“APT-KADO Study Visit Course on National Informatization Framework”

Seoul, Korea
September 4th - 13th 2007

Azeem Sajjad
Project Manager-R&D
Table of Contents

TABLE OF CONTENTS .................................................................................................................................1
LIST OF PARTICIPANTS ..................................................................................................................................6
ACTIVITY PLAN ................................................................................................................................................8
ACKNOWLEDGMENT .......................................................................................................................................11
EXECUTIVE SUMMARY ..............................................................................................................................12
ABOUT KADO ................................................................................................................................................14

THE AGE OF INFORMATIZATION AND ROLES OF THE GOVERNMENT .........................................................16

1.1 Transforming Govt. Environment with Informatization ........................................................................16
    1.1.1 Informatization society ..........................................................16
    1.1.2 Transforming Service Delivery ..............................................17
    1.1.3 Informatization Promoting Strategies .................................17
    1.1.4 Strategies for eKorea .........................................................17

1.2 Departmental Govt. & E-Govt. ..............................................................................................................17
    1.2.1 What is e-Govt? ...............................................................17
    1.2.2 Burning Issues in Public Sector .........................................17
    1.2.3 Structure of e-Government ...............................................18
    1.2.4 Concept of e-Government .................................................18

1.3 Role of E-Govt. CIO ..............................................................................................................................18
    1.3.1 Government CIO’s Qualities and Roles ..............................19
    1.3.2 Global Governance Issues ................................................19

1.4 Informatization Diffusion & Closing Digital Divide .............................................................................19
    1.4.1 What is Digital Divide? .....................................................19
    1.4.2 Types of Digital Divides ....................................................19
    1.4.3 Present position of Digital Divide ......................................20
    1.4.4 Solution to overcoming the Digital Divide ......................21
    1.4.5 Vision and Strategies for closing the Digital Divide ..........21

1.5 Strengthening International Competitiveness of IT Usage ....................................................................21
    1.5.1 Reforming Public Service .................................................22
    1.5.2 Vision and Goal ..............................................................22

KOREA’S DIGITAL ECONOMY STATUS AND INFORMATIZATION POLICY .................................................24

2.1 Status of IT industry .............................................................................................................................24
2.2 How we got here .....................................................................................................................................24
    2.2.1 Take-off Period (1980s) .....................................................24
    2.2.2 Diffusion Period .............................................................24
    2.2.3 Maturation Period ..........................................................25
    2.2.4 Weakness of Korean IT industry .................................25

2.3 Designing State Institutions ..............................................................................................................25
    2.3.1 Varieties of State Institutions in IT .................................25
    2.3.2 Role of the Government: common features .....................26
    2.3.3 Method of building information infrastructure: Asia vs West ...................................................26
    2.3.4 Key Questions in designing state institutions ..............26

2.4 Other Domestic Issues from Information Society ..............................................................................27
    2.4.1 Political Impact ............................................................27
    2.4.2 Social Impact ...............................................................27

E-GOVERNMENT OF KOREA ......................................................................................................................28
## List of Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Contact Information</th>
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<tbody>
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<td>Fax: 84-8-825-6120</td>
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E-mail: zuriati@ktak.gov.my |
## Activity Plan

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Schedule</th>
<th>Venue</th>
<th>Attire</th>
<th>Meet at</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/4</td>
<td>12:00-13:30</td>
<td>Lunch</td>
<td>Seoul Garden Hotel</td>
<td>Formal</td>
<td>Hotel Lobby @ 11:45 (Bus)</td>
</tr>
<tr>
<td></td>
<td>14:00-16:00</td>
<td><strong>Orientation</strong></td>
<td>KADO KoIL Lab</td>
<td></td>
<td>Hotel Lobby @ 13:30 (Bus)</td>
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<tr>
<td></td>
<td>16:00-17:00</td>
<td>KADO at a Glance</td>
<td>KADO KoIL Lab</td>
<td></td>
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<tr>
<td></td>
<td>18:30-20:30</td>
<td><strong>Welcoming Reception</strong></td>
<td>Seoul Garden Hotel Lily Hall</td>
<td></td>
<td>KADO Entrance @ 18:00 (Bus)</td>
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<tr>
<td>9/5</td>
<td>09:00-12:00</td>
<td><strong>LC1: Gov't Role in the Information Age</strong></td>
<td>Seoul Garden Hotel Seminar Rm.</td>
<td>Semi-Formal</td>
<td>Seminar Rm. @ 08:45</td>
</tr>
<tr>
<td></td>
<td>12:00-13:30</td>
<td>Lunch</td>
<td>Seoul Garden Hotel BBQ</td>
<td></td>
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<tr>
<td></td>
<td>14:00-15:30</td>
<td><strong>Intro to Korean Language and Culture</strong></td>
<td>Seoul Garden Hotel Seminar Rm.</td>
<td></td>
<td>Seminar Rm. @ 13:45</td>
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<tr>
<td></td>
<td>15:30-17:00</td>
<td>On Move (Subway)</td>
<td>Hotel-Son's Home</td>
<td>Casual</td>
<td>Hotel Lobby @ 15:30 (metro)</td>
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<td>17:00-20:00</td>
<td>Cultural Experience: Korean Family Visit</td>
<td>Son's Home</td>
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<td>20:00-21:00</td>
<td>On Move (Subway)</td>
<td>Son's Home-Hotel</td>
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<td>9/6</td>
<td>09:00-12:00</td>
<td><strong>LC2: Korean Digital Economy and Informatization Policies</strong></td>
<td>Seoul Garden Hotel Seminar Rm.</td>
<td>Semi-Formal</td>
<td>Seminar Rm. @ 08:45</td>
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<td></td>
<td>12:00-13:30</td>
<td>Lunch</td>
<td>TBA</td>
<td></td>
<td>Hotel Lobby @ 12:00</td>
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<tr>
<td></td>
<td>14:30-15:30</td>
<td><strong>On-Site Training: SKT</strong></td>
<td>TBA</td>
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<tr>
<td>Date</td>
<td>Time</td>
<td>Activity</td>
<td>Location</td>
<td>Type</td>
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<tr>
<td>9/7</td>
<td>16:30-</td>
<td>On-Site Training: KT</td>
<td>Seoul Garden Hotel</td>
<td>Semi-Formal</td>
<td>17:30</td>
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<tr>
<td>(Fri)</td>
<td>17:30</td>
<td></td>
<td>Seminar Rm.</td>
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<td><strong>LC3: 11 Main e-Gov’t Projects</strong></td>
<td>Seoul Garden Hotel</td>
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<td>Lunch</td>
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<td>14:00-</td>
<td><strong>LC4: U-City Building Project</strong></td>
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<td></td>
<td>17:00-</td>
<td>Lunch</td>
<td>TBA</td>
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<td></td>
<td>17:00-</td>
<td>Dinner</td>
<td>Ganga (Finance Center)</td>
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<td>18:30</td>
<td>Cultural Experience: Music at the Museum</td>
<td>Seoul History Museum</td>
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<td>9/8</td>
<td>10:45-</td>
<td>Cultural Experience: Kyongbok Palace</td>
<td>Casual</td>
<td>Hotel Lobby @</td>
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<tr>
<td>(Sat)</td>
<td>12:00</td>
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<td></td>
<td>10:00 (bus)</td>
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<td></td>
<td>12:00-</td>
<td>Lunch</td>
<td>TBA</td>
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<tr>
<td></td>
<td>13:00-</td>
<td>Shopping: Insadong &amp; Dongdaemun</td>
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<td></td>
<td>16:00-</td>
<td>Cultural Experience: B-Boy Korea (Musical</td>
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<td>Dinner</td>
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<tr>
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<td>Cultural Experience: DMZ</td>
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<td>Hotel Lobby @</td>
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<td>22:00</td>
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<td>9/9</td>
<td>Morning/</td>
<td>Cultural Experience: DMZ</td>
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<td>Hotel Lobby @</td>
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<tr>
<td>(Sun)</td>
<td>Afternoon</td>
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<td>08:00</td>
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<td></td>
<td>20:00-</td>
<td>Korean Movie Night: Taekuggi (The War of</td>
<td>Seoul Garden Hotel</td>
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<tr>
<td></td>
<td>22:00</td>
<td>Brotherhood)</td>
<td>Hotel Fl. 16</td>
<td>Hotel Fl. 16 @</td>
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<td></td>
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<td>20:00</td>
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<tr>
<td>9/10</td>
<td>10:00-</td>
<td>On-Site Training: U-Dream Hall</td>
<td>Hotel Lobby @</td>
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</tr>
<tr>
<td>(Mon)</td>
<td>11:00-</td>
<td></td>
<td>09:00</td>
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<td><strong>On-Site Training: InnoVision</strong></td>
<td>Hotel Lobby @</td>
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<tr>
<td>9/11</td>
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<td>Cultural Experience: MOKDONG ICE RINK</td>
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<td>09:00-12:00</td>
<td>LC5: PKI</td>
<td>Seoul Garden Hotel Semi-Formal</td>
<td>Seminar Rm. @ 08:45</td>
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<tr>
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<td>Lunch</td>
<td>Hotel Buffet</td>
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<td>17:00-19:30</td>
<td>Dinner</td>
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<tr>
<td>9/11</td>
<td>19:30-21:00</td>
<td>Performance: Dance. Chunhyang</td>
<td>The national theater of Korea</td>
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<tr>
<td>9/12</td>
<td>10:00-12:00</td>
<td>Country Report Presentation</td>
<td>KADO KoIL Formal</td>
<td>Hotel Lobby @ 09:30</td>
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<td>Pattaya</td>
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<td>Course Evaluation &amp; Wrap-Up</td>
<td>KADO KoIL Lab</td>
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<td>11:30-12:00</td>
<td>Graduation</td>
<td>KADO Grand Hall</td>
<td>Hotel Lobby @ 10:30</td>
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<td>9/13</td>
<td>12:00-13:30</td>
<td>Farewell Luncheon</td>
<td>Mayfield Hotel</td>
<td></td>
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</table>
Acknowledgment

I would like to thank Ministry of Information Technology (MoIT), who made the production of this report possible, above all Member Telecom and Director-ICU. International Coordination Unit (ICU) of MoIT deserves special mention for their coordination for this study visit course of National Informatization Framework.

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Azeem Sajjad
Project Manager-R&D
Executive Summary

The development of the telecommunications sector in the Democratic People’s Republic of Korea (DPRK) is seriously impeded by the country’s parlous economic state and government repression of communication. It has been a difficult journey indeed for telecommunications in the DPRK. The Republic of Korea has proven itself a leader in many aspects of the telecommunications industry. South Korea has one of the most interesting and innovative telecommunications markets in the world supported by a visionary government, a creative and energetic private sector and a technology savvy population. According to a report by the International Telecommunication Union (ITU) in early 2007, Korea had topped the global list of countries in the ITU’s Digital Opportunity Index for the second consecutive year, confirming its status as an IT and telecoms powerhouse.

South Korea has the highest number of broadband connections per capita in the world. By early 2007, broadband subscriber penetration was running at 30% of the population; or, put another way, 90% of all households had broadband access as the broadband market in country was reaching near saturation. The much anticipated launch of WiBro services (South Korea’s locally developed version of WiMAX) in 2006 certainly did not meet expectations, despite substantial investment and effort by the service providers. The general feeling was that to launch such a service while a choice of suitable handsets was not available was a premature move.

The South Korean mobile market, which continues to look like it has reached a point of saturation, again found a way to grow by a further 5% (in subscribers and revenue) in 2006 and this growth pattern was continuing into 2007. Mobile penetration was around 85% in early 2007, the majority of services being new generation. Not surprisingly, the country continued to be considered a leader in Third Generation (3G) mobile technology. WCDMA, the second 3G standard to enter the South Korean market after CMDA2000, became commercially available in December 2003, though the service had failed to attract a significant number of subscribers. There was increasing interest in the task of upgrading the 3G networks using HSDPA technology, sometimes described in the industry as 3.5G. Both SK Telecom and KTF launched their HSDPA services in 2006. This seems to be the new service offering the market had been waiting for. It effectively did what WiBro was meant to do. With the launch of HSDPA 3G services by SK Telecom and KTF, the mobile market was given a significant boost. By June 2007, there were 1.6 million customers on the upgraded WCDMA networks.

Satellite-based Digital Media Broadcasting (S-DMB) was moving in a positive direction coming into 2007. TU-Media, a subsidiary of SK Telecom, claimed to have signed up 950,000 S-DMB subscribers by end-2006. In other words, the subscriber base has increased by about 100% in 2006. Even more importantly, the operator
Executive Summary

reported that the average TV viewing time per subscriber was running at 62 minutes per day. This was a much higher usage rate than in other markets.
About KADO

The Korea Agency for Digital Opportunity & Promotion, the special agency created with the organizational vision to reduce the national information gap, designs and builds a digital welfare country putting the benefits of Information Technology at every person’s fingertips. KADO’s mission is to nurture an environment which provides access to information for the deprived, to develop and support technology and content to reduce the information gap, to promote the public’s ability to utilize information through education, to create a healthy environment for life within the e-World, to assist public policy and related research and development activities, to coordinate international cooperation and reduce the information gap between countries and to create a venue for future information society and promotion of sound cyber culture.

The Agency upholds Korea’s image as a strong IT country, e-Korea, through sending out internet youth volunteers abroad, building internet education and training centers in developing countries, Training IT experts and expertise abroad on the mid, and long-term basis, and operating IT tour programs for foreign journalists. Organizing these types of project repetitively helps reduce the information gap between countries like Korea Internet Volunteers Program (kiv.kado.or.kr). IAC project are also to provide aid to establishing IT infrastructure such as Internet plaza, computer laboratory and seminar rooms in ASEAN and other developing countries. These facilities are to be provided free access to internet as well as practical and educational IT training. Korea IT Training Program is to foster IT experts on both IT and digital knowledge that are applicable to development of IT and process of IT policies of developing countries, KADO invite staffs of public and private organizations, providing them Korea’s IT experience and know-how as well as IT technical training.(www.kiltp.or.kr). IT Visit for oversea Journalists and staffs in the developing countries and international organizations will contribute to disseminate the information and knowledge in the information society and to promote Korea's position in the IT field. Research on the new paradigm of information society in preparation for the World Summit on the Information Society (WSIS) and research into effective ways to prepare and encourage government, civil society, and business sector to participate in WSIS. The agency nurtures an environment promising equal opportunity access to information so that any individual can get free access to information networks and use information without regional, economic, and physical barriers. Assistance for building information access facilities for isolated regions from informatization and the deprived from society through free access to the internet.

