The Community Network and Its Benefits: Korean Case*

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Abstract: In the Information Age, the world is driven by information and communication technology. The Internet is one of the principal features of everyday life. Internet-based community networks can play a vital role in local development and in improving the lifestyle of local residents, as well as ensure a regular flow of information. Community networks can increase the cohesiveness of community and social integration, boost equity, improve access to public information, ensure delivery of government services and political participation, and foster regional development. This article discusses the Korean Information Network Village (Invil) project and the potential of community networks in general. Community networks make it easy for local residents to stay in touch with others within their own community and in other communities, to explore and share their culture, and to market their products and culture.

Keywords: Community Network, Electronic Village, Invil

INTRODUCTION

In the 20th century, a community's prosperity was determined largely by the proximity of a highway. Communities near highways prospered, and those too far away withered. Today, we are being faced with a similar situation. It is widely recognized that communities with high bandwidth access within the community and to regional and national networks will prosper and that communities that lack that access will not. The network of many electronically connected computers enables reliable, fast, asynchronous point-to-point information exchange over small and large geographic distances. The utilization of information and communication technology enables improved formal and informal communications among individuals and groups, access to impor-

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tant information sources, facilitation of business transactions, a reshaping of government process, and access to and delivery of public services (Bikson and Law, 1993; Sproull and Kiesler 1991a, 1991b; Steinfield et al. 1993). As a result, the patterns and challenges of society nowadays have given rise to a need for meaningful interconnectedness and local organization among members of previously loosely bound communities. Properly designed public networks provide an opportunity to change the direction of the contemporary forces of social isolation and insulation.

However, access to computers and computer networks is not evenly distributed throughout the population. Specifically, computer access and use is positively related to various variables such as higher levels of education, income, and physical ability. Apparently, if current trends continue without intervention, access to electronic information and communications technologies and associated benefits will be skewed in favor of traditionally advantaged groups.

Equipped with the world's most developed IT infrastructure, Korea has a large number of high-speed Internet users. More than two-thirds of households subscribe to high-speed Internet services that enable them to apply for e-government services. However, the high-speed Internet network is concentrated in urban areas rather than rural and fishing areas and remote regions. Not only do people in these isolated areas not able to access the Internet and e-government services, but they also have limited opportunities for IT training. The Korean government's Information Network Village (Invil) project aims at bridging the digital divide between regions and social classes. The main focus of the Invil project is to lay a foundation for information have-nots, including rural and fishing village residents and the elderly, to have equal access to government services via e-government.

The Korean effort to build a new community network project using information and communication technology is both similar to and different from the community network movement in the United States. This article presents a comparative discussion based on research questions related to the community network, such as how online access to people, groups, and relevant information is helping the general public share a sense of community; how online access to local and central government representatives may increase citizen participation in government affairs; and whether such access offers benefits to community members. These questions are related to the debate regarding the effects of technological innovation on communities.

These issues raise strong concerns in the context of the increasing number of community networks emerging countrywide. How can the Invil project realize the common benefits that the community networks have sought for? What are the similarities and differences between the Korean case and the community networks in the United States? To answer these questions, this paper discusses the community network move-

ment and its benefits in general, and then goes on to analyze the new model presented by the Korean Invil project.

COMMUNITY NETWORKS: SEARCHING FOR COMMUNITY IN CYBERSPACE

Community Networks: Toward a Marriage of Community and Technology

We all live somewhere and are all members of communities.[1] Communities all over the world provide their members with mutual support. Interactions and relationships help create strong and vital communities. Of course, there are pragmatic reasons for banding together. Communities differ widely in the dispositions and diversity of their residents, in size, and in econo-political status. Some communities are up and coming, while some are becoming extinct; young people who regard their communities as nonviable move to metropolitan areas. Many studies have explored the internal and external factors that contribute to community decline (Harwood & Mcintosh 2004; Schuler 1996; Putnam 1995).

In the United States, communities are the place to address such problems as poverty, crime, unemployment, and drug use. These problems are obvious to community members and are best examined and dealt with by the community. Thus two important questions are Who can solve these problems in communities? and How can they solve them?

The rapid development of information and communications technology strongly affects the way we live, communicate, and think. Advanced technology has become the most useful tool for planning the future of communities, and community networking has become a focal point of public concern.

Before computers became important in everyday life, the term *community network* referred to the pattern of communications and relationships in a community. According to Shuler (1996, 25), new computer-based community networks are a recent innovation intended to help renew, strengthen, and expand existing community networks much in the same way that previous civic innovations have helped communities

1. People use the word *community* in different ways, including the following: (a) a community can be comprised of people who live together; (b) They are like minded to some degree, as they perform the ordinary as well as extraordinary human activities together (c) There is also a sense of community, whereby community members have a sense of belonging to a greater social unit.

throughout history. Community networking is designed to allow electronic information access to improve the quality of life and the economic development of the community. Most important, community network can provide a way to restore a sense of cooperation and belonging that many thought were on the wane (Bajjaly 1999; Seo 2001). A community network may be defined as a unified body of people with common interests using a system of computers, terminals, and databases connected by communications lines.[2] In terms of uses or purposes, community networking means effectively applying information and information technologies to improve the lives of local residents (Bajjaly 1999, 1). In addition, the Association for Community Networking (ACN) defined community networking as occurring "when people and organizations collaborate locally to solve problems and create opportunities, supported by appropriate information and communication systems" (as cited in Miller n.d., para. 5). In this study, a community network is understood as a locally-based, locally-driven communication and information system designed to enhance community and enrich lives. This article limits its discussion to communities that originate in existing offline communities.[3] These community networks have been supported by government and nonprofit organizations to provide online access to citizens, especially the economically disadvantaged, who may not have Internet access at home. In some cases, the focus has been on promoting democracy and increasing civic participation within a community.

