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in South Korea**

Name: Young-Jin, Shin

Affiliation: Expert Advisor,

Agency: Ministry of Government Administration and Home Affairs.

Email: jinsyj@yahoo.com

<Biography of the Authors>

Young-Jin Shin received her Doctor of Public Administration degree from Sungkyunkwan University in South Korea. Dr. Shin is an expert advisor for the Ministry of Government Administration and Home Affairs, South Korea. She is a well-known policy advisor to Korea's e-Government as well as its information policy. She worked as director at the Global e-Policy and e-Government Institute. She was one of the members working on projects in the Ministry of Government Affairs and Home Affairs, Ministry of Information Communication, and other government agencies.

E-Government and Universal Administrative Information Service in South Korea

ABSTRACT

Implementation of e-government has motivated many projects resulting in human development and increased security around the world. South Korea has enacted an E-Government Act to protect citizen's rights based on a national informatization promotion basic law, in 1996. South Korea has since developed several national informatization plans to encourage participation of stakeholders. Some of these plans are ICT Master Plan, e-Korea Vision 2006, Cyber Korea 21, as well as others. This paper's primary objective is to discuss e-government in South Korea through the G4C project, local administration complex informatization, National Finance Information System, National Education Informatization System, as well as others. An additional objective is to share the experience of Korea's e-government and suggest directions for enhanced e-government with universal information service.

SUMMARY

South Korea has also advanced in e-government to promote ICT productivity with effectiveness and efficiency of administrative tasks and public services. The government had constructed ICT infrastructure and systems with national master plans; a national basic information system project (1987-1996), Korea information infrastructure project (1995-present), national master plan of informatization promotion (1996-2000), 11 e-government initiatives (2001-2002), e-government roadmap (2003-2007), and other initiatives.

The most important point is that the e-government should ensure improvement of stakeholders' benefits in connecting with government, business, and citizens. South Korea has constructed an e-government plan as "the world's best open e-government" based on citizens' participation and based on this e-government being reliable. As one measure of the results of these efforts, South Korea was assessed on its e-government as 5th out of 191 countries by the UN's e-government readiness index from 2004. E-government project has constructed an ICT infrastructure and has considered citizen's convenience and local economic development with G4C, GePS, INVIL and others. The G4C system is to deliver convenient public service online. GePS is also single service to reduce documents and office visits. INVIL benefits local informatization and the local economy based on its ICT infrastructure and cyber space environments.

As like this, the participatory e-government has to provide direction and vision for the e-government's organization and services. It has to construct information systems and an e-document system. It has to support participation of citizens as well as promote national competitiveness. In detail, the e-government should construct an information infrastructure and information systems that will support PCs and Internet subscribers. It is important to promote an e-government environment for e-democracy with both education and promotion. The education and training to use the Internet and the e-document system are for vulnerable people to give these people digital opportunities also. To improve, the local economy should promote a cyber community for e-business and information productivity. The e-government will provide a healthy culture for protecting its cyber community and its cyber culture.

Therefore, the e-government will establish integrated portals and integrated communication centers to encourage people's participation. E-government will provide universal service for citizens reducing digital divides and digital obstacles. In the future, the universal service of e-government has an important issue to resolve, that is, the digital divides from vulnerable regions and vulnerable classes of the people. The participatory government tries to rebuild and review e-government projects for leading e-participation in the policy process and to reduce regional digital divides so that regions can also obtain the benefits of national informatization. Finally e-government in South Korea will continue to develop and to lead in the participation of stakeholders and to expand its networking to facilitate cooperation for its national social and economy development.

INTRODUCTION

In an information and knowledge society the use of information communication technology (ICT) in government leads to what we call e-government. ICT's use in government changes administrative tasks and public services. The changes can result in high quality democracy and improved social welfare. That is, the government has implemented efficient and effective innovation ICT. It's national information and communication infrastructure where citizens can participate online satisfies citizens' needs. A definition of e-government is a government to maximize citizen's convenience based on the government's innovative use of ICT and to lead an e-democracy based on the consideration of and communication about introspective government (G. H., Kwon, 2003). E-government for economic development is defined by improved recognition of strategic means. That is, e-government is to improve national competitiveness and economic activation based on IT development by supporting directly and indirectly ICT and network infrastructures (NCA, 1996; NCA, 1997:19-21).

South Korea has progressed in implementing e-government by utilizing ICT to automate administrative processes while improving the transparency and efficiency of public service. South Korea's government has constructed a national basic information system project (1987-1996), the Korea information infrastructure project (1995-present), a national master plan of information promotion (1996-2000), 11 e-government initiatives (2001-2002), a e-government roadmap (2003-2007) and others. It is important to construct a basic infrastructure to network central and local governments for e-government. The present government, as a participatory government, has utilized ICT such as ADSL for networking and a national information infrastructure for its administrative tasks involving its stakeholders. This infrastructure gives the government a chance to connect with the stakeholders electronically and thus improve the administrative services of the government involving the stakeholders. That is, through e-government, connecting with government (G2G), business (G2B), and citizens (G2C), the government has promoted public productivity and has enhanced business surroundings.

The goal of e-government in South Korea is to be "the world's best open e-government" based on citizens' participation and the reliability of the e-government. As the e-government plan has progressed, public efficiency and improved high quality of citizen's services as well as acceleration of the national economy has occurred. E-government's many information projects have resulted in resolving the nation's digital divides with universal service. As a further result, South Korea was ranked 5th rank of 191 countries on the e-government readiness index from the UN (United Nations, 2005) and was recognized as the best country with e-government.