Used PC's are collected and are distributed for free to those who are deprived of information access after refurbishment, Distribution of IT or telecommunication Accessories and special SW for the handicapped, Development and Distribution of content specifically aimed at the handicapped and the senior citizens (Doun Nara, www.itall.or.kr), Home-informatization networks catering for family community
About KADO

KADO is responsible for the development (Operation of www.family21.or.kr, www.jubu21.net). The agency is working on various projects given below:

<table>
<thead>
<tr>
<th>Project</th>
<th>Name of the Subproject</th>
<th>URL</th>
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</thead>
<tbody>
<tr>
<td>Korea Agency for Digital Opportunity &amp; Promotion</td>
<td></td>
<td><a href="http://www.kado.or.kr">http://www.kado.or.kr</a></td>
</tr>
<tr>
<td>Access Environment Establishment</td>
<td>Distribution of Used PCs</td>
<td><a href="http://lovepc.kado.or.kr">http://lovepc.kado.or.kr</a></td>
</tr>
<tr>
<td></td>
<td>Doumnara (content development and distribution for the handicapped and senior citizens)</td>
<td><a href="http://www.itall.or.kr">http://www.itall.or.kr</a></td>
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<td></td>
<td>Home Informatization Network</td>
<td><a href="http://www.family21.or.kr">http://www.family21.or.kr</a></td>
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<td><a href="http://www.jubu21.net">http://www.jubu21.net</a></td>
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<td></td>
<td>Office of Information Culture PR</td>
<td><a href="http://plaza.kado.or.kr">http://plaza.kado.or.kr</a></td>
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<td></td>
<td>Baeumnara (online education)</td>
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<td></td>
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<td>Informatization Test for Employees in Public Service</td>
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<td></td>
<td>e-Korea Education</td>
<td><a href="http://www.ekorean.or.kr">http://www.ekorean.or.kr</a></td>
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<tr>
<td></td>
<td>e-Biz Education for Women</td>
<td><a href="http://www.womenbiz.or.kr">http://www.womenbiz.or.kr</a></td>
</tr>
</tbody>
</table>
The Age of Informatization and Roles of the Government

1.1 Transforming Govt. Environment with Informatization

1.1.1 Informatization society

- Informatization Society is Information-based Society or Information Intensive Society. Society is becoming increasingly dependent on an intelligent use of information and information technologies as a competitive factor.

<table>
<thead>
<tr>
<th>Industrial Age</th>
<th>Informatization Age</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production Characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>Digital</td>
</tr>
<tr>
<td>Mass production –mass consumption</td>
<td>Flexible production</td>
</tr>
<tr>
<td>Standardization</td>
<td>Customization</td>
</tr>
<tr>
<td>Economies of scale and scope</td>
<td>Economies of flexibility and speed</td>
</tr>
<tr>
<td><strong>Organizational structure</strong></td>
<td></td>
</tr>
<tr>
<td>Centralized command and control</td>
<td>Decentralized coordination</td>
</tr>
<tr>
<td>Hierarchy and bureaucracy</td>
<td>Network</td>
</tr>
<tr>
<td>Internal control</td>
<td>Alliances and partnerships</td>
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<tr>
<td><strong>Asset base</strong></td>
<td></td>
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<tr>
<td>Capital and labor</td>
<td>Skills and knowledge</td>
</tr>
<tr>
<td>Resources</td>
<td>Innovation</td>
</tr>
</tbody>
</table>

![Diagram of Informatization and its components]

- Digital Phones
- Broadband
- Optical Fiber Cable
- Mobile Communication
- Internet
- Computer
- E-Technology
- IT Policy & Cyber Law

The Age of Informatization & Roles of Govt.
1.1.2 Transforming Service Delivery

<table>
<thead>
<tr>
<th>Departmental Focus</th>
<th>User/Client Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automation of existing processes</td>
<td>Rethinking service delivery</td>
</tr>
<tr>
<td>Services provided in relevant</td>
<td>Integrated Services</td>
</tr>
<tr>
<td>Departments</td>
<td></td>
</tr>
<tr>
<td>Program-by-program Solutions</td>
<td>Shared or common solutions</td>
</tr>
<tr>
<td>Program-by-program access</td>
<td>Single-Window access</td>
</tr>
</tbody>
</table>

Transforming Govt. environment with Informatization needs an effective use of IT, can be a powerful example for the business community.

1.1.3 Informatization Promoting Strategies

Cyber Korea 21

In Cyber Korea 21, Korean government is aiming for building e-Korea through the eKorea (through nationwide informatization)

1.1.4 Strategies for eKorea: -

- Promoting the knowledge-based Information Infrastructure
- Fostering a new internet-based industry (digital loyalty)
- Strengthening the competitiveness of IT services

1.2 Departmental Govt. & e-Govt.

1.2.1 What is e-Govt:

E-Govt is a form of using ICT in supporting government activities such as paperwork reduction, public service computerization, e-Procurement and one-stop government services. Policy targets of e-Govt are: -

- Distribute Govt. information on demand
- Encourage e-Participation
- Establish e-Citizen Center (one-stop public service)
- Promote e-Commerce and E-competency
- Promote e-Democracy

1.2.2 Burning Issues in Public Sector

Transparency, Lean Government, Call-Centers, Efficiency, Internet Services, Deregulation, Total Quality, Public Private Partnership, Privatization, New Public Management and Output Oriented Government
1.2.3 Structure of e-Government

1.2.4 Concept of e-Government

<table>
<thead>
<tr>
<th></th>
<th>Departmental Gov.</th>
<th>e-Gov</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Service Expectation</td>
<td>• Government-driven</td>
<td>• Customer-driven</td>
</tr>
<tr>
<td></td>
<td>• Cumbersome, many channels</td>
<td>• Option for end to end self service</td>
</tr>
<tr>
<td></td>
<td>• Get in, get out</td>
<td>• Enduring relationship</td>
</tr>
<tr>
<td>Staff</td>
<td>• Overworked or underutilized</td>
<td>• Optimized effort-to-value ratio</td>
</tr>
<tr>
<td></td>
<td>• Distant customer contact</td>
<td>• Immediate customer service</td>
</tr>
<tr>
<td>Technology</td>
<td>• Silo-serving</td>
<td>• Enterprise-serving</td>
</tr>
<tr>
<td></td>
<td>• Information Center</td>
<td>• Intelligent reporter</td>
</tr>
<tr>
<td>Organizational Structure</td>
<td>• Process-based</td>
<td>• Competency-based</td>
</tr>
<tr>
<td></td>
<td>• Territorial</td>
<td>• Shared service</td>
</tr>
<tr>
<td></td>
<td>• Outsource to meet today’s need</td>
<td>• Partner for current and future value</td>
</tr>
</tbody>
</table>

1.3 Role of e-Govt. CIO
The position as essential for reinventing government. Cross-departmental financial and administrative systems, intranets and electronic commerce systems can boost customer service in government and save tax dollars.
1.3.1 Government CIO’s Qualities and Roles

- One’s post Management and Control
- Efficient management and propulsive force of IT use
- Expert knowledge of IT and related fields
- Mediate a dispute on related IT matter
- Innovative capacity Of Informatization mind
- Communicating CEO/Other officers / persuasive power / ability of foreign language
- Present of Strategies as well as vision and new enterprise
- Understanding of business sense and the all enterprise

1.3.2 Global Governance Issues:

1.4 Informatization Diffusion & Closing Digital Divide

As Informatization progresses, the gap between those who use digital information and those who don’t use is getting wider.

1.4.1 What is Digital Divide?

The gap between individuals, households, businesses, and geographic areas at different socio-economic levels with regard both to their opportunities to access “Information Communication Technologies (ICTs)” and to their use of the internet for a wide variety of activities.

1.4.2 Types of Digital Divides

- Race/ethnicity
- Income
- Education
- Location: urban/rural/inner city
- Disability
1.4.3 Present position of Digital Divide


Gini's Coefficient of Internet Usage
1.4.4 Solution to overcoming the Digital Divide

<table>
<thead>
<tr>
<th>Profit Organization</th>
<th>Government</th>
<th>Non-profit Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Participation in Rural Telecom</td>
<td>• Provision of national plan</td>
<td>• Implement various programs such as provision of IT education</td>
</tr>
<tr>
<td>• Disabled access to ICT</td>
<td>• Making necessary laws &amp; institutions</td>
<td>• Distribution of refurbished PC</td>
</tr>
<tr>
<td>• Financial/technical supports to non-profit org.</td>
<td>• Encourage private sectors</td>
<td>• Free internet access sites</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provision of online info. to needy</td>
</tr>
</tbody>
</table>

1.4.5 Vision and Strategies for closing the Digital Divide

<table>
<thead>
<tr>
<th>Vision</th>
<th>Goal</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The achievement of Digital welfare society &amp; Digital opportunity nation</td>
<td>• Provision of information network to all people at reasonably equal condition</td>
<td>• Establishment of Govt. - centered system</td>
</tr>
<tr>
<td></td>
<td>• Establishment of environment that any person can use information devices and services</td>
<td>• Solution of Customer – centered subject</td>
</tr>
<tr>
<td></td>
<td>• Improvement of the information ability of the poor to use IT through provision of educate IT based learning opportunity</td>
<td>• Cooperation and Partnership</td>
</tr>
<tr>
<td></td>
<td>• Promotion of cooperation among international societies, nations</td>
<td>• Expansion of National movement</td>
</tr>
</tbody>
</table>

1.5 Strengthening International Competitiveness of IT usage

- Wideness and High effectiveness of IT use
- Human Resource Development (EduNet)
- Elevation of Public Service
  - Application Integration Services
  - Security & Authentication Services (PKI)
The Age of Informatization & Roles of Govt.

- Directory Services
- Network Services
- Architecture and Planning Services

1.5.1 Reforming Public Service

- Service Transformation
- Common business processes
- Hard policy issues
- Security
- Government-wide architecture
- Complex skills sets

- Relationship Management
  - Citizen satisfaction
  - Citizen Welfare
  - Service standards
  - Inter-jurisdictional
  - Citizen engagement / e-democracy

- Sustainability
  - Long term governance

1.5.2 Vision and Goal

- Effecting real change
  - Service Transformation
  - Common business processes
  - Hard policy issues
  - Security
  - Government-wide architecture
  - Complex skills sets

- Relationship Management
  - Citizen satisfaction
  - Citizen Welfare
  - Service standards
  - Inter-jurisdictional
  - Citizen engagement / e-democracy

- Sustainability
  - Long term governance
The Age of Informatization & Roles of Govt.

- Management of IT assets and shared services
- Resource / Sustainability
- Private-public sector partnerships
Korea’s Digital Economy Status and Informatization Policy

2.1 Status of IT industry

- Annual average growth ration of GDP (98-05): 7.5% that of IT industry: 14.6%
- In 2005, IT industry export accounted 36% (102.3 b$) of total export
- In 2005, trade surplus of IT industry 48.38 US $b (twice of the total trade surplus)
- Portion of IT industry in total GDP from 9.5%(2000) to 15.6%(2005)
- Effect of IT industry on price stabilization annual consumer price index decreased by 0.22% point, producer price index by 1.15% point (00-04)
- The number of households subscribing to broadband internet 12.19 million with 33.01 million internet users (Dec. 2005)
- Export volumes of DRAM, CDMA cell phones, CRT and LCD are no.1 in the world

2.2 How we got here

2.2.1 Take-off Period (1980s)

- TDX(time-division digital switching system): ETRI+private companies
- 4 mega-bit DRAM project (ETRI+private companies)
- 1983, government announced "Year of IT Industry"
- 1983, Promotion Committee of IT industry under the direct jurisdiction of President
- 1986, Enactment of 'Providing and Expanding Telecommunication Network Act'
- 1987, Start of Five Year National Information Highway Project (administration, finance, education and research, defense, and police): first stage,

2.2.2 Diffusion Period

- 1994, creation of MIC (from agency of Postal Service)
- 1994, beginning of construction of the Broadband Network
- 1995, enactment of the Basic Law promoting Informatization
- 1996, Basic Plan for constructing Information Society (1st plan)
- 1997, Economic Crisis (IMF)
- 1999, 2nd Plan (Cyber Korea 21) : blue-print of e-gov., to overcome the economic crisis of 1997 (venture industries), paradigm shift to information society, e-commerce
2.2.3 Maturation Period

- 2002, 3rd Plan (e-Korea Vision: promoting information society as a whole, upgrading information infrastructure, international cooperation for global information society)
- 2004, IT 839 strategy: core policies in 2005, promoting the globalization and international standardization of DMB and WiBro.
- IT839 policy stands for eight service areas, three infrastructures and nine major new growth engines.
- Three infrastructures: BcN (Broadband convergence Network, IPv6 are included), USN (u-sensor network), IT Service
- Nine major new growth engines: mobile communications, digital TV/broadcasting, home network devices, telematics devices, intelligent robot, next-generation computing/peripherals, and digital tags

2.2.4 Weakness of Korean IT industry

- Lack of core technology (too much loyalties)
- Heavy dependence on DRAM, LCD, cell phones (fluctuation in world price), low-value added nature (import from Japan)
- Underdevelopment of software industry
- Over-matured domestic market
- But some strength: test-bed for the new product, the most advanced market in IT

2.3 Designing State Institutions

2.3.1 Varieties of State Institutions in IT

- Korea: centralized, MIC
- Singapore: IDA (Information Development Agency)
- Japan: no single central authority. in 2000, IT HQ under PM
- Hong Kong: market-friendly policy, weak state initiative
- Germany: state providing visions, no single authority in charge of IT
- UK: state providing visions, market-led
- Canada: MIR (ministry of Industry and Resources) in charge of National Information Infrastructure, market-led, state as regulator
- Finland: Treasury and Congress providing visions, market-led
- US: OMB (Organization for Management and Budget) in
- White House as coordinator of IT Policy
Korea’s Digital Economy Status and Informatization Policy.