Historical Background and Major Community Networks

Community networking goes back to the Cleveland Free-Net, begun in 1984 at the School of Medicine at Case Western Reserve University. The initial project was designed as a forum through which patients could contact doctors and get answers to medical questions. In 1986, it was expanded to become a more general public network. The Cleveland Free-Net provided free e-mail accounts, access to community information, and finally, Internet access.[4]

2. Civille (1993) summarized the purpose and promise of community networking as "a country that works smarter; that enjoys more efficient, less costly government - guided by a better informed citizenry; that supports job growth through small businesses; that promotes life-long learning."
3. Networked communities can form in a number of different ways. They may originate as online communities and then expand into the offline world, or they may start offline and then go online. In contrast to the communities that initially form online, the communities discussed in this study originate in existing offline communities.
4. The Cleveland Free-Net was shut down in 1999, when Case Western Reserve University decided not to pay for necessary software upgrades.

As the Internet has become a more important element of everyday life, a number of communities have sought to go further, not only providing free access but also improving the network infrastructure within the community. The goals of such wired communities are to bring Internet access into the homes of all community residents, to provide various information and services through Internet, to facilitate training and education in information technology, and in some cases to promote the growth of computer-related industries within the community.

In this context, the Public Electronic Network (PEN) in Santa Monica, California, which started in February 1989, is regarded as the first community network. Other representatives of the community network project include the Blacksburg Electronic Village (BEV) in Blacksburg, Virginia, and the Seattle Community Network (SCN) in Seattle, Washington.

Like the Cleveland Free-Net, PEN, in its initial stage, began with the modest goal of providing information, particularly in the form of access to government documents. However, as community members soon used it more to talk to people with a variety of different backgrounds and as people with few economic resources gained access to the online world, PEN attracted public interest and in the 1990s began one of the first community networks of online discussion groups (Dutton 1996). PEN's primary goal is to increase residents' awareness of and particiipation in local government affairs, that is, promoting electronic democracy. Impressed with how e-mail had improved communications and responsiveness within City Hall itself, Santa Monica city officials aimed to extend the model and the technology to ease more effective communication between local residents and their government. Their secondary goal was to allow residents to conduct increasing amounts of local government-related business online, for example, payment of parking tickets or application for business licenses (Doctor & Dutton 1998).

BEV was initiated in 1991 by researchers at Virginia Polytechnic Institute and State University (Virginia Tech), located in Blacksburg. The original idea was to expand the campus network in order to provide home access for faculty, students, and staff living in town. Enthusiasm about the Internet's potential to increase civic participation and improve the local economy led to the establishment of BEV in October 1993; all the major community institutions were involved, including Virginia Tech, the local telephone company, and the municipal government. Like Cleveland Free-Net and PEN, BEV is a rich source of information on ways that community networks are structured to provide online access to underserved populations, the kinds of services they offer, and how they help support and redesign personal business and government interactions. BEV was started with a goal of creating a virtual community in which all activities that take place within a normal community—from politics to business and

social organizing—could be conducted through an online network. In addition, BEV instituted a series of Web pages devoted to community information and online discussion groups (Cohil and Kavanaugh 1997).

The Seattle Community Network (SCN) was founded in May 1994 by organizers who view it primarily as a mechanism to foster community building through information and communications technology. SCN was designed to provide a forum for idea sharing among Seattle community residents. Its primary aim was to provide access for all residents, including the urban poor and ethnic minorities. A secondary goal of SCN was to give local organizations a site in which they could provide peer support and promote activities and events online (Schuler, 1996).

ANALYTICAL FRAMEWORK

Now more than 200 communities in the United States and Canada host their own community networks. Although these networks take different forms in different communities, all have a similar purpose: to enhance community and enrich lives through the development of community online information systems. The provision of universal access to information has been an important strategy for community networking. The objectives of community networks include (a) developing important and useful electronic information resources and services focused on the local community, such as cultural events, business, community organizations, education, government, health, libraries, news and media, sports and recreation, transportation, and the weather; (b) providing affordable access to these electronic resources and services throughout the community; and (c) offering the necessary level of training, support, and technical

Table 1. Analytical Framework: Conceptual Categories & Specific Programs

Categories	Specific Programs
Community Building and Social Integration	– Electronic conference – Neighborhood forums – Community bulletin board
Equity and Improved Access to Information	– Access to Internet – IT education
Delivery of Government Services and Online Participation	– Delivery of public service through Internet, i.e., online transaction, e-mail, and renewal of certificates – Online participation
Regional Economic Development	– Sharing regional information & support regional industries – Earning income through e-commerce

assistance so that every individual and organization in the community can participate (Bijaly 1999, 6). These objectives can be categorized according to the benefits that are expected to be realized through building the community network. All the benefits are packaged together and are potentially attainable by all residents regardless of income, education, or other characteristics that have traditionally limited access (Doctor & Dutton, 1998; Schuler, 1996 & 1997; Cohill & Kavanaugh, 1997).