To explain participatory e-government this paper discusses the background of public service as well as the ICT infrastructure in South Korea. The e-government has several representative projects to close the digital divide and to support participation of all of its stakeholders. E-government has emphasized e-democracy by emphasizing participatory e-government. Internal process innovation, public service

innovation, information resource management innovation, and legal innovation have resulted in an e-government that is easy to use and efficient. This paper will discuss the best practices of e-government in South Korea and give a direction for democratic e-government.

BACKGROUND OF E-GOVERNMENT

E-Government in South Korea

In an information and knowledge society e-government has progressed with ICT master plans for administrative tasks and citizen's service. E-government also uses information technology to accomplish administrative services transparently and efficiently. The Presidential Committee on Government Innovation and Decentralization (PCGID, 2001) defined e-government as a form of government to respond positively to the citizens' needs for democracy with transparency and efficiency of administrative tasks related to e-transmission and public services based on the ICT infrastructure. The Committee further explained that e-government is a form of government to perform public services among the agencies or citizens through electronic transmission for promoting electronic public service to embody e-government (2001). So e-government has a role of improving the digital environment for administrative tasks and public service based on the participation of stakeholders (PCGID, 2003).

South Korea had driven e-government project as part of the office automation for statistical analysis work in the Economy Planning Board (EPB). This was part of establishing a Committee on Coordination for Development of Computerized Organization under the Ministry of Science and Technology (MOST) in 1967. The need for increased informatization brought to e-government initiative a realization of how to achieve a more advanced e-government. E-government in South Korea was started by the groundwork of a national basic information system project and the Korea information infrastructure (KII) project since the late 1980s. In addition, South Korea enacted an informatization promotion basic law in 1996 and instigated several informatization plans such as National Master Plan (1996-1998), Cyber Korea 21 (1999-2001), Broadband IT Korea Vision 2007(2003-2007), as well as others.

South Korea constructed the foundation for e-government with 11 e-government initiatives (for 4 front offices, 4 back offices, and 3 infrastructures) in the early 2000s. The Kim administration (1998-2002)¹ had the goal of improving public services instead of restructuring and downsizing the public sector.

¹ Kim Dae Jung, 15th president, lead e-government in South Korea. We called the government during his tour of duty (1998-2002) the Kim administration.

Table 1. E-Government in the Kim administration

Category	Project
Front office (G2C, G2B)	- Government for Citizens System (G4C) - Home Tax Service (HTS) - Social Insurance Information Sharing System (SIIS) - e-Procurement System (GePS)
Back office (G2G)	- National Financial Information System (NAFIS) - Personnel Policy Support System (PPSS) - National Education Informatization System (NEIS) - Local Government Information Network System (LGINS)
E-Government Infrastructure	- e-Approval & e-Document - e-Signature & e-Seal System - Consolidated Information Resources

The Presidential Committee on Government Innovation and Decentralization tried to suggest the direction of the next generation of e-government with e-government projects such as the Government for Citizens System (G4C), local e-government projects, the National Finance Information System (NAFIS), National Education Informatization System (NEIS), Home Tax Service (HTS), Electronic Procurement System (Narajangteo: for G2B), as shown in Table 1.

The Roh administration government² has an overall goal to be the top open government world-wide. The Roh administration has detailed targets for 3 goals (Table 2) to improve from 2003 to 2007.

- increase online public services to 85%
- rise into top 10 ranking in the world for business support competitiveness
- reduce visits for civil service applicants to 3 visits per year and
- raise the utilization rate of E-Government programs to 60% (MOGAHA, 2005). So the e-government roadmap is divided into 4 areas, 10 agenda, and 31 priority tasks.

Table 2 Goals of improving e-government in South Korea (2003-2007)

Goals	Details	2003	2007
Innovation in service Delivery	Ratio of civil services offered online	15%	85%
	Enhancing business support competitiveness	24 th place	10 th place
	Annual average number of visits to government offices	10 times/year	3 times or less/year
	Rate of using the e-government service	23%	60%
Efficiency and Improved Transparency in Admin-	Use of IT for common administrative functions	Localized exploitation of IT	Full scale online integration
	Digitalization of registers	Coexistence of paper and electronic registers	100% electronic registers
	Administrative information sharing	Limited sharing between ministries	Inter-agency information sharing anytime, anywhere

² Roh Moo Hyun is the 16th president to lead open government with roadmap projects. We designate the government during his tour of duty (2003-2007) as the Roh administration.

istration	Information Resource Management (IRM)	Independent, by agency, IRM	Government wide IRM
Expanded Citizen Participation	Electronic participation	Limited participation such as opinion polls	Participation and deliberation in policymaking
	Disclosure of administrative information	Passive and limited disclosure	Active and wider online disclosure
	Privacy	Limited self control over personal information	Enhanced level of self-control over personal information

The government should keep the conditions for achieving e-government as the goals in Table 2 First, the government should seek to provide more value-added government service to citizens by improving service delivery and focusing on the needs of citizens and business.

Second, it should strive to improve transparency and efficiency in carrying out administrative tasks. It should establish a complete electronic process for handling tasks and sharing the administrative information owned within different government agencies.

Third, it should aim to expand the citizen's right to disclosure of administrative information, encourage e-participation with various ways of e-participation, and take all the necessary steps of protecting individual information and privacy.

The participatory government of the Roh administration has tasks to embody e-government as shown in Table 3. This table illustrates 4 goals for innovation with 10 agendas, and 31 priority tasks.