2.3.2 Role of the Government: common features
- Building information and communication networks
- Adjusting Legal and institutional frameworks to accommodate the information society
- Informatizing Human Resources, including digital divide
- Informatizing Public Sectors including e-government
- Informatizing Industries: promoting e-commerce, IT industry

2.3.3 Method of building information infrastructure: Asia vs West
- Role of the government: direct (Korea, Japan) vs indirect (US, Canada, Australia, UK, EU)
- Designating Public enterprise (Korea, Japan) vs Private Competition (US, Canada, UK, Australia)
- Network-centered (Korea, Japan) vs demand centered (US, Canada, Australia)

2.3.4 Key Questions in designing state institutions
- a) Whether to centralize or to decentralize
  - Centralization: efficient planning and implementation (merit), lack of deliberation (risk of wrong choice! demerit)
  - Decentralization: avoiding the risk of wrong choice (merit), but lack of swiftness and efficiency (demerit)
- b) Indigenous versus dependent development
  - Korean case: relied on foreign sources for critical and basic technology (e.g., Qualcomm in CDMA) but indigenous R&D efforts for applied technology (TDX: import substitution effect 500 million US$ in 1980s, major export item to CIS and China)
  - Ireland: mainly adopted foreign technology, but hub for software industries
- c) Choice of industry standard
  - In introducing cell phone service: choice of CDMA and WCDMA (mainly choice between US and EU standard)
  - Digital TV service (mainly choice between US and EU standard)
  - Which global standard to follow (failure of Japan in HDTV)
  - Interoperability with the global standard is critical for the sustainable development
- d) Choice between public enterprise and private company
  - Efficient implementation in implanting information infrastructure by KT (at that time, public enterprise)
  - Also success story of Samsung Electronics (putting private entrepreneurship in motion)
Korea’s Digital Economy Status and Informatization Policy.

2.4 Other Domestic Issues from Information Society

2.4.1 Political Impact
- Politics moves online (first ever internet President log on: Financial Time in December 2002)
- Political fan club
- Online Journalism (OhMyNews, surpassing gatekeeper)
- e-gov. (Seoul, Inchon, Ulsan are model cases, exporting program to Southeast Asia)

2.4.2 Social Impact
- Privacy regime (electronic ID card, NEIS)
- Digital divide (KADO)
- Security issues (e-banking, e-health)
- Internet addiction (porno, game and gamble sites)
- After 2000 APT(ASEAN Plus Three) Summit, Korea-China-Japan Next Generation Network Community is formed
- Pan-Asian e-trade Commission is formed in 2001
- Standardization attempt of East Asian e-commerce
- Digital Gateway Foundation for Asia (International digital divide fund)
- Linux Forum in Northeast Asia
3.1 **Introduction to e-Government**

3.1.1 **Definition of e-Government**
E-Government is generally defined as being “the use of digital technologies to transform government operations in order to improve effectiveness, efficiency, and service delivery” (Source: Mark A. Forman, “Using it to transform the effectiveness and efficiency of government”, June 2005)

3.1.2 **Conceptual Framework of e-Government**
3.1.3 Stages of e-Government Evolution

Scores by stages* - Top scoring countries

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>Sum</th>
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<td>Mexico</td>
<td>100</td>
<td>83</td>
<td>86</td>
<td>81</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Japan</td>
<td>100</td>
<td>94</td>
<td>22</td>
<td>37</td>
<td>86</td>
<td>77</td>
</tr>
<tr>
<td>11</td>
<td>Israel</td>
<td>100</td>
<td>62</td>
<td>81</td>
<td>54</td>
<td>22</td>
<td>86</td>
</tr>
<tr>
<td>12</td>
<td>Ireland</td>
<td>100</td>
<td>90</td>
<td>89</td>
<td>81</td>
<td>13</td>
<td>88</td>
</tr>
</tbody>
</table>

* Source: UN Global e-Government Readiness Report 2005
3.1.4 From e-Korea to u-Korea

Key words:
- Through ubiquitous IT
- Connecting physical area with electronic area tightly
- Multi-Channel Access
- Constant Flow of Information
- Expanding the reach of business and government to customers
- Intelligent and Real-time Administration
- Personalized Service
- Information Overload
- Customer and Cultural Sensitivity

3.2 e-Government of Korea

3.2.1 History

<table>
<thead>
<tr>
<th>Year</th>
<th>Accomplishments</th>
</tr>
</thead>
</table>
| 1986 | • Act on Promotion of Information & Communications Network Utilization and Information Protection Act (1986)  
      • Two Phased National Basic Information System Projects: Civil Service, Real Estates, Automobiles, etc. (1987~1996) |
      • First Basic Plan for Information Society Promotion (1996)  
      - G2C: Innovative Services for Citizens and Businesses  
      - G2G: Reform of Government’s Internal Work Processes Infrastructure Building |
| 2003 | • Announcement of e-Government Road Map (2003)  
      - 4 Areas, 10 Agendas, and 31 Initiatives  
      • Implementation of New 31 e-Government Initiatives (2003~Now) |
3.2.2 UN e-Government Readiness Rankings
The Republic of Korea remains one of the world leaders in e-government. Its central services portal, http://www.egov.go.kr, continues to offer citizens the opportunity to complete a vast array of government related transactions through several payment options, including digital currency…The Republic of Korea is also home to one of the most impressive e-procurement implementations through its continued development of the Government e-Procurement System (GePS) as a single window for public procurement, which provides full integration – from initial purchase request and bid information

3.2.3 Vision and Objectives

Vision of Korean E-Government
“Prompt, Transparent and Quality Administrative Service for Citizens”
- To become a competitive government, government officials can cope with all the administrative and civil services with one set of a personal computer
- To become a transparent government, citizens (business) can resolve all the problems with one click

Objectives
- Innovative services for citizens and business
- Reform of Govt.’s internal work processes
- High speed and secure infrastructure building
### 3.2.4 Key 11 Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Innovative Services for Citizens and Businesses</strong></td>
<td></td>
</tr>
<tr>
<td>Initiative I</td>
<td>Citizen-oriented Service via One-stop Window - Government Portal (G4C) System</td>
</tr>
<tr>
<td>Initiative II</td>
<td>Integrated Electronic Government Procurement - National e-Procurement (G2B) System</td>
</tr>
<tr>
<td>Initiative III</td>
<td>Comprehensive Service for National Taxes via Internet - Home Tax Service (HTS) System</td>
</tr>
<tr>
<td>Initiative IV</td>
<td>Connecting Four Major Insurances - Social Insurance Information Sharing System</td>
</tr>
<tr>
<td><strong>Reform of Govt.'s Internal Work Processes</strong></td>
<td></td>
</tr>
<tr>
<td>Initiative V</td>
<td>Reform of Government Financial Information Management - National Finance Information System (NAFIS)</td>
</tr>
<tr>
<td>Initiative VI</td>
<td>Improvement of Gov’t Personnel Information Management - Personnel Policy Support System (PPSS)</td>
</tr>
<tr>
<td>Initiative VII</td>
<td>Improvement of National Education Information Mgmt. - National Education Information System (NEIS)</td>
</tr>
<tr>
<td>Initiative VIII</td>
<td>Improvement of Local Administrative Information Mgmt. - Local Government Management Information System</td>
</tr>
<tr>
<td><strong>High Speed and Secure Infrastructure Building</strong></td>
<td></td>
</tr>
<tr>
<td>Initiative IX</td>
<td>Establishment of Government Integrated Computing Center</td>
</tr>
<tr>
<td>Initiative X</td>
<td>Establishment of Electronic Document Management System (EDMS)</td>
</tr>
<tr>
<td>Initiative XI</td>
<td>Establishment and Expansion of Electronic Certifying Center</td>
</tr>
</tbody>
</table>
3.2.5 New 31 Initiatives

<table>
<thead>
<tr>
<th>Area</th>
<th>Agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure Reform</td>
<td>1. Online processing of document handling</td>
</tr>
<tr>
<td></td>
<td>2. Integration and control of local government financial information</td>
</tr>
<tr>
<td></td>
<td>3. eLocal government</td>
</tr>
<tr>
<td></td>
<td>4. Online auditing</td>
</tr>
<tr>
<td></td>
<td>5. e-Assembly</td>
</tr>
<tr>
<td></td>
<td>6. Integrated criminal justice system</td>
</tr>
<tr>
<td></td>
<td>7. HR administration integration</td>
</tr>
<tr>
<td></td>
<td>8. Foreign affairs and legal information system</td>
</tr>
<tr>
<td></td>
<td>9. Real-time management of national tasks</td>
</tr>
<tr>
<td></td>
<td>10. Expanded administrative information sharing</td>
</tr>
<tr>
<td></td>
<td>11. Business reference model (BNM) development</td>
</tr>
<tr>
<td>Civil Service Reform</td>
<td>12. Enhanced Internet civil service</td>
</tr>
<tr>
<td></td>
<td>13. Integrated national safety management service</td>
</tr>
<tr>
<td></td>
<td>14. Integration and enhancement of construction, land and registry</td>
</tr>
<tr>
<td></td>
<td>15. Enhancement of commerce support service</td>
</tr>
<tr>
<td></td>
<td>16. Integrated national safety information service</td>
</tr>
<tr>
<td></td>
<td>17. Integrated food and drug information service</td>
</tr>
<tr>
<td></td>
<td>18. Integrated employment information service</td>
</tr>
<tr>
<td></td>
<td>19. Internet administrative court service</td>
</tr>
<tr>
<td></td>
<td>20. Single window for business support services</td>
</tr>
<tr>
<td></td>
<td>21. Integrated national logistics information service</td>
</tr>
<tr>
<td></td>
<td>22. e-Trade service</td>
</tr>
<tr>
<td></td>
<td>23. Integrated foreign support service</td>
</tr>
<tr>
<td></td>
<td>24. Support for reporting e-government solutions</td>
</tr>
<tr>
<td></td>
<td>25. Expanded citizen online participation</td>
</tr>
<tr>
<td>Information Resource</td>
<td>26. Governmentwide integrated information resource</td>
</tr>
<tr>
<td>Management Reform</td>
<td>27. Enhancement of e-government network</td>
</tr>
<tr>
<td></td>
<td>28. Application of government wide information technology architecture (ITTA)</td>
</tr>
<tr>
<td></td>
<td>29. Building the information security system</td>
</tr>
<tr>
<td></td>
<td>30. Enhancement of IT staff and organizations</td>
</tr>
<tr>
<td>Legal Reform</td>
<td>31. e-Government related legal reform</td>
</tr>
</tbody>
</table>

E-Govt. of Korea
3.2.6 Implementation Structure
3.2.7 Future Direction

<table>
<thead>
<tr>
<th>PAST</th>
<th>NOW</th>
<th>FUTURE</th>
</tr>
</thead>
</table>

3.3 Critical Success Factors

3.3.1 Vision, Objectives, and Strategies
Implementation of e-Government is a long-term plan for the country. So, Think big with a big picture, but start small with prioritized tasks.

3.3.2 Laws & Regulations
Plan for sufficient time and effort to cater for changes in legislation that may be required to support implementation of new processes.

3.3.3 Organizational Structure
Do not underestimate effort required in this area. It typically makes up between 30% and 50% of total effort. So ensure that impacts on organization are well planned and scheduled.

3.3.4 Business Process
The existing way is not necessarily the right way. Challenge existing practices if you want to make significant improvements.
3.3.5 Information Technology

Information technology is a rapidly changing area. So, choose the right company for successful system implementation.

3.4 Major Challenges to Overcome

<table>
<thead>
<tr>
<th>What the heck is the e-government?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t know the access channel of each service.</td>
</tr>
<tr>
<td>To go to the government office is easier than e-gov.</td>
</tr>
<tr>
<td>E-government homepage is too difficult to use.</td>
</tr>
<tr>
<td>I don’t know about the computer.</td>
</tr>
<tr>
<td>It is difficult to access the internet.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What did you do with the money?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 billion U.S. dollar (for 10 years)</td>
</tr>
<tr>
<td>880,000</td>
</tr>
<tr>
<td>90,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Why don’t you give the money to me?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Company 65%</td>
</tr>
<tr>
<td>Korea Company 35%</td>
</tr>
</tbody>
</table>

3.5 LG CNS’s Contribution to Korean e-Government

3.5.1 List of Projects Implemented by LG CNS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>National Basic Information System</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Informatization Promotion Plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyber Korea 21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e-Korea Vision 2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11 Initiatives of Cyber Korea 21 Phase in Korea
- Citizen-oriented Service via One-stop Window
- Integrated Electronic Government Procurement
- Comprehensive Service for National Taxes via the Internet
- Connecting Four Major Insurances
- Reform of National Financial Information Management
- Improvement of Government Personnel Information Management
- Improvement of National Education Information Management
- Improvement of Local Administrative Information Management
- Establishment of Government Integrated Computing Center
- Electronic Documentation of All Government Documents
- Establishment and Expansion of the Electronic Certifying Center

11 Initiatives of e-Korea Vision 2006 Phase in Korea
- Online processing of document handling
- Integration of central and local government financial information
- e-Local government
- Online auditing
- e-Assembly
- Integrated criminal legal system
- HR administrative integration
- Foreign affairs and trade information system
- Real-time management of national tasks
- Expanded administrative information sharing
- Business reference model (BMR) development
- Enhanced Internet civil service
- Integrated national security management service
- Integration and enhancement of construction, land and registry
- Enhancement of comprehensive tax service
- Integrated national welfare information service
- Integrated food and drug information service
- Integrated employment information service
- Internet administrative court service
- Single window for business support service
- Integrated railings logistics information service
- e-Trade service
- Integrated Fongura support service
- Support for exporting e-governance solutions
- Expanded online participation of citizens
- Government wide integrated information environment
- Enhancement of e-governance network
- Application of government wide information technology architecture (ITA)
- Building the information security system
- Enhancement of IT staff and organizations
- e-Government and security related legal reform

3.5.2 LG CNS Way to e-Government

* TRG = Technology Research Group
** TSG = Technology Service Group
Land Registration and Korea Case Study

4.1 Land Registration System

4.1.1 What is Land Registration?
Land registration, though defined in many ways, mainly refers to the provision of legal basis for recording, with certainty, the ownership and other rights to the land

4.1.2 Why the Need for Land Registration System (LRS)?
Current land registration in countries which haven't embraced yet technological innovations have shown common operational challenges

- Manual-based Transaction Processing
- Paper-based Records Keeping
- Lack of Integrated Transactional Records
- Outdated Technology Infrastructure

4.2 Actual Project References

4.2.1 Case Study Overview
- LG CNS’s experience in land registry computerization covers both nationwide efforts for Korea and the Philippines
- The scope of work for Korea was a massive and complex undertaking of nationwide scale
- The Korea project was broken down into 4 major components covering all aspects of land registration operation

4.2.2 Korea Experience
The Korea project was divided into 2 phases with the 1st Phase spreading over 12 years from its conceptualization to full implementation.
At a system level, the Korea project is a mixture of various technological innovations that reflects the sophistication of AROS.