First, network access provides individuals and groups with opportunities for new and more effective ways of communicating. E-mail enables virtually immediate (but also asynchronous) one-to-one, one-to-many, and many-to-many interactions, regardless of geographical distance. Community networks, therefore, have the ability to support interpersonal relationships, local community building, and social integration.

Second, community networks serve an important information resource function. Individuals and groups can access, use, and exchange information relatively cheaply and effectively through electronically accessible databases and direct online connections to service providers. The benefits associated with such capabilities are clearly recognized by community network organizers. For instance, the goals of increasing resident access to important information on education and employment opportunities, health and community resources, and other related services were common to a greater or lesser degree at all sites. In addition, compared with commercial on-line services, a characteristic feature of community networks is that they attempt to ensure equity of access to their services, particularly among traditionally underserved residents. The community network should emphasize related issues that are critical in the context of providing universal access to online services, namely, location of computer access points and training.

Third, community networks may offer some services aimed at promoting greater efficiency and increased responsiveness of government agencies. An electronic network can change the status quo by restructuring delivery of government services, raising resident awareness on local and national political issues, and encouraging democratic participation in the political process. Finally, a community network may offer economic opportunities for local business and industry as well as for residents. It may work closely with local government, civic groups, businesses, and individual residents to ensure that these new communication tools are used not only to support everyday activities, but also to support and restructure business activities in the area. Local businesses can advertise and sell their products through the network and share commercial information for their own purposes.

The benefits categories outlined here are conceptualized from studies of PEN, SCN, BEV, and other community networks.[5] They also represent the common assump-

5. One of the important studies on the benefits of community networks is a RAND Corporation

tions and goals of community networks. In this article, Korea's Invil project will be analyzed upon the basis of these categories, using data from the Korean Ministry of Government Administration and Home Affairs (MOGAHA). In addition, the article will discuss the implications of these findings in terms of how community networks can mazimize benefits for community members.

KOREAN CASE: THE INFORMATION NETWORK VILLAGE PROJECT

Main Purposes

The Korean Government has been pursuing the Invil project as the final step in its efforts to realize a small but effective form of electronic government. According to MOGAHA, Invil is understood as a village whose residents utilize the Internet in everyday life. All the residents who participate are helping build this village. The major purposes of the Invil project are as follows. First, Invil will erase the digital divide among regions and social levels by building the advanced Internet infrastructure in agricultural and fishing villages in remote areas alienated from the information society. Second, it will expand opportunities to access information by constructing village information centers, distributing personal computers to villages, fostering an environment amenable to informatization, and providing relevant education. Third, it will customize services to provide information on education, medical services, the economy, administration, and culture. Fourth, it will help to increase the income of villagers and vitalize regional economies by allowing local producers to create information content and conduct e-commerce. Use of the Internet will enable contract-based farming and direct transactions of regional indigenous products, thus serving the mutual interests of both consumers and producers. The website of each village can be used to promote regional attractions, tourist areas, and indigenous products quickly and inexpensively. Such websites will provide a cyberspace for mutual exchange between local residents, community organizations, alumni associations, and model villages (MOGAHA 2003, 2004).

Under the project, rural and fishing villages and remote areas that had been isolated

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study of five community networks (Anderson et al. 1995). The report classified these benefits into the following categories: (a) community building and social integration, (b) improved access of public information, (c) delivery of government services and political participation, and (d) equity of access to online services.

from the information revolution were able to have high-speed Internet access and a village information center that played an important role of village computerization. Personal computers were provided to less well off households. Rural people were able to enhance their income by selling local specialties through the Internet. All households in the Invil project are networked via broadband Internet and can formulate a nationwide Invil community for sharing information among information villages, enhancing exchange and cooperation, and achieving other synergy effects such as online sales of local specialties. Invil residents are information consumers and information producers at the same time. To facilitate this double role, *Invil* News was created to inform residents about local autonomy.

Strategies and Development

After it was launched in 2001, the Invil project produced 25 networked villages in 2001-2002, 78 in 2002-2003, and another 88 by October 2004, for a total of 191 Invils all over the nation. The budget spent on this project was about 67.5 billion Korean Won. The first phase comprised 19 villages aided by the central government and six villages aided by local governments. The second phase, in keeping with the Balanced Development policy of the Noh Moo-Hyun government, further developed the model cases on a mid- and long-term basis and promoted more diversified programs within the project. The third phase comprises four villages on an urban model and 80 villages on an agricultural and fishery model. The provincial villages outnumber those within the six metropolitan areas. This is a result of the government's strategic policy to redress the disparities of informatization between urban and rural areas. The government has constructed broadband Internet infrastructure in remote and underdeveloped areas in order to offer residents better means of accessing information and to encourage them to utilize newly acquired knowledge in daily life, thus improving their quality of life. Of the agricultural and fishery villages, 34 used the small-scale model and 46 used the mid- to large-scale model. Table 2 shows the present staus of Information Nework Villages implemented during the three phases of the project. Invil, so far, consists of 65,285 households, with 32.1% of the population over the age of 50.

