connectivity. We are now witnessing the acceptability of the culture of building LANs in Government Departments, corporate organisations, and educational institutions and even within individual small business undertakings. This culture is also emerging in the rural areas via local government departments, health centres and some schools.

5. The Issues: for making Policy Statements

The National ICT policy document needs to demonstrate the commitment, Leadership, deduction and determination of all stakeholders in enabling deployment of infrastructure for ICT development! Let me highlight some of the challenges that need to be addressed by the National ICT policy and we seek your comments on them:

- (a) ICTs could only be tools of empowerment for those who have access to them. We have the challenge to overcome the social, technical, political and economic barriers to introducing the idea of ICTs into the communities. It begins by being a user! Should we make a policy to enforce this culture?
- (b) Inadequate investment. The challenge is that of creating networks. We need to build a user base large enough to sustain the connectivity to Global Information infrastructure. It takes users to build own LANs and Providers to build the backbones based on long-term equity goals. Should this be a budgeting requirement in all our plans?
- (c) The culture of competition and independent effort to solve the connectivity problem could it be managed well to eliminate isolationism among operators and to avoid under utilisation of Telecom assets and connectivity capacity?
- (d) Rural access: requires coordination of resources and the diffusion of technology. It is desired that the National ICT Policy orient stakeholders to build awareness that investment in and through ICT in remote areas is a potent means of reducing the cost of rural-urban transactions, thereby mitigating one of the leading causes of rural to urban migration. Seriously, is it true that only the rural income is available to pay for ICTs applications and services?
- (e) The national wish is to foster efficient, inter-operable, reliable and sustainable national ICT infrastructures commensurate with grass-root needs, and compliant with regional and international standards, with increasing access capacity while reducing cost of access. However, what should be the requirement on the QoS from the supporting physical infrastructure, e.g. Electrical power supply, Telephone networks and wiring buildings for ICT? Is it time to institute a new building code to leapfrog the industry towards smart buildings, then into smart villages, communities to towns or cities and eventually to a knowledge society?
- (f) It is desired that the Policy should lead into the establishment of mechanisms that will result in least cost access to international broadband bandwidth for Institutions or individuals in Tanzania. One approach is to encourage regulatory organs to collaborate at a regional level leading to the evolution of regional Internet development policies and regional Internet infrastructure (national, regional and an African Internet Exchange points). Is it time to approach ITU to establish the Regional Internet Protocol Address Spaces (RIPAS) and National Internet Protocol Address Spaces (NIPASs)?² If this becomes the way forward, who should become the National Administration to

² Ntoko, Alexander, "Public IP Address Allocation and Assignment in Africa", ITU Africa Telecom 98: 4th Regional Africa Telecom Forum, Paper 6.8, pg. T.6.8.1-T.6.8.9.

implement the NIPAS in Tanzania? Will the move be seen as encouraging monopolistic practice?

6. Conclusion:

International experience has shown that the ability to communicate instantaneously, a benefit enabled by ICTs, can facilitate the development process by increasing: Efficiency, Effectiveness and the Equity; i.e. - the distribution of development benefits throughout the society.

The Greek Poet Alcaeus said of cities in the 6th Century B.C., "Not houses finely roofed, no the stones of walls well built, nay, nor canals and dockyards, make the city but men able to use their opportunity"

The National ICT Policy should empower Tanzania Government and its people to grab the opportunities enabled by ICTs for realising national objectives, present and future ones, especially those set in the Vision 2025.
