Improving Public Internet Access in Brazil:

Moving Beyond Connectivity...

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Since 1998 Latin America has exhibited the highest rates of Internet growth among all world's regions (ITU, 2000). The Latin 'net fever' is commonly measured in terms of number of Internet users and hosts[1]. Between 1995 and 1999, the number of Latin American Internet users climbed from 540,000 to 9 million. And only in 2000, the number of hosts increased 136 %, well above the expansion rate in North America (74 %), Asia (61 %), Europe (30 %) and Africa (18 %). Brazil is an important contributor to these statistics. With 32.4 % of the region's users and 45 % of the regional hosts, Brazil is considered the leading Latin American market by investors and marketers that set in motion the world digital economy (Elkin, 2001; Rojo, 2000).

For observers less concerned with potential revenues of the e-economy, Brazil presents a contradictory trend: the deceleration of web users' growth, which has caused the country to fall in the rank of Internet penetration in the region (Table 1). The demand for Internet use is not accompanying the expansion of infrastructure that situates Brazil in the fifth place of host penetration in the region. So some factors or barriers to Internet use may be slowing the increase in new users in Brazil.

Table 1. Internet Penetration Rank in Latin America

Rank 1998	Users/ 100 people	Rank 2000	Users/ 100 people	Hosts /10,000 people (2000)	
1 Uruguay	6.99	1 Chile	11.55	1 Uruguay	162.02
2 Costa Rica	2.60	2 Uruguay	11.08	2 Argentina	72.98
3 Chile	1.68	3 Argentina	6.75	3 Mexico	56.55
4 Brazil	**1.51**	4 Costa Rica	6.21	4 Panama	52.82
5 Venezuela	1.50	5 Venezuela	3.93	**5 Brazil**	**51.53**
6 Mexico	1.41	**6 Brazil**	**2.94**	6 Chile	49.11
7 Panama	1.08	7 Mexico	2.74	7 Costa Rica	18.29
8 Colombia	0.89	8 Colombia	2.07	8 Colombia	11.06
9 Peru	0.81	9 Panama	1.59	9 Dominican Rep.	9.44
10 Argentina	0.55	10 Peru	1.58	10. Venezuela	6.68

Source: ITU 2001

Federal and state governments in Brazil have understood that the problem of increasing Internet access and use requires state and private action. In mid-2000 the

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[1] According to Network Wizards, the best-known worldwide survey of Internet hosts, a host is "a domain name that has an IP [Internet Protocol] address associated with it". Domain names (Internet addresses) can be hosted in one or in several computers thus, it cannot be assumed that a host is a single computer connected to the Web. For further discussion on the topic, see http://www.isc.org/ds/defs.html.

government announced new plans to enhance e-government solutions and public access asking for private support. The plan *Porta Aberta* aims at giving free e-mail addresses and providing public Internet access to Brazilian citizens through telecenters. States, cities and NGOs are also moving quickly to install telecenters (E-marketers, Feb. 2001).

A *telecenter* or *infocenter* can be defined as *a shared site that provides public access to information technologies* (Proenza et al., 2001). Telecenters are becoming an almost universal vehicle to enhance access to the Internet, in particular for low-income groups. Brazil is currently committing a great deal of effort and resources to build a national telecenter network that democratizes access to technology.

Internet access kiosks are being installed this year in selected post offices of Rio de Janeiro, the greater metropolitan area of São Paulo and the interior of São Paulo state (Elkin, February 2001). On November 16, 2000, São Paulo Governor, Mário Covas, inaugurated the first "infocenter" of a network that should include 60 locations in Greater São Paulo and 60 more locations in the interior of the state by the end of 2001. This project, called Acessa São Paulo, should benefit 3.5 million "paulistas" having a budget of R$ 4,8 million and partnerships with companies like Microsoft, Hewlett-Packard and Telefônica. Located in a neighborhood on the southern periphery of the city, in the neighborhood Jardim São Luís, this first center is already being utilized to train young people and adults in informatics, use of the Internet and the generation of local information. Goiânia and Porto Alegre were cited in the inauguration as cities planned for similar systems and more will follow. Private companies such as NetCash-PopBanco (an enterprise), Caixa Econômica Federal (a government bank), Globo Cabo (a cable internet provider), Telefônica Empresas (the business division of Telefónica of Spain), recently announced similar efforts to build points of access at neighborhood *paderias* (bakeries,) which Brazilians typically visit every day.

Brazil is now in the crossroad of balancing forces between commercial and public interests that can effectively enhance people's participation in the information revolution. The major challenge ahead is to build a public access network that meets people's needs by becoming a tool to increase their living standards.

Based on a review of evaluation research of telecenters around the globe, this report provides a summary of best practices for attracting users to telecenters, in particular for attracting members of low-income groups and groups in disadvantage (women, seniors, ethnic minorities, etc). This analysis understands technology as a result of the social relations linking users, the innovation and the knowledge that mediates between them. Telecenters can be a potent tool to ease this relationship but they should be placed within a strategy of integral social development. Telecenters can enhance

opportunities of development but they cannot compensate for lack of investment in education, health, transportation and public services (Proenza et al, 2001). The goal is to design a strategy that makes telecenters into effective instruments of social development.

This report is organized in four sections. The first section draws a picture of the current state of Internet development in Brazil, identifying issues that contribute to the digital divide in this country. The second section presents a profile of the trends of web use in public spaces around the globe that may be relevant to Brazil. The third section summarizes best practices identified in evaluation research on telecenters, and substantiates the discussion with examples from different countries. Finally, the report lists some recommendations to improve the strategies of Brazilian telecenters to attract users and enrich their Internet experience.

1. PROGRESS BEING MADE AND BARRIERS TO OVERCOME

The ITU identifies two main factors accounting for the rush of e-development in Latin America (2000). First, the expansion of infrastructure and more flexible pricing plans fostered by telecommunication reforms, and most importantly, by competition among telecom companies and ISPs. And second, the slow but consistent increase of content produced in local languages. Brazil seems to be doing well in both aspects but there still are barriers to overcome.

Unlike other Latin American telecommunication reforms, the Brazilian strategy for reform emphasized liberalization of competition. The divestiture of Embratel before its privatization, and the open competition in mobile telephony and Internet access set up an environment where no dominant groups emerged, and where operators were eager to meet the demand. The competitive environment is reflected in relatively low Internet connection charges. Tariffs have consistently gone down in the last four years making Brazil the country with lowest Internet charges in Latin America (Table 2). Today, more companies have moved to flat rate plans with unlimited access[2]. However, this cost represents a high toll to pay for the majority of Brazilians, in particular for almost half of the population that lives on less than $200 a month.

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[2] The most aggressive players offered free Internet dial-up. In 2000, Banco Bradesco, a leading financial e-services launched the first free access plan. Since then, different Brazilian ISP lowered prices and even started to offer feeless connection. However, today it is not clear if these providers will survive in the market. Some of them have already stopped these promotions while others have ceased operations (The Economist, April 23, 2001).