The Invil project was approached strategically. First, the Information Network Village Planning Group was formulated. To ensure close cooperation among relevant organizations, it consisted of the Ministry of Agriculture and Forestry, the Ministry of Information and Communication, the Ministry of Education and Human Resources Development, the Agricultural Cooperatives, and the Fisheries Cooperatives. Second, the central government organizations and local autonomous governments (province, county, municipality, city, and district) divided their roles. The MOGAHA (2003) set

Table 2. Basic Invil Information

	Households	Villages	No. of Residents (%)						
			Total	Under 20	20s	30s	40s	50s	Over 60
Total	65,285	191	16,976	42,665 (21.7)	27,992 (14.2)	31,056 (15.8)	31,994 (16.2)	24,125 (12.2)	39,195 (19.9)
1st Phase	16,794	25	53,016	13,901 (26.2)	7,631 (14.4)	10,475 (19.8)	8,730 (16.5)	5,045 (9.5)	7,234 (13.6)
2nd Phase	20,656	78	62,464	11,352 (18.2)	9,213 (14.7)	8,819 (14.1)	9,985 (15.8)	9,264 (14.8)	13,931 (22.3)
3rd Phase	27,835	88	81,496	17,412 (21.4)	11,148 (13.7)	11,762 (14.4)	13,229 (16.4)	9,815 (12.0)	18,030 (22.1)

Source: MOGAHA (2005: 11).

Table 3. Implementing Invil

1. Building High-Speed Internet Network	Communication network is established for low-cost high-speed Internet.
2. Building Home Internet System	High-performance PCs are provided to individual households so that each family member can have an easy access to Internet anytime.
3. Establishing Village Information Center	Village information center is established to to provide training and education, online government services with advanced training equipment and materials, and automated government document issuing machines.
4. Building Information Content	Diverse materials collected from public and private agencies in different locations are developed into information content customized to users' needs, then offered to users.
5. Educating Community Internet Network	Customized training and education adjusted to the level of the residents are provided on a continuous basis so that any individual can be familiarized with the use of Internet. In parallel, educational programs foster local information leaders for the community's Internet network.
6. Establishing Management System	Information Network Village Steering Committee is established for encouraging autonomous management by the residents. In the meantime, a structured operation system is set up through a Central Council in which all community members take part.
7. Fostering Information System	Online as well as offline promotions through Internet and other media are launched in a comprehensive manner. Various events and themes are developed to foster the operation of the information system.

Source: http://www.mogaha.go.kr

out the blueprint for the project, secured budget and support, prepared the legal policy foundation, and established a collaboration system for related organizations. And local authorities worked on building information content, pursuing the information utilization environment project for each village, and providing resident training and education. Third, from the very beginning of the project, the active engagement of local residents was emphasized. In each village, an Invil Operation Committee of about 15 resident representatives was formulated. The committee determined critical issues regarding the information village operation. The creation of a profit model was also encouraged, so that the committee would be able to stand on its own as a self-sustainable body even after the government support for the project ended. And fourth, pilot Invil sites were selected to evenly represent urban areas, agricultural and fishing villages, and mountain villages. Invil models were designed to take unique local characteristics into consideration, and then after evaluation the models were applied nationwide.

As a result, each information network village has had high-speed Internet network infrastructure and a village information center; these provide access to information as well as IT training and education opportunities for local residents. Plans for Internet usage environments (e.g., PC distribution to households) have been formulated. Information content for each village has been developed. These characteristics of the Invil project provide momentum for cultivation of the nationwide desire to move toward an information society.

ANALYSIS: INVIL PROJECT AND ITS BENEFITS

Unlike community networks such as PEN, SCN, and BEV, the Invil project has been initiated by the government. This section will discuss the assumed goals of community networks and how the Invil project can realize these goals: (a) Community Building and Social Integration, (b) Equity and Enhanced Access to Public Information, (c) Delivery of Government Services and Political Participation, and (d) Regional Economic Development.

Community Building and Social Integration

Generally, there are two common phenomena in community network sites: facilitating the use of e-mail, and stimulating user participation. Individuals and groups can communicate with each other easily through e-mail anytime, no matter where they are. E-mail access ensures some additional but important features for users, such as chat rooms, e-conferences, and electronic bulletin boards. These types of communication-

enabling features are typically easy for community network subscribers to use and can produce some immediate social benefits. E-mail is a source of power in that it encourages user participation in community networks; thus all the sites in the Invil project make e-mail accounts available to users. At each Invil site, residents can register for an e-mail account free of charge. Email can ensure more advanced participation in community network. Network organizers understand the role of e-mail and that encouraging the use of e-mail to support social and recreational interactions also increases its potential to raise awareness about community issues and activities. E-mail can boost efforts to promote a community dialog for improving social cohesiveness.

