



Session 5
Infrastructure, Access, and the Potential of
Wireless
DRAFT

by

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EXECUTIVE SUMMARY

The latest draft declaration of principles for the World Summit on Information Society (WSIS) recognizes that “knowledge, information and communication are at the core of human progress, endeavor and well-being and that, although the dramatic increase in the volume, speed and ubiquity of information flows, which has been made possible through new information and communication technologies, have already brought about profound changes in peoples lives, and are creating enormous new opportunities, **they have yet to benefit the vast majority of the peoples of the world**”.

Said draft declaration further promotes, among others, the principles of “**inclusion and universal, ubiquitous and affordable access to ICT**” wherein countries, particularly with less developed infrastructure, will encounter very serious difficulties because of the various dimensions associated with this goal.

The emerging global and national information and communications technology services sector has been characterized by rapid technological change, industry restructuring, market expansion, privatization, widespread competition and significant cost reductions over the last decades. Such changes have profound implications for developing countries as they seek to expand and develop its ICT sector to make it globally competitive and at the same make it, as, Noam¹ stated, “a public policy to spread telecommunications to most members of society, and to make available, directly or indirectly, the funds necessary.”

Given this emerging environment, debates are ongoing as to the role of government in achieving the goal of universal service. There is the dilemma of pursuing the policy of privatization on one hand and the reluctance of the private sector on the other hand, in providing the necessary applications and services in unserved and underserved communities because of lack of commercial viability.

A number of Community eCenters or multi-purpose community telecenter models have been adopted by a number of countries. In the Philippines, the Community e-Center Program (CECP) is being adopted by the Philippines, in its pursuit of achieving the goal of universal access. The Program intends to coordinate similar and related initiatives to align with a single blueprint of CECP implementation strategies. Moreover, CECP focuses on content development rather than over-emphasizing broadband deployment alone. Content can drive utilization of

¹ Eli M. Noam, “Reforming Universal Service: A Prerequisite to Competition and Interconnection” in Eli M. Noam and A.J. Wolfson, eds., Globalization and Localism in Telecommunications (Elsevier Science B.V. 1997), 113

broadband, as well as the need for complementary capacity building efforts to educate end users.

In many cases, sustainability, business/commercial mechanisms, content provision and local participation are primary considerations in each of these models. Given the current status of broadband deployment and Internet penetration in the region, a number of technologies more suitable to remote communities are being utilized in some “successful” models.

I. INTRODUCTION

Traditionally, the goal of spreading telecommunications was referred to as *universal service*. Hadden,² for example, states “Universal service is the name given to the level of telecommunications service that public policy regards as so essential it must be made available to everyone at reasonable cost”. Universal service is supposed to respond to the global concern of “narrowing the telecommunications gap” (Maitland Report) and recently “bridging the digital divide”.

In many cases, the terms universal access and universal service are used interchangeably. Hank Intven, Jeremy Oliver and Edgardo Sepulveda, principal authors of the Telecommunications Regulation Handbook³ described the concepts as follows:

Universal Service policies generally focus on promoting or maintaining “universal” availability of connections by individual households to public telecommunications networks. The objective of connecting all, or most, households to public telecommunications networks is generally referred to as the “Universal Service Obligation” (USO). According to the International Telecommunication Union (ITU)⁴, the goal of universal service is appropriate for developed countries only, since the concern is with “the few without a telephone rather than the majority of the population, which already have one.” However, it is not economically feasible in most developing countries, where universal access is a more practical objective.

Universal Access (UA) generally refers to a situation where every person has a reasonable means of access to a publicly available telephone. UA may be provide through pay telephones, community telephone centers, teleboutiques, community Internet access terminals and similar means.

The definition of Universal Access is very much a country-specific matter and correspondingly Universal Access policies ought to be flexible in meeting specific Universal Access needs. Definitions also vary and the focus usually depends on the level of development of a particular country. For example universal access needs in high-income economies focus the needs of for example, the elderly, the information infrastructure, availability of choice and quality of service. Examples of universal targets in selected developed countries are shown in Table 1.

² Susan G. Hadden, “Universal Service: Policy Options for the Future” in Eli M. Noam and A.J. Wolfson, eds., Globalism and Localism in Telecommunications (Elsevier Science B.V, 1997), 129

³ The preparation of the Telecommunication Regulation Handbook (Nov 2000) was funded by the *info*Dev Program of the World Bank, with additional funding from McCarthy Tetrault.

