

m-Government & Development of e-Government in Korea

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<Educational Background>

- Indiana University at Bloomington, Ph.D. in Public Policy
- University of Texas at Austin, MPA

-<Research>

- e-Government and national ICT policy

Topics to be addressed



- m-Government
 - ✓ Overview of m-Government
 - ✓ Reasons behind m-Government
 - ✓ Different types of m-Government
 - ✓ m-Government services in Korea
- Evolution of e-Government in Korea
 - ✓ 1st Phase: NBIS
 - ✓ 2nd Phase: KII, 11 e-Government Initiatives
 - ✓ 3rd Phase: e-Government Roadmap, SMART Gov
 - ✓ CSFs



m-Government

m-Government helps to make public information and government services available anytime, anywhere to citizens.

- Examples include providing real time traffic information, sending security alerts, reminders to renew licenses, results of medical examinations, and tax returns, etc.
- m-Government efforts are still limited in scope, but they present an unavoidable shift in the future evolution of e-Government.
- m-Government is an effective tool to make public information and services more efficient , effective and more convenient.

Go Mobile!

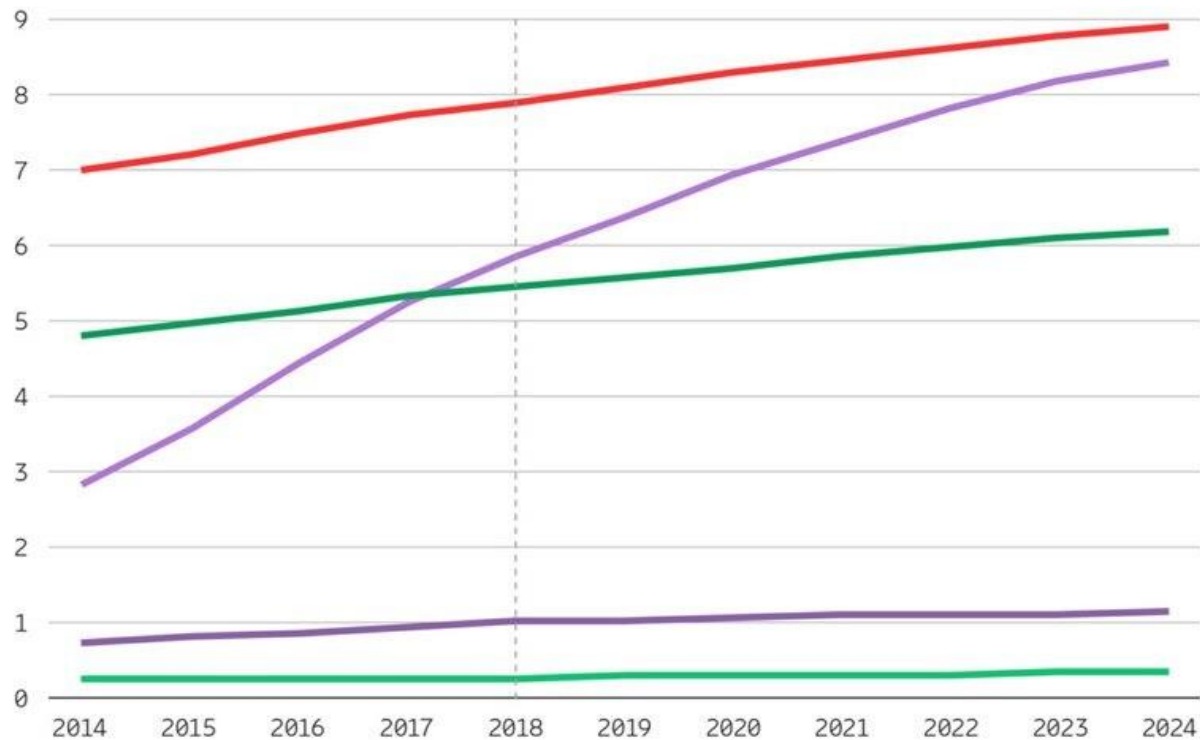
Global Mobile Subscription

- Globally, the number of mobile phones surpassed the number of fixed/wired phones in 2002.
- According to ITU, at the end of 2013 there were 6.7 billion mobile subscriptions in the world.
- Total mobile subscriptions in the world exceeded 100% in 2016.
- In 2024, there will be 8.9 billion mobile subscriptions.