Community building can be assisted by fostering unity and harmony among residents. Each Invil has its own special features. Most communities in the Invil project have their own special products, and their residents have a strong desire for and interest in informatization. The formation of cultivation teams and other hobby clubs that operate actively within communities is leading the drive to enhance each community's competitiveness. Hence, Invil's organizers are particularly focused on promoting the community-building capability of the community networks in their villages. From the very beginning, each Invil has hosted electronic clubs or online associations. Community networks in each village use electronic bulletin boards to post locally relevant information, news, and issues. For example, network users can post or retrieve information about community events and programs specific to their neighborhood. The community bulletin board has two distinct focuses on the Invil. "About Each Village" is one accessible area in which information about each village's history, location, and general information is posted. Information about local culture, cultural assets, festivals, historic areas, parks and recreation areas, and community events (e.g., open air markets, flea markets, concerts) is posted in "Community Activities" (MOGAHA 2005, 37-38).

Many clubs were organized at the beginning of the Invil project. Some of these have become inactive, and some have been excluded from the community; the number of clubs decreased dramatically between 2003 and 2004. However, club activities are becoming livelier and the number is beginning to grow again.

As shown in Table 4, the numbers of clubs dropped by 932 between December 2003 and December 2004. But the number of active clubs increased by approximately 500, proving that the cyber communities of are taking shape quite rapidly. The number of new members, as shown in Table 5, increased 438% from January 2004 to December 2004. Posted notices have also increased by 320%. Furthermore, the number of visitors to clubs increased by 144%, and the average length of visit per person increased 200% (MOGAHA 2005, 38).

As a subset of their community-building activities, many of the sites in the study

Table 4. Clubs, Members, and Active Clubs in 2003 and 2004

Classification	As of Dec., 2003	As of Dec., 2004
Clubs	2,082	1,100
Members	7,012	6,072
Active Clubs	210 (10%)	707 (64%)

Note: Dormant clubs were closed.
Source: MOGAHA (2005:37-38) modified.

Table 5. New Members, Posted Notices, and Club Vistors

Classification	Jan. 2004	Dec. 2004	Increase (Approximate)
New Members	142	622	+438%
Posted Notices	1,468	4,691	+320%
No. of Vistors	17,374	24,982	+144%
Visiting Frequency	23,217	74,146	+319%
No. of Pages Viewed	174,146	464,756	+268%
Pages Viewed per Person	10	19	+190%
Time per Person (Minutes)	8	16	+200%

Source: MOGAHA (2005: 38) modified.

actively promote the use of the community networks to facilitate the social integration of traditionally disadvantaged groups, for example, older adults, and individuals with mental and physical handicaps and serious illnesses. The benefits of network access for members of otherwise peripheral groups include the weakening of status-based hierarchies and increasing integration of marginalized groups (e.g., Sproull and Kiesler 1991b).

Invil participation can develop the quality of life of disadvantaged and marginalized members in various ways. Invil supports the social integration of disadvantaged groups through increased access to informal peer support. It provides access to two-way online communication. For instance, the social isolation often experienced by older adults or disabled individuals lessens when they are able to communicate easily with relatives living in other places.

Equity and Enhanced Access to Public Information

Access to Computers

Calculations based on 2005 data of Korean Statistical Bureau showed that 74.2% of the Korean population have used a computer and 72.8% have access to a computer connected through a high speed network (http://www.itstat.go.kr). But in some remote and rural areas, most of the population do not have access to network services. Clearly,

then, for the goal of universal use of e-mail and other online services to be realized, access for these target citizens needs to be addressed.

To accomplish the main goal of the Invil project—the closing of the digital divide—the organizer first provides the Internet environment set-up for the village. Designated common carriers like KT and DACOM provided Internet infrastructure in the rural villages that were incorporated into Invil projects. A broadband communciation network (xDSL) was installed in every household in the villages, providing Internet services of similar quality to those in urban areas. Second, the distribution of PCs (the goal toward which villagers were the most receptive) had a target of 70% distribution to households in the villages. In the first phase of Invil, around 100 PCs for each village were distributed by MOGAHA. Target villages were selected by the local government, and they distributed PCs from their own budgets during the second phase. The Operation Committees finalized the PC Distribution Rules for Households, and PCs were distributed to each household according to those rules. The management of distributed PCs was consigned to the Operation Committees. Table 7 shows the rates of PC ownership and Internet subscription before and after implementation of the Invil project (MOGAHA 2005, 31).

Table 6. Current Status of PC Distribution for Invils

Classification	No. of Villages	Total No. of Households	No. of Households Owning PC	No. of Households Owning Distributed PC	Distribution Ratio (%)
Total	191	65,285	22,595	16,172	59.4
1st Phase	25	16,794	9,313	2,722	71.7
2nd Phase	78	20,656	6,142	7,331	65.2
3rd Phase	88	27,835	7,140	6,119	47.6

Note: No PCs were distributed in urban Invils.
Source: MOGAHA (2005, 31).