⁴ 1998 World Telecommunication Development Report (Geneva: International Telecommunication Union)

Table 1: Universal Service Targets of Selected Developed Economies

Universal Service Targets in Selected OECD Countries	
Australia	Standard telephone services, including voice telephony and, if voice telephony is not practicable due to a disability, another form of communication equipment to voice telephony (e.g. a teletypewriter); payphones; prescribed carriage services.
Canada	Individual line local service with touch-tone dialing provided by a digital switch with capability to connect via low speed data transmission to the Internet at local rates; enhanced calling features, including access to emergency services. Voice Message Relay service, and privacy protection features; access to operator and directory assistance services; access to the long distance network; a copy of a current local telephone directory.
USA	Voice-grade access to the PSTN, with the ability to place and receive calls; Dual Tone Multi-frequency (touch-tone) signaling or its functional equivalent; single party service access to emergency services; access to operator services; access to directory services; access to long distance services.
Norway	Public voice telephony; operator assistance; emergency and directory inquiry services; public payphones.
Spain	Basic telephone service including local, national and international access; free directory services; public phones; special services for disabled people.
United Kingdom	Connection to the fixed network able to support voice telephony and with speed data and fax transmission (and the option of a more restricted service package at a lower cost); public telephones; free access to emergency services; itemized billing; selective call barring; access to operator assistance and directory assistance.

On the other hand, Universal access objectives of developing and transitional economies generally focus on network coverage, payphones, affordability and education of users. Examples of these are shown in Table 2.

Table 2: Universal Access Targets of Selected Developing and Transitional Economies

Universal Access Targets in Selected Developing and Transitional Economies	
Costa Rica	Within 1 km of both public and private access.
Iran	Telephone facilities to all villages of more than 100 people.
Kenya	A phone within walking distance.
Mozambique	A public telephone within distance of less than 5 km. At least one public telephone in each of the 144 district centres.
Zambia	Telephone booths in public places (schools, clinics, etc.) countrywide.
Philippines	The availability in all urban and rural areas of a minimum set of telecommunications services, which are reliable and affordable.

Recently, focus has shifted to access to information and communication technologies (ICT) to ensure the fundamental right to receive and impart information and ideas through any media as enshrined in Article 19 of the United Nations Universal Declaration of Human Rights. As we come close to the holding of the World Summit on Information Society in December this year in Geneva, Switzerland,

With rapid advancement in technologies and changing global ICT environment, policy makers no longer define universal service in terms of access to telephone services, but rather in terms of access to information and communication technologies.

There appears to be a converging viewpoint that the digital divide is not just about access to technology, nor necessarily of high cost, but has socio-economic component. There are many dimensions to the digital divide. The digital divide exists between nations and within nations. It exists between rich and poor, young and old, urban and rural. There is a financial divide, a knowledge divide and a divide of confidence. The divide is also reflected in the concentration of information resources in a small group of developed countries – the imbalance of information technology assets among nations.⁵

The 2002 World Telecommunication Development Conference identified the following important factors to bridge the digital divide:

Awareness – the state and individuals should be fully aware of the importance of digital technologies and their applications.

Accessibility – Infrastructure should be expanded and improved in order to provide the necessary connectivity for effective use of ICTs.

Affordability – Means should be found to provide low-cost services to users, low-cost equipment, and training on the effective use of ICTs for national and individual development.

These need to be expanded by another “A” if we are to succeed in this objective-APPLICATIONS. Focus and concerted efforts should be undertaken both by governments and private sector to develop applications. Too often there is too much emphasis on building networks and deploying broadband at the sacrifice of developing content, and more specifically, national language content.

These are some of the main focus of the preparatory discussions to WSIS.

II. THE CHANGING GLOBAL ICT ENVIRONMENT

The global information and communications technology and services sector has been characterized by rapid technological change, industry restructuring, market expansion and significant cost reductions over the last decade. Changes in this environment are on going which necessitate regular examination of the assumptions on which the structure of government policies and strategies towards the ICT industry has been based.

⁵ p.4, Final Report of the ITU World Telecommunication Development Conference, Istanbul, Turkey, March 2002.

An understanding of the current global environment, including its change and driving forces, is essential to appreciate the enormous challenges that currently confront developing countries as they strive to keep up with demands of participation in the global economy.

III. DIAGNOSTIC SNAPSHOT OF ASIAN ICT ENVIRONMENT

Table 3 provides a snap shot of the ICT environment in Asian countries. As expected, a wide disparity exists within Asia and between developed and developing countries.