Table 3. Roadmap projects for e-government

Goals	Agenda	2003-2007 Priority Tasks
Innovation for Internal Process	Electronic Administration	1. Electronic document processing
		2. Consolidated financial information system for the central and local governments
		3. Local e-government
		4. Electronic auditing and inspection system
		5. E-Assembly
		6. Integrated criminal legal system
		7. Personnel administration policy information system
		8. Foreign affairs and trading information system
		9. Real-time management of national tasks
		Expanded common use of public information
	Service oriented BPR	11. Government functions BRM development
Innovation for Public Service	Enhancement of Civil Service	12. Enhanced Internet civil affairs service
		13. Consolidated national security management service
		14. Enhancement of buildings, land and Registration convergence
		15. Consolidated national taxation service
		16. Consolidated national welfare information service

		17. Consolidated food and drug information service
		18. Consolidated hiring and employment information service
		19. Internet service of administrative appeal
	Enhancement of Business Service	20. One-stop business service
		21. Consolidated national logistics information service
		22. Electronic international trading service
		23. Consolidated foreigner assistance service
	Expanded Electronic Participation	24. Support for exporting e-government
		25. Expanded online civil participation
Innovation for Information Resource Management	Integration and Standardization of Information Resource	26. Integrated government-wide information system
		27. Enhancement of the e-government network
	Strengthened Information Protection System	28. Application of government wide information Technology Architecture(ITA)
	Specialization of IT Manpower and Organization	29. Construction of information protection system
Legal Innovation	Improvement of laws and systems	30. Enhancement of IT manpower and organization
		31. Reform of e-government and security related laws

As in Table 3, the Roh administration has tried to improve working patterns, public service, information resource management, and legal systems.³ To implement the plans for e-government by year (2003-2007) requires detailed steps involving preparation, foundation building, system building, integration and innovation, and innovation and evaluation as indicated in Table 4. The priority tasks have been designated as 3 projects in Business Process Reengineering/Information Strategy Planning (BPR/ISP), 7 projects in pre-development, and 21 projects in system development. More than 90% of these projects are in progress and are following a schedule for e-government.

Table 4 Implementation Plans for e-Government (2003-2007)

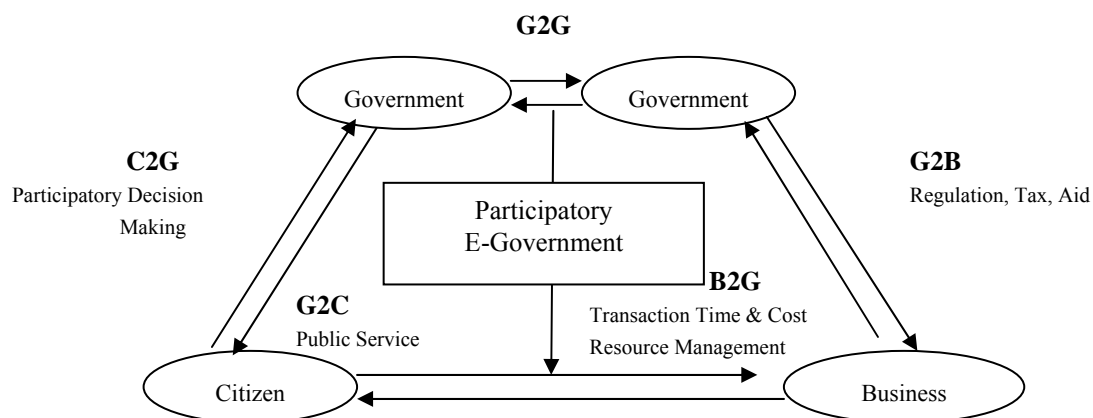
2003	2004	2005	2006	2007
Preparation	Foundation Building	System Building	Integration /Innovation	Innovation. Evaluation
- Selection of priority tasks - Development of detailed plans - Preparation of promotion basis	- Promotion of BPR/ISP - Establishment of infrastructure - Improvement of laws & systems	- System establishment - Process improvement - Service improvement	- System integration - Process innovation - Service innovation	- Integrated service - Government innovation - Evaluation of results

³ The 4 areas are business practices, service innovation, information resource management, and revision of law for e-government. The 10 agendas are establishing e-transactions, expanding information sharing, service-centric business process, enhanced G2C, enhanced G2B, expanded e-participation, consolidated information resources, strengthening information security, strengthening IT manpower and organization, and revising laws and rules. The 10 agendas are establishing e-transactions, expanding information sharing, service-centric business process, enhanced G2C, enhanced G2B, enhanced e-participation, consolidated information resource, strengthening information security, strengthening IT manpower and organization, and revising laws and rules.

The PCGID made the plan for e-government as 31 priority tasks. The Ministry of Government Administration and Home Affairs (MOGAHA) manage projects for e-government in each ministry. The projects are supported with ICT by the Ministry of Information and Communication and the National Computerization Agency.

Stakeholders of e-Government

E-government has constructed its national informatization plan to delivery information and services for customer oriented public service. That is, the goal of e-government is to provide effective and efficient government to improve public service, to innovate on internal public affairs, and to maximize policy decision and supports. So to provide this enhanced public service and public productivity the stakeholders, as government (G2G), business (G2B), and citizens (G2C), should be electronically networked. The e-government has to deliver public service for stakeholders using ICT that facilitates a cooperating relationship among stakeholders.



Source: S.T. Kim (2003).

Fig. 1 Relationship among Citizens, Business, and Government

The function and role of e-government has been influenced by participation of the stakeholders, government (G2G), business (G2B), and citizens (G2C), in the viewpoints of front office and back office. The G2G relationship is to share information among inter-government and agencies for e-government policy and project. This relationship among governments emphasizes coordination and collaboration with other ministries. It also reduces transaction costs and increases the efficiency and accuracy of administrative processes. Therefore, it obviously contributes to increased productivity of administration and better decision-making.