Brazil also has the largest number of Internet Service Providers (ISP) in Latin America: 280 firms. Two main factors account for the boom of Brazilian ISPs. First, unlike neighboring countries such as Argentina, Venezuela and Peru, Brazil has no restrictions or special licenses for entering the market of Internet providers. Second, ISPs have been allowed to integrate vertically and horizontally, and to engage in strategic alliances with telecom firms, other media and a variety of content providers. These conditions have certainly promoted the growth of local content but markedly skewed ISP toward commercialization, targeting user groups with higher income. Brazilian e-commerce has flourished and continued to grow. By 1999, Brazil represented 62% of Latin American e-commerce (ITU, 2000).

Table 2. Monthly Internet Cost (1999)

Country	Internet Charge[1] (US$)
Belize	74.99
Honduras	40.00
Argentina	27.90
Ecuador	25.00
Mexico	25.51
Guatemala	22.00
Peru	21.99
Costa Rica	20.00
Panama	20.00
Nicaragua	19.48
Chile	19.12
Bolivia	15.07
Brazil	**12.24**

Source: ITU 2000.
1. Monthly cost of 20 hours, off-peak Internet use (excluding telephone charges).

The first generation of Brazilian ISPs has also grown as portals. The leader since its creation in 1996 is Universo On Line (UOL), controlled by the Folha Group and Editora Abril, both major media and editorial corporations from São Paulo[3]. UOL has been transformed into an Internet holding company showing the advantages of vertical integration for young Internet businesses. From Internet backbone to content creation, UOL developed the ability to move faster than its competitors. Nowadays UOL operates in Argentina, Mexico, Chile, Colombia, Venezuela, Portugal, and the USA, becoming the best-positioned Latin American player in the regional Internet, and the number one regional portal[4]. In the Brazilian market, UOL is followed by: Zaz (owned by Telefónica's Terra Network), Mandic.com, Matrix Internet, AOL Brazil, Zip.Net, Originet, ICONet, UniNet and DGL Net (IBOPE, 2001)[5]. The result of

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[3] In September 1999, UOL sold 12.5% of its shares to a pool of banks and Reuters for 100 million US$. The resources were used to reach out neighboring markets. Foreign investors include: Morgan Stanley Dean Witter Private Equity, Blackstone Capital Partners III, Providence Equity Partners Inc., Credit Suisse First Boston Garantia, DB Capital Partners Latin America, Hambrecht & Quist, Latinvest Asset Management.

[4] In Abril 2001, UOL announced that it had 12.7 million of registered users, and 16.5 million unique visitors per month, which made it the largest ISP and portal of Latin America.

[5] Another recent trend in the ISP market is concentration. In 2000, Telecom of Portugal (TP) bought Zip.Net, and in March of 2001, they announced an association with UOL. The transaction will give to UOL

these trends has been a consistent increase in all indicators of Internet connectivity and use as summarized in Table 3.

Table 3. Brazil - Internet access indicators

| Infrastructure	1998	2000	Production	1998	2000	Consumption	1998	2000
Telephones/100 inh.	12.1	14.9	Internet Providers	n/a	280	Literacy rate	83	84.5
Mobile phones/100 inh.	4.7	13.6	Local content rate[1]	40.4	101.9	Internet users/10,000 inh	150.7	293.9
Computers/100 inh.	3	4.4	Hosts/10,000 inh.	12.9	51.5	Internet subscribers (000)	941.6	3,422

Source: ITU, World Bank/Pyramid Research
1. The Internet local content rate is taken from the research done by Pyramid Research for the World Bank based on worldwide surveys with operators and providers.
 (Available at http://www.infodev.org)

In spite of significant improvements in service and content availability and accessibility, Internet growth in Brazil has been unable to overcome the largest inequities characteristics of the Brazilian society. Even worse, it threatens to widen the gap between social groups. The ITU data has alerted us to the fact that among Latin American countries, Brazil presents the most class-stratified access to the Internet (Graph 1).

Interviews with Internet users have shown the emergence of an elite who uses the Internet to become further integrated with the global elite (Hannerz, 1992). This role of the Internet for the Brazilian elite has digital divide implications, since it may widen gaps between Brazilian elites and others in terms of access to information, to economic opportunity and to global networks of contacts. Initial work also shows a growing use of the Internet by middle classes who find in it a more in-depth version of the national media they already know, represented for

Graph 1. - Internet Penetration in Upper & Middle Classes (1999)
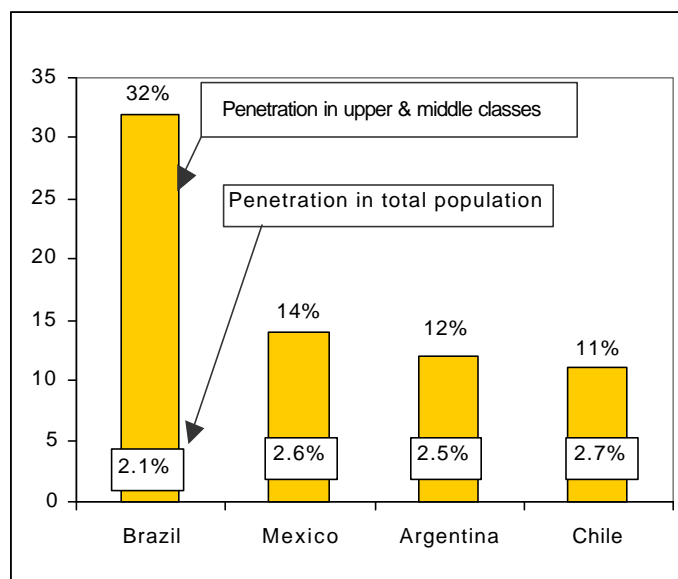
Source: ITU 2000

example, by UOL. There is also a poorer civil society represented by NGOs hoping to

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more than 82% of the market of Brazilian ISP/portals. It would also open to UOL the market of mobile Internet access, in which TP operates (Kotzrincker, March 2001).

use the Internet for very local empowerment, as well as networking with international NGOs and other parts of international civil society.

The drive of the commercial Internet in Brazil has focused on the importance of keeping track of users in terms of new customers. The Institute of Public Opinion of Brazil (IBOPE) has become a partner with Nielsen E-ratings in the elaboration of audience research on the Brazilian Internet. These studies show online users as a young mass of urban people (49% between ages 20-39; 33% between ages 10-19; living in Sao Paulo (56%) and Rio de Janeiro); mostly males (56%) (Ibope, 2001). But even among the youth, social stratification persists.