CATEGORIES/COUNTRIES	IDN	LAO	MAL	MMR	PHIL	SGP	THA	BNGLDH	INDIA	PKSTN	S. KOREA
TELEPHONE SUBSCRIBERS per 100 pop.	9.1	2.1	51.2	0.6	22.0	125.5	22.2	1.3	5.2	2.9	116.8
CELLULAR MOBILE SUBSCRIBERS per 100 pop.	5.50	1.00	34.88	0.03	17.77	79.14	26.04	0.81	1.22	0.56	67.95
INFORMATION TECHNOLOGY											
- Internet Hosts per 100 inhabitants	2.2	0.3	31.1	-	3.9	479.18	11.8	-	0.81	0.78	148.47
- Internet Users per 100 inhabitants	191.2	27.1	2,731.1	2.1	255.7	5,396.6	775.6	15.3	159.1	34.5	5,518.9
- Estimated PCs per 100 inhabitants	1.1	0.3	12.6	0.11	2.17	50.83	2.78	0.34	0.58	0.41	55.58
INT'L. INTERNET BANDWIDTH, Mbps (As of 2001)	313.0	2.0	733.0	2.0	237.0	2,369.0	642.0	40.0	1,475.0	225.0	5,432.0

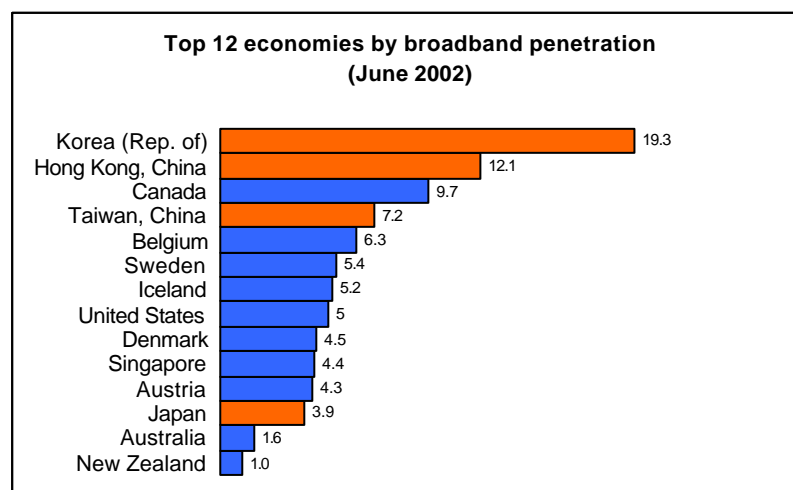
Source: ITU; (<http://www.aseanconnect.gov.my>)

Table 3: ICT Indicators in Selected Asian Countries

Infrastructure and Technology

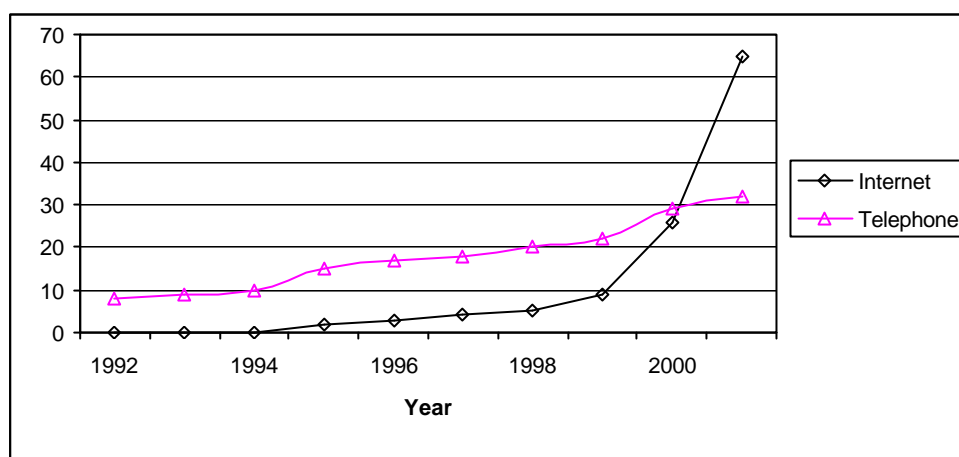
Asia-Pacific emerged as the largest telecommunications market in the world in 2001, according to an ITU report released during TELECOM ASIA 2002. The region is a leader in advanced Internet technologies such as broadband access and mobile data (see Figure A)

Figure A: Top 12 economies by broadband penetration (June 2002)



The region is experiencing an explosion of international Internet bandwidth. Capacity on Internet links connecting Asia Pacific to the world have grown more than eightfold over the last two years from 8 to 65 gigabits by the end of 2001. International Internet capacity in the region now far exceeds conventional telephone capacity (see Figure B).⁶

Figure B: Asia-Pacific International Communications Capacity (Gbit/s)



While the region is experiencing the bandwidth boom, not all countries have participated in and benefited from it. The ITU identifies two such groups of countries with unfavorable geographic locations, i.e. land-locked Asian countries and Pacific island nations lying too far away from main submarine cable routes. These groups of countries do not get the full benefits from undersea cables.