Examples for G2G are the national financial information system (<http://www.moge.go.kr>) to integrate financial management information, the electronic personnel management system (<http://www.csc.go.kr>)

to efficiently handle all personnel management, the integrated local government system for cities, counties, and districts (<http://www.ebang.go.kr>) to simplify and handle 21 key services including resident registration, automobile registration, and family registration, the nation wide education information system (<http://www.neis.go.kr>) to increase the efficiency of online school administration and e-courses from 16 educating offices and other education organizations, electronic approval and e-document distribution to relay e-document system, and electronic signature and official seal to introduce e-signature authentication system for Internet-based administrative services.

G2B provides better public services where industry and companies can conduct their business transactions harmoniously and comfortably online. It is useful to reduce transaction time and costs for business by providing e-commerce with transparency and efficiency of public procurement (<http://www.g2b.go.kr>). G2B transacts procurement, e-bidding, e-contracts and e-application, etc. in a single window. G2C provides services requested from citizens and concerning how to modify the role and scope of government.

Examples of G2B and G2C are the G4C system (<http://www.egov.go.kr>) as one of the well-developed systemic e-government websites providing online administrative services and the single-window e-procurement system (<http://www.g2b.go.kr>) for transparent and convenient procurement service and single registration procurement. Other examples are the Home Tax Service (HTS) (<http://www.hometax.go.kr>) for tax service at home and the integrated information system for 4 social insurances (<http://www.4insure.or.kr>) as a single-window portal for all types of civil appeals services relating to the four social insurances. The KIPOnet system (<http://www.kipo.go.kr>) is a single-window for patent applications. The military manpower administration information system (<http://www.mma.go.kr>) allows citizens to access to military manpower administration information services at home. The computerization of real estate management (<http://lic.mogaha.go.kr>) allows citizens access to various home management services at home. The Integrated Law Information System (<http://www.moleg.go.kr>) allows stakeholders to access all law-related information.

Assessment of e-Government

The effort to embody high quality e-government in South Korea was rewarded with a good rating from the UN on its e-government readiness index. The UN has assessed e-government standards in 191 countries since 2002. The results has been assessed and then published to allow comparison among countries. The Division for Public Administration and Development Management (DPADM) of the UN department of economic and social affairs (UNDESA) offers this survey of e-government readiness (N.Soliman, 2005). The UN's approach classifies e-government into the following five "e-Gov" phases to measure a country's progress: emerging phase, enhanced phase, interactive phase, transactional phase,

and the networked phase (UN/ASPA global survey, 2005).⁴ The UN has assessed more than 50,000 features of e-government websites in 191 countries in how well these sites improve the access and quality of basic social services for sustainable human development. South Korea has been in the interactive phase and was assessed with a rank of 15th in 2002 then 13th in 2003, and 5th out of 191 countries in 2004 and 2005, rapidly growing to be a leading e-government in the world (UN, 2002-2005).

Table 5. Top 15 e-government ready countries (by e-government readiness ranking)

	2005		2004		2003		2002	
	Country	Index	Country	Index	Country	Index	Country	Index
1	U.S.A	0.9062	U.S.A	0.9132	U.S.A	0.927	U.S.A	3.11
2	Denmark	0.9058	Denmark	0.9047	Sweden	0.840	Australia	2.60
3	Sweden	0.8983	U.K.	0.8852	Australia	0.831	New Zealand	2.59
4	U.K.	0.8777	Sweden	0.8741	Denmark	0.831	Singapore	2.58
5	<i>South Korea</i>	0.8727	<i>South Korea</i>	0.8575	U.K.	0.814	Norway	2.55
6	Australia	0.8679	Australia	0.8377	Canada	0.806	Canada	2.52
7	Singapore	0.8503	Canada	0.8369	Norway	0.778	U.K.	2.52
8	Canada	0.8425	Singapore	0.8340	Switzerland	0.764	Netherlands	2.51
9	Finland	0.8231	Finland	0.8239	Germany	0.762	Denmark	2.47
10	Norway	0.8228	Norway	0.8178	Finland	0.761	Germany	2.46
11	Germany	0.8050	Netherlands	0.8026	Netherlands	0.746	Sweden	2.45
12	Netherlands	0.8021	Germany	0.7873	Singapore	0.746	Belgium	2.39
13	New Zealand	0.7987	New Zealand	0.7811	<i>South Korea</i>	0.744	Finland	2.33
14	Japan	0.7801	Iceland	0.7699	New Zealand	0.718	France	2.33
15	Iceland	0.7794	Switzerland	0.7538	Iceland	0.702	<i>South Korea</i>	2.30

The readiness index of rankings for e-government included categories of the state of web service, national IT infrastructure, and human resource. South Korea ranked 4th for web service, 9th for IT infrastructure, and 12th for human resource. The National Computerization Agency publishes a national informatization index composed of the sectors of computer, Internet telecommunication, and broadcasting, from ITU (International Telecommunication Union). South Korea ranked 3rd out of 50 countries because