The governments have to transform their activities according to this demand of convenience and efficiency of interactions.

Go Mobile!

Subscriptions and subscribers (billion)



8.9bn

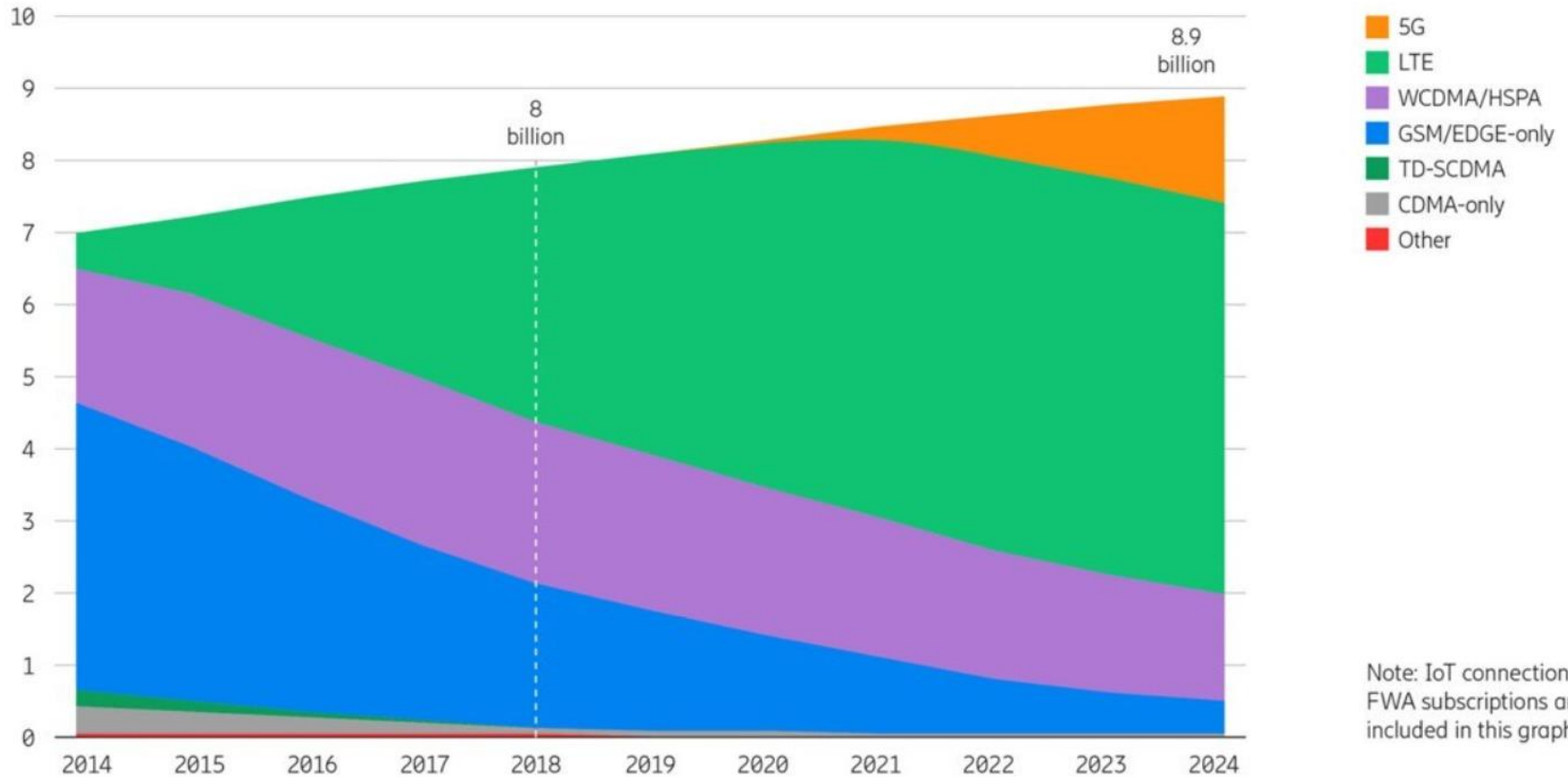
In 2024, there will be 8.9 billion mobile subscriptions, 8.4 billion mobile broadband subscriptions and 6.2 billion unique mobile subscribers.