ITU further explains that these nations find themselves in a situation where they rely on lower quality and high-cost satellite connections. In most cases, these countries do not have the economies of scale and therefore do not have the resources to buy large amounts and thus pay higher prices. For example, ITU research suggests that countries in South East Asia are paying between six and seven times more than what Japan pays for international Internet bandwidth.

IV. TECHNOLOGIES AND OTHER UNCONVENTIONAL ACCESS METHODS AND APPLICATIONS

Access barriers have been largely due to poor telecommunications infrastructure in places, which still predominantly use the traditional analog copper cable.

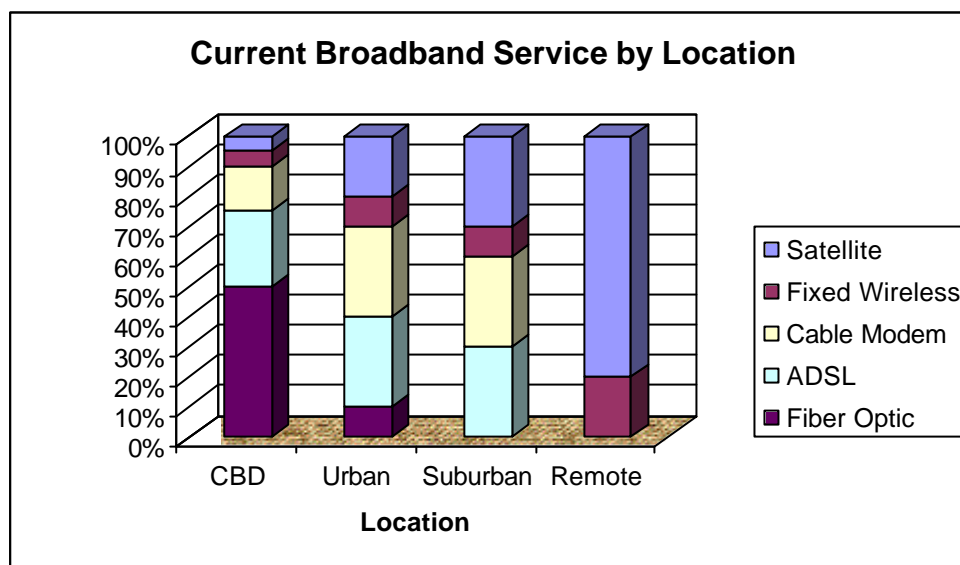
There are an increasing number of wireless technologies being utilized in developing countries to improve access. By utilizing wireless technologies, rolling out of the infrastructures becomes quicker and more often than not, more cost effective.

⁶ Source: International Telecommunication Union.

East Asia APEC Economies include China, Hong Kong China, Indonesia, Korea, Malaysia, Philippines, Singapore, Chinese Taipei, Thailand and Vietnam.

Satellite, as cited earlier, has been utilized by land-locked and small island nations. It has been recognized as an appropriate technology for broadband service in remote location as shown in Figure C.

Figure C: Current Broadband Service by Location⁷



On the other hand, some unconventional access methods have proven to be successful particularly to meet the requirements of SMEs. Companies, community groups and individuals are now recognizing the need and the potential for using the short messaging service (SMS) of cellular phones for communicating with customers, members and associates.

We have already seen that mobile phone usage in many, if not all, countries is growing rapidly and has certainly reached “critical mass”. Mobile phones are usually kept with the person all the time and so it becomes the ideal way of communicating reliably with people.

A report from the APEC Telecommunications and Information Working Group (TEL) on “EC Strategies for Rural SMEs in APEC” presented the results of case studies in the Philippines and Indonesia that put forward cases showcasing the “importance of community internet access in rural areas” into realities. Said report presented the following applications⁸, among others, that showcase the many opportunities for creative people who utilize SMS for specific business requirements.

⁷ Presentation by Dr. Phinainitisart, Shin Satellite Public Co., Ltd., at the Industry Forum held in conjunction with the 3rd ASEAN TELMIN Meeting in Singapore, September 2003

⁸ Examples were taken from the APEC TEL Working Group Report on EC Strategies for Rural SMEs in APEC, presented at APEC TEL 28 in Taipei on 4-10 October 2003.

Booking Hotel Rooms in the Philippines

A beach resort recently opened in the southern island of the Philippines, 880 kilometers south of Manila. Business during a prime vacation week was quite brisk, even though the place has no reservation office, no website, no fixed-line phone or Internet access. The owners only had a poorly printed brochure listing two mobile phone numbers. “Practically all out guests this week made reservations through these numbers, and most of them didn’t call – they just texted us,” the owner said. “Our customers save a lot of money.”