Table 7. Information Infrastructure Before and After Invil

Classification	Before the Project		After the Project
PC Ownership Rates	Urban Areas	63.7%	71.98%
	Rural Areas	21%	
Internet Subscription Rates	Urban Areas	37.2%	64.5%
	Rural Areas	8.8%	

Source: MOGAHA (2005: 32)

The Village Information Centers (VICs) were usually set up in a public place, for example, the town hall, a public building, or a defunct school building. A beam pro-

jector, printers, and an average of 11 PCs connected with a LAN were installed in every VIC (MOGAHA, 2005: 32). VICs are used both for Internet access and as a place for informatization training and education and village meetings. They are operated according to the VIC Operation Guide, which is tailored to the special conditions of each village. The residents of each Invil village have access to a computer either at home or at the VIC.

These efforts to ensure computer access attest to the importance of universal access. VICs play a significant role in providing such access in rural areas.

Informatization Training and Education

Initial informatization training, education, and ongoing technical and social support for providers and consumers of online information constitute the other essential components of implementation success stressed by organizers and participants at each community network. Training and education may be regarded as a critical first step to getting individuals online. Most network organizers recognized that users who do not have enough knowledge and confidence will have difficulty exploring the potential of network technology. Preliminary training and education can aid in overcoming this problem (Seo, 2003).

As the information literacy among residents in rural areas is very low, training and education are primary factors in the success of the Invil project. From the beginning of the Invil project, residents have been provided with basic training and education for content utilization. The e-leaders are very important to the Invil project. In each village in the Invil project, an e-leader is selected to provide training and education that includes basic knowledge of computers and the Internet, document editing, information retrieval, and e-mailing. As a result, e-mailing, retrieving information, and e-commerce are significantly increasing, demonstrating that villagers are beginning to use computers in more productive ways.

Compared to a non-Invil villager, an Invil villager is expert in such activities as e-mail usage and e-commerce. The training and education provided under the Invil project has made that difference. An aged villager who can now exchange e-mails with his grandson is grateful that he learned how to use the Internet as part of the Invil project.

Improved Access to Information

Electronic networks serve as an important information resource. Networking technology enables new and more effective point-to-point communication; it can facilitate effective access to, use of, and distribution of information. Through electronic networks, individuals and groups can directly access large amounts and many types of information from online databases and from organizations that advertise or offer their

products and services online. The growing sophistication of network search applications, which make it easier to find and retrieve online information, has supported the increased use of network technology as an information resource. Invil organizers have emphasized efforts to bring the benefits of online information resources to their users. The networks allow users to conduct online searches and to download information and files. Direct connection to the World Wide Web allows Invil users to access information from all over the globe (Seo 2001, 2003).

Aware that users are most interested in having access to specific, individually relevant types of information, Invil offers more than access to broad information resources on the Internet. The network works to make locally relevant information available online. Invil organizers maintain that information content that will benefit residents is a core part of the project. Such content is provided through the construction of content banks, Web portal sites, and e-commerce shopping malls in which to sell local products. Content that supports community building is also improtant. Content based on each village's unique features is categorized into the e-commerce model (e.g., the so-called Green tour model, combined model, and community model), and this content is being made available throughout the country through the Internet. Now residents understand how important it is to provide content for advertising their products and introducing themselves to the outside world.

Table 8. Common Service Content

Classification	Service Contents
e-Admin	– Civil Service Administration: Civil service on the Internet, Document issuance – Common Content: Law, Regulations, Procedures, Notices, etc.
e-Biz	– E-Commerce: Cyber shopping, etc. – e-Market Place: Specially promoted local businesses – Internet Banking: Cyber banking, Trading, Insurance, etc. – Economic and Industrial Content: Economy, Economic indicators, Statistical data
e-Edu	– Remote Education: Cyber education program, Certification issuance – Content for Education: Schools, Educational organizations, Education programs and their contents, Lecture information, etc.
e-Health Care	– Remote Health Care: Diagnosis and reservations through the Internet – Contents for Health Care: Hospitals, Medical knowledge, Sanitary information, Communities for special diseases, Specialist clubs, etc.
e-Culture	– Local e-Community: Cyber village meetings, Bulletin boards – Reservation on the Internet: Lodging, Leisure, Performances, Events, etc. – Cultural Contents: Performances, Events, Movies, Toursts, Sports, History, Leisure, etc.

Source: http://www.mogaha.go.kr.

Invil's homepage, a central portal site that represents every Invil, has been in operation since May 2002. Villagers have welcomed it cordially. Expansion and regular upgrading of this portal ensure better services for users. The website provides various content about civil services, education, the economy, health care, and culture. It also provides an e-commerce system through which people can buy well-known local products. It is a virtual space in which Invil residents and outsiders can meet and exchange information with each other, and in which any villager can have his or her own space for keeping and managing personal information.