- Mobile subscriptions
- Mobile broadband subscriptions
- Mobile subscribers
- Fixed broadband subscriptions
- Mobile PCs, tablets and router subscriptions

Ericsson Mobility Report November 2018

Go Mobile!

Mobile subscriptions by technology (billion)



Ericsson Mobility Report November 2018

Note: IoT connections and FWA subscriptions are not included in this graph

Go Mobile!

Mobile in Nepal

- Nepal's mountainous topography has made it extremely difficult to develop its telecommunications infrastructure.
 - ✓ The fixed line market in Nepal remains underdeveloped.
 - ✓ A major reason for this is due to the dominance of the mobile segment.
- In mid 2017 Nepal Telecom (NT) was speeding up work to extend its coverage to 175 new locations nationwide, while network extension platforms will be shared with other phone companies.

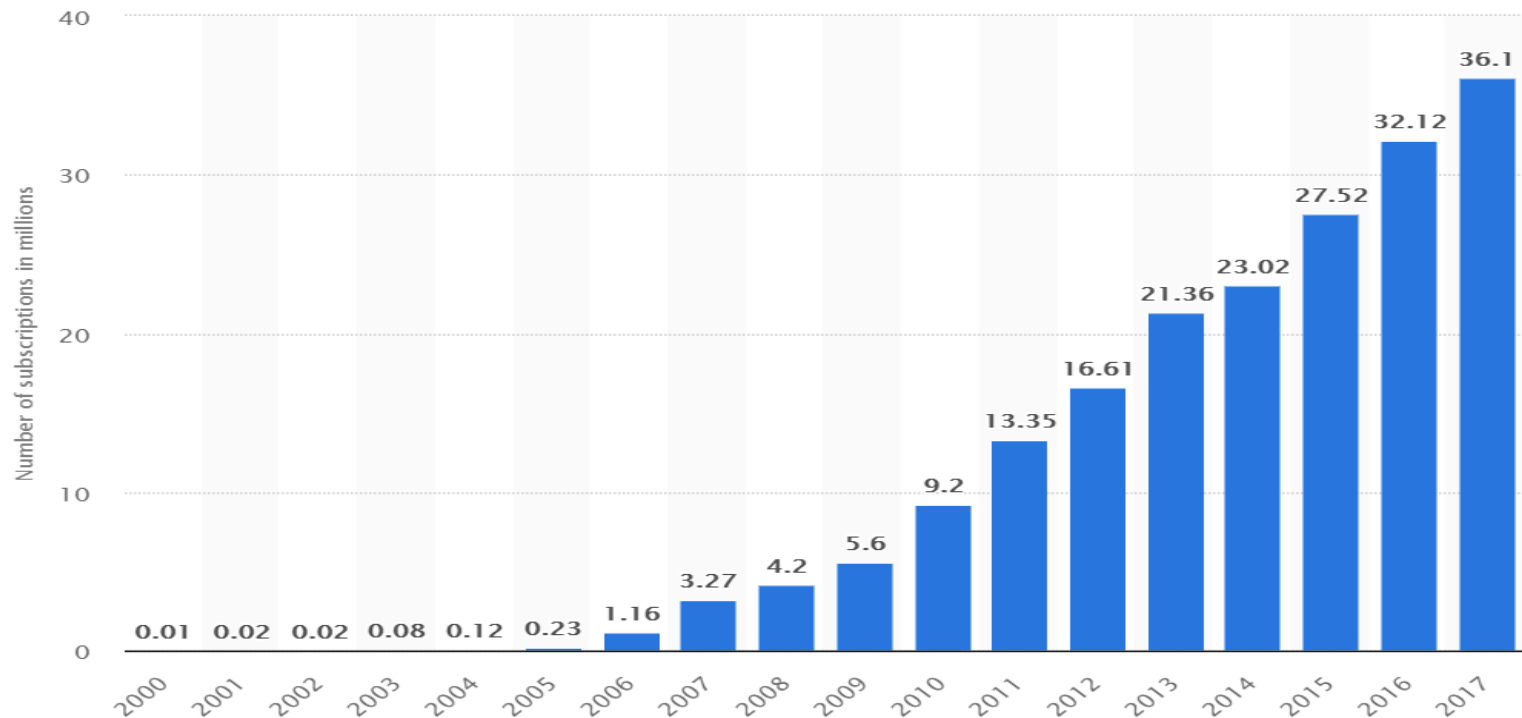
Go Mobile!