Text2teach in the Philippines

text2teach, a service introduced in the Philippines is a global program developed jointly by Nokia, the International Youth Foundation (IYF), Pearson and the United Nations Development Programme (UNDP). The four organizations combined their expertise in technology, training, content and processes to create an impact on the learning of young people. It enables the teachers to use mobile phones supplied by Nokia to request more than 80 full-length videos provided by Pearson, each of which introduces and illustrates a key component of the Philippine science curriculum. Upon texting, the requested video will be sent via satellite to a digital recorder connected to a television in the teacher’s classroom. Each video’s interactive demonstration of science concepts and ideas is expected to benefit both teachers and students.

Malaysian News by SMS

Online newspaper Malaysiakini launched pay-per-view access to its news content by SMS. In order to subscribe, readers must send an SMS with the word “Mkini” to telephone short code 32300. Malaysiakini will send a return SMS with a special login code. Once this code is entered into the SMS login box on the website, the content can be accessed for the next 24 hours.

Livestock and Harvest Prices

Australian based Agricultural agency Elders say that growers and sales representatives now replace fax with SMS to receive up-to-date information about prices –vital in an industry where price changes can happen quickly. They are also examining the use of SMS for insurance quotes and livestock prices. Emails have also become an important means of reaching growers.

Bureau Trial of SMS to Warn of Severe Weather

The Australian Bureau of Meteorology is running a trial in four cities using SMS to deliver an alert directly to the mobile phones of members of the public when severe weather is forecast. The trial has already attracted over 2500 subscribers each requesting, on average, six specific services. The SMS message provides an alert that a warning has been issued and refers the recipient to the Bureau website or a 1300 telephone number for full details of the warning.

V. COMMUNITY E-CENTERS, MULTI-PURPOSE COMMUNITY CENTERS AND OTHER SIMILAR SCHEMES: BEST PRACTICES AND MODELS

A telephone in every home should be a key goal in any country's telecommunications policy, but a telephone within walking distance is a worthy interim step.

This is why telecenters appear as important elements within the communications infrastructure of a number of countries around the world.⁹ Telecenters are also known as community e-centers, community access centers, telecottages, Internet shops, Internet cafes, cyber-cafes, and other names, depending on size and functionality. Community E-Centers are facilities where the public can access a variety of information and communication services and technologies. Community E-Centers range in size from one-person micro-business to middle-size enterprises or cooperatives employing ten or more people. Its concept is flexible, can be adopted to a wide range of local needs and circumstances, and can evolve from one form to another in response to changes in business practice, technology, and the economy.¹⁰

More than just providing "shared premises" where the public can access ICT services¹¹, community e-centers play a major role in "developing human capital, and encouraging social and economic development¹²" especially in underserved and unserved areas.

Bastidas-Buch, Montero and Proenza identified seven (7) types of community e centers based on management style: commercial, franchise, university, school, Non-Government Organization (NGO)-sponsored, municipal and multipurpose¹³.

The commercial e-center (a.k.a. *cyber café*), mainly offering Internet access, has the highest potential for replication and sustainability. The mechanisms for the **franchise model** have yet to be defined. The **NGO-run community e-center** has the highest potential of targeting the poor populations. It tends to have specialized content and services as determined by the location and promoting institution. The **university-based e-center** provides access to ICT mainly for students. The services, however, may be available to the public. Likewise, the public is allowed to access ICT in **school e-centers** but only after class hours. In concept, **municipal and multipurpose community e-centers** offer wide-range of private and government services. Municipal e-centers are primarily run by local governments, some of which are in partnership with private entities. Multipurpose e-centers, on the other hand, may be run either by the state government or an administrative board.

In addition to these seven types, two more types are proposed in this paper, namely the community and cooperative telecenters. The **community e-center** focuses on the services uniquely required by the community while the **cooperative telecenter** is funded and managed by the cooperative.

⁹ Peter Kruger, The Role of Telecenters, "World Telecommunication Development THE DIGITAL OPPORTUNITY", published by International Systems and Communications Limited, 2002

¹⁰ Framework for DOTC Community E-Center Program, p. 3

¹¹ Colle, Royal D., and Raul Román, quoted in Dymond, Andrew C., and Sonja Oestmann.

¹² Dymond, Andrew C., and Sonja Oestmann.

¹³ Bastidas-Buch is a Telecommunications Engineer working for the International Telecommunications Union. Montero works as Systems Specialist for the Inter-American Development Bank. Proenza is an Economist with the UN-Food and Agriculture Organization.