The Registry/Core Application of AROS is a fully automated process from entry of documents until the issuance of documents.
Land Registration and Korea Case Study
5.1 C&C/EMS Overview

5.1.1 What is C&C/EMS?
Simply put, C&C/EMS is any means, tools, or systems aimed at addressing and coordinating efforts to respond to incidents and emergencies.

| Saving Lives | -> | Protecting Properties | -> | Fighting Crimes |

5.1.2 Why the Need for C&C/EMS?
Past and recent events have highlighted the need for C&C/EMS due continued increase in incidences of emergencies and the escalating rate of criminality…

In 2006, Asia was the most disaster prone continent, with 50% of the countries among the Top 10, belonging in Asia.

1. China
2. United States
3. Indonesia, Philippines
4. India
5. Afghanistan
6. Vietnam
7. Australia, Burundi, Pakistan
8. Ethiopia, Mexico, Romania
9. Germany
10. Bangladesh, Japan, Canada, Kenya, Russia, Somalia, Malaysia, PNG

Source: Center for Research on the Epidemiology of Disaster

Many countries still fall short in coping up with the rising incidences of emergencies and criminalities due to lack of suitable system and facilities…

5.2 C&C/EMS Overview (Operational Structure)
The operational structure of the “C&C/EMS of the Present” follows processes which without any technology application are common to many countries…
5.2.1 System Components
“C&C/EMS of the Future” will have technology applications to automate and drastically improve the “C&C/EMS of the Present”...

The never center of the “C&C/EMS of the Future” is its Operation Center which plays the key role of centralizing and coordinating all activities from call receipt to case closing...

<table>
<thead>
<tr>
<th>Wall Display System</th>
<th>Displays emergency situations, vehicle route, maps, command status, various statistics and video from CCTV</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANI/ALI</td>
<td>Automatically identifies the phone number or location of calls</td>
</tr>
<tr>
<td>GIS</td>
<td>Facilitates the display of the location of the caller, physical objects and various map layers.</td>
</tr>
<tr>
<td>Integrated Communication</td>
<td>Provides stable and seamless interface among individuals, vehicles, and agencies</td>
</tr>
</tbody>
</table>
5.3 System Demonstration
System demonstration was given.
U-CITY OF KOREA
- It is right time to start!

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Implementation</th>
<th>Overview</th>
</tr>
</thead>
</table>
| We discuss about the challenges & opportunities of building the technologically advanced city. | U-City is not an option, but a must. You should know and think about it carefully for your near future. | • Introduction to u-City  
• U-Services  
• U-City case studies  
• Critical success factors |

6.1 Introduction to Ubiquitous Computing

6.1.1 Ubiquitous, Ubiquitous Computing
Ubiquitous: If you describe something or someone as ubiquitous, you mean that they seem to be everywhere

6.1.1.1 Ubiquitous Computing:
- Is the computer which is present everywhere
- Is the computer that user can use easily without being conscious
- Is the third wave of computing
- Makes you can communicate with the world unlimitedly

6.1.2 Computing Paradigm Stages

<table>
<thead>
<tr>
<th>Decentralized Computing</th>
<th>Mobile Computing</th>
<th>Portable Computing</th>
<th>Ubiquitous Computing</th>
</tr>
</thead>
</table>
| • Remote Communication and Information Access | • Mobile Information and Information Access  
• Location Recognition  
• Power Supply Management | • Network Interoperability  
• Context Recognition  
• Adaptable Application | • Intelligent Space  
• Ubiquitous Information Access  
• Invisible and Active Computing |

Computing paradigm of next generation
Computing & Networking embedded in product
- Pervasive computing & interactive wireless communication technology embedded in environment
- Computing environment supporting self-operating & adjusting, and optimized resource location
6.1.3 Ubiquitous Technologies

6.2 Introduction to u-City

6.2.1 What is u-City?
6.2.2 Concept of u-City

6.2.3 Service Component of u-City

- **Metro Service**
  - ITS/Telematics
  - Public connected service
  - Other connected service (cf. Park, Museum)

- **Connected Service**
  - Local business facility connected service
  - U-Healthcare
  - U-Learning
  - U-Shopping

- **UMC Service**
  - Facility Management Service
  - Integrated Customer Support
  - Internet Service
6.2.4 Entities of City Development

Ministry of Information and Communication
- u-Korea project implementation
- Legislation of u-IT law and regulation
- Standardization of u-Service, u-technology, certification
- Privacy protection policy

Ministry of Construction & Transportation
- Balanced local city development
- Legislation of city development
- Standardization of localized city model

Local Government
- City master planning & development
- Localized service development to boost local economy
- Quality of life
- Total City operation & mgmt

Ministry of Government Administration and Home Affairs
- e-Transformation for 16 city & provinces
- Legislation for e-Transformation
6.2.6 U-City Value Chain and Major Players

6.2.7 U-City Industry Size

<table>
<thead>
<tr>
<th>Field</th>
<th>Year</th>
<th>Global Market</th>
<th>Korean Market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
<td>2010</td>
<td>2005</td>
</tr>
<tr>
<td>Network</td>
<td>87.5</td>
<td>286.7</td>
<td>4.7</td>
</tr>
<tr>
<td>Terminal</td>
<td>45.8</td>
<td>65</td>
<td>2.54</td>
</tr>
<tr>
<td>Platform</td>
<td>6.7</td>
<td>25</td>
<td>0.4</td>
</tr>
<tr>
<td>e-Commerce</td>
<td>60.8</td>
<td>201.6</td>
<td>3.3</td>
</tr>
<tr>
<td>Service</td>
<td>51.7</td>
<td>124.2</td>
<td>2.8</td>
</tr>
<tr>
<td>Total</td>
<td>252.5</td>
<td>702.5</td>
<td>13.7</td>
</tr>
</tbody>
</table>
6.3 **Introduction to u-Service**

6.3.1 **u-City Vision**
The unique city with quality of life adopting u-IT and convergence technology

6.3.2 **u-City Engineering Framework**

---

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>u-City Industry</td>
<td>138</td>
<td>144</td>
<td>161</td>
<td>184</td>
<td>193</td>
<td>202</td>
</tr>
<tr>
<td>u-IT Industry</td>
<td>128</td>
<td>136</td>
<td>143</td>
<td>151</td>
<td>160</td>
<td>169</td>
</tr>
<tr>
<td>Construction Industry</td>
<td>10</td>
<td>8</td>
<td>18</td>
<td>33</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>GDP</td>
<td>878</td>
<td>913</td>
<td>952</td>
<td>994</td>
<td>1034</td>
<td>1078</td>
</tr>
<tr>
<td>u-City/GDP</td>
<td>15.7%</td>
<td>15.7%</td>
<td>16.9%</td>
<td>18.5%</td>
<td>18.6%</td>
<td>18.7%</td>
</tr>
</tbody>
</table>

**Methodology**

1. **USP**
2. **u-City Construction**
3. **ITCM**
4. **Business Modeling**
6.3.3 Service offering

<table>
<thead>
<tr>
<th>Plan</th>
<th>Design</th>
<th>Build</th>
<th>Operate</th>
</tr>
</thead>
<tbody>
<tr>
<td>USP</td>
<td>Service Design</td>
<td>Information System</td>
<td>Maintenance</td>
</tr>
<tr>
<td>• Basic Information Analysis</td>
<td>• Service Framework Define</td>
<td>• U-Life Service Center Construction (Application)</td>
<td>• Maintenance</td>
</tr>
<tr>
<td>• U-Vision &amp; Strategy Setup</td>
<td>• Service Technology Define</td>
<td></td>
<td>• Change Mgmt and support</td>
</tr>
<tr>
<td>• To-Be Model Design</td>
<td>• Infrastructure Design</td>
<td>• Communication Infrastructure</td>
<td></td>
</tr>
<tr>
<td>• Implementation Planning</td>
<td>• System Structure Define</td>
<td>• Power Infra-structure</td>
<td>• Service Operation</td>
</tr>
<tr>
<td>u-City Development Consulting</td>
<td>• System Build-up Guide</td>
<td>• Interior Architecture</td>
<td>- SPC Maintenance</td>
</tr>
<tr>
<td>• SPC composition</td>
<td>• Space Design</td>
<td>• Engineering Facility</td>
<td>- U-Life Service Center Operation</td>
</tr>
<tr>
<td>• City Development Planning</td>
<td>• Service, Infra Disposition</td>
<td>• Fire Fighting Facility</td>
<td>- Managed Service Delivery</td>
</tr>
<tr>
<td>• City Relocation Planning</td>
<td>• Blueprint, Specifications Framing</td>
<td></td>
<td>- Security</td>
</tr>
<tr>
<td>• Financing Planning</td>
<td>• Business Model Design</td>
<td></td>
<td>- Facility Management</td>
</tr>
</tbody>
</table>

Support & Mgmt.

<table>
<thead>
<tr>
<th>Plan</th>
<th>Design</th>
<th>Build</th>
<th>Operate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ITCM</td>
<td>PR</td>
<td></td>
</tr>
<tr>
<td>• ITCM for Fee</td>
<td>• u-City PR Planning &amp; Implementation</td>
<td>• PR Center Setup</td>
<td></td>
</tr>
<tr>
<td>• ITCM at Risk</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.3.4 u-Asset: Service framework

<table>
<thead>
<tr>
<th>Service</th>
<th>Asset</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. House</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Apartment Complex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Type1 neighborhood convention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Type2 neighborhood convention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Culture &amp; assembly facilities</td>
<td></td>
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<td>6. Sales facilities</td>
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<td>7. Medical Facilities</td>
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<td>8. Education research &amp; Welfare</td>
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<td>9. Sports facilities</td>
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<td>10. Business Facilities</td>
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<td>11. Housing Facilities</td>
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<td>12. Leisure Facilities</td>
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<td>13. Factories</td>
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<td>14. Warehouse Facilities</td>
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<td>Biz</td>
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<td>Public</td>
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<td>16. Toxic storage &amp; process facilities</td>
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<td>17. Automobile Facilities</td>
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<td>18. Animal &amp; plant facilities</td>
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<td>19. Soil purification process</td>
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<td>20. Common &amp; starting facility</td>
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<td>21. Cemetery facilities</td>
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<td>22. Travel &amp; reasort lounge</td>
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<td>23. SOC</td>
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250 solution categories

3x3 Matrix

Service System Management
## 6.3.4.1 Service Framework: u-Urban Management Service

### City Infra Management Service

<table>
<thead>
<tr>
<th>U-Governance</th>
<th>U-Urban Mgmt.</th>
<th>U-Transport</th>
<th>U-Security</th>
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</thead>
<tbody>
<tr>
<td>Remote governance support</td>
<td>City infra mgmt</td>
<td>Intel street/traffic mgmt</td>
<td>Physical security</td>
</tr>
<tr>
<td>Citizen driven service</td>
<td>Geographical info mgmt</td>
<td>Intel self-monitoring</td>
<td>Video surveillance</td>
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<td>Field governance support</td>
<td>Security</td>
<td>Integrated traffic info</td>
<td>Info security</td>
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<thead>
<tr>
<th>U-Home</th>
<th>U-Work</th>
<th>U-Education</th>
<th>U-Shopping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated customer support</td>
<td>Integrated FM</td>
<td>U-Classroom</td>
<td>Intel shopping info</td>
</tr>
<tr>
<td>Home network</td>
<td>Process Management</td>
<td>U-Campus</td>
<td>Online order/delivery</td>
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<td>Connected service</td>
<td>Management</td>
<td>U-Learning</td>
<td>Mileage</td>
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<tr>
<td>Digital self-experience</td>
<td>Resident healthcare</td>
<td>Social welfare support</td>
<td>Environment mgmt</td>
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<tr>
<td>U-Information</td>
<td></td>
<td>Citizen in need support</td>
<td>Environment improvement</td>
</tr>
<tr>
<td>U-Convention</td>
<td>U-Hospital</td>
<td>Kids nurturing system</td>
<td>Environment self-experience</td>
</tr>
</tbody>
</table>

### UMC Mgmt. System
- Operating
- Monitoring

### City Infra DB
- Status Info.
- Data Sharing
- Linking System
- Operations
- Statistics

### Users
- (PC, Notebook, PDA, Phone)

### System Components
- Road Mgmt. System
- Underground Facilities Mgmt. System
- Statistics Analyzing System
- Telemeter System

---

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6.3.4.2 Service Framework: u-Transport Service

6.3.4.3 Service Framework: Video Surveillance Service
6.3.4.4 Service Framework: u-Home Service

- Integrated Telemeter System
- Inquiry with wall pad

- Telemeter
- Easy UI
- Living Space Control
- Crime/Disaster Prevention

- Various Controllers
- Wall Pad
- PDA
- Mobile Phone
- Integrated hand-pad

6.3.4.5 Service Framework: u-Education Service

- School Affairs Service
- Location Information Service
- Digital Library
- Parking Information Service
- Local Education Service

- Local Custom Training Service
- Cultural Treasure Information Service
- Library Information Sharing Service

- High-tech Education Service
- Online Training Service

Contents Sharing

UMC

Contents Service
6.3.4.6 Service Framework: u-Shopping Service

- Home
  - u-Yellow Paper
  - u-Catalog
  - Personalized Shopping Information
  - Real time direct order/reservation
  - e-Coupon
  - Mileage Service for town life
  - Payment (Cash/Mileage)

- Street
  - UMC
  - LBS
  - Wireless N/W
  - Wired N/W
  - Mileage
  - u-Marketplace
  - Payment Gateway

6.3.4.7 Service Framework: u-Entertainment Service

- u-CITY Hall
  - Movie Theater
  - Concept of the city
  - u-CITY Touring
  - Scale Model of the city
  - Landscape of the city
  - U-Service Introduction
  - Entrance

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6.3.4.8 Service Framework: u-Healthcare Services

- Hospital
  - Health Consultation
  - Telemedicine
  - Bio Measuring Info.
  - Telemedicine Request

- Fitness Center/Clinic
  - Personal Record
  - Diet Program
  - Exercise Program
  - Exercise Record
  - Intake Record

- U-MC
  - Consultation
  - Program
  - Telemedicine
  - Prescription
  - u-Terminal
  - Bio Measuring System
  - Digital Sporting Goods

6.3.4.9 Service Framework: u-Environment Service

- Atmosphere Control
  - The car and factory chimney pollution monitoring

- Water-purity Control
  - The sewage disposal plant monitoring and remote controlling

- Waste Matter Control
  - Waste matter box tracking by RFID tag

- Living Environment Control
  - Public facilities' air conditioning
  - Noise/smell Preventing

- River Control
  - Flood controlling by the real time water level mgmt.