The CPM Research (2000), "Projeto Jovem Brasil" based on personal interviews with 2,098 adolescents, found 66% of upper-income adolescents had used the Web while only 7% of low-income youth had any experience with Internet. Young women were also less active online. This study found another worrisome trend among young Brazilians. Although the overwhelming majority showed positive attitudes toward the technology, only 44% had experience with the Internet, and almost half of this group declared that they did "not have the habit" of using it. Even for many in those groups that have had the opportunity of access, the Internet seems to have little attractiveness.

Projeto "Joven Brasil"

	Have you ever used the Internet?					
	Gender		Class			
	Male %	*Female* %	**A** %	**B** %	**C** %	**D** %
Yes	21	17	47	22	5	1
Do not use it frequently	15	16	19	21	15	6
No	65	67	34	57	80	93

Frequency of Internet Use
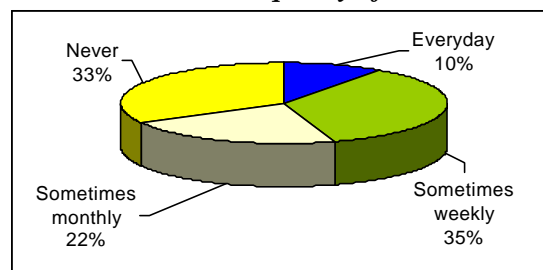
These facts raise questions about content relevance and meaningfulness of many uses of the technology, which should be carefully examined in the design of public policies aiming at enhancing public access. Telecenters represent an opportunity to diminish the growing distance between the *cidadãos* (citizens) who are "rich in knowledge" and "those who are not-rich in knowledge." They offer opportunities to strengthen educational and professional training as well as to increase opportunities for

local self-expression. The task demands a closer relationship with communities opened to these initiatives, and sensibility to interpret people's needs.

2. TRENDS OF INTERNET USE IN PUBLIC SPACES

Understanding the significance of any new technology, and its possible development, requires an assessment of social uses, attitudes and economic aspects that shape its adoption. Infrastructure and economic aspects may determine availability of services, however it is important to account for the social meanings and applications developed by users, and the social context that surrounds them. Public use of information technologies tends to present very particular patterns that may greatly diverge from uses at home or at work. Here are some of the trends observed in telecenter use in different countries.

- *Telecenters are attracting the target population*. The poor and disadvantaged people are the main customers of telecenters. However, the response to telecenters is less enthusiastic among low-income groups in developing nations than in developed countries. Users typically have had some experience with computers but limited Internet access at home.

Table 5. Telecenter's Users by income level

Income level	Peru	USA
I	2.1 %	8 %
II	33.9 %	13 %
III	33.3 %	21%
IV [a]	32.6 %	54 %

[a] IV represents users under poverty level of the country.

	Peru	US	Canada
Have computer at home	40.7%	44%	31.6 %
Have Internet access	5.1	-	7.4 %

- *Other types of disparities persist: most of the users are young and have a significant amount of cultural capital*. The low-income population being served has built up a significant amount of social and cultural capital. By that, we refer to knowledge, attitudes and skills learned from educational or cultural institutions as well as from social networks of friends, family, neighbors, etc. A significant presence of students is a common feature of telecenters around the world. In Uganda, students, health workers and well-to-do farmers are the main users of telecenters. In Costa Rica and Peru, students and small entrepreneurs are the habitual customers. These students often already have much of the base of literacy, factual knowledge and other skills that they need to understand what computers and Internet access can do for them.

A significant difference between developed and developing countries is related to the virtual absence of young children and elders in the telecenters of Third World nations. In Africa and South America the youngest users typically are 14 or 15 year-old while senior citizens are never found among customary users of telecenters. In contrast, children and the elderly are frequent users at public centers, especially libraries in the USA.

Age rank of telecenter users %

Age Range	Peru %	USA %
10-19	33.8	24.8
20-29	55.3	21.2
30-39	8.5	16.8
40-49	1.9	17.0
50-59	0.3	8.7
>60	0	11.4

Education of telecenter users (%)

Education	Peru	USA
Didn't finish High School	0.6%	37%
High School Diploma	29.7%	16%
Some College	54.2%	27%
College Graduate	12.2%	16%
Other	.3%	4%

	Peru	USA	Canada
Students	77 %	67 %	88 %
Not a student	23 %	33 %	22 %

■ *Telecenters are being used for continuing education or training purposes*. Telecenters are a valuable source for obtaining job skills and learning about job opportunities. Continuous education, training and job-related activities are the main reasons attracting many people to telecenters in developed and developing nations. In the US, socializing at the center and playing on-line games have also been identified as important activities for telecenter users.

Meanwhile, recent studies in *cabinas públicas* (small, commercial access centers) in Peru (Fernandez-Maldonado, 2001) have found evidence of changes in

Goals pursued by telecenter users

Goals	Peru	USA
Improving academic performance	72.7%	74.8%
Improving job skills	52.6%	71.9%
Working far from the work place	21.5%	-
Finding a job	30.6%	57.6%
Learning and training	41.6%	-
Increasing self-confidence	41.5%	74.4%
Acquiring/Improving ability with computers	63.8%	52.9%
Overcoming fear to computers	27.4%	61.4%
Increase business revenues	21.6%	-
Shopping	22.8%	-
Avoiding red tape and save time	26.8%	-
Keeping myself informed	57.6%	-
Doing literary or artistic work	30.3%	-
Searching for friend/couple via e-mail - Internet	44.6%	-
Socializing at the telecenter	-	69.4%
Playing games on-line	-	84.3%
Entertainment	47.6%	-

the weight assigned by users to job-related goals. That is, uses other than occupational ones seem to be growing in prominence.

Communicative goals have emerged as important reasons for telecenter use. As users experience the potential of Internet technology as an interactive and communication medium, web applications such as Internet telephony, chats and e-mailing at relatively inexpensive rates have increased their attraction for the public. It is hypothesized that these relatively recent discovered communication functions might enhance the base of habitual users, as more people discover the advantages of using Internet-related services to communicate with friends, family and work contacts.

- *The importance of computer use and the increasing attraction of the Internet*.

Access to computers is the most popular service in telecenters worldwide. Observations and surveys suggest that a gradual process of technological adoption takes place in telecenters. It starts with the acquisition or improvement of abilities for using computers and different software. Then, it develops toward Internet use. This may be related to awareness. Studies in the USA show that poorer people tend to be aware of computers for educational or work-related purposes before they are aware of the Internet.