Among the most successful models established are:

- (1) Peru's *cabinas publicas*
- (2) Paraguay's AMIC@S
- (3) Chile's El Encuentro
- (4) Philippines B2B Price Now ¹⁴

Peru's *cabinas publicas* fall under the commercial e-center category where the centers are privately-owned and managed, and are more popularly known as Internet cafés. The first *cabinas* were set up by the academic and scientific community, *Red Científica Peruana* (RCP). The success of the *cabinas* resulted from the aggressive awareness campaign led by the RCP, the increase in the number of young people capable of operating and managing ICT, and Peru's telecommunications policies that embrace the concepts of market liberalization and competition. Both human resource and market conditions created the demand and infostructure that brought about the widespread use of ICT and ICT-enabled services.

Paraguay's AMIC@S (*Aulas Municipales de Información, Comunicación y Aprendizaje*) are basically municipal community e-centers established in both cosmopolitan and poor communities that serve as media for cyberconferences between the mayor and the public, computer training centers, instruments for virtual trips, and/or venue for accessing other ICT service/s specific communities demand. The AMIC@S were put up and are maintained by finances provided by the USAID and the local government. A central *technical unit* has been put up to set the guidelines for the operation of all AMIC@S while individual *management committees* have been formed to supervise each.

Chile's El Encuentro is an example of an NGO-run community e-center. *El Encuentro* was conceptualized by an influential individual who sought hardware and software donations from private businesses. The finances of the *El Encuentro* are managed by a *Board of Directors*, which consists of influential people who solicit funds for the community e-center.

Philippines B2B Price Now is basically a cooperative type telecenter. It is focused on meeting the needs of very small agricultural concerns across the Philippines. India's Warnana "Wired Village" project in the state of Maharashtra, India is implemented by a local cooperative that utilizes ICT to streamline the operations associated with sugarcane growing and harvesting. The project is benefiting small farmers, both in terms of transparency and time saved on administrative in terms of monetary gains.

Foregoing, the setting/location where the community e-center shall be set up must be the primary determining factor in identifying the appropriate type of e-center that shall be established, as an entirely commercial model may be set up in some areas while it may not be an effective mechanism in very low-income communities. For the latter, certain types/levels of private sector incentives and/or government subsidies may be necessary to make community e-centers successful. Nonetheless, the aforementioned cases exemplify that community e-centers:

¹⁴ In the APEC TEL Working Group Report on EC strategies for Rural SMEs in APEC, B2B Price Now was used as a benchmark example of what can be achieved in the rural sector, serving as a model for others to adopt and adapt for local use.

- Can also be established in low-income communities, aside from the cosmopolitan areas;
- Have adopted various type/s of business models to ensure their self-sustainability; and,
- Run by individual/s who are accountable for the operations, management, and sustainability of the community e-centers.

Likewise, the above models illustrate that real success lies in networking the population by:

- Maximizing technologies and integrating systems and ICT-based resources;
- Implementing socially-inclined activities such as awareness campaigns and ICT training;
- Developing technologies and content based on defined priorities that are, in turn, defined by the needs/demands of the immediate user community; and,
- Involving the local community in all phases of the project.

VI. THE COMMUNITY E-CENTER PROGRAM: PHILIPPINE MODEL

Definition of Community e-Center

A Community eCenter (CeC) is an outlet for providing the general public with affordable access to a variety of services using information and communication technologies, such as telephone, Internet access, e-mail, fax, telex/telegram, computer training, distance learning, online services and other kinds of services/information relevant to the community.

The outlets will be located in strategic areas accessible to the local residents, such as the municipal hall, the post office, the barangay hall, or any similar area where most of the local folks congregate almost daily.

Similar variations of this concept of a 'one-stop provider of ICT services' are also called telecenters, information and reading centers, community access centers, telecottages, and Internet cafes, among others.

CeC Services

Depending on the size of the community, the services offered in a CeC will range from the basic Voice and Data services, Business Center services to Govt and Commercial services, such as:

- ❑ Voice Services (national and international phone calls);
- ❑ Data Services (Internet, e-Mail, texting);
- ❑ Business Center Services (fax, telex, telegram, photocopying, scanning, printing);
- ❑ Computer Training Services (basic training, distance-learning);

- ❑ Local Government Unit (LGU) services (barangay clearances, complaints, cedula, real estate taxes, business permits and licenses);
- ❑ National Government services (birth certificates, Tax Identification Number, passport, Social Security System, Government Service Insurance System);
- ❑ Special Overseas Foreign Worker (OFW) Services (VoIP, e-Mail w/ WebCam, Philippine Overseas Employment Authority one-stop service, job search/placements),
- ❑ Community-based Services (agricultural prices, local content development, local tourism),
- ❑ Commercial Services (e-procurement, payment and collections, remittance processing).