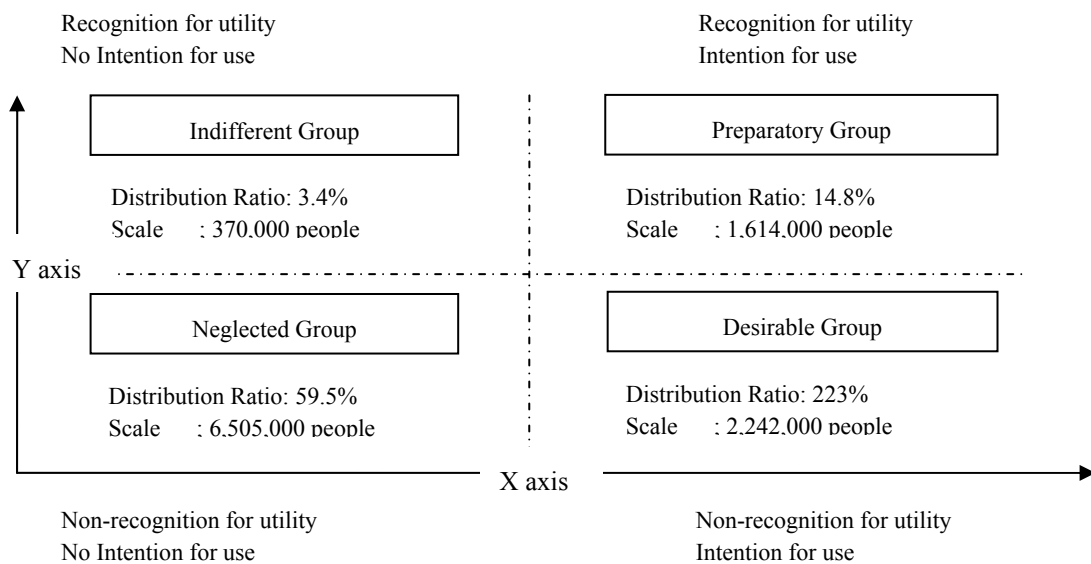
⁴ The five categories are as follows

- *Emerging presence*: A country may have only a single or a few official national government websites that offer static information to the user and serve as public affairs tools.
- *Enhanced presence*: The number of government web-pages increases as information becomes more dynamic with users having more options for accessing information.
- *Interactive presence*: A more formal exchange between users and government service providers takes place such that forms can be downloaded and applications submitted online.
- *Transactional presence*: The users can easily access services prioritized by their needs and conduct formal transactions online such as paying taxes and registration fees.
- *Networked presence*: The complete integration of all online government services through a one-stop portal.

of the increasing numbers of Internet users, high speed Internet subscribers, and CATV subscribers (NCA, 2005). The Swiss Business School, IMD's, annual national competitiveness index for 2005 ranked South Korea as 2nd in IT infrastructure and 8th in telecommunication among 82 countries. The national ICT infrastructure is important to grow national development and to be able to lead in e-government.

THE BEST PRACTICE OF E-GOVERNMENT

In an information society, expectations and requirements for public services and content and for methods of delivering public service information are rapidly increasing the advantage of e-government. E-government is now desperately needed for national competitiveness. The projects for e-government have implemented involving 11 inter-agency projects and 31 priority tasks. The projects have supported the informatization plan for government officials and informatized citizens with a national education program similar to e-learning programs in school as well as in governmental offices. A survey of Internet usability shows increases of 68.2% for private Internet users and 77.1% for computer subscribers. The digital divides, the gaps that exist between those people who do and do not have access to and or use digital technology had been identified by weakness in classes based on age, sex, income, etc as following Fig. 2.



* X axis: depends on intention for use, Y axis: depends on recognition for utility

Source: KADO (2004. 13)

Fig. 2 Subdivision of non-Internet users with weakness classes

To close the digital divide within each of the weaker classes it is important to give all people a chance

to use universal service among the people. It is important to have best practices that make understanding e-government and considering citizen's convenience and the local economic development of high priority with Government for Citizen System (G4C), Government e-Procurement System (GePS), Information Network Village (INVIL), etc. as seen below.

Government for Citizen System

Government for Citizens (G4C) system has implemented goals to ensure more convenient access to civil service and public administrative services to bring a future-oriented open e-government. That is, G4C is to deliver seamless government services to citizens by providing convenient and prompt online service. It is a representative single portal of e-government (<http://www.egov.go.kr>) of diverse retrieval functions. This portal makes everything available online so that anyone can use public services and access administrative information in each government agency via the Internet, mobile devices (mobile phone and PDA), and TV regardless time and place.

In actuality, the G4C takes advantage of various search functions to get information on civil services, related laws and regulation, and to access on-line applications. It could produce virtual services to overseas Koreans and foreigners as well as internal residents. G4C has introduced 5 citizens services, issuance of residence certificates, issuance and peruse of building permits, issuance of mother-children family certificates, issuance of handicapped certificates, and application for issuance of farmland permits in April 2004. It now provides public services with 4,700 systemic service guides, 500 on-line applications, 23 perusals of government information related with civil affairs, 21 on-line certificate issuances and others.⁵

The G4G is to achieve 3 goals for convenient and fast processing of civil petitions, while sharing administrative information and common infrastructure for electronic civil services. At first, G4C is to share administrative information reducing the number of visits, required documents, accompanying expenses and the wait time. The administrative information on 24 civil services most frequently used by citizens will be shared among related government agencies such as information on residence, real estate, automobiles, business, taxes, veterans' affairs, military affairs, and judicial affairs.⁶

⁵ Directions for use is following

Access the e-Government homepage (<http://www.egov.go.kr>) → Choose the online application menu → Click the button for the desired civil service → Fill out online application → Confirm the public digital signature certificate → Pay fees → Check service results → Click the document print button when done. It should use a working printer for printing digital signature certificates.

⁶ The administrative information is available for shared use as follows;

Certificate of residence, Certificate of federal tax payment, Certificate of income amount, Certificate of tax payment, Certificate of business registration, Certificate of business suspension, Certificate of business discontinuance, Real-estate register book, Land register, Building register, Family census register, Master register of automobile (A/B), Declaration on the use of motorcycles, Mater register of construction equipment, Certificate of automobile tax payment, Certificate of local tax payment, Confirmation of individual declared land prices, Land (Woodland) register,

The G4C provides various convenient functions such as personalized services, integrated forms, and a link to the electronic payment system. It provides other useful information, such as information on civil applications and user education. It is designed to facilitate access of necessary information only, provide a automatic notification service, provide periodic notification of inspection status, and provide an electronic payment links service which links authorities and usage status to payment. These provisions will enable transparent administrative processing by ensuring accuracy, privacy, and information security.⁷

So the future of the G4C will be expanded to include integration of civil services and sharing of information to not only the government administrative agencies, but also to other public agencies and private organizations so that e-government is further implemented, enabling every citizen and organization to access necessary information via the Internet. It will be possible to get civil petitions processed quickly and conveniently.