Mobile in Nepal

- The penetration of Internet users in Nepal remains very low by international standards however has grown very strongly over the past five years driven by strong growth in mobile broadband.
- Fixed broadband penetration in Nepal remains very low mainly due to a limited number of fixed lines and the subsequent dominance of the mobile platform.
- Nepal's mobile market is now relatively developed and has experienced extraordinarily strong growth over the last five years.

Go Mobile!

Number of mobile cellular subscriptions in Nepal from 2000 to 2017
(in millions)



Go Mobile!

Nepal (Republic of) Profile (Latest data available: 2018)

Various statistics (Latest data available: 2018)

Fixed-telephone subscriptions per 100 inhabitants	2.8
Mobile-cellular subscriptions per 100 inhabitants	139.4
Fixed (wired)-broadband subscriptions per 100 inhabitants	0.9
Mobile-broadband subscriptions per 100 inhabitants	47.5
Households with a computer (%)	14
Households with Internet access at home (%)	17.9
Individuals using the Internet (%)	34



m-Government vs e-Government

Extension or Replacement?

- m-Government is the extension of e-Government as well as the strategic supplement of e-Government services which are only possible or provide additional value using mobile technology.
 - ✓ All e-Government services cannot be transformed into m-Government services.
- m-Government implementation involves integrated and flexible data communication and exchange with the existing e-Government system(s).
- Developed countries focus on synergy between e-Government and m-Government, while developing countries focus on reaching citizens.



Reasons behind m-Government

- Wider reach
 - ✓ Because mobile penetration already exceeded Internet penetration, public services that are offered via mobile phone can be available to a greater number of people than those offered over the Internet.
- Always carried, always on
 - ✓ People carry their mobile phones with them all the time. So, public information and services via mobile phone are accessible anywhere, anytime, making information flow quicker.
 - ✓ This is especially important in case of urgent messages and crisis communication.



Reasons behind m-Government

- More personalization for targeting users
 - ✓ Computers are often shared among different users, but mobile devices are designed for a single user. So, information through mobile phone reaches to the preferred addressee at any time.
 - ✓ As mobile phones are typically personal, the possibility of locating an individual's exact physical location ensures that governments can directly provide services to each person.
- Cost-effective
 - ✓ m-Government provides many cost saving opportunities for the government as well as for the citizen (For instance, an SMS is much cheaper than sending a stamped letter.)



Reasons behind m-Government

- Faster information flow
 - ✓ Use of mobile technologies can make information flow faster by enabling government officials to access to and transfer data in service site, resulting in time saving and better decisions within a shorter time.
 - ✓ Information and actions can be coordinated in any location and with other agencies, improving collaboration among government authorities.
 - ✓ Mobile technologies can be valuable in emergency response through instant information access and release.



Reasons behind m-Government

- Increased democracy
 - ✓ m-Government is expected to transform the relationship between citizens and governments, and encourage participation of citizens in decision-making and policy formulation.
 - ✓ Public officials can stay current on public opinion and priorities from a larger group of citizens.
 - ✓ Extended outreach can enhance government accountability and transparency and encourage greater citizen participation in policy development and democratic decision making.