While set-up and operational costs of the CeCs will be fairly predictable, the major critical success factor for its sustainability will be the revenues coming from various compelling applications for the local community.

Need for Community e-Centers

Current Problems

Citizens residing in smaller communities (barangays, towns, municipalities) do not have access to basic services (e.g. long distance telephone services, internet access, e-learning) and would need to travel long distances just to avail of them. To worsen the situation, existing telephone companies are certainly not interested in developing access to these smaller communities and predictably, tend to concentrate on the more lucrative areas of the business. Further, telephone density and PC penetration are still low with a correspondingly low affordability level of consumers.

Citizens in rural areas do not need to be disadvantaged in terms of timely information and basic phone and data services (e.g. cheaper long-distance calls, e-mail to family overseas, e-Learning) because of poor telecommunication facilities

Objectives of the CeCs

The CeCs aims that:

- ❑ ICT participation in remote communities shall be increased;
- ❑ Access points for delivery of e-government services (national and local) to smaller communities that do not have access at all shall be prepared;
- ❑ Existing government effort on solving the 'last-mile problem' with private sector and local community participation shall be augmented;
- ❑ Bandwidth affordability in remote areas through special incentives (e.g. pricing, subsidies, low-interest loans) shall be improved; and
- ❑ Affordable access to voice and data services to unserved/underserved areas shall be provided.

Benefits

With the establishment of CeCs, it is envisioned that digital divide issues shall be decreased by increasing universal access to the internet. Likewise, the cost for delivery of government services to areas not covered by the various agencies shall be decreased. More important is that the CeCs shall directly contribute to income generation, intellectual development and poverty alleviation in the rural areas through job opportunities, better agricultural prices, training for IT-Enabled Services, among others.

Opportunities

The CeC concept is something 'nice-to-have', but it has to be noted that the challenges of implementing the CeC concept are numerous, such as:

- ❑ Accessibility of most of the Filipino population to basic telecommunication services;
- ❑ Accessibility to job opportunities by more than 4 million unemployed Filipinos, mostly in the agricultural areas;
- ❑ Ability to monitor and get better prices on agricultural products;
- ❑ Provision of market opportunities, and delivery of goods and services;
- ❑ Opportunity to provide cheaper communication with OFWs and other OFW requirements/services;
- ❑ Provision of access to markets both for the agriculture sector and SMEs
- ❑ Provision of skills training for potential workforce to address the rapidly growing IT-Enabled Services (IT-ES) global market, ranging from low-entry level skills (e.g. data-entry, medical transcription) to high-end skills (e.g. customer contact centers, accounting, legal, human resource process outsourcing)
- ❑ Opportunity for government agencies (national and local) to offer more responsive services to half of the population
- ❑ Opportunity for communities to participate to identify/provide meaningful and accurate content
- ❑ Opportunity for growth at the barangay level
- ❑ Provision of a vital link to a host of information with content coming from communities
- ❑ Provision of a mode to promote tourism
- ❑ Accessibility of SMEs to provide peripheral products and services
- ❑ Provision of "just in time" communications
- ❑ Accessibility of students to research

- Provision of e-health services
- Provision of rural vocational training

Major stakeholders

While there are numerous groups of people who have a stake in the success of CeCs, it is important that we recognize the major groups where we need to solicit participation to ensure a more successful implementation, specifically, these stakeholders are the:

1. Filipino citizens in areas who have no access to a phone and means to get information or be informed, such as families of overseas foreign workers and students with no access to the internet for research;
2. Small and Medium Enterprises (SMEs) and cooperatives that have no access to important information and want to reach other markets beyond their area;
3. Government agencies (both local and national) that want to extend their services to more citizens;
4. Commercial establishments who want to offer their existing products/services to hard-to-reach areas such as financial institutions, payment and collection centers, and buying/selling marketplaces;
5. Local resorts, travel agencies and tourists;
6. Non-Government Organizations (NGOs) such as those involved in handling returning rebels, housewives, poorest of the poor;
7. Application (e.g. barangay.net) and content providers (local, regional, national); and
8. Other stakeholders that will be interested in the success of CeCs such as the Hardware and Software vendors, Internet Service Providers (ISPs), education and training institutions, and telecommunication companies.

Previous efforts

In the past, services to remote areas have been focused only on providing voice services, such as the Telepono sa Barangay (TSB) and the Public Calling Offices (PCOs) offered by Telecommunication Office (TelOf) of the government and other private telcos.

Access to the Internet are currently being offered by local Internet cafes but are mostly concentrated on the larger cities and municipalities where voice and data services are more prevalent. Similar initiatives, but on a very small scale basis (and not on a **nationwide scale**) have been done with funding coming from various

NGOs, and foreign funding agencies (e.g. Municipal Community Telecenters of DOST-PCHRD in Lanao).

