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Public Telephone and Internet Services in Africa The Rise of The Telecentre & Cybercafe

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There is now increasing awareness in Africa of the potential for public access facilities in low-income and rural areas to provide a broad range of low-cost communication and information services, ranging from phone calls and email to multimedia distance learning and e-commerce. These centres exploit the convergence of technologies to provide cost effective services where most people cannot afford their own PC, phone line or Internet connection.

Often called Telecentres, the idea has been widely adopted in the United States, Canada and Australia, but in those countries the main focus is on the more advanced services such as Internet access and video conferencing rather than on basic communication services. In Africa and other developing regions they are used primarily for basic access to phone and fax, as well as for other value-added services such as Internet access. Telecentres may be dedicated facilities or provided through the addition of phone lines and IT equipment to existing organisations such as storefront shops, libraries, community centres, police stations and clinics.

In Africa, small-scale private Telecentres have become widespread in the urban areas of many countries, notably in Nigeria, Morocco, Egypt, Ghana, Kenya, Senegal and Zimbabwe. Many universities and schools in Africa are also establishing Telecentres, primarily to provide access for students and staff, but in some cases to the general public as well, in order to defray costs.

The concept has also received considerable support from members of the international community, as well as a number of national governments and public telecommunication operators as a means to establish access in rural areas. This is being seen as an important way of realising Universal Service Objectives in rural and remote locations where the majority of people in African countries live, and has resulted in many national programmes and over 20 international pilot projects scattered through Africa (with the majority in Ghana, Mozambique and Uganda, as well as in Benin, South Africa, Tanzania, Zambia and Zimbabwe) to test different models, means of implementation and mechanisms for sustainability.

More recently, addressing the Digital Divide has become an even higher priority amongst the international community. This culminated in the activities of the G8 Dot.Force, UN ICT Task Force and related efforts which have resulted in the developed countries creating a variety of new projects to help developing countries to be in a better position to take advantage of the digital revolution. In Africa these are being augmented by regional collaboration amongst African states through the African Union and its New Partnership for African Development (NEPAD). Many of these activities due to take place in the coming years are likely to be aimed at supporting the emergence of community telecentres, learning centres and other forms of shared public access to ICT facilities.

One of the major barriers to telecommunication service provision in Africa has been that the

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costs of installing, maintaining and using the infrastructure are high, while income levels are usually low, so the investment in providing the necessary facilities to individual users cannot be justified. However now that the infrastructure can carry a wide range of ICT services and not just voice calls, providing access infrastructure has become more feasible, especially if the costs are spread across many people making use of a variety of services through public access centres.

The main aim of a public facility is usually to provide drop-in or scheduled access to the wide range of communication and information services that are now obtainable through various ICTs such as telephone, fax, e-mail, Internet, radio and TV, thus allowing organisations and individuals to obtain information and transfer knowledge, make transactions, and generally increase their ability to communicate. Some examples of the activities taking place in a Telecentre would be:

- The general public communicating regularly with people within the country and internationally.
- Students and teachers using educational software, downloading courseware and accessing online libraries and distance instructors through the Internet.
- Farmers obtaining guidance on agriculture, weather information, and monitoring market prices.
- Local administrators and society leaders using up-to-date information on basic social services such as water supply, sewage, education, infrastructure and health (e-governance).
- Businesses conducting commercial transactions, obtaining office services such as fax, e-mail and copying and perhaps finding new markets.

Thus a Telecentre can be seen simply as a phone booth, or as the point of delivery for government information or services, a community library of the future, a point of access to distance learning, a local or regional news service or as a business services centre, depending on the needs of different users.

Although the size and range of services can vary considerably, a Telecentre is usually equipped with a number of computers with an Internet connection, telephones, fax and printer/copier. Other indirectly related services may also be part of a larger Telecentre. These could include radio and television/video viewing/production, hosting meetings, making travel bookings, expediting delivery of goods (both to and from the Telecentre) and selling stationary, refreshments etc. Transcription and information brokerage services are also required by many who may not be familiar with computers and efficient ways to extract information from the Internet, or may even not be able to read or write.

While individual users who pay for the services directly are often the principal income source, other services may be paid for or 'subsidised' by government departments such as education, health, local authorities and NGOs. The services are not necessarily all provided by the operator of the Telecentre directly, but may be provided by the other sponsors such as NGOs and government departments, as well as by small-scale entrepreneurs who locate themselves at a Telecentre. A class of 'scribes' who assist other users is already emerging in some countries where Telecentres, and private cybercafes are more well established.