Web Use in telecenters	USA	Peru
Designing web pages	12%	5.0%
Using software	-	1.6%
E-mail	33%	26.1%
Information search	58%	29.8%
Internet telephony	-	1.8%
On-line games	84%	0.9%
Chat	-	8.8%
Surfing	-	1.3%
Computer courses	-	3.1%
Academic courses	-	5.0%
Video conference	-	1.1%

	US	Peru
Computer use in telecenters	96%	68.8%

Electronic mail, information search, and entertainment uses, such as chats and on-line games, are the most frequent uses of the Internet. The ability to design web pages is typically developed by highly motivated users who visit telecenters 3 or more times a week. Little is known about the type of projects that are developed by users but anecdotal accounts suggest personal rather than business use. Some centers in the United States show a rising use of centers for web and email for small business, too. In poorer countries, like Peru, without widespread telephone penetration to homes, telecenters also provide many with access to telephones and fax service.

- *The use of Internet in telecenters is affected by social conditions and cultural norms surrounding them*.

Once the technology is accessible to the public, responses from different social groups vary from one social context to another. Table 4 shows results of national surveys among telecenter users in Peru, USA and Mali. The under-representation of women in Mali has been reported as the result of a conservative and religious society (mostly Muslim), which has historically set cultural restrictions on information and education for women (Hudson, 2000). In contrast, US telecenters are being developed in community centers and libraries, traditional places for after-school activities and activities shared by all community members, including those unemployed, with part-time jobs or who remain at home, many of whom are women, children, and the elderly. The Peruvian *cabinas públicas* have developed the profile of business units (commercial telecenter and franchises), or educational centers which promote training, commercial and job-related activities.

Table 4. Users of telecenters by gender

Gender	Peru[a]	Canada[b]	USA[c]	Mali[d]	Uganda[d]
Male	55.8	51	38	65	55
Female	44.2	49	62	35	45

Source: [a] Peru: FAO-World Bank 2000   [b] Canada: Bruce, 2000
          [c] USA: CTCNet 1999   [d] Mali & Uganda: Hudson. 2000

SUCCESSES AND FAILURES IN TELECENTER ADMINISTRATION

The broad definition of telecenters as shared sites providing public access to information and communication technologies encompasses very different facilities supplying Internet connectivity, from cyber-cafes to public libraries and commercial info-centers. However, telecenters can be classified by two main aspects: a) the way in which their management is organized, and b) the types of services offered in addition to a computer connected to the Internet.

Evaluations of different kinds of telecenter facilities agree on identifying types of management as a key aspect defining issues of sustainability and community outreach (Proenza et al, 2001; IDCR, 1999). According to their type of management, telecenters can be classified as commercial or independent and privately operated telecenters; private franchises of public networks; centers managed by non-governmental organizations; universities and school centers; telecenters organized by municipal governments directly or in partnership with local entities; and private or public multipurpose centers, which typically offer a wide variety of public service (health providers, legal assistance, banking, equipment rental, etc.).

Based on evaluation research, the Inter- American Development Bank has identified some strengths and weaknesses of different types of telecenters. The IADB has found that NGOs and telecenters in schools are the most efficient models balancing out conflicting goals of self-sustainability and service provision to low-income groups.

Potential Impact of various types of Telecenters

Type	Target group: the poor	Replicability	Self-sustainability
Commercial	***	*****	*****
Franchise	*	Limited evidence	Limited evidence
NGO	*****	****	****
University	**	**	***
School	****	****	***
Municipal	***	***	**
Multipurpose- Private	****	**	**
Multipurpose- Public	***	***	*

Desirable feature of a telecenter

low service cost → higher cost & more services

more reliant on market forces → more proactive offer of services

Achievement level
* Very low   *** Medium   ***** Excellent
** Low   **** Good

Source: FAO-IADB

It is worth mentioning that experiments of publicly founded Brazilian telecenters have mostly relied on the multipurpose model, which typically face conflicting goals, unclear economic bases, and issues of self-sustainability. One of the first centers, established in 1993 in the town of Brusque (60,000 inhabitants) in Santa Catarina, for example, had telephone booths, public services (water, electricity, tax offices), computer training, business counseling, office support services (computers, office rentals, fax) and access to databases. After a period of prosperity, the center experienced a sudden decline of the demand due to increased availability of centers in adjacent areas providing services at cheaper prices. The concept of public service has stayed alive in Bahía and other states, where *Serviços de Atendimiendo ao Cidadão* (SAC) have been set up with state government financing and administration, and with IADB support. SACs have been placed at strategic locations where a large number of people converge, and there are also mobile SACs to serve rural communities. SAACs combine mostly public services of the different levels of government (federal, state, municipal) under one roof. At the *Liberdade* SAC, for example, citizens can obtain an identity document, a driver's license, birth certificates and tourist information.

Brazilian experiences also include NGO telecenters. The Committee to Democratize Information Techology (Comité para Democratizar a Tecnologia da Informação CDI) is a NGO sponsored by the government and private corporations, such

as BNDES, Microsoft, Xerox, the Starmedia Foundation, IBM and Global Partnership. Since 1995, CDI has set up 240 Information Processing and Citizenship Schools in diverse communities, including *favelas,* around the country. CDI schools are set up in communities that manifest interest in the project. CDI provides specialized instructors and technical support involving volunteers of the host communities. The goal is to make the schools self-supporting enterprises counting with help and funding of local businesses and individuals. The growth of the CDI network speaks of the advantages the NGO model.

## 3. WHAT ATTRACTS PEOPLE TO TELECENTERS ...AND WHAT DRIVES THEM AWAY

3.1. Awareness

- *Users are the best vehicles to increase community awareness.*

Raising awareness about the importance of communication technologies for individuals, families, organization and communities is crucial for telecenter success. Information campaigns about these issues and telecenter activities are expensive and time/effort consuming requiring strategic partnership (see section on *Community Networking*). The good news for telecenter managers and administrators is that evaluation research around the globe has found that users themselves are the best channels of promotion of telecenter activities.

Graph 2 summarizes the findings of evaluation studies done in 14 *cabinas públicas* in Peru (2000) and in 44 telecenters in the United States (1999). Although the studies do not evaluate exactly the same categories, both found that social networks (relatives, friends or acquaintances) are the channels drawing more people to telecenters.

Graph 2. Channels of telecenter diffusion: *How did you find out about this center...?*
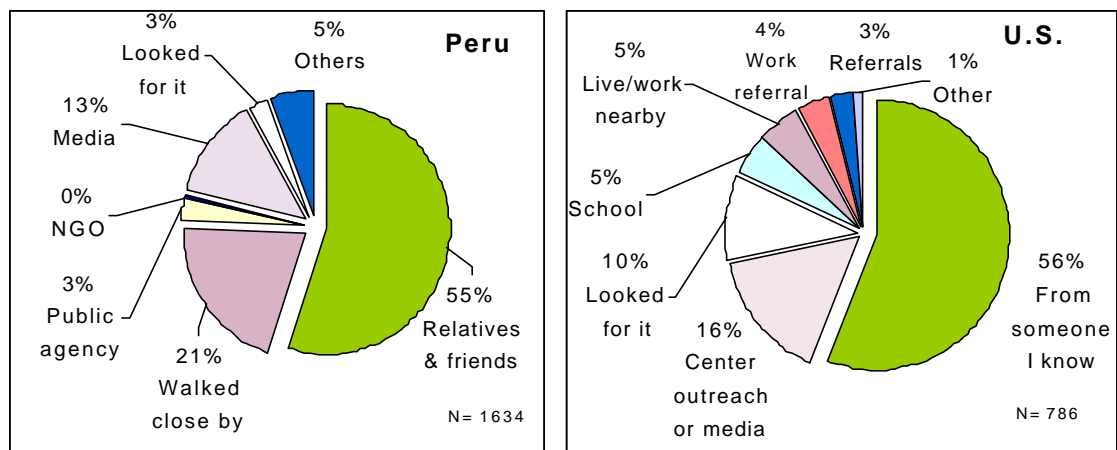
Source: FAO/IADB 2001; CTCNET 2000.