- Real-time Environment Mgmt.
- Green Areas and Park Mgmt.

- Park Mgmt.
- Online Registration Service
- Location Based Service

- u-Green Center
  - Monitoring/Analyzing/Operating
  - Sharing the Environment Info.

- Two-way Comm. Service
  - Real time environment Info.
  - Multi Reporting Channel
  - Searching Park Info.
6.3.5 u-Asset: Technology Framework

6.3.5.1 Technology Framework: UMC Service
6.3.6 u-Asset: Space Solution Set

6.3.7 u-City Methodology
6.4 Critical Success Factors

6.4.1 CSF for u-City development
Critical Success Factor for u-City Development are as under:
- Infrastructure development
- Environment of Investment attraction
- Self-supply & consumption system
- Distinctive strategy of city industry prosperity
- Feasible business model
- Synergic partnership
- Active policy of Government support

6.4.2 Value Proposition
The futuristic city full of life with safety, quality, and opportunity of life
- Efficient management by single-channel service provider
- Enhancement of quality of life
- Optimized construction by constructor

<table>
<thead>
<tr>
<th>LG CNS as u-City engineering partner</th>
</tr>
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<tbody>
<tr>
<td>Total Solution</td>
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</tr>
<tr>
<td>• u-City A to Z</td>
</tr>
<tr>
<td>• One-stop Solution</td>
</tr>
<tr>
<td>• Total solution covering u-City service, infrastructure, space, profit model</td>
</tr>
</tbody>
</table>
Public Procurement of Korea

7.1 Overview of Procurement Market.

7.1.1 Korea’s Public Procurement Structure
- Combination of centralized and decentralized procurement
  - Centralized: Procurement by central and local government agencies over the threshold* must be assigned to PPS
  - Decentralized: Procurement under the threshold and the procurement of state-owned enterprises are left to themselves

7.1.2 Market Share of Each Domain of Organizations
- State-owned enterprises account for the largest volume 36%(US$30.7B)
  - Central Government: 35%(US$29.7B)
  - Local Government: 28%(US$24.3B)
- Construction represents the largest share of 57% (US$40B), and goods(including services) 43% (US$36B)

7.1.3 Legal Framework
Government contract:
- Act on Contracts to which the State is A Party (ACSP)
  - Regulations implementing ACSP: Executive orders, enforcement rules issued by the Minister of Finance and Economy
  - PPS has authority to interpret regulations regarding government procurement and contract terms, starting from June, 2003
- Local governments, state-owned enterprises contract : subject to separate laws modeled after ACSP
7.2. Introduction to PPS

7.2.1 History of PPS

- Office of Foreign Supply (1949)
  - Created to manage foreign aid materials, and procure goods and services from abroad for the government
- Office of Supply, Republic of Korea (OSROK: 1961)
  - Changed into a full-fledged central procurement agency
- Renamed to Supply Administration, Republic of Korea (SAROK: 1996)
- Renamed to Public Procurement Service (PPS: 2000)

7.2.2 Organization Structure

7.2.3 Budget and Workforce

- Budget
  - Spending in FY 2005: US$90M
  - Estimate in FY 2006: US$ 97M
- Workforce and Per Capita Productivity
  - Per Capita productivity soared after 1997 due to e-procurement
7.2.4 Roles and Responsibilities

Purchase of goods and incidental services required by customer departments and agencies, including local governments
- Contracting and supervision of building and civil works for customer departments and agencies
- Stockpiling of raw materials to balance supply and demand
- Government goods management
- Operation of KONEPS (Korea Online e-Procurement System) for the entire public procurement

7.2.5 Customers of the Centralized Procurement

- Mandatory: Central and local governments
  - For flexibility in meeting low-value or simple requirements, PPS delegates the procurement authority to each organization
    - Goods and services: Below US$ 70 K
    - Construction works
      - Central government: Below US$ 3M
      - Local government: all works except for the project subject to pre-qualification procedures and turn-key base projects
  - Optional: State owned enterprises and non-profit institutions

7.3 Korea’s Procurement Process

7.3.1 Outline

As a member of the WTO/GPA, PPS implements the procedures as follows:
7.3.2 Detailed Procurement Procedures

- 1) Procurement request from a customer organization to PPS (Centralized procurement only) --> Pre-Notice to public
- 2) Preparation of bidding documentation (Contract method, etc)
- 3) Public announcement of the invitation and cost estimation
- 4) Pre-qualification of bidders (by the rules and regulations)
- 5) Pre-bid meeting (If needed, according to the laws and regulations)
- 6) Receipt of bid bonds from the valid bidders (Not less than 5% of the bid price)
- * All bidders have to register at the PPS one day before participating.
- 7) Receipt and opening of bids
- 8) Award of contract (Lowest price, Eligibility screening, Negotiation, etc)
- 9) Receipt of performance bond (Not less than 10% of the contract price)
- 10) Making contract and performing Contract
- 11) Tests and inspections
- 12) Payment and closing of contract

In case of small purchases valued at US$ 30,000 and below for goods or at US$ 100,000 and below for construction, bid process is not necessary but a comparison of quotations is enough.
7.3.3 Unit Price Contract

- As for goods constantly needed by all public institutions such as PCs, construction materials, MROs, PPS establishes contracts on those items based on unit price and quantity for the year.
  - An advanced central procurement method to save budgets or transaction cost resulting from individual purchases or bidding
  - PPS establishes contracts for around 25,000 goods and supplies them to end-users
- Public institutions that require unit-price-contracted goods can search and purchase them at the KONEPS shopping mall just by one click.

7.3.4 Challenge Procedures

Phase I

- Any potential supplier may file an objection against PPS including any procuring entities
- Time limits for the resolution of complaints
  - Within 15 days after the day when the claimant's interests were damaged
  - Within 10 days after the day on which the cause of the objection became known to potential suppliers
- The Contract Review & Consultation Committee shall examine the objection and determine any measures within 10 days

Phase II

- Anyone who is dissatisfied with the measures taken by PPS may request a review for mediation to the International Contract Dispute Mediation Committee, the independent review body, within 50 days of receiving the notification
Main Workflow of Public Procurement

- Registration: Business Application, PPS Approval
- Announcing bid request: Each Public Organization Announcement
- Participating in bid: Business Participation
- Opening the Bids: Each Public Organization Execution
- Contracting: Both businesses and organizations Execution
- Confirming the execution of contract: Both businesses and organizations Execution
- Payment: Each Public Organization Execution

* Some paper documents for registrations and evaluations are partly required, but most of processes are executed online with the electronic documents now.
KONEPS-Korea's Online e-Procurement System

8.1 Background of Establishing KONEPS

- Problems in traditional procurement
  - Required intensive paperwork and manual processes
  - Suppliers needed frequent visits to and repeated registration with each purchasing office
    - Troubled with irregularities and low level of public trust

- Innovation thru digitalization
  - Efficiency thru on-line process of entire procedures
  - Cost saving thru getting rid of suppliers’ visit and info integration
  - Transparency thru non face-to-face transaction and real time disclosure of information

8.2 Development of KONEPS - 1

8.2.1 1997~2001: KONEPS was started with EDI

- PPS adopted EDI to initiate e-procurement
  - In 1997, EDI (electronic data interchange) system was developed to interchange documents such as purchase request
  - In 1997, 20 purchasing agencies started to use EDI system

- PPS expanded e-procurement application step by step
  - e-procurement applied to procurement of goods and to the online shopping mall, was expanded to construction and services in 2000, and upgraded from EDI to XML based on the Internet
  - In 2001, digitalization was extended to all work including bidding, contract and payment.

8.2.2 2001~2002: Government-wide expansion and launch of KONEPS

- Mar 2001: Decision to build a government-wide e-procurement system as one of the 11 e-government projects
  - Government-wide efforts made by creating a task force comprising relevant institutions and businesses

- Jul ~ Dec 2001: Performed BPR / ISP for KONEPS
  - BPR: Business Process Reengineering
  - ISP: Information Strategy Planning
  - Provided for good model of e-procurement system

- Mar ~ Oct 2002: System building and launch of KONEPS
  - Built the system for 7 months
  - Started the service of on-line e-procurement system
8.2.3 2002~Present: Realization of world’s best electronic procurement system

March 2006: Opening intelligent type product information system
  - Ontology-based artificial intelligent search engine
  - July 2006: Opening the largest e-shopping mall for public organizations
  - Improving customer service quality
  - Supporting development of new technology and small& medium company sales routes
  - Nov 2006: Starting ontology based e-catalogue service

8.3 All about KONEPS

8.3.1 System Architecture

8.3.2 Functions

- Process all procurement procedures on-line from purchase request, bid notice, bidding, contract to final payment.
  - In case of GSA of U.S., each process is managed on separate sites.
- Serve as a portal for the entire public procurement.
  - Purchasing agencies and businesses are using together
  - Provides Integrated bidding information including detailed specification and criteria for the evaluations, etc
  - One-time registration enables participation in all biddings.
8.3.3 Security Policy

8.3.3.1 Security Policy – 1

| Bid Announcement | -> | Bid Participation | -> | Bid Evaluation |

- Bid Announcement
- Issuance of encrypted certificates from third-party agencies on event-basis
- The private key of encrypted certificates is saved only on the contracting official's PC
- Another copy of the private key split in halves and kept by the Public Procurement Service and the National Information Society Agency

Bid Participation
- Before Information such as the bid price is transmitted from the bidder's PC, the information is encrypted using a public key and a digital signature is added.

Bid Evaluation
- Contracting official uses his/her private key to decrypt all bidding forms and starts the evaluation process.
- Using PKI Encryption method
  - Any international/external intrusion or modification is impossible
- Any attempt of intrusion will be blocked
  - Since incorrect digital signature will lead to a halt of the process

8.3.3.2 Security Policy – 2

- PKI Encryption System
  - PKI (Public Key Infrastructure)
  - Infrastructure where users can exchange information safety with a pair of public keys and personal key issued by the certification authorities in order to use and manage the public key encryption system with safety.
    - a. Ensure credibility by issuing certificate from the certification authority designated by the government
    - b. Legal authority: Laws on Digital Signature, Act on e-Commerce
KONEPS-Korea Online e-Procurement System

c. Applied to various areas including online transaction, customer service, and shopping

- PKI Application
  - Digital Signature
    - Processing personal signature electronically to certify online purchasing or check identities
    - Enabling to check any fabrication and manipulation of electronically-exchanged information, and to check identities
  - Encryption
    - Transformation to unrecognized type of information to prevent any leak of information by hackers and others
    - Allowing only sender and recipient to check the electronic information

8.3.3.3 Security Policy – 3

- Generating encrypted certificate in KONEPS
  Upon the e-bidding notice, encrypted certificate is issued and stored in the bid executor’s PC, and for ensuring stability of a personal key, the key is separately stored in the independent organization NIA and PPS

8.3.3.4 Security Policy – 4

Processing bids via KONEPS e-bidding system
- Bids are submitted to the e-bidding system to be encrypted and provided with digital signature during the transmission, and after the system check for any
fabrication and manipulation during the transmission, then encrypted original bids are stored.

- During the bid opening, any fabrication and manipulation during the storage is checked through decryption and examination of digital signature.

**8.3.4 Performance and Achievements**

**8.3.4.1 Performance and Achievements – 1**

Utilization volume

- Used by 35,000 Purchasing agencies and 150,000 Suppliers
  - Jointly used by buyers ranging from the central and local governments to state-owned enterprises
- Records a daily average of 100,000 website hits
- Exchange 100,000 documents daily online which, in the past were delivered via mail or in person.

**8.3.4.2 Performance and Achievements - 2**

- Transaction volume
  - In 2006, transaction reached US$ 44 B
    - 21 millions businesses participated in 207,633 biddings amounting to US$ 28B
    - Other portion, US$ 16 B, including transaction in the shopping mall was also made electronically
  - 90% of all biddings were conducted online
KONEPS-Korea Online e-Procurement System

- 611,772 orders for products were delivered by one-click purchasing in the shopping mall

8.3.4.3 Performance and Achievements - 3
Enhanced Efficiency and Transparency
- Saves US $4,474 M worth of transaction costs annually in terms of time and transportation (US 400M for public organizations)

<table>
<thead>
<tr>
<th>Cost Reduction</th>
<th>Registration</th>
<th>Bid Notice</th>
<th>Bid Participation &amp; Execution</th>
<th>Contract</th>
<th>Payment Request</th>
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<tr>
<td></td>
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<td>128 M</td>
<td>825 M</td>
<td>90 M</td>
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<td>Total</td>
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<td>4474 M</td>
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- Per-capita productivity of PPS employees rose by 102% (from 208 to 421 contract cases)

8.3.4.4 Performance and Achievements - 4
Improves transparency in doing business with the government
- Reduced face-to-face contacts between suppliers and officials
- All the information publicized in real time on-line

Leads the development of private sector e-commerce
- Expands the experience of e-commerce
- Facilitates the establishment of infrastructure for digital signature and security including PKI encryption

8.3.4.5 Performance and Achievements - 5
- Global Evaluation: The Best e-procurement Practice Model
- UN: Bestowed PPS with Public Service Award (June 2003)
- OECD: A strong pull - through effect on ICT use in the private sector and no further actions are required (May 2004)
- UN: Best Practice Model for e-procurement (Nov 2004)
- UN: Reflected the KONEPS bidding process in the global standards (Mar 2005)
- WITSA: Bestowed PPS with Global IT Excellence Award (May 2006)
WITSA: World Information Technology and Series Alliance

8.3.5 Success Factors

8.3.5.1 Success Factors - 1
Overcoming Internal Resistance
PPS employees concern and resistance
- Concern over future roles of PPS “If procurement is processed on-line, won’t it result in the cessation of PPS?”
- Resistance to losing discretionary power “If I am unable to meet with suppliers and all info is disclosed in real time, what possible discretion will there be available to me?”