A basic requirement for most Telecentres is that the communications regulatory environment is conducive, supporting the principle of third party provision of communication, information

and related services. In a few countries such as Ethiopia, only the licensed telecommunication operators are allowed to sell access to telephone or Internet services to the public. Although other countries in Africa are not generally this restrictive, most countries do not have tariff policies that encourage the development of public access services. The operators of these facilities must usually pay standard retail tariffs for telecommunication services, leaving little room for markup and profit margins to ensure sustainability.

There are some interesting exceptions however, such as the policy adopted by the telecom operator in Senegal, where service providers receive a substantial discount on residential call tariffs, and the recent decision by the regulator in Uganda to allow public phone providers to receive some of the income from incoming calls.

Accessing the Internet from a rural telecentre may also be costly if it requires a long distance phone call. While DSL lines and VSAT are increasingly becoming viable options for connectivity, these facilities or services may not be available or allowed in some countries. In these cases dialup is often the only alternative, and if the country does not have a special local call tariff for calls to the Internet (only 18 of the 53 countries in Africa do) then access can be too costly for the general public.

Telecommunication costs are usually the largest operating expense of a cybercafe or Telecentre. As indicated earlier most of the smaller cyber cafés in Africa use dialup access, while some of the larger ones operate on 64Kbps or 128Kbps leased lines or two-way VSAT connections. In Southern and North Africa, increasing numbers of cyber cafés are cutting connectivity costs and improving their download speeds by using the simplex Ku-band satellite broadcast networks to receive data, while sending out via a low-speed dialup connection or analogue (33Kbps) leased line, which increase download speeds to 300-400kbps.

Experience has shown so far that in the rural areas where Internet and other PC-based services have been among the services provided, they were not as popular as expected, partly due to the lack of relevant content, but also because of the low levels of computer literacy in rural areas. Thus the provision of training is a key need for these centres.

A Look at Some Telecentres & Cybercafes in Africa

Of the Telecentre and related projects that are now in the process of formation in a number of African countries, two different groups can be distinguished - a) those that are emerging from entrepreneur driven initiatives or through expansion of services at existing public 'telephone-shops' and in other businesses, and b) national or international development programmes to support non-profit Telecentres driven by NGO, government entities or international organizations.

Private Sector Telecentres

A well known example of locally emerging private sector Telecentres is in Senegal where the Public Telecom Operator (PTO) handed over the operation of public payphones to small businesses in the mid 1990's. As a result there are now over 10 000 of these public telephone shops which are licensed by Sonatel (the PTO) and run by local entrepreneurs. Many have now added fax, Internet, email & word processing services and are serving a much broader range of information needs amongst their surrounding communities. These telecentres now

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account for about 30% of Sonatel's traffic and 13 000 lines and have their own association - the Syndicat national des gérants des télécentres du Sénégal. While the bulk of these centres are in the major urban areas, a significant number of them are now located in more rural areas, following Sonatel's ambitious expansion of its telecommunication network. No financing is provided, but to encourage their establishment, Sonatel gives a substantial discount on tariffs and provides advice for Telecentres wishing to add new services.

In Ghana there are numerous Internet access points located at phone shops called 'Communication Centres', mainly in urban areas. Many are small businesses in urban areas which provide Internet access via franchises from the ISP AfricaOnline. These have provided drop-in Internet access and email services to about 20 000 users, but are now being scaled back as AfricaOnline has not been able to find a viable model for sustaining them.

BusyInternet Ghana Ltd, a partnership between Ghanaian investors and a US-based technology company, has built a large cybercafe in Accra as the first in a series of Internet centers across Africa. These centers are aimed at the higher end of the market and will provide individuals and businesses with the expertise and resources needed to promote and expand their traditional businesses into e-commerce and other Internet-related activities.

Each center consists of three areas: a sixty-seat learning center for workshops and seminars, an access area with 100 computers for public internet access, and 4000 sq feet of office space where small businesses and organizations can develop their Internet-related programs and products. With plans to launch two new centers each year, BusyInternet aims to create a network of centers of excellence where participants and businesses can share best practices and help each other exploit new opportunities.

Until recently, in Nigeria the telecommunication network outside the major urban areas is so poor that there were few rural Telecentres. However with the recent availability of low cost VSAT costing less than \$200/month, many more such centres have opened. In the urban areas, hundreds of large cybercafes and 1000s of smaller 'business centres' have emerged which provide relatively low cost access to the Internet and other services, encouraged by the regulatory environment which also allows them to provide cheap international phone calls via Voice over IP.