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The US study, funded by the Community Technology Centers' Network (CTCNet) included a one-year ethnographic study of 12 users from different telecenters and social backgrounds (Chow et al., 2000). The qualitative component of the evaluation helps to understand the dynamics of the process. One of the most powerful community-related effects of CTCs is that they raise the knowledge and skills of community members. Additionally, they help to bring people together in an informal setting, and in that way, enable informal exchanges of information to occur and new relationships to develop among community members. Nearly all of the participants in the CTCNet study talked about how they encouraged family and friends to come to the center. An unemployed woman mentioned that she encouraged other women in her welfare reform program to take good advantage of the computer courses in the telecenter. A young Latino promoted the telecenter among coworkers and partners in a gym he used to attend.

The key to successful promotion through social networks of users seems to be rewarding learning and social experience facilitated by the telecenter. The young Latino user highly valued the skills he had acquired at the tech center, which allowed him to make a brochure for a Latino health center, and helped producing a health-related cable TV program. A 40 year old

Media effectiveness in Peru:
How did you find out about this center...?

Medium	%
Newspaper & Magazine	1
Internet	2.5
Radio	3.8
TV	1
Posters	4.7

white man, who ended up working as a volunteer and liked to refer to his tech center as "a contact point in cyberspace," said he liked to connect there with like-minded people who shared his concerns about the environment and needed his technical skills. It is important the telecenter managers and staff understand that their customers are not only users of the services provided by the telecenter but also the best allies to grow attracting more people to the center.

Media campaigns appear as the second best option. The media mix varies but radio and posters seem to be very effective means of diffusion of the telecenter activity. A golden rule for successful administrators and center managers: *Do not advertise the telecenter if you are not prepared to meet the demand of services.*

3.2. Training

■ *The skills and attitudes of the telecenter staff make a difference.*
Behind a successful telecenter there are always motivated and assertive staff members who day by day make possible a real connection with the community. Preparing personnel to deal with common problems and to find new and better ways of operations

should be a primary objective of telecenter managers. Training of telecenter staff goes beyond computer literacy issues. It also includes business development and management capabilities, as well as networking and cooperation skills.

Research different sites of the CTC network in USA found that people who prefer these centers to other points of public access to the Internet highly valued the presence of helpful and knowledgeable staff and volunteers, and the supporting and learning environment that they help to create in the center. A friendly environment open to everybody's need is crucial to break down cultural barriers and the fear to the technology. Participant observation and structured interviews in libraries and community sites in Austin, Texas, found a considerable difference in customer satisfaction and performance between sites with welcoming and motivated staff and those with less prepared and unreceptive personnel (Lentz et al., 2000). Librarians, for example, were less likely to help people to learn how to use access, particularly important for adult users, because they perceived this task as 'extra' workload. In contrast, am Austin center focused on job training was seen as very welcoming to adults since they had staff specialized to help people learn the technology and software.

Notions of business development and management abilities are desired to monitor the telecenter performance and to look for new services an applications that can increase the number and diversity of customers. Well-prepared telecenter staff should be able to keep track and analyze statistics of use of different service and serve as a lived bond with the users. They should play a key role in identifying new business opportunities. Customer service skills should be developed in cooperative and non-intrusive behavior. Staff familiarized with the community usually delivers better results.

■ *Training a core group of users results in more usage of information and communication technologies available in the telecenter.*

Telecenters can provide special training opportunities for *motivated learners*. Training a seed group of highly motivated users produces a faster take-up in target groups than a 'drop-in', self-teaching approach. In telecenters in Soweto, South Africa, there are staff directed programs that enable users to obtain Microsoft Windows NY certifications on-line. In Uganda, community outreach programs targeting women invited them to visit telecenters advertising special courses to obtain health care, credit and price information, some of the biggest concerns for this group. Then, free and special training were offered to women who demonstrated interest in the service. Evaluation research found that in some cases the knowledge has been passed down to other community members (Hudson, 2000).

In the development of telecenters around the world it has been evident that the demonstration effect produced by a key community member making use of the technology is a powerful factor to attract users, particularly in small and close communities. The old lesson of the diffusion of innovation literature about the importance of *leaders* in the process of dissemination of new ideas and practices seems to apply well to the case of information and communication technologies. However, not all leaders are born as innovators, and conversely, not all innovators are leaders. A special effort should be made in providing 'hands on experience' to community leaders.

An alternative path to 'connect' to the community is to rely up to some extent on community *volunteers*. In exchange for training and experience, community volunteers have been found to make exceptional contributions to customer satisfaction in telecenters. The Western Australia's Telecenter Support Unit has designed a special program to attract volunteers summarized in three commands: "Gain, Train and Retain". Some incentives to attract local volunteers include recognitions, free time on computers, and college credits in local universities (Roman & Colle, 2001). Likewise, the Brazilian CDI program has had considerable success with using as trainers people who are volunteers or users 'paying' for their access by volunteering.

3.3. Overcoming economic barriers

■ *Self-sustainability: the main goal.*
Telecenters need for long term sustainability and business plans that fit the culture of the community. A panel study on telecenter management based on surveys and structured interviews with experts from 17 developed and developing countries found that 95% of them considers that successful telecenters must find ways to become self-sustained. Only 5% of the participants considered subsidies as the main source of income. In approaching issues of sustainability, telecenters face the question of how they can generate income yet serve those in the community who cannot afford to pay for their services. Evidence from the field suggest that there is no a single prescription to the problem. The solution seems closer to a diversified source of income, which combines user fees with public and private contributions. Responses to the challenge required economic evaluation potential sources of income within the host community, other founding sources, and a careful design of the telecenter business plan.