Setting clear vision and making employees awakened to crisis
- Vision of creating KONEPS as the world’s best e-Procurement model
- Emphasis on the new opportunity for the e-Procurement service provider
- Sharing the sense of crisis: “Even a government organization cannot survive without innovation”

8.3.5.2 Success Factors - 2
Established government-wide promotion system
- Inter-ministerial cooperation was essential
  - Some local govts wanted to build e-procurement system for their own
  - KONEPS was a project needing inter-ministerial cooperation
    - *legal framework, linkage to external systems, user participation
- Promoted under a strong inter-ministerial initiative
  - Operated an e-government special committee as a top task-force
    - * The Committee assumed full management of e-government projects
  - Joint efforts by officials and private sector specialists in the Committee
  - Public: Vice-ministers from related ministries
  - Private: Specialists applying new ICT
    - * ICT: Information Communication and Technology

8.3.5.3 Success Factors - 3
Convincing purchasing agencies and suppliers
- User reluctance and cautiousness
  - Purchasing agencies: ingrained to manual work and reluctant to change
  - Suppliers: too cautious to transact on-line
    - “Multi-million dollar bid will be executed on-line just by one click? What if there’s any error?”
- Drawing attention to the benefits and security of KONEPS
  - Made purchasing agencies understand the resulting benefits thru education and promotion
    - * Established KONEPS education center at each regional office
  - Eliminated suppliers’ concern by emphasizing the system security
    - * KONEPS is the safest system equipped with digital signature and encryption
8.4 Continued Innovations

8.4.1 CRM (customer relationship management) service (2004)
Providing differentiated services for each customer by introducing CRM
- ‘My Page’ provides custom-tailored info to KONEPS users
  - Customers can choose product information of their interest
  - product referrals according to customer’s purchase pattern
- contract progress status notice to end-user agencies that make purchase request to PPS
- procurement notice to interested businesses and delivery of award notice in real time in text message to a successful bidder

Establishing Web Call-Center
- Provides interactive consultation service by sharing customer’s computer screen
  * First of its kind among Government Call centers.

8.4.2 Ubiquitous Service (2005)
Mobile e-bidding service for businessmen on the move
- Suppliers can submit bids thru PDA or notebook computer while traveling
- Mobile e-inspection/tally service for construction items
- Purchasing agencies can inspect/tally on the site of delivery from Nov 2006
  * As for materials delivered on the construction site, it is hard to use KONEPS system for location
- Mobile info service
  - Mobile channels shift away from the PPS homepage to wireless channels such as PDA
- Government property management through Radio Frequency Identification (RFID)
  - Applied to PPS properties on a pilot basis in 2005 and planned to be expanded to central Government agencies.

8.4.3 Ontology Based e-catalogue service (2006)
Products registered initially for property management since 1997
- mostly used for the government’s property management by providing unique classification and identification code

As KONEPS launched, PPS chose the UNSPSC code to facilitate e-commerce
- As of Nov.2006, approximately 780,000 products registered in e-catalogue

Initiated Ontology-based e-Catalogue service to enhance searching capability and support interoperation with private sectors in 2006
  * can search product info with just a part of the product name or similar word
KONEPS-Korea Online e-Procurement System

- Providing the integrated reference to many kinds of different standards and opportunities for the private businesses to enter the KONEPS e-catalogue
- Plan to apply ontology service to e-shopping mall and support the private sector & e-marketplaces to establish own e-catalogue in 2007

8.4.4 e-Shopping Mall
Objectives of e-Shopping Mall
- Provides purchasing agencies with greater choice of selection and one-click purchase of various goods and services
  “1 Commodity, 1 Supplier → 1 Commodity, multiple Suppliers”

The largest shopping mall with approximately 110,000 items
Improved customer service quality and support technology and businesses
- Improved customer service quality by convenient purchase of goods for unit-price contract with PPS
- Support of development for new technology and small and medium sized companies sales route

8.5 Future Plans

![Global Leader @ e-Procurement Service]

- Expansion of Ubiquitous Services
  - Wireless e-bidding
  - Mobile information services
  - Property management through RFID

- Development of High Value-Added Services
  - D/W services
  - Cost analysis
  - Evaluation of contractors
  - Improvement for searching function

- Advancement Of e-Catalogue Services Based on ontology
  - Central Repository System
  - Catalogue Building Tool
  - Mapping Services
9.1 PKI based Secure e-Business

9.1.1 Security in e-Commerce

9.1.1.1 Brief overview of online statistics in Korea
- Total Population: 48 million in 2005
- Broadband User: 90% of total households (12 million subscribers)
- Mobile User: 79% of total population (39 million users)
- Licensed CA’s Certificate: 20% of total population (11 million certificates)
- Online Banking: 25 million users
- Online Stock Trading: 70 of all transactions

9.1.1.2 Issued Problems of e-Commerce

Online Characteristics
- Remote connection and no face to face contact
- Difficult to verify who does issue transactions
- Difficult to prove “transaction was happened”

Risk of breach about transactions and personal profile
Difficult to secure transmitted contents
Easy to make forgery document / Difficult to prove electrical document is in original state.

9.1.1.3 Possible Security Holes
- Breach of personal profile and credit card information at transaction
- Breach of personal profile in shared computer
- Cyber stealing
- Hacking on cyber securities & bank account / Stock price manipulation
- ID and Password stealing

Need of strong security protection with PKI technology
9.1.1.4 OSI Level Matched Diagram

9.1.1.5 Simplified Security Diagram

<table>
<thead>
<tr>
<th>First Defense</th>
<th>IDS (Intrusion Detection System)</th>
<th>Application Server Protection</th>
<th>Data Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Firewall</td>
<td>• Network traffic filtering</td>
<td>• Security for access</td>
<td>• 1024 bit / 128 bit encryption (RSA / SEED)</td>
</tr>
<tr>
<td>• Protect Intrusion from outside the wall</td>
<td>• Clear monitoring</td>
<td>• Log management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Network control</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PKI related product

- Digital Signature
- Encryption/Decryption
- PKI toolkit
- SSL Certificate

VPN

Protocols

IDS

Firewall

Router / Switch

Topology, Flow control

Network adapter

Cable
### 9.1.1.6 PKI Solution to hacking attempts

<table>
<thead>
<tr>
<th>Problem</th>
<th>Matched Security Method</th>
<th>Protection Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficult to verify identity</td>
<td>Authentication of identity</td>
<td>Digital Signature Technology (User authentication)</td>
</tr>
<tr>
<td>Easy to make forgery or modification on contents</td>
<td>Guarantee Integrity</td>
<td>Digital Signature Technology (Message Authentication)</td>
</tr>
<tr>
<td>Repudiate transactions</td>
<td>Non-repudiation</td>
<td>Digital Signature Technology (Message Authentication)</td>
</tr>
<tr>
<td>Breach Information</td>
<td>Confidentiality</td>
<td>Encryption Technology (Message Authentication)</td>
</tr>
</tbody>
</table>

### 9.1.1.7 Strong Protection => PKI Solution

Digital signature is a unique digital data; it is applied to a document keeping the unique information of the signer with the digital signature creation key and make it possible to verify the entity authentication of document or weather there were modifications or not.
9.1.2.1 Comparison

<table>
<thead>
<tr>
<th>Concept</th>
<th>Electronic Signature</th>
<th>Digital Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept</td>
<td>Electronic data as an identifier</td>
<td>Digital signature using asymmetric encryption / decryption method</td>
</tr>
<tr>
<td></td>
<td>1359829394897765839</td>
<td>19293933923939239239</td>
</tr>
<tr>
<td></td>
<td>492949593593993953</td>
<td>99943049384550490594</td>
</tr>
<tr>
<td></td>
<td>49395234898434857558</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>Reusable</th>
<th>Impossible to reuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>No forgery</td>
<td>Can’t make a signed document without a private key</td>
<td></td>
</tr>
<tr>
<td>No modification</td>
<td>Can’t modify the signed document without the private key</td>
<td></td>
</tr>
<tr>
<td>Entity Authentication</td>
<td>The private key holder is the maker of the document</td>
<td></td>
</tr>
<tr>
<td>No reuse</td>
<td>Can’t substitute the digital signature of “A” document to “B”</td>
<td></td>
</tr>
<tr>
<td>Non-repudiation</td>
<td>Can’t repudiate signing of the private key holder</td>
<td></td>
</tr>
</tbody>
</table>

Encryption/Decryption: Type: RSA, DSS (Digital Signature Standard), ESIGN, Schnorr, KCDSA

9.1.2.2 Feature of Electronic Document

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Paper document</th>
<th>Electronic document</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media</td>
<td>Paper</td>
<td>Digital media</td>
</tr>
<tr>
<td>Delivery</td>
<td>Mail, hand over</td>
<td>Network transmission</td>
</tr>
<tr>
<td>Safety of contents</td>
<td>Difficult to make forgery document or modify identification possible from characteristics of paper</td>
<td>Easy to make forgery document or modification impossible to acknowledge forgery</td>
</tr>
<tr>
<td>Entity Authentication</td>
<td>Handwriting signature, Seal</td>
<td>Digital Signature</td>
</tr>
</tbody>
</table>

9.1.2.3 Problems without Digital Signatures
- Confidentiality
- Integrity
- Non-Repudiation

Confidentiality
- Difficult to secure important information from others
**Integrity**
- Need of verifying transmitted and saved data.

**Non-Repudiation**
- Difficult to checkout if user “C” pretends to be user “A”

- Did “B” receive it or not?
  - Did “A” send it?
  - I didn’t receive it!
Internet, e-Commerce, Infrastructure and Security

User A

Internet

User C

Delivery schedule changed

User B

Problem of difficulty in receiver / sender verification
9.1.2.4 Authentication Process using licensed certificate

Public key of “A”  Public key of “B”

Licensed CA

1. Certificate request
2. Verify entity (face to face) and issue certificate
3. Digital signature creation and transmission
   (Electronic document + Digital signature + Certificate)
4. CA certificate and ceased list request
5. Certificate validation list transmission
6. Check validity
7. Certificate verification
8. Digital signature verification

Need of Licensed CA:
Verify public key of each one guarantee the effectiveness

Private key of “A”

Private key of “B”

9.1.3 Digital Signature Law & Licensed CA

9.1.3.1 Overview Digital Signature Law in Korea
Purpose
- Legal effectiveness on electronic documents (Electronic trade basic law)
- Keep security on electronic documents (Digital Signature Law)
- Enhance national benefits (Digital Signature Law)

Digital Signature Law
- MIC, 1999

Electronic Trade Basic Law
Internet, e-Commerce, Infrastructure and Security

- MICIE (Ministry of Commerce, Industry, and Energy), 1999

Digital Government Law
- MOGAHA (Ministry of Government Administration and Home Affairs), 2001

Other countries
- Utah, USA (‘95) 41 States and Federal Government (June, 2000)
- Germany (‘97), Italy (‘98)
- Malaysia (‘97), Singapore (‘98), Hong Kong
- Japan (June, 2000)

UNCITRAL: Digital Signature Model Law (July 2001)
EU: Digital Signature Directive (January 2000)

9.1.3.2 Provisions for Licensed CA
- Digital Signature Law Article 4
  - Qualification: Government organization or corporation
  - Financial status: Capital - over 8 billion won (8 million US$)
  - Technical condition: Qualified operator – should be over 12 person
  - Facilities: Guarantee safe condition: In physically and systematically

9.1.3.3 Root CA Architecture in Korea

Digital Signature Authentication Management System

<table>
<thead>
<tr>
<th>MIC</th>
<th>KISA (Root CA)</th>
<th>Licensed CA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>National Authentication system operation</td>
<td>Authentication management</td>
</tr>
<tr>
<td></td>
<td>Field test for licensed CA designation</td>
<td>Provide CA service</td>
</tr>
<tr>
<td></td>
<td>Issue certificate for licensed CA</td>
<td>Certificate issuance</td>
</tr>
<tr>
<td>Law, System arrangement</td>
<td></td>
<td>Certificate termination / renewal</td>
</tr>
<tr>
<td>Plan national authentication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Licensed CA management</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comparison between Licensed and Private CA

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Licensed CA</th>
<th>Private CA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Signature Law</td>
<td>Applied</td>
<td>No</td>
</tr>
<tr>
<td>Designation upon digital signature law</td>
<td>Designated</td>
<td>No</td>
</tr>
<tr>
<td>Digital Signature</td>
<td>Government approved</td>
<td>Private</td>
</tr>
<tr>
<td>Criteria of technology and security</td>
<td>Strict criteria based digital signature law</td>
<td>Upon company’s inner rule</td>
</tr>
<tr>
<td>Responsibility of compensation</td>
<td>Apply compensation upon digital signature law</td>
<td>Upon company’s inner rule</td>
</tr>
<tr>
<td></td>
<td>Cover by insurance</td>
<td></td>
</tr>
<tr>
<td>Interoperability</td>
<td>Possible</td>
<td>Uncertain</td>
</tr>
</tbody>
</table>
9.1.4 Application of Licensed Certificate

9.1.4.1 Business Cases

<table>
<thead>
<tr>
<th>e-Biz</th>
<th>Public</th>
<th>Finance</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Internet Shopping Mall</td>
<td>- Civil Appeal</td>
<td>- Internet Banking</td>
<td>- Medics</td>
</tr>
<tr>
<td>- Ticket / Reservation</td>
<td>- Digital Receipt</td>
<td>- Cyber Trading</td>
<td>- National Act</td>
</tr>
<tr>
<td>- Online Billing</td>
<td>- Electronic supply</td>
<td>- Cyber Insurance</td>
<td>- Cyber University</td>
</tr>
<tr>
<td>- B2B Marketplace</td>
<td>- Tax</td>
<td>- Elec. Transfer</td>
<td>- General Holder’s meeting</td>
</tr>
<tr>
<td></td>
<td>- Electronic Bidding</td>
<td>- Electronic Currency</td>
<td>- VPN</td>
</tr>
<tr>
<td></td>
<td>- Clearance</td>
<td></td>
<td>- Time Stamping</td>
</tr>
</tbody>
</table>

- National Act
- Document Verification
- Cyber University
- Internet Insurance
- Mobile Internet
- Internet General Holder’s meeting
- Cyber Medics
- Internet Shopping
- Civil Appeal
- Web Mail Security
- Cyber Trading

- W-PKI
- Biometrics
- Taxation
- Internet Banking
- Receipts
- Internet Bidding
- Code Signing
- VPN
- EDI
- Timestamp Service

- B
- C
- G

[Image of network diagram]
### 9.1.5 How to Cooperate

#### 9.1.5.1 Strengths of KICA

<table>
<thead>
<tr>
<th>Service Know-how</th>
<th>Best Solutions</th>
<th>Ready to Transfer</th>
<th>Total Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No failure in service for 6 years&lt;br&gt;• Operational regulations&lt;br&gt;• Full sets of service utilities</td>
<td>• Verified solutions in the field&lt;br&gt;• Well-prepared additional solutions&lt;br&gt;• 100% comply with international standards</td>
<td>• Be able to transfer the knowledge of PKI systems&lt;br&gt;• Provide source code of relevant documents</td>
<td>• Hardware&lt;br&gt;• Software (applications)&lt;br&gt;• PKI Systems&lt;br&gt;• Network/System security facilities.</td>
</tr>
</tbody>
</table>

#### 9.1.5.2 Establishment of National PKI

- Law, Policy, Standards
- Certification Service
- E-procurement, Internet Banking, E-commerce, etc.