Reasons behind m-Government

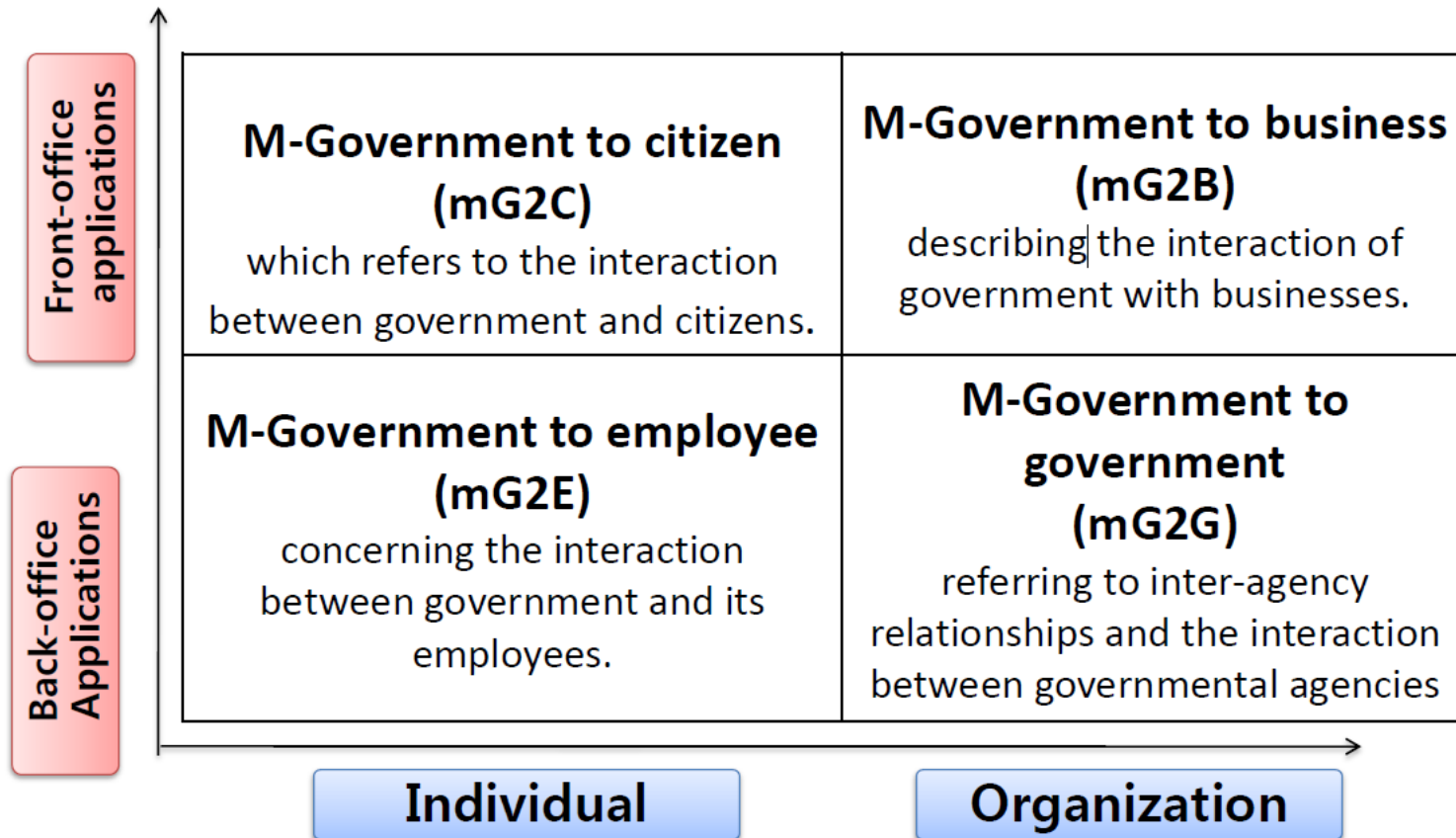
- Solution to digital divide
 - ✓ Mobile technology is probably one of the most rapidly expanding technologies in terms of the speed of expansion and reach to the unconnected. The technology is mostly based on voice and SMS.
 - ✓ Mobile technology contributes to improve accessibility for many individuals who were previously digitally excluded.
- Better the lives of disabled
 - ✓ SMS can be helpful for those who are hearing-impaired. Many hearing-impaired people find text-messaging to be an ideal form of communication because no audible conversation is needed.



Benefits of m-Government

- Cost reduction;
- Efficiency;
- Transformation/modernization of public sector organizations;
- Added convenience and flexibility;
- Better services to the citizens;
- Ability to reach a larger number of people through mobile devices than would be possible using wired internet only.