▪ *Government subsidies are needed to reach out rural communities or communities in greater need.*

Even a rather low cost of Internet access is a serious burden for people living at or below the poverty level. In its extensive evaluation of telecenters in rural areas of South and Central America, the Inter-American Development Bank concluded that: "it is not reasonable to expect commercial telecenters to expand quickly and spontaneously enough in rural or low-income areas, even if these are served by telecommunication infrastructure" (Proenza et al., 2001). The State should adopt subsidized development interventions to bring the service to the poor. Subsidies can be designed in a number of forms:

▪ *Indirect subsidies*: They can be a start-out investment leaving operating and maintenance costs to the operators. Some governments, such as the Australian government, do a larger commitment with telecenters subsidizing them up to four years of subsidies (Roman & Colle, 2001).

▪ *Direct subsidies*: Subsidized tariffs or free access can be also warranted through scholarships for students, and voucher systems for the impoverish sectors of the population. This system offers the advantages of steering the process to the consumer-demand side promoting more accountability of telecenters administrators to their communities.

Subsidies pose the issue of devising effective financing mechanisms. Resources can be drawn from Telecommunications Development Funds or Community Investment Funds constituted with contributions from telecommunication operators and other local businesses. Funds contribute to the redistribution of wealth and investment supporting sustainable development in the region. Sources of funds can vary according the economics of the place. For example, in Timbuktu (Mali) the city introduced a $10 departure tax for all air passengers departing from this regional trading center to support telecenters (Hudson, 2000).

In the United States, the E-rate policy warrants preferential tariffs for community access in schools, libraries and health centers. The E-rate is a program that generates funds to connect libraries, schools and telecenters to the Internet. The funds come from a small tax on commercial and business telephone bills. Some states, like Texas, have implemented similar plans at the state level.

▪ *Differential tariffs are needed to target different social groups and zones.*

Common marketing tools such as memberships, promotional plans, and diversity of user plans and tariffs enhance the attractiveness of telecenter for different members of the community. Offering of special plans for members of academic institutions, business and civic organization is one of the most successful strategies commonly reported by telecenters around the globe. Promotional plans are used to target special groups. Segmented tariffs and pre-paid plans and one-time contributions and subscriptions attract low-income users. In Bologna (Italy), for example, the community-network *Iperbole* charges customers with a onetime fee (about $40) for unlimited access.

▪ *Designing mechanisms of on-line payment increases on-line transactions.*

Developing projects with micro financing institutions helps them to develop on-line services for their clientele. In India, telecenters open account to users that can pay in cash for online purchases from the franchisees. Telecenters would complete the transaction by drawing on a trade account previously established with the on-line retailer through an initial deposit that is periodically replenished (Proenza et al., 2001). Colnodo[6], through its *Unidades Informativas Barriales* in Colombia, has developed similar systems of commerce. Colnodo leads the initiative "Comercio-e para t@dos" bringing together customers, cooperatives, small entrepreneurs, banks and credit card companies through their different sites (http://www.colnodo.apc.org/comercio_electronico.html). The site www.commerz.com.co is a rather successful initiative offering online payment systems, product catalogues, online shopping, cost calculation, and different kinds of delivery systems. The virtual bookshop www.magisterio.com.co run by an editorial cooperative offers more than 2,000 items including books, magazines, games and multimedia products. Serving the needs of small cooperatives of different Colombian regions, Colnodo has launched www.ecolombia.com.co, a site focused on commercializing original handcrafts from the Colombian countryside (Cadena, 2001).

▪ *Diversifying services not only attracts more customers but also increases sources of income.*

Looking at telecenters as simply educational providers limits their possibilities of development. Administrators and managers should remember that not-for-profit does not mean not-for-income. Assuming telecenters as "centers of information" could widen the

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[6] Colnodo is a Colombian NGO, which advocates for the use of electronic communication and universal access for e-mail. Its primary objective is to support community networking projects based on information and telecommunication technologies aimed at improving life conditions of host communities. Colnodo also provides electronic content focusing on topics such as human rights, environment and women rights. Comoldo has developed community technologies centers (CTC) in Colombia and Ecuador integrated under a CTC network known as *Unidades Informativas Barriales*. (http://www.colnodo.apc.org/index.php3).

range of services to be offered to their communities. In Canada, the Community Learning Centers (CLC) have started to discover the possibilities opened by the 'information center' model evolving toward a model that offers special services for local business and organized groups (Roman & Colle, 2001). In fact, the literature suggests that "a mature" or "robust" telecenter typically possess other information and communication business beside computer and Internet access (Colle 2000).

In Hungary, telecottages offer more than 50 different services to the community. These range from blood-pressure measurement (provided by 25% of these sites) to computer games (94%) and social assistance (44%). Cross-subsidies between telecommunication services can be used to keep some of them (e.g. Internet access) free to the vast majority of the public. Businesses and industries groups can pay for services such as teleconferencing facilities, or training packages for employers driving more people to the center, and providing a good base for sustainability.

3.4. Community Networking

Evaluation research across countries consistently points out that the effective insertion of telecenters into the host communities is a key feature of the centers' success. It is important to remember that telecenters are links in larger communicational chains. Going beyond computer connectivity and focusing on building networks of institutions and people transforms telecenters into local points of reference enhancing their base for generating income, attracting users, having an impact on community development, and sustaining operation over time.

■ *Develop strategic partnerships to promote special telecenter initiatives.*
The natural sources of partnership are related to the different kinds of "communities" in which the telecenter is embedded. Telecenters can pair up with neighboring organizations in their '*geographic communities*'. Some "*communities of interests*", such as professional associations, religious groups, academic institutions and ethnic/cultural organizations can also be supportive partners willing to go online. *Communities of commerce* formed by people working together in the same company or area, or groups of companies linked in a supply chain are usually interested in taking advantage of the technology to do business or *teleworking*.

Teleworking has played an important role in the creation of telecenters in France, most of which act as information technology service companies. In the United States, many telecenters have teleworking as their primary activity, in particular in California and the North East. An example of these alliances is the Potomac KnowledgeWay (http://www.knowledgeway.org), a coalition of public access providers, local

governments and enterprises in geographically continuous areas in Maryland, Northern Virginia and Washington D.C.

The Potomac KnowledgeWay has focused on two successful programs of e-commerce and teleworking. The 'Netpreneur Program', designed for a new kind of entrepreneurs who would not exist without the Internet. NP is designed to create a regional network that connect enterprises with people who can help them (other *netpreneurs*, suppliers, founders, advisors, media, strategic partners and local agencies) facilitating information exchange and deal-making to help *netpreneurs* to bring their products and services faster to the market. The second initiative is the 'Work Force Enhancement Program' focused on attracting computer and Net savvy workforce needed in information industries. A high profile public relation campaign attracts local talent (students and interested individuals), they're received training and put in contact with companies that support the program. In Austin, Texas, partnerships have been made between employers who need skilled employees, local schools, and NGOs to create access and training center that function within secondary schools, and that serve the general public after school hours. Extreme dependence on teleworking programs can make telecenters less sensitive to local development objective. The problem can be addressed through programs, which train locally marginalized people creating employment for them.