To establish safe and reliable Information society
9.1.5.3 National PKI Framework

CPS Framework

- Implementation Planning
- Organization of PKI TFT
- PKI Scheme

PKI Standards
Accreditation Generals
PKI Degree Recommendation

Operation Requirements
Facilities and Equipment
Requirements for PKI System

Long-term Security plan
Promotion
Education

Organization of PKI TFT
Accreditation Generals
PKI Degree Recommendation

Education & Promotion
PKI Applications

Preparation
Law & Regulation
PKI Center

NPKI (National Public Key Infrastructure)

9.1.5.4 Implementation steps of NPKI

<table>
<thead>
<tr>
<th>Phase 1 Preparations</th>
<th>Phase 2 Law &amp; Regulation Setup</th>
<th>Phase 3 PKI Center Construction</th>
<th>Phase 4 Education &amp; Promotion</th>
</tr>
</thead>
</table>
| • Design of PKI scheme
  • Launching of PKI TFT
  • Finding ways to finance | • Setup decree (D.S)
  • PKI Standardization | • PKI systems
  • Facilities / Equipment
  • Operation guideline | • Education & Training
  • Development of Promotional policies |

National PKI

- Pilot project
- RA Constructions
- Planning of long-term National PKI services
9.1.5.5 PKI System Entities

- Admin: Administrator Program
- Clients: Client S/W
- CA: Certificate Authority Server
- RA: Registration Authority Server
- DS: Directory Server
- OCSP: Online Certificate Status Protocol Server
- VA: Validation Authority Server
- HSM: Hardware Security Module (Accelerator)
- TS: Time Stamp Module
- TSA: Time Stamp Authority Server
- DVCS: Data Validation Certification Server
- KRS: Key Roaming Server
- Etc: Other Service Server

All networks and servers are double connected (Fault Tolerant)

9.1.5.6 Estimated Cost of NPKI

Budget: Approximately USD 7 million
Time Cost: About to 6 Months

Root CA Center

- PKI System for root CA
- Basic Facilities and Equipment

PKI Center

- Accredited CA Systems
- Facilities and Equipment
- Consulting

- Law & Regulation Setup
- Accreditation & Auditing Details
- Promotion Strategy

Branch RA Construction

- RA Software / Hardware
- Other Equipment (Smartcard)

Education & Training

- Training for Operators
- (including operational know-how)
- Education for Developers
- Education for Managers

Establishment of National PKI
9.1.5.7 PKI Application Development

- Local Self-government
  - Civil Service
  - Local tax
- Authentication Service
  - Identify oneself online by certificates
- Personal Management inside Government
  - All employees inside Government
- Tax Service
  - National Tax
  - Customs Service
- National Financing Information System
  - Internet banking, Stocks trading etc
- Electric Document System
  - Interoperable with other systems
- Broadband/Mobile Infra
- E-Government
- Certificate Infra

9.1.6 KICA's Overseas Business

9.1.6.1 Business Areas

<table>
<thead>
<tr>
<th>Marketing MOU</th>
<th>PKI Project</th>
<th>Asia PKI Forum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taiwan CA &amp; NII</td>
<td>The Philippines</td>
<td>Chairman of Business WG</td>
</tr>
<tr>
<td>China Infosec</td>
<td>Egypt</td>
<td></td>
</tr>
<tr>
<td>Hong Kong Post</td>
<td>Vietnam</td>
<td></td>
</tr>
</tbody>
</table>

9.1.6.2 PKI Project - The Philippines

- The title of the Project: “National PKI Establishment for the Philippines”
- Government Body: E-commerce Act
  - CICT (Commission on Information and Communication Technology)/NCC (National Statistics Office, Policies, Research & Standards Office)
  - DTI (Department of Trade and Industry)
- Total Budget: USD 7 million
- Current Status
Internet, e-Commerce, Infrastructure and Security

- December 2, 2005: KIPA (Korea IT industry Promotion Agency) entered into an MOU with NCC/CICT for Feasibility Study project

9.1.6.3 PKI Project - Egypt
- The Title of the project: “Establishment technology and operation system for Egypt PKI system”
- Government Body: E-signature Act
- ITIDA (Information Technology Industry Development Agency)
- Total Budget: USD 5 million
- Current Status
- March 14, 2006: ITIDA and KIPA signed MOU to do consulting for Egypt PKI Feasibility Study
- May 4, 2006 – August 10, 2006: KICA has performed PKI Feasibility Study for about 3 months in cooperation with ITIDA.

9.1.6.4 PKI Project - Vietnam
- The Title of the project: “Investment in building the evaluation center for secrecy and information security products”
- Government Body: E-transaction Act
  - VGISC (Government Information Security Commission)
  - MPT (Ministry of Posts and Telematics)
- Total Budget: USD 24 million
- Current Status
June, 2006: VGISC and KIPA signed LOI to do consulting for Vietnam Feasibility Study
August 1, 2006 – October 20, 2006: KICA is performing PKI Feasibility Study for about 3 months in cooperation with VGISC.

9.1.6.5 Asian PKI Forum
- The Asia PKI Forum is established on June 13, 2001

Korea PKI Forum, China PKI Forum, Japan PKI Forum, Chinese Taipei PKI Forum, PKI Forum Singapore, Hong Kong PKI Forum, Macao Post, Thailand PKI Forum

Main Objective: Promote Joint-work to secure interoperability among country’s / area’s PKIs in the Asia / Oceania Region.
9.2 **Infrastructural view in E-Government and e-Commerce**

- Focus on e-Government & Broadband infrastructure

### 9.2.1 Application of e-Government

- Milestone of Korean e-Government

#### 9.2.1.1 Milestone of Korean e-Government

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Building National Administration Network</td>
<td>Basic Plan (1st Stage) for accelerating Digitalization</td>
<td>Cyber Korea 21</td>
<td>E-Korea Vision 2006</td>
</tr>
</tbody>
</table>

- Introduced the concept of Electronic Government (Early 1990)
- Inaugurated E-Government Special Committee (Feb. 2001)
- Finished 11 projects of e-Government (by 2002)

Building National Administration Network:

**Completed National Administrative Network Project**

- One of 1st and 2nd National backbone network (87 - 96)
- Completion of DB construction of national basic resources like NID, real estate, car etc issued residence registration papers and land register papers from 1991

**Basic Plan (1st Stage) for accelerating Digitalization**

Information Highway Infra

- Broadband Infra building Project
- Establish “IT Promotion Law”
- Set-up other external environment

**Cyber Korea 21**

- Introduce digitalized reporting process inside the government
- Online processing on Real estate registration, Patent, Military service
- Set up e-Government action plan (June 1999)
- 2nd stage IT promotion basic plan “Cyber Korea 21” (Year 1999)
- e-Government Special Committee inaugurated (Year 2001)

**E-Korea Vision 2006**
11 core projects in every industry

9.2.2 E-Government’s basic project: NID
- Korean NID project
- Venezuelan NID project

9.2.2.1 Korean NID project related Process
- Computerization of resident registration
- The computerization of resident registration was realized as a precedent for administrative computerization.
- Budget: 145 million USD

<table>
<thead>
<tr>
<th>Preparation (78.5 ~ 88.8)</th>
<th>Preparation (78.5 ~ 88.8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Arrangement of original resident data</td>
<td></td>
</tr>
<tr>
<td>• Execution of the pilot project</td>
<td></td>
</tr>
<tr>
<td>• Establishment of the project plan</td>
<td></td>
</tr>
<tr>
<td>• Establishment of the computer network</td>
<td></td>
</tr>
<tr>
<td>• Program installation and Building resident DB</td>
<td></td>
</tr>
</tbody>
</table>

Smart ID card
April ’95 : Confirmation of the basic plan for ID card renewal
- 7 function in an IC card
- Resident registration, Registry certificates, Driving License, Medical Insurance, National pension, Legal seal, Fingerprint

June ’95 : Execution of the pilot project for smart ID cards
- In Jung-ang Dong, Gwacheon city
- From June ’95 to February ’96

’96 : Objection from civic organizations
- The forced listing of the people is the violation of human dignity
- Disapproval of resident registration system
- Apprehension of privacy violation due to collection of personal information
- Apprehension of tightening the control on the people
Internet, e-Commerce, Infrastructure and Security

To Create the foundation For e-Government

To facilitate information sharing
- Integrated administrative information DB
- Integrated computerization environment of government
- Anti-hacking & anti-virus
- Disaster management & back up

Strengthened safety & reliability
- To refurbish laws and regulation for e-government

To refurbish technical infrastructure
- Improvement of Internet-based service network environment
- Establishment of standard Information system
- Public Key Infrastructure
- Cryptographic Key Infrastructure
- Construction of information protection infrastructure
- Government-wide information management scheme

To improve laws and regulations

One-stop service
Civil-oriented administration service
- Civil applications
- Civil petitions
- Call center
- Kiosk
- Open-government
- Internet

Higher official productivity
- Home
- Edu. center
- Distant work
- Smart card
- Office
- e-Learning

Office automation

Higher administrative productivity
- Government office
- Knowledge Management
- Digital document

Knowledge-based service
9.2.2.2 Venezuela NID project

<table>
<thead>
<tr>
<th>Objective</th>
<th>Improvement of national competitiveness through the effective control of residents and immigration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>250 million USD (Total amount 500 million USD)</td>
</tr>
<tr>
<td>Period</td>
<td>42 months</td>
</tr>
<tr>
<td>Scope</td>
<td>To establish the DB of 26 million people and to issue ID cards</td>
</tr>
<tr>
<td>Project General</td>
<td></td>
</tr>
<tr>
<td></td>
<td>To issue new electronic ID cards for all the people</td>
</tr>
<tr>
<td></td>
<td>To retest the fingerprints extracted from the existing personal data</td>
</tr>
<tr>
<td></td>
<td>To establish the system among the public offices for interoperability</td>
</tr>
<tr>
<td></td>
<td>To establish the modernized immigration control system</td>
</tr>
<tr>
<td></td>
<td>To establish the resident control system for effective administration and improved public service</td>
</tr>
</tbody>
</table>

9.2.3 NID system (PKI inside e-Government)

9.2.3.1 Background and Objectives

**Background**
- The need of establishing the system among the public offices which is essential for the national administration
- The waste of national administrative power due to the lack of the basic national information
- The abuse of IDs when forged and altered
- Inconvenience of the public service due to poor information system

**Objectives**
- Maximum administrative efficiency through the establishment of the NID system
  - Establishment of the base for e-Government
- Effective national administrative power by building the resident data
  - Immigration control, taxation control, better election administration
- Effective public service through the system among the public offices
  - Realization of the administrative services for the convenience of the people
- Stable security control based on the correct resident data
  - Prevention of ID forgery and alteration
9.2.3.2 Project General

To issue the high-technology ID cards with IC chips to all the citizens

<table>
<thead>
<tr>
<th>Integrated Network Establishment</th>
<th>Integrated Resident Data Establishment</th>
<th>Operating System Establishment</th>
<th>Issuing NID</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To establish one network among organization in the nation</td>
<td>• To establish people information DB for the services</td>
<td>• To install the best equipment for managing lots of information</td>
<td>• To establish the secure and rapid issuing center</td>
</tr>
<tr>
<td>• To establish the closed network for enhanced security</td>
<td>• To establish biometrics data for security maintenance</td>
<td>• To establish the operating environmental for local offices</td>
<td>• To establish the operating system for secure issuing and distribution of ID cards</td>
</tr>
<tr>
<td>• To establish the dual network system for non-stop operation</td>
<td>• To make use of reliable and correct DBMS</td>
<td>• To establish the dual network system for uninterrupted service</td>
<td>• To make use of reliable and correct DBMS</td>
</tr>
</tbody>
</table>

9.2.3.3 Expected Effects

- Administrative efficiency and improvement of public service through the establishment of the national resident system
- Stable security control and crime prevention through the resident control
- Easiness of project process and governmental strategies through the use of the resident registration system
- Establishment of the infrastructure for the future information-based society
- Activating the information technology industry through establishment of the system among the public offices

9.2.3.4 Detail - Network Establishment

- Establishment of one network connecting all the public regional offices in the nation
- Closed network which has powerful security devices
- Effective network which enables to perform various processes
- Dual network system for the non-stop processes
9.2.3.5 Detail Network Configuration