Moreover, the village homepage was designed following classifications such as e-commerce, Green Tours and combined type. The unique features of each village must be reflected in its homepage so that the village may accurately portray itself to the public. Each village homepage includes content that presents the specific themes of the village, as well as providing each individual, household, and group with a place to display its own content. The content of each village homepage is classified as follows: advertisement of local products and tourist spots and support for their marketing; information needed by residents in order to enhance their quality of life; advertisement of the activities of local administration offices and the collection of residents' opinions; an introduction to the historical, cultural, and traditional background of the village; and support for online education in the village.

Delivery of Government Services and Political Participation

The third category of emerging benefits associated with access to electronic networks involves more efficient delivery of local and central government services and increased public awareness of and participation in government processes. Local government agencies post information and notices at the Invil site; the administrative services are electronically delivered through the government portal site (http://www.egov.go.kr) and linked to the Invil homepage. Online inquiries or complaints can be registered with government agencies via the Invil site. All local bills can be paid electronically on the site.

Currently, opinions vary on how electronic networks will affect political participation (Tambini 2001; van de Donk, Snellen, and Tops 1995). For example, Tambini discussed network design issues; he argued that the community networks have simplistic assumptions about motivations of political participation and that these assumptions should be reviewed. Tambini, as well as van de Donk, Snellen, and Tops, argued that unless citizens have access to information management tools, their participation in the democratic process will be constrained as a result of new information and communication technologies. According to empirical studies conducted by researchers at Virginia Tech, BEV does not appear to have increased civic participation (Kavanaugh, 1996,

1999, 2001; Kavanaugh and Patterson, 1998, 2001; Kavanaugh et al., 2000).[6]

Invil does not focus strongly on the potential of the system to deliver government services and promote political participation. It has tried in various ways to use technology to increase citizen involvement for community building, rather than political participation. The Invil project was established by the government to close digital divide in rural areas and to stimulate regional economies through by increasing incomes. In addition, since in its beginning stages the project was led by the central government, and participation by local government was very passive. Therefore, the Invil, unlike other selected networks, has not emphasized politically oriented communication or two-way dialog such as SCN's question-and-answer forums between local politicians and citizens, BEV's encouraging their members to write to senators and representatives, and PEN's asking public officials to take part in electronic conferences and encouraging citizens to contact city representatives via e-mail.

Regional Economic Development

Improving regional competitiveness is very important in the Invil project. Local competitiveness is the key to strengthening local economies, and by promoting itself to the world at large, a village increases its value. This belief is maintained by both organizers and villagers in the Invil project. The promotion of local competitiveness is categorized as either e-commerce, Green Tour, or combined efforts, depending on how income is generated to support local economies.

First, e-commerce through the Invil supports the sale of local specialty products produced by farming teams. Before Invils were formed, offline sales through agricultural co-ops, private sales, and contract cultivation were the main sales routes, but since the creation of Invils a significant amount of production has been sold through e-commerce. Figure 4 shows sales ratios before and after the formation of Invils. Before Invils, 77% of sales were from agricultural co-op procurement, private sales, and contract cultivation, but these numbers have changed a lot since the inception of the Invil project. Especially, it should be noted that sales through e-commerce has increased from 0.2% to 12%, and joint shipments have increased five fold. Furthermore, if we compare the ratio of sales increases of telecommunication sales to those of offline sales, a total of 95.5% of businesses surveyed have experienced sales increases as a result of direct sales through online e-commerce and phone orders. Increases are rang-

6. Individual participants perceive benefits in being connected to the Internet through BEV, and several Internet-related businesses have developed in the town, but BEV does not seem to have significantly strengthened participants' feelings of community.

Table 9. Invil Sales During Events

Classification	Sales during events (Unit : 100 Million Won)				
	2003		2004		2005
	New year	Korean Thanks-giving Day	New year	Korean Thanks-giving Day	New year
Total	18.3	48.0	34.3	51.7	76.1
Online	2.0	2.7	3.8	3.7	4.1
Offline	16.3	45.3	30.5	48.0	72.0

Source: MOGAHA (2005: 41)

ing from under 10% to over 30%. These figures show that there is a bright future for e-commerce. In particular, since November of 2003 the number of sales (a 126% increase from the previous year) and sales revenues (a 61% increase from the previous year) from e-commerce through Invil's consignment operation has shown a steady increase. As Invil's name recognition increases, offline sales are also rapidly increasing (MOGAHA 2005, 39).

Second, Green Tours is an Invil project that provides opportunities for tourists to participate in the farming of local specialties directly, so that they can experience rural life and learn the importance of primary industries (i.e., agricultural and fishing). Green Tours are provided by a village, usually by members of that village, and tourists have the opportunity to purchase what they have cultivated on the farms. In addition, citizens of the village can make on-the-spot sales of what they produce. There are about 80 Invil Green Tours. In 47 of these villages, tour efforts have produced outcomes that contributed to the local economy (MOGAHA 2005, 41).

Invil organizers expect the following benefits from Green Tours. An increase in exchange between urban and rural areas may improve the recognition of local specialty brand names, thus promoting direct trade. Both urban dwellers and village citizens may increase awareness of the importance of preserving the natural environment, thus encouraging the consumption of environment-friendly green production and the continuous expansion of green agriculture.