Government e-Procurement System

Government e-Procurement System (GePS) for procurement attempts to reduce numerous documents, visits, and consultations between buyers and sellers. In September 2002, GePS became the single service where all public institutions could utilize its service and people could process business transactions with public institutions. GePS has become the world's largest e-marketplace with total transaction volume amounting to \$43 billion among 30,000 public organizations and 150,000 companies. E-bidding to contract goods and construction accounted for \$25 billion of the total amount. Every company participated in public bidding via the Internet in 2004 and 18 million bidders took part in 120,000 e-bidding cases.

GePS provides the whole process of procurement via Internet at home without visiting Public Procurement System (PPS), because GePS has transaction procurement on its homepage (<http://www.g2b.go.kr>). It works by implementing the network connection between public organizations, procurement agencies, security companies and e-signature certification authority based on PPS's e-Procurement system. In recent days, the GePS has implemented a wireless network service so stakeholders can use devices such as mobile phones and PDA.

E-procurement has contributed to enhanced efficiency of the national economy and will result in the reduction of \$3.2 billion worth of transaction costs in every year. GePS has contributed to more

(General/Comprehensive)Building register, Temporary use approval of building, Registration of patriots & veterans, Certificate of military registration, Attestation of arrivals information and departures from the country, Attestation of foreigner registration.

⁷ The electronic civil service infrastructure needed by several departments and agencies will be integrated and developed into a single system, reducing required investments, and saving money such as Single Sign-On (SSO), Public Key Infrastructure (PKI), Universal Description, Discovery, and Integration (UDDI), Lightweight Directory Access, Issuance Service, Information Service, Electronic Payment System, Electronic form service, etc.

transparency owing to real-time information disclosure, automatic business processing, and online transactions. The GePS shopping mall homepage can be accessed to procure office supplies, software and building materials. Its transaction volume reached to close to \$7 billion dollars gained from some 470,000 cases in every year.

South Korea successfully established the single window of public procurement with information infrastructure such as a high-speed communications network. In 2004, PPS accomplished the revolution of e-procurement service based on CRM (Customer Relationship Management). The PPS established the first Web Call center among public institutions to enhance service quality by providing telephone response, video consulting, and a screen-sharing guide in South Korea.

Information Network Village

Information network village (INVIL) is to promote oneness by connecting the cities, farming villages, mountain villages, and fishing villages, etc. It is not concerned with real space but also with cyber space where we can share our stories and feelings based on ICT infrastructure. The INVIL is to resolve the digital divide and to boost local economy with agricultural and marine products by sharing beneficial information and ideas. From 2001, the INVIL project was initiated to grow a balanced economy among local governments that are, for example, farming and fishing communities. It has helped to cultivate an environment in which informatization can lead to increased quality of residents' life.

Table 6. Balanced development over the country

Division	Detail Goal
Boost regional Economy	<ul style="list-style-type: none"> - Income increase via E-commerce - Creation of a second income source including weekend farm and tourism - Strengthening local competitiveness through the use of various information contents
Reduce digital divide between Urban and Rural Communities	<ul style="list-style-type: none"> - Information access improvement of residents - Diverse advantages through information networks - Active information exchange among connected communities - Expansion of urban and rural interchange
Improve Quality of Life in Rural Communities	<ul style="list-style-type: none"> - Access to various information based on solid network systems - Opportunity to utilize public service regardless of time and space
World Model of Information Village	<ul style="list-style-type: none"> - International promotion through multi-language websites - World's first information village model - Development of observation course to model villages

The main tasks of INVIL are based on the distribution of a high-speed Internet network and PCs; and established ICT environments. Examples are building village information centers and developing central content repositories such as a local village homepage, e-commerce, and an experience tour. In addition,

projects of INVIL provided ICT education for local residents to utilize information. The ICT leadership development organization and administrative committee for independent operation established the INVIL brand with public relations, events and CI development.

MOGAHA formed 103 villages in the first and second phase of the INVIL project, which show strong willingness of participation in local informatization and a high probability of development creating actual income. For the launching of e-commerce services, continuous business development and systematic management and maintenance, the Central Council of INVIL had to firmly build the nationwide business foundation. The third phase of project added 191 villages added to 88 villages to form various village models in order to develop farming and fishing villages. INVIL based on operation and promotion of 280 villages, including new 80 villages in the fourth phase, has contributed to building a successful online village as an information community with support from the nation and other support worldwide.

The contents of INVIL, such as INVIL News/Info Channel, INVIL Shopping, Experience Tour, Community, etc., can be accessed easily and speedily through the Internet. INVIL is the cyberspace to share information and provide warm compassion among people with similar ideas with one another. INVIL projects are financially supported for community activities, operations, coalitions and for projects such as choosing good communities to boost up proactive exchange. INVIL provides convenient services like Mail, Messenger, and Chatting for the Internet community. It provides Blogs, Personal homepages, Message board, Chatting, Messenger, Avatar, etc.⁸ anytime and anywhere.