9.2.3.6 Details - Building resident DB
- Establishment of total DB for all the registry information about the people
- Establishment of image data for biometrics and security
- Establishment of integrated data needed to improve the civil affairs and national strategies such as personal information, and residence information
- To use DBMS for the effective administration based on the established data
9.2.3.7 Building resident DB

- To issue new electronic ID cards which have high security and usability
- To issue ID cards in the integrated issuing center for the security

9.2.3.8 Details - ID Renewal

- To issue new electronic ID cards which have high security and usability
- To issue ID cards in the integrated issuing center for the security

<table>
<thead>
<tr>
<th>Front</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electronic ID</strong></td>
<td><strong>Personal information</strong></td>
</tr>
</tbody>
</table>
| Name: Azem Sajjad  
Number: 12345  
Address: Pakistan  
Signature: | Project Manager-R&D Fund, MOfT |

SPECIMEN
9.2.3.9 Details - Smart Card Security Features

<table>
<thead>
<tr>
<th>Card Structure for Security Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention of alteration</td>
</tr>
<tr>
<td>• Data and picture protection of print layer</td>
</tr>
<tr>
<td>• Printing name and photo etc.</td>
</tr>
<tr>
<td>• Printing background design</td>
</tr>
<tr>
<td>• Prevention of alteration of basic printing</td>
</tr>
<tr>
<td>• Printing personal data</td>
</tr>
<tr>
<td>IC</td>
</tr>
<tr>
<td>Transparent protection</td>
</tr>
<tr>
<td>Transparent hologram</td>
</tr>
<tr>
<td>Photo and data</td>
</tr>
<tr>
<td>Front transparent protection film</td>
</tr>
<tr>
<td>Front basic print</td>
</tr>
<tr>
<td>PET</td>
</tr>
<tr>
<td>PET</td>
</tr>
<tr>
<td>Back basic print</td>
</tr>
<tr>
<td>Back transparent protection film</td>
</tr>
<tr>
<td>Data</td>
</tr>
<tr>
<td>Transparent protection</td>
</tr>
<tr>
<td>Prevention of forgery and alteration</td>
</tr>
<tr>
<td>• Non-duplicable 2 dimensional hologram</td>
</tr>
<tr>
<td>• Recognizable with eyes of forgery and alteration</td>
</tr>
<tr>
<td>• Use of special printing method to prevent forgery and alteration</td>
</tr>
<tr>
<td>• No use of fluorescence</td>
</tr>
<tr>
<td>• Impossible use of forgery</td>
</tr>
<tr>
<td>• Printing notice and background design</td>
</tr>
<tr>
<td>• Prevention of alteration</td>
</tr>
<tr>
<td>• Protection of data printing</td>
</tr>
</tbody>
</table>

9.2.3.10 Details - Reform of regulations

- Reform of present public service regulations and the resident registry regulations
  - Preparation of legal base for the total renewal
  - Preparation of legal base for the access to the resident data
- Reform of regulations for information system
  - Acknowledgement of legal effectiveness for electronic civil affairs
  - Regulations for personal authentication using electronic signature

Areas where IDs are used: - National Identification (NID)

- Immigration service
- Policy-making
- Civil application service
- E-election
- License service
- Health care service
- Financing service
- Authentication for Internet PKI
9.2.3.11 PKI BM in e-Government

9.2.4 Future of e-Government

9.2.4.1 On the base of e-Government...

<table>
<thead>
<tr>
<th>e-Government’s self evolution model</th>
<th>Government service to citizens (G4C)</th>
<th>Gov. / Citizen cooperative project to boost competency of the country</th>
</tr>
</thead>
</table>

**Definition of M-Gov**

- Wire & Wireless Internet based Government
- Government – A host & beneficial Proprietor
- Strategic project to promote productivity
9.2.4.2 M-Government with Certificates
9.2.2 Network Infrastructure

9.2.2.1 Broadband Introduction in Korea

Background - Result of Transition

<table>
<thead>
<tr>
<th>In '80th</th>
<th>Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiate Computerization of National Data</td>
<td>Process E-Government project Toward M-Government (via All mediums)</td>
</tr>
</tbody>
</table>

Govt. Sector

| 1 wired operator | 3 major mobile operators |
| 1 PC Online Service Provider | 10 major wired service operators Several hundred special type operators 70 ISPs (Internet Service Providers) |

| 1 Mobile Operator | Tons of Websites, Several thousands Internet Shopping Malls |

Industry Sector

Background - Backbone (Transmission)

Metropolitan areas: 250 ~ 130 Gbps through (Dense) – Wavelength Division Multiplex Small-and-Medium cities and towns: optical cables with maximum transmission rates of 2.5 Gbps Through KII-G connecting 144 calling zones with optic fibers and installing ATM switches (1995 ~ 2000)
Broadband Service Configuration

Access Method Comparison
Internet, e-Commerce, Infrastructure and Security

- **Type 1 - ADSL**
  - Switch or router
  - DSRAM
  - 2wire telephone line (in 3Km)
  - ADSL Modem
  - PC

- **Type 2 - Cable Modem**
  - Switch or router
  - CMTS
  - Coaxial cable or 2wire telephone
  - Cable Modem
  - PC

- **Type 3 - xDSL**
  - Switch or router
  - CMTS
  - 2wire telephone line (in 1~2Km)
  - HDSL
  - PC

- **Type 4 - Power Line Communications**
  - Switch or router
  - C.O unit PLC router
  - Power line (Electricity)
  - PLC Modem
  - PC

**Application on Broadband Access**

<table>
<thead>
<tr>
<th><strong>E-Government</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• E-Procurement</td>
</tr>
<tr>
<td>• E-Civil petition</td>
</tr>
<tr>
<td>• National ID card</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>E-Business</strong></th>
<th><strong>Information Exchange</strong></th>
<th><strong>E-Community</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• E-Banking</td>
<td>• Search Engine</td>
<td>• Various communities (Schoolmates, Mania clubs, etc)</td>
</tr>
<tr>
<td>• Home shopping</td>
<td>• Multimedia Email</td>
<td>• Bulletin Board System</td>
</tr>
<tr>
<td>• Auction</td>
<td>• Information Portal</td>
<td></td>
</tr>
<tr>
<td>• E-stock trading</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.2.2.2 **Effective broadband solution PLC (Power Line Communications)**

**Benefits of PLC**

<table>
<thead>
<tr>
<th><strong>Cost Effective</strong></th>
<th><strong>Easy Access</strong></th>
<th><strong>Performance</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• No Cable installation</td>
<td>• Plug &amp; Connected</td>
<td>• High speed (over 128K)</td>
</tr>
</tbody>
</table>
9.2.2.3 Configuration Example & Commercial Approach

- Currently low voltage Power line is used for transaction
- The medium voltage power network system is being tested
- Medium voltage power network (22.9 KV) will be utilized in near future

9.2.2.4 Applications on Broadband Access

- Transfer the internal data using low voltage power line network
- Data signal can travel from the transformer side to the wall power point (outlet).
- Subscribe utilize almost every power outlet in his house for high speed internet access.
- Average 5~7 Mbps/1 Master modem
9.2.2.5 Field Trials

Field Trials - Korea
March 14, 2001
Official opening of PLC Demohouse in Seocho, Seoul
(Visit by the Minister of MOCIE*)

Featured solutions:
- PLC Internet access
- Home Networking
- Home Server System
- (appliance control, automation, security functions)
- Energy Home Server System
- (electricity, gas, water meter reading and energy management functions)

May 2003
Large-scale field trial with a total of 220 households in Seoul, Jeju Island, Changwon, and Daejon.

2.4 Field Trials - China

- 2001. 4 SPTC (State Power Telecom Center) delegation visit
- 2001. 1 Cooperation agreement with SPTC on PLC Field Test
- 2001. 12 First installation of 14 households for PLC System Field Test
- 2001. 12 ~ Delegation from 30 provinces of China Power
- 2002. 5 Completion of 1st stage pilot project (23 households) – certification issued
- 2002. 8 Upgraded 30 households with XPAS-100 System
- 2002. 11 Installed additional 20 households (Total: 50 households)
- 2002. 12 Purchase agreement for 1,000 households
- 2003. 1 Second shipment of 500 households (2003.1.6)
- 2003. 5 Awarded bid as supplier for large-scale commercial deployment by SPTC (20,000 households)

Field Trials– International Activities
- Germany (Jun.~July 1999)
  o Field test w/ 6 utilities for 21 days
- Germany (Mar. 2000)
  o Field test w/Veba
- Italy (Feb. 2002)
  o Field test w/20 households
• China (Dec. 2002 ~)
  o Large scale field test w/ 1, 200 households in Beijing, Sichuan, and Hunan
• Japan (Mar. 2001)
  o Application control field test
• Korea (Mar. 2001)
  o Official opening of PLC Demohouse
• Korea (Mar. 2003~)
  o Field test w/220 households
• Algeria (June 2002)
  o Field test w/Algeria utility (school)
• Malaysia (May 2000)
  o Field test w/ Malaysia utility
• Indonesia (July 2003)
  o Field test w/20 households
• Australia (Aug. 2001)
  o Field test with Country Energy
• Braszil (Nov 2001)
  o Field test w/ Brazil utility
• South Africa (May 2003)
  o Field test w/ 10 households

9.3 Overall Comments on Security
• Security is very important in e-Commerce
• E-Commerce itself cannot be developed easily because of infrastructure problem
• Government’s role is important on this
• Government has to show its will to be changed:
  • NID, e-Government
• All activities should be backed by broadband network (both backbone network and access network)
• To lead participation of people, broadband access network is inevitable
• As an effective method of broadband access network, PLC is a good approach
Onsite Trainings-KADO at a glance

Onsite Trainings

10.1 Orientation and KADO at a glance
10.2 Welcoming Reception
10.3 On-Site Training: SKT
10.4 On-Site Training: KT
10.5 On-Site Training: U-Dream Hall
10.6 On-Site Training: InnoVision
Cultural Experiences

11.1 Intro to Korean Language and Culture
11.2 Cultural Experience: Korean Family Visit
11.3 Performance: Dance Chunhyang
11.4 Cultural Experience: Kyongbok Palace
11.5 Cultural Experience: B-Boy Korea (Musical Performance)
11.6 Cultural Experience: DMZ
11.7 Shopping: Insadong & Dongdaemoon
11.8 Korean Movie Night: Taekuggi (The War of Brotherhood)
11.9 Cultural Experience: MOKDONG ICE RINK
11.10 Cultural Experience: Music at the Museum
Country Report is attached at Annex-I
Graduation Ceremony

Visit Course on Nation Framework
South Korea is one of the leading economies in the Asia-Pacific region. Along with Hong Kong, Singapore and Taiwan, its economic development in the 1980s and 1990s caught the attention of the world. Having been one of the poorest countries in the 1960s, it has become the 10th largest economy today. South Korea's economy has been seen as a model for developing countries. The country is very receptive to new developments, particularly with broadband applications. The penetration of broadband in homes and businesses is remarkably high, and South Koreans spend longer online than citizens in any other country. These are just a few examples of how the global landscape of development is changing. Developing countries like Pakistan can tremendously benefit from these changes through sharing experiences around technologies, expertise, knowledge, best practice, financial contributions or peer learning with other countries.

The government is aiming to position the country as a leading technology hub in North East Asia, and developments indicate that it is well on the way to achieving that goal. The country’s telecom infrastructure is one of the most advanced in the world. The government has initiated a series of development plans that, over the years, have transformed the telecom landscape. Its latest initiative is to deploy by 2010 a next-generation network, known as a Broadband Convergence Network (BcN), with speeds up to 50 times those available today to provide the platform for a wide range of advanced applications. Broadband penetration is high, with a range of technologies being used for the purpose. While xDSL is the most popular technology today, the government’s plans to put a ubiquitous next-generation broadband network, consisting of multiple technologies, in place by 2010 means that broadband use will continue to expand and will do so in many different forms.

Despite of fame of ADSL, in 2005 around 44% of broadband Internet lines were in Korea. WiBro broadband access is experienced and was commercially available in 2006. South Korea has the highest number of broadband connections per capita in the world as in 2005, 75% of household or 25% of population were broadband subscribers. While entrance of private sector in competition against KT to provide broadband services, a marketing flurry is created in the saturated South Korean broadband market, with broadband providers fighting to retain their customer bases. No doubt strong government support has played her part in this regard. Developing countries like Pakistan can learn from best practices of South Korea Broadband market including cable modem, DSL, Very high data rate DSL (VDSL), Fibre-to-the-Home (FtH), Broadband over Powerline (BPL) for rural areas, WLAN, WiFi, Broadband Wireless Local Loop (B-WLL), broadband via satellite and the much anticipated debut of WiBro.

Television broadcasting in South Korea has been erratic in couple of years. Hopes are high that e-commerce via TV, known as t-commerce, will become especially
popular. Growth of this is stepping towards its tremendously growth of digital broadcasting system. Govt. is really committed to transitioning the country to digital cable, digital terrestrial, digital satellite TV broadcasting by 2010. In May 2005, South Korea launched the Digital Multimedia Broadcasting (DMB) TV services for mobile devices such as cell phones with focus on the rise of digital television.

Triple play Models to provide TV, broadband Internet and Voice telephony all three services from a single provider is the technology early adopted by South Korea. Pakistan can seek guidance from South Korea regarding media convergence and broadcasting sector. Digital satellite-based direct-to-home (DTH) services were introduced in 2003 in South Korea, the numerous cable operators are upgrading their networks to compete and the government has decreed that there will be full digital deployment by 2010. The telecom operators are planning broadcasting services, while broadcasters are hoping to expand into the telecom market. A range of triple-play models - incorporating telephony, broadband and TV- is already on offer.

Online trading, e-banking, e-government and online gaming are e-services playing key drivers of the converged environment in South Korea. Not only is high-speed broadband widely available, the use being made of it is extraordinary. South Koreans spend longer online than anyone else, encouraged by the fact that services are decidedly affordable. Naturally, many of the applications to which this online activity is directed are common to broadband users elsewhere, but what stands out in South Korea is the popularity of online gaming. Championships contested by teams that are sponsored by major companies abound, and gaming is now a major economic activity in its own right.