There are also a variety of larger companies active in this area in Nigeria, most notably Telepoint and Anyiam Osigwe. Telepoint is a subsidiary of Andchristie which deploys payphones, Telepoint has a national payphone and cybercafe license (which costs 500 000 Naira for 5 years), and operates 600 payphones and 17 cybercafes in Lagos. Each cybercafe has an average of 20 workstations and Internet access prices are about USD0.05/ minute. Telepoint also has a university 'campus strategy' which will see it deploy 50PC cybercafes in universities, charging US0.02/ minute. Anyiam Osigwe is a large conglomerate in Nigeria which is planning to roll out Telecentres in each of the Nigerian states, having established the first one in Abuja. These will provide a full range of VOIP services via its planned partnership with Paconet and onward wireless data links to other smaller access service providers. AnyiamOsigwe has a VSAT and ISP operators license, as well as a partnership with New Deal, the low end PC recycler which bundles older machines with its specialised software which is optimised to work on older, slower hardware.

In Kenya the ISP Africaonline had been operating about 260 E-Touch centres with about

40,000 users. This proved to be unsustainable and so it scaled back this operation in favour of fewer, larger scale cybercafes with a tight branding & franchise model. It launched four of these in key locations in Nairobi with local franchisees, and also four of its own centres where it sets the standards and prototypes new applications and services. These new E-Touch cafes usually have at least 10 PCs and one or two staff to manage operations (all women). Services include photocopying and faxing, and a payphone, but use of the Internet is currently the main function. Some franchises also provide other related services related to their existing business functions, such as selling prepaid GSM phone cards (which, GSM handsets, or other services, such as food, in the case of the centre located on the premises of local fast food chain, Nandos.

However because of the high cost of telecommunication access in the country (a monopoly operator and no international fibre, requiring more expensive satellite bandwidth) and the large number of small competitors from the informal sector, this model has also not yet proved viable for AfricaOnline.

In Egypt, based on the European EasyEverything model, ISP Menanet has started its first branded i-cafe which it aims to franchise across the country. The charges are 10 Egyptian pounds per hour for ad-hoc use. 10 hours pre-paid costs 9Pounds /hr and 20 hours prepaid costs 8 Pounds /hr.

Non Profit Telecentres

In the second group - (b) non profit Telecentres - two main sub-types can be seen: (1) Pilot projects conducted by international development agencies with local partners and (2) national Telecentre Roll-out Programmes as part of Government policy to address Universal Access needs. Examples of these two models include:

- The UNESCO/IDRC/ITU Joint African Telecentre pilots in Benin, Mali, Mozambique, Tanzania & Uganda. These are official development assistance programmes operated in partnership with the national government, the national telecom operator, and with local partners or hosts which were drawn from libraries, schools, chambers of commerce etc.
- In Tunisia, the Agence Tunisienne d'Internet (ATI) which is the government authority for maintaining the Internet backbone in Tunisia, has outsourced to the private sector the operation of hundreds of public cybercafes, which are called PubliNets. These are usually operated from government buildings and are provided connectivity through ATI's network.
- In South Africa, the Universal Service Agency (USA), which is established at same level as the regulatory authority under the Ministry of Communications, is in the process of assisting in rolling out hundreds of public access ICT points over the next few years. Startup costs are provided through the licensed telecom operators who must contribute a small proportion of their profits to the Universal Service Fund which yields around R15 million (US\$ 2.1 million) per year. The projects are initiated by local community groups and are also supported by partnerships with development agencies, NGOs, private sector and government who can 'adopt' individual centres. Most of the centres are owned by community organisations, such as civic groups, women's organisations or community forums. A few are owned privately, and others are attached to existing public services (such as libraries, schools and post offices). In August 2004, there were 60 USA centres, primarily in rural areas. They cost around US\$ 30,000 each and although the exact specification varies, most have 4-10 computers, 4 phone lines, printer, copier and TV.

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- In Burkina Faso the government is planning to implement a national programme of Telecentres that aims at boosting rural economy. The initiative is led by Délégation Générale à l'Informatique.

The long term sustainability of the larger non-profit Telecentres is not yet guaranteed through state funding, even in the urban areas, so it is likely that community oriented Telecentre programmes will 'piggy-back' as much as possible on existing infrastructure, and the support of institutions.

As shown above, a variety of national agencies are usually active in the area of Telecentres. National Regulators, Universal Service Agencies, National Telecom operators and IT Development Agencies are often involved. As part of their universal service strategies, they are keen to support Telecentres as a means to increase national development through improved access to ICTs. These agencies also usually assist in information gathering, co-ordination, obtaining resources required for the project from other agencies and in putting political pressure on the telecom operators and other state owned service providers that are needed. Ministries of Information and Communication are also usually involved at this level. The National Education Sector may be involved at a variety of different levels.