- ***Offer network support to local associations and micro-producer groups.***
Many telecenters are born as a part of a communication project of specific communities (academic networks and schools, health centers, rural communities, cultural groups, etc). Telecenters can take advantage of the 'organic' characteristics of their host communities targeting groups linked to them (professional associations, student associations, activists, businesses). Assessing information needs of these groups could be part of the formative evaluation of the center. The goal is to design a business plan that can be flexible enough to adapt to a variety of demands from different social actors. The clear advantage of this strategy is the creation of conditions for a continuous flow of customer and resources. The immediate set back is the risk of narrowing telecenter operations to serve the needs of very particular groups isolating it from the rest of the community. These tensions can be managed monitoring the mix of telecenter activities keeping a balance in time slots devoted to serve different groups. In Colombia and Ecuador, Colnodo has developed associations with rural institutions (e.g. Corporación Autónoma Regional at http://bases.colnodo.org.co/reloc/index.html) organizing online news and exhibitions, sensitive maps, and an Interactive Environmental Council that enables communication among members, most of them farmers in distant areas.

▪ *Participate in plans to modernize formal education in the host community.*

In developed as well as in developing countries telecenters draw large numbers of students of all levels who see in the telecenter a place to develop freely educational and entertainment activities. Sometimes, neighboring academic institutions are not fully aware of this fact and the opportunities that it might offer to them. Contacting these institutions to develop courses adjusted to their curricula can widen the base of telecenter customers. It may require special training programs for professors as well as for students, which can be offer for low fees.

Another opportunity is to coordinate adult education programs with local academic institutions. The CTCNet ethnographic study of telecenter users in the U.S. have found that many participants felt that learning at the tech center was easier or more enjoyable than the learning they did in school. Several also mentioned that their view of themselves as learners was more positive as a result. A 30-year old Hispanic and a disabled, white women in her early 40s, for example, talked about having more confidence in their abilities valuing the hands-on opportunities and absence of pressure to learn at the center. In terms of achievement, learning to use a computer helped one of the users to become a published writer and enabled a community activist to extend his work with the homeless from a local to an international arena. Good attitudes to the center learning experience can lead adults back to formal education.

In the Austin, Texas, program with secondary schools and training centers, one attraction to the school is support for facilities. A foundation, funded by employers, government and technology companies, provides the money to create and update technology lab and facilities used by both the school and the adult training program.

3.5. Mechanisms of Appropriation: Users as content creators

▪ *Create content in local language and launch public services on-line.*

Linking community "values" and content on the Internet is key to telecenter success, particularly in Latin America, where the content preference for native language content is higher than in other world regions (see Graph 3). Content and services must be affordable, timely, reliable, and easy to use. They should cover a wide range of offerings that reflect social diversity in terms of cultural identity, linguistic preferences and political views.

Providing *'community information'* including a range of information from local interest (local listings, directories, calendars) to social services (public health information, library-supported data bases, commercial data bases). Essential online databases potentially include those providing access to information about environmental conditions (weather, pollution), employment opportunities (job banks), health matters (information, list of health care providers), emergency services, library holdings, political processes and civic/local events, and commercial databases (action sites, price databases, e-commerce sites).

Graph 3. Language preference on Internet content
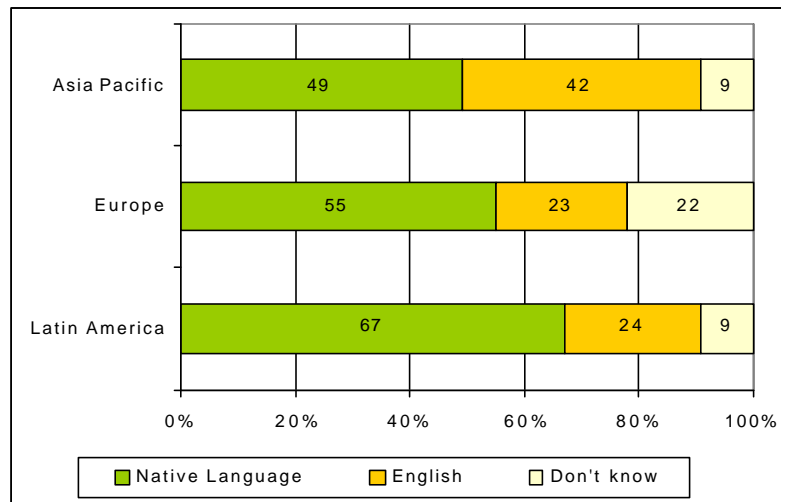
Source: Adapted from IDC 2000.

Based on this active network of telecenters and in partnership with other NGO and professional association, the Colombian NGO Colnodo is developing new contents for the Colombian Internet through different projects. Projects include:

- More than 30 different databases developed and hosted in Colnodo's server (http://www.colnodo.apc.org/bd_desarrollo.html), among them: the Colombian Film Catalog, Library on Sustainable Development, Press Summaries, Colombian Conflict Solution Network, Database of Colombian Recipes, Video Library CINEP, Center for Women and Gender Studies, environmental database of Ecofondo, and database Suna Hisca on indigenous cultures.

- Developing web sites for cultural and civic organizations such as Kerigma Theater Foundation (http://www.uib-kerigma.Colnodo.apc.org), Foundation for Adult Learning Programs (http://www.uib-pepaso.Colnodo.apc.org), and the AVF Foundation for Social Development (http://www.uib-favp.Colnodo.apc.org).

- Association with the World Community Radio Association (AMARC) to create MoebiuS, a channel to broadcast AMARC programming on the web.

- Organizing Planeta Colnodo, a site that hosts portals of different telecenters of the UIB network (http://www.uib-teusaquillo.colnodo.org.co/) with locally relevant information offering e-commerce information, interactive features for the communication between citizens and government officials, and updated calendar of events.

Another model pulling people to public telecenters and to the Internet in general is the model of *'digital cities'*. It has been successfully developed in Europe bringing the

life of the cities online. In Bologna, the network Iperbole has develop the Bologna Digital City project aiming at 'reproducing' Bologna online bringing together people, commerce and local government to their site (http://www.iperbole.bologna.it). In 1999 Belgium had 357 'digital cities. Some of them started as top-down initiatives (from the local government to communities) while others were created and supported by community networks, telecenters and cyber-cafes. Digital cities initiatives have been transformed into an official policy of the European Community (http://www.infocities.eu.int).

- ***Make the community responsible for maintaining community information systems.***
  Entrusting civil society institutions with the management of the telecenter enhances likelihood of success. Telecenters should develop a community-based capacity to receive and generate services and information. The more that community members and organizations help operate and maintain a center the more it becomes theirs. The Brazilian CDI, for example, argues that their centers are seldom robbed because community people take ownership of them and protect them.