INVIL boosts a regional economy with information channel categories and main service contents such as Life Culture, Health, Education, Economy, Administration, Agriculture, Fishery industry, Forestry, Livestock industry, etc.⁹ INVIL delivers the regional products to consumers as nationally top quality commodities. INVIL shopping is the nation's representative market directly connected to producers where they can market agricultural and marine products using the Internet. INVIL suggests possibilities, by providing various and practical travel information, for getting special experiences, by enjoying a life style in the INVIL Farm recalling a hometown's warm heart and atmosphere. It is based on the 'INVIL Certificate' system supported by experts to bring you extraordinary experiences where visitors to the

⁸ Table for the contents of INVIL (No.)

Division	Internet community	Personal homepage	Blog
No	580	2,940	877

⁹ The categories of INVIL are life culture, health education, economy, administration and other industrial fields.

- Life Culture: Life information service, Info on cultural spaces, Performance/exhibition/event, Job information, Fortune telling, Game, Local news etc.
- Health: On-line health consulting, Health magazine, Health and life, Family health, Search for hospital /pharmacy etc.
- Education: Local government's cyber education, INVIL video education, informatization education for farmers, free foreign language lecture, Lecture on business startup, Infant/parent schools, Lifetime school etc.
- Economy: Financial information, Policy Fund, General Economy, Real Estate, Insurance etc.
- Administration: Government news, Local news, Civil Service information etc.
- Agriculture, Fishery industry, Forestry, Livestock industry, etc.

agricultural and sea villages will be fully pleased. They will come back to these places again on trust. INVIL is a rural model and community for operating and promoting an ICT environment and information utilization capability to strengthen regional competitiveness. The government will construct 1,400 INVILs to spread citizen's participation in cyber space, and to progress new communities that connect with schools, enterprises, and governments. It will be a prime mover of national balanced development as well as exemplary of government process and public service.

Other online systems for citizens

At least, the participatory government had projects to increase online citizen participation with portal systems and the e-voting system. These projects are focused not on universal service but on positive participation by citizen; at first, an online citizen participation portal was implemented to handle civil complaints, proposals by the people, and policy participation. The project has progressed to integrate civil complaints, proposals by the people, and policy participation for 5 agencies including the Blue House, Ombudsman of Korea, and the Ministry of Construction and Transportation. The project will be expanded to cover 16 city / province upper-level, local government, and 234 lower-level local governments in 2006. Second, e-voting system and e-election system tried to ensure stability and reliability of the system and to promote an environment for political and social development. The e-voting system and e-electronic system maximizes various election and voter convenience and manage elections in a speedy and precise manner. The pilot system implementation plan was formulated to ensure stability and reliability of e-voting and e-electronic system and measure to promote an environment for political and social acceptance. To implement this system, identification of improvement measures and establishment of improvement plans for law and institutions will provide improved Internet based election system and e-voting system services.

Recommendations for e-Government

For the participatory e-government we should continue supporting 3 focused concerns for e-government to progress. We will start with a discussion of the first focused concern. □ We have to expand capability for e-government to quickly react to new circumstances and changes that occur in an information and knowledge society □ We have to create the direction of future government after redefining the role of e-government to improve internal efficiency and citizen oriented services □ We have to revise existing law and to establish new systems for e-government □ We have to modify current organizations and administrative cultures to adapt to new electronic surroundings that provide easily to access services and allow participation in public affairs by citizens.

For the second focused concern, to progress for e-government in the supply perspective we should keep

- constructing various information systems for public service as well as the information communication infrastructure,
- pursuing public progress based on high quality public service and our ability to react to change of work process,
- installing a broad e-document system to connect government and government or government and business using electronic document system,
- giving universal information among the regional and stratified digital divide,
- managing human resource to drive e-government such as providing a sufficient budget for education, and the labor environment and compensation that is oriented to e-government results,
- seeking to eliminating the digital divide by suggesting information access and national balanced development.

For the third concern for e-government to progress in the demand perspective we should pursue to

- pursue global competitiveness for improving national informatization with the Internet utility.
- maximize investment efficiency by connecting public agencies and citizens for constructing appropriate contents linking regional conditions
- support participation in local society by constructing information environments between government and citizens or between citizens and citizens and give an easy to use and culturally appropriate information portal so these stakeholders can easily contact health, environment, education, and other such organizations.

Above all, the participatory government efforts in South Korea to give a chance for all of the stakeholders to use online digital information and its support system for many benefits and to progress e-government based on the participation of all stakeholders. So the government tried to find good methods to suggest high quality open e-government and to reduce difficulties using e-government. The government had a master plan for digital opportunity in September, 2001 as well as e-government plans for citizens: a high speed network, free Internet Center, and informatization training, etc. The government is continuing to install home network systems for 1,300 households in 2004 to 10,000,000 households in 2007. It is giving the informatization training program to over 5,000,000 people. It has plans to supply low-income and disabled people with high speed network for 140,000 households, Internet network for 100,000 households, and PCs for 470,000 households. In addition, there are plans to operate an e-Learning, Job Information Center, an informatization training program for the low-income population and to support IT expert training and starting new enterprises for their living.

Table 7. Informatization supported plan for vulnerable people

	Informatization Training Program			Supplement of PCs		
	Total	2003	2008	Total	2003	2008
Disabled people	1,450,000	27.6 %	59.6 %	1,130,000	58 %	80 %
Low-income class	3,080,000	31.7 %	57.9 %	700,000	47 %	80 %
Old people	6,780,000	14.0 %	50.5 %	-	-	-
Farmer and fisherman	2,670,000	16.2 %	63.0 %	-	-	-

Total	13,980,000	19.7 %	55.5 %	1830,0000	54 %	80 %
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* The table does not include supplements of PCs for the old and farmer and fisherman

Source: KADO (2004: 34-35).