General Framework of m-Government





Types of m-Government Services: Push vs Pull

m-Government services can be classified into two groups; push vs pull services

- Push services
 - ✓ Push services are passive in nature where clients or end-users usually receive notifications about certain activities or events.
- Pull services
 - ✓ Pull services ask users to play more active role in either initiating the service or responding to queries via mobile devices.

SMS m-Services

SMS could be more appropriate to deliver m-Government services in developing countries (F.O. Chete et al., 2012).

- People are more familiar with SMS than the Internet.
- The number of SMS users is much higher than the Internet users.
- The SMS infrastructure is more extensive.
- SMS costs are lower than Internet costs.
- Mobile phones are much more affordable than PCs.

SMS m-Services

A six-level model of SMS-based m-Government services:
Listen, Notification, Pull-based Information, Communication, Transaction, and Integration

- The term 'level' represents the available service offering and not the direction of the systems' evolution.
- Each level is independent of the others and can be complementary each other.
 - ✓ One or more level can be added into another level.
- The model ranks the levels according to the complexity of the system and benefits received to citizens.

SMS m-Services

A Six-level Model of SMS-based m-Government Services
(T.D. Susanto, et al., 2008)

➤ Listen level

- ✓ SMS-based applications have been widely used by governments to listen to citizens' opinions, reports and complaints
- ✓ Most of the systems in this level use SMS to enable citizens to send messages directly to mayors, the council, and the local authority.
- ✓ These systems are not designed to reply to the input-messages or to inform the sender of the following actions.

SMS m-Services

- Notification level
 - ✓ One-way communication from government to citizens
 - ✓ The government is able to notify citizens about their personal information and to broadcast important public information.
 - ✓ Services in this level use push-based mechanism, which sends the messages to citizens activated by data on the server, not by a user's request.

SMS m-Services

- Pull-based information level
 - ✓ Two-way communication that enables citizens to access public or personal information by sending a request message
 - ✓ The services use the pull method: citizens send a request SMS to the service and the replied service is sent back to the sender's handset via SMS.
 - ✓ The information options provided by services in this level are limited and the request text must be in a certain format.



SMS m-Services

- Communication level
 - ✓ Two-way communication between government and citizens in which the people can inquire, complain or report about anything without worrying about the text format and get responses immediately
- Transaction level
 - ✓ Through these systems citizens can pay bills, and send or update their personal data through SMS.
 - ✓ Since citizens can do any transaction with the government agencies any time anywhere in a secure channel, this level offers more benefits in the accessibility, availability, accuracy, responsiveness, timeliness, and trust.

SMS m-Services

➤ Integration level

- ✓ All the SMS-based systems are integrated and organized in a single portal so people just send messages to a single service number for all services.
- ✓ Integrated-SMS systems can be integrated with the Internet/Web-based e-Government systems so citizens have the option to access government services by sending SMS to one number or through the Internet at one Web address.
- ✓ The SMS and the Internet may complement each other in a service, for example: a citizen may send a form or pay for a public service electronically by Internet and receive notification via SMS, or pay the services through SMS and receive the receipt by e-mail.



Smartphone enabled m-Government

- Native App
 - ✓ Conventional mobile app
- Mobile Web
 - ✓ Browser-based access to the Internet
- Hybrid
 - ✓ Combination of the two approaches



Native App

- Distributed through the popular app store or marketplace of the device, or via an enterprise distribution mechanism
- A binary executable file is down loaded and stored on the file system of the mobile device.
- Executed directly by the operating system
 - ✓ Launched from the home screen
- Takes fully advantage of all the device feature
- Designed and coded specifically for one platform
 - ✓ Multiple platforms result in expensive development and maintenance.
- Offers the fastest, most reliable and responsive experience to users.



Mobile Web

- User visits mobile websites by typing the URL into the browser or clicking hyperlink
 - ✓ Run by a browser
- Have a navigational UI that visitors must navigate between pages that display static data.
- Generic look and feel
- Server-side rendering
- Require connectivity
- Designed for every platform



Native Apps vs Mobile Web