The other institutions that may be involved include:

- National university networks, such as those in Nigeria and South Africa support public access and off-campus cybercafes for students and provide connectivity, if the Telecentre is located near to an academic institution.
- University Distance Learning Programmes use local venues for their students and are keen to support Telecentres by providing the educational content and possibly sponsorship for students.
- Local schools and other units of the educational system are also taking on broader Telecentre functions, inviting members of the community to share the costs of their facilities. Other institutions close to the schools also share in the cost of bringing the infrastructure into a remote area, such as through using cheap WiFi links.
- Capacity building of local government is increasingly seen as an important component in development programmes and combined with the recent move to implement e-governance, support for Telecentres in local government gaining greater attention. This includes municipalities providing connectivity for Telecentres housed in other government departments. The government of Italy's Ministry of Science and Technology has recently announced a major programme to support e-Governance in Africa, starting with Nigeria, Mozambique and Tunisia.
- National NGO networks which assist providing information for the Telecentres, carry out awareness raising of the project amongst their members and help in identifying potential local partners.
- Many other private sector companies with large networks have donated their older model PCs to schools and other community projects, often through specialist recycling programmes (see below).
- Telecom operators and Internet service providers in many African countries are the connectivity suppliers to the service providers.

The Outlook for the Telecentres and Cybercafes in Africa

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While almost everyone in industrialized countries now has virtually immediate access advanced telecommunications facilities, excluding South Africa, fewer than one in 100 people in sub-Saharan Africa has a fixed telephone line (for the general public mobile services are too expensive to use except for brief calls and text messages) and less than 1 in 250 have access to the Internet. This, combined with the generally low income levels means that public access services will be the most common mode of access to ICTs for the majority of the population. However it is as yet unclear how long it will take for these services to gain widespread adoption.

While technological developments have made Telecentres possible, the major issues are still the same as they are for other small scale enterprise development - i.e how to obtain the capacity building and financing required, especially in the rural areas where they are most needed. In addition there are some key technical issues that most Telecentres have to solve, namely:

- **Telecommunications & Internet links.** Rural areas often have very poor infrastructure – in many African countries more than 80% of the phone lines are concentrated in the biggest city. Where local telecom infrastructure is available and reasonably priced, the least cost solution for Internet access is normally to use a standard modem dialup link to start with and then graduate to a leased line when usage grows. However in most cases it is unlikely that existing infrastructure is available at low cost or at sufficient reliability and so VSAT or terrestrial wireless links are often needed. This usually requires special expertise and additional capital costs, but with the recent availability of low-cost broadcast satellite services such as DSTV and WorldSpace, there are new opportunities to receive data and images, such as weather maps, news bulletins and web pages without requiring access to traditional 2-way telecommunication services. Probably of more importance is the recent availability of low-cost two-way VSAT that is now available in Africa, offering the potential to provide Internet and voice connectivity anywhere on the continent for as little as \$100/month. Outside of the urban areas, which are already well covered, the demand for low-cost VSAT is likely to be substantial, assuming that regulatory impediments are overcome. However currently in most countries there are restrictions on the use of VSAT, ranging from high license fees to outright prohibition on their use except by the national telecom operator. As social projects, some non-profit Telecentres may be able to obtain special dispensation from licenses and fees in some countries.
- **Electricity/Power:** In most rural areas in Africa, an often neglected issue is that an alternative source of power is likely to be required, not only given the limited penetration of the electricity grid in most countries, but also because of its unreliability, even when present. A generator is often the cheapest solution, but the running cost and availability of fuel has caused problems for some Telecentres. A solar/battery installation may have higher initial costs, but will normally pay for itself over the long term. Biogas or bicycle powered centres are also an option.
- **Technical Support:** Ensuring the availability of technical support for installation, training and ongoing maintenance is vital and yet all too rare in areas serviced by telecentres. Many projects fail because sufficient training does not occur. Because technical resources are extremely limited in rural areas, a centralised technical help-desk shared by many Telecentres helps address this problem.
- **Cost and Complexity of the ICT system:** Related to the need for technical support is the complexity of the ICT system and its initial cost, as this is often the largest single component of the startup budget and a big factor in long term sustainability. Thin clients

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with no moving parts connected to a server are becoming increasingly popular as they usually require less hardware maintenance and less software configuration, and because changes made by the user can be controlled. Using recycled PCs is also becoming more common now that previous generation machines are fully multi-media capable, and there are a number of agencies such as Computer Aid and World ComputerExchange, set up to recycle PCs from large companies for development projects. Costs are also being cut by using free-software (Open Source) such as Linux and OpenOffice which are functionally equivalent to their commercial counterparts but have no license fees.