All existing initiatives have been observed to be highly subsidized and not sustainable models, with no compelling Internet applications for the community.

Vision for CeCs

Our Vision for CeCs is to ensure that the capability of digital technologies really impact the quality of life of each Filipino, rich or poor by availing of basic ICT services, irregardless of distance.

This vision supports the over-all ITECC Vision of *“an e-enabled society where empowered citizens have access to technologies that will provide quality education, efficient government service, greater source of livelihood, and a better way of life”*. It is similarly supported by the Information Infrastructure Committee ‘s Vision to “provide affordable internet access to all segments of the population”

The strategies to achieve this vision are:

- ❑ To solicit the support of key stakeholders in working together to expand ICT participation to remote communities
- ❑ To augment the existing government effort on solving the ‘last-mile problem’ with private sector and local community participation
- ❑ To improve bandwidth affordability in remote areas through special incentives (e.g. pricing, subsidies, low-interest loans).

The recommended business models to deploy the program have sustainability as the common feature.

Three (3) business models are enumerated below, showing the potential sources where funding can come from as well as where the regular revenue streams should come from to sustain the model financially.

Various funding sources can be tapped to initially fund the CeCs, but financial sustainability should come from regular monthly revenues from its various service offerings. The CeCs will need to continually build compelling and relevant applications to attract the various community groups to go to the CeCs on a regular basis.

1. Entrepreneur-led

Variants: SME-led, Cooperative-led, IT School-led, Telco PCO-led
Source of Funding: Business loans, Capital

Monthly revenue sources:

- ❑ Voice Services (local/national/international calls, texting, phone cards)
- ❑ Data Services (Internet access, e-Mail accounts, PC rental),
- ❑ Business Center Services (domestic/international fax, telex, telegram, photocopying, scanning, typing/printing)
- ❑ Audio-Visual Services (business forms design/printing, audio-visual editing, web site development, hosting of SME websites)
- ❑ Training Services (computer literacy training, office systems software, basic internet access training, distance-education, e-Learning modules, IT-Enabled Services training)
- ❑ Community-based Services (agricultural price monitoring and trading, local content development and data-entry, local tourism-tour packages/booking)
- ❑ Special OFW Services (VoIP, e-Mail service + WebCam, job search and placement, PC to SMS services)
- ❑ Commercial Services (money remittance services, payment & collection services, e-Procurement services)
- ❑ e-LGU Services (barangay clearances, cedula, real estate tax payments, business permits & licenses, barangay complaints)
- ❑ National Govt Services (online services from national govt agencies, e.g. birth certificate from NSO, loans from SSS, PhilHealth, Pag-IBig, contributions tracking from GSIS, passport renewal with DFA, overseas application tracking with POEA)

2. LGU-led

Variants: Town Mayor-led, Provincial Governor-led, Public School Superintendent-led

Source of Funding: regular LGU funds, politician's pork-barrel fund

Monthly revenue sources (in addition to those enumerated in Entrepreneur-led):

- e-LGU Services (barangay clearances, cedula, real estate tax payments, business permits & licenses, barangay complaints)
- National Govt Services (online services from national govt agencies, e.g. birth certificate from NSO, loans from SSS, PhilHealth, Pag-IBIG, contributions tracking from GSIS, passport renewal with DFA, overseas application tracking with POEA)

3. NGO-led

Variants: Corporate foundation-led (e.g. Adopt a CeC project), Funding agency-led, Civic organization-led (e.g. Rotary)

Source of Funding: Grants, donations and similar sources

Monthly revenue sources (same as both models enumerated earlier)

CONCLUSIONS:

Majority of the people in the world remain untouched by the explosive developments of ICT and their applications, and the resulting emergence of a global "information society".

The Asia Pacific region, which is home to 62% of the world's population, is making progress in bringing and utilizing the fruits of technology for benefit of humanity. The Asia Pacific region lead the world in several areas such as broadband deployment, growth in mobile services, production of high quality software, manufacture of cost effective equipment, etc¹⁵.

However, the infrastructure development within Asia is uneven. Universal access goals of developed and developing countries vary and the strategies adopted to achieve these goals are unique for each country.

One common general strategy for universal access is the community e-center, multipurpose telecenter, etc. Several models are now in place ranging from a simple public calling office to a multi-purpose kiosk.

Whatever model is used, the concerns on sustainability, community involvement, content and applications are recognized as crucial component.

¹⁵ Message of ITU Secretary General Yoshio Utsumi to the Third Meeting on Asia Pacific Initiatives for Information Society (Bangalore, India, 21-25 July 2003)