In Milan, the Rete Civica di Milan (RCM @ http://www.retecivica.milano.it) strives to build free services and user-friendly electronic environments that can attract people. Some key features of the RCM's strategy includes:

- Offering space for local virtual communities of interest. Some 80 nonprofit associations have their sites on RCM. They include hobbyists (like motorcyclists, kite lovers, archers, etc), volunteers (Caritas), thematic groups (political associations and trade unions0, and professional associations. These areas are directly supplied with content and independently managed by a member of the association who informs citizens of the association' initiatives and carries online discussions.

- Carrying about 400 moderated public forums managed by online communities.

- Working with 300 volunteers moderators that preserve the save, friendly environment of the RCM free net.

3.6. Overcoming social and cultural barriers

Creating an effective connection between a telecenter and its host community attracting diverse groups of users requires a good understanding of the cultural norms of the community, in particular of those that may hold back the adoption and diffusion of the technology. Some strategies can be used to overcome cultural barriers of access.

- ***Women are more likely to use telecenters if telecenter staff includes women***
  Evaluation research in different African countries found that women are more likely to use telecenters if their staff includes women (Hudson, 2000). The incorporation of women in the organization and administration of telecenters help to break cultural

barriers that have constrained technological issues to men. In Colombia, some of the most frequent customers of the Unidades Informativas Barriales are women members of the Latin American Network of Nurses (REAL) (http://www.r-e-a-l.org),. It has set up its database, chat rooms and special search system on the servers of these telecenters. In general, the Brazilian CDI finds that the most effective "monitors" or trainers are those who are comparable in age, gender, etc, to the person they are assisting or training.

- *New technologies can be used to preserved traditions.*

In Yoff, a traditional Islamic area of Senegal, APECSY –a base community organization- designed the EcoCommunity Program of Yoff (ECOYOFF) aiming at building a sustainable development project for the region by the Year 2020. The goal is to use "modern technology to preserve ancient traditions". APECSY has created the Popular Urban Information System (SIUP) of Yoff-Dakar (http://www.siup.sn/default.htm) linking telecenters and providing links between citizens and government and NGOs. An innovative aspect of SIUP is the involvement of the traditional communicators leaders (*griots*) to the initiative attracting attention toward the information made available online, and growing sensitization and involvement of the traditional authority and populations.

4. AN AGENDA...

This overview of best practices in telecenter development around the world clearly shows that telecenters goals must go beyond simple connectivity to information services and the Internet. Telecenters should develop a model for an Integral Service Delivery System (Gurstein, 2000) aimed at meet the needs of their host communities. Elements of such a strategy can be summarized in the following points:

- Form coalitions to increase awareness on the importance of the technology and the center's work.
- Provide continuous training for your staff and core users/customers.
- Strive for self-sustainability.
- Monitor your users/customers and be attentive to their needs.
- Evaluate your performance and make adjustments when they are needed.
- Diversify your information related services. They could include:

1. Providing community Internet access from for-profit cyber cafes to community access sites and telecenters.

2. Providing *'community information'* including a range of information from local interest (local listings, directories, calendars) to social services (public health information, library-supported data bases, commercial data bases).

3. Facilitating civic/community participation online through non-partisan, democratic projects sponsoring civic forums and public consultation initiatives.

4. Providing community service delivery online in partnership with e-government including information and registration processes (entitlement, certification, health information, counseling, employment information, small business support.

5. Supporting local e-commerce organizing local e-malls, community web sites of small entrepreneurs, links to other e-commerce sites, giving information about products and data bases on prices.

6. Providing education and training for community learning networks from the distribution of information about uses of the technology and different sources of information to formal classes aiming at lifelong learning.

7. Supporting community and regional planning becoming a link between planners and real communities gathering information about local needs and making it available online.

8. Enabling and supporting 'telework' initiatives offering dedicated data-lines and work related services that serve the need of certain enterprises and their employees

Integral Service Delivery System
for Telecenters

1. Connectivity
- Computer and Internet access
- Telephone, fax and teleconferencing services
- Diverse software availability

2. Sustainability
- Price information systems
- Local e-commerce and e-malls
- E-banking and investing information
- Supplier networks
- Distribution networks

3. Economic equity and opportunity
- Ads and job listings
- Labor news
- Job training
- Telework
- Unemployed, laid-off, and workers discussion forums

4. Education
- Online databases and homework help
- Online forums for educators and students
- Q&A on major topics
- 'Pen pals': discussion or work groups
- Access to library information systems

Based on Gurstein (2000) and Schuler (2000)

INTEGRAL SERVICE DELIVERY SYSTEM
FOR TELECENTERS

5. Conviviality and culture
- Forums for ethnic, religious, cultural and neighborhood interest groups
- Local recreation, events and parks information
- Art, crafts, and music classes, events and festivals
- Community calendar

6. Health and well-being
- Q&A on medical and dental information
- Self-help forums
- Alternative and traditional healthcare information
- Community health care providers
- Public safety reports and information
- Where to find help…
- Resources for homeless and shelters information

7. Strong democracy and participation
- Contact information for elected officials ("Ask the Major…")
- E-mail to government agencies and political organizations
- E-mail to local NGOs and other civic organizations
- Online versions of legislation, judicial decisions, and regulations
- Forums on major local issues
- Government information

8. Information and communication
- Cooperation projects with alternative media (e.g. community media)
- Email lists of public services and local agencies
- Online access to newspapers, radio and TV channels
- Access to other online databases

Based on Gurstein (2000) and Schuler (2000)

FURTHER RESOURCES

Telecenters and Community Networks' sites

The Acacia Initiative
http://www.idrc.ca/acacia/acacia_e.htm

Community Technology Centers
http://www.ctcnet.org\

Colnodo - *Unidades Informativas Barriales*
http://www.colnodo.apc.org/index.php3

Planeta Colnodo
http://www.uib-teusaquillo.colnodo.org.co/

Popular Urban Information System (SIUP) of Yoff-Dakar
http://www.siup.sn/default.htm

The Potomac KnowledgeWay
http://www.knowledgeway.org

Red Científica Peruana
http://www.rcp.net.pe/

Rede Iperbole
http://www.iperbole.bologna.it

Telecenters in Mozambique
http://www.telecentros.org.mz/

Major Supporters of Telecenter Development

Bellanet (Italy)
http://bellanet.org

The Canadian International Development Agency (CIDA)
http://www.acdi-cida.gc.ca/index.htm

The Inter-American Development Bank
Information Technology for Development Division
http://www.iadb.org/ict4dev/index.htm

The International Development Research Centre
http://www.idrc.ca

The International Communication Union /Telecommunication Development Sector
http://www.itu.int/ITU-D-UniversalAccess/index.html
UNDP- Sustainable Development Networking Programme (SNDP)
http://www.sdnp.undp.org/

The United States Agency for International Development
http://www.usaid.gov

World Bank's InfoDev
http://www.infodev.org

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