In more detail, first, the important issue is to promote the e-government environment for citizens' participation in each project for e-democracy. So education is needed in how to use online services and how to participate in public policy decision for vulnerable people. This education and training program should be designed to facilitate use of the e-government network by over 80% of the people in the vulnerable classification especially old, housewife, farmer and fisherman, and others. The government also will promote an e-learning program for life so that any person can take the educational e-learning program anytime and anywhere through broaden continuously available informatization education via online access.

Second, the cyber community based on this informatization training will promote cyber citizen's activity based on the Internet in the social sector. In addition digital opportunity promotion projects are needed to operate various development programs for local informatization in the sector of a local unit. It will give a chance to vulnerable people to develop or participate in enterprise or commence work there-by increasing economic wealth with e-business.

Third, to promote informatization productivity there should be developed good digital content so that this digital content could also measure the progress of an information and knowledge society. After enacting the Law of Resource Management of Information and Knowledge in 2000, it had expanded to construct a database (DB) containing 195,000,000 cases for technology, education, and others until 2003. The 2nd master project for this information and knowledge DB (2005~2009) will expand the DB to contain cases in public fields. But this DB needs to have content and then supply mobile contents suitable for vulnerable classes as the disabled and the old. The site of content such as 'Doum Nara (<http://www.itall.or.kr>)' will contain a comprehensive information service targeted to vulnerable people.

Fourth, e-government has to foster a healthy informatization culture in the social sector and the e-government has to provide single window service that protects stakeholders from mis-use such as information invasion from privacy, spam mail, Internet viruses, etc. The education of informatization e-ethics among the citizen with students, parents, teachers, etc. is needed. Education and training are needed to get rid of the obstacles that detract from information productivity such as off-line habits, disbelief, fear of informatization, etc. So to be successful e-government should enhance its training and education and its implementations to reduce social, institutional, and practical obstacles. Finally e-government must offer universal service for citizens reducing digital divides and digital obstacles.

CONCLUSION

Until now, this paper discussed about e-government that has progressed to provide successful national informatization. It has improved social and economic development. E-government is a government to lead efficient innovation and citizens' needs with Information and Communication Technology (ICT). ICT is promoting universal information service via system and online access. That is, e-government is to enhance the national informatization environment and support national competitiveness. South Korea has also advanced in e-government to promote ICT productivity with transparency and efficiency of administrative tasks and public services. The government had constructed ICT infrastructure and systems with national master plans; a national basic information system project (1987-1996), Korea information infrastructure project (1995-present), national master plan of informatization promotion (1996-2000), 11 e-government initiatives (2001-2002), e-government roadmap (2003-2007), and other initiatives.

The most important point is that the e-government should ensure improvement of stakeholders' benefits in connecting with government, business, and citizens. Toward this end, the Korean government has constructed an e-government plan as "the world's best open e-government" based on citizens' participation and based on this e-government being reliable. The participatory government rebuilt e-government to delivery public service for stakeholders and to cooperate for high quality administrative affairs to central and local governments. So e-government will provide social and economic development through reduce transaction costs and time and increased information productivity. As one measure of the results of these efforts, South Korea was assessed on its e-government as 5th out of 191 countries by the UN's e-government readiness index from 2004.

E-government project has constructed an ICT infrastructure and has considered citizen's convenience and local economic development with G4C, GePS, INVIL and others. The G4C system is to deliver convenient public service online. It was introduced as 5 citizens' services as issuance of residence certificates, issuance and review of building permits, issuance of mother-children family certificates, issuance of handicapped certificates, and application for issuance of farmland permits. The G4C reduces office visits, required documents, processing expenses, and wait time. GePS is also single service to reduce documents and office visits. It provides for consultation between buyers and sellers online. It allows the sharing of information and provides an e-procurement service with CRM. INVIL benefits local informatization and the local economy based on its ICT infrastructure and cyber space environments. INVIL attempts to eliminate the digital divide of vulnerable regions and vulnerable people and to increase local economy by providing such features as a local village homepage, e-commerce, and an experience tour. MOGAHA will increase INVIL from 103 villages in 2001 to 280 villages in 2005 and then to 1,400 villages in 2014. It will become a main project for providing national balanced development as well as innovation of government processes and public service.

As like this, the participatory e-government has to provide direction and vision for the e-government's organization and services. It has to construct information systems and an e-document system. It has to

support participation of citizens as well as promote national competitiveness. In detail, the e-government should construct an information infrastructure and information systems that will support PCs and Internet subscribers. It is important to promote an e-government environment for e-democracy with both education and promotion. The education and training to use the Internet and the e-document system are for vulnerable people to give these people digital opportunities also. To improve, the local economy should promote a cyber community for e-business and information productivity. The e-government will provide a healthy culture for protecting its cyber community and its cyber culture.

Therefore, the e-government will establish integrated portals and integrated communication centers to encourage people's participation. E-government will provide universal service for citizens reducing digital divides and digital obstacles. E-government provides administrative information and services through wire and wireless networks. It provides real-time records of the decision-making process based on document control cards, e-approval, and a record management link. The technology of e-government is changing rapidly in order to develop additional information and services such as ubiquitous computing. Sometimes e-government is known by the terms m-government, t-government, and u-government where m is for mobile, t for television, and u for ubiquitous.

In the future, the universal service of e-government has an important issue to resolve, that is, the digital divides from vulnerable regions and vulnerable classes of the people. The participatory government tries to rebuild and review e-government projects for leading e-participation in the policy process and to reduce regional digital divides so that regions can also obtain the benefits of national informatization. South Korea has been rated as among the best countries in the world for its work in e-government in the world, so e-government should particularly be noted for information environment. Finally e-government in South Korea will continue to develop and to lead in the participation of stakeholders and to expand its networking to facilitate cooperation for its national social and economy development.

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