Table 10. Revenue of Green Tours

Classification	2004			As of Jan. 2005 (online)
	Total	Online	Offline	
No. of Visitors	84,192	192	84,000	792
Revenue (Unit: Million Won)	3,364	4	3,360	20

Source: MOGAHA (2005: 42)

In January, 2004, online reservation and settlement systems and revenue generation models for tours were developed and delivered, and the systems are now in service. The system content includes information about the farm experience, weekend farming, camps, theme tours, and reservations. In 2004, the first year of service, a total of 84,192 visitors participated in Green Tours, an average of 1,800 tourists per village. In 2004, the total revenue of these tours amounted to about 3.4 billion won, an average of 71 million won per village (MOGAHA 2005, 41).

Third, combined efforts promote a combination of e-commerce and Green Tours. Consumers can find answers to their questions and become more familiar with their purchases by visiting producers, thus familiarizing themselves with rural cultures. Whereas the early goal of the Invil project was the closing of the digital divide to promote regional unity and to improve regional competitiveness, an improved infrastructure led village citizens in the direction of e-commerce and the sale of local specialty production to online consumers. This process encouraged consumers to visit and to experience rural life. Therefore e-commerce and Green Tours have helped rural areas to become more competitive (MOGAHA 2005, 42).

The modest, early efforts at e-commerce have since become a very powerful means of local specialty sales. As e-commerce flourishes, the numbers of sales and customers are steadily increasing. The introduction of the five-day work week in Korea increased consumers' desire to visit and experience rural production sites. By encouraging these visits, producers can foster trust among consumers and secure future sales. Although this process is just beginning, there have been steady increases in the number of villages participating in the combination tours, which suggests that such a model may become one of Invil's primary efforts.

As a result, many Korean villages now focus on e-commerce and Green Tours. This trend can not be found in the case of many networks in advanced countries. For example, BEV does not emphasize e-commerce in order to enhance regional competitiveness. BEV encourages local businesses, universities, and social service organizations to post information on the network that is directly relevant to the community. The organizers seem to believe that such improvement will occur spontaneously as local community bonds strengthen.[7]

7. The network, for example, has one area called the Village Mall. Here, users can access information on a large number of businesses in and near Blacksburg. Some firms post their location and business hours, some advertise products and services, and others accept online delivery orders. Another example of BEV organizers' attempts to post locally relevant information is their online Health Care Center. Here, users can access information from medical databases and local hospitals, health services, and support groups. They can also e-

CONCLUDING REMARKS

Korea's Information Network Village is designed to reduce the digital divide between rural and urban regions by increasing availability of e-government services and to increase income levels of local residents by boosting regional economy through e-commerce. These developments will eventually lead to the improvement of the quality of life in rural communities.

Generally, the Invil network provides opportunities for new and reliable informal and formal communication, which can support interpersonal relationships and facilitate the social integration of otherwise marginalized groups. The network also makes access to vast amounts of information quick and easy. Facilitating access to information on, for example, education and employment opportunities should benefit traditionally disadvantaged groups relatively more than their socio-economically advantaged counterparts. Moreover, online networks are known to facilitate citizen participation in the political and administrative process; some individuals now use e-mail to contact representatives or public officials and submit their various ideas or complaints in the electronic bulletin board. Ensuring access to computers and providing adequate training and education are critical issues in the context of implementing community networks.

In sum, the Invil case indicates that there are important common benefits associated with access to e-mail and other network services. Invil focuses efforts on ensuring access to information and services relevant to its target audience. By introducing high-speed communication lines, setting up Village Information Centers, and supplying PCs, Invil has provided many citizens with ready access to information that had previously eluded them. Through information training and education gained at VICs, and through the training and education of local information leaders, citizens' quality of life has improved. Elderly citizens' access to information has increased markedly. Furthermore, the strengthening of solidarity and friendship among village citizens now occurs largely in cyberspace, rather than solely offline, through produce cultivation teams. Anybody can access cyberspace, without the limitations of time and place, to participate in an exchange of information among people with common interests, a process that promotes solidarity among citizens. The promotion of local competitiveness is the key characteristics that distinguishes the Korean project from other community network projects. Many villages now focus on e-commerce and Green Tours. For many

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mail questions about prescription drugs, and a local doctor will respond. Also, a section of the network called the Village Schoolhouse contains information on colleges and universities throughout Virginia.

villages, revenue from offline produce sales was very low, and they have benefited tremendously from the introduction of e-commerce. Now these villages are facing new problems, such as meeting customer demand, product planning according to consumer preference, and quality control. The mindset of the villages' residents is in the process of changing.

Community networks have been subject to criticism from both left and right. The necessity of government intervention in building the community networks is an important issue. Brants et al. (1996) and Arterton (1987) have questioned whether governments, local or otherwise, should be involved in activities, such as leisure and entertainment, that are already provided for by private enterprise (Brants et al. 1996; Arterton 1987). The success of the Invil project provides an argument for government involvement in the community network.

Finally, the notion that community and technology are incompatible concepts needs to be addressed. Community and technology are inseparable parts in the building of community networks. Technology and technological systems are only tools; when we reassert our control over them, those technologies can be made to better serve human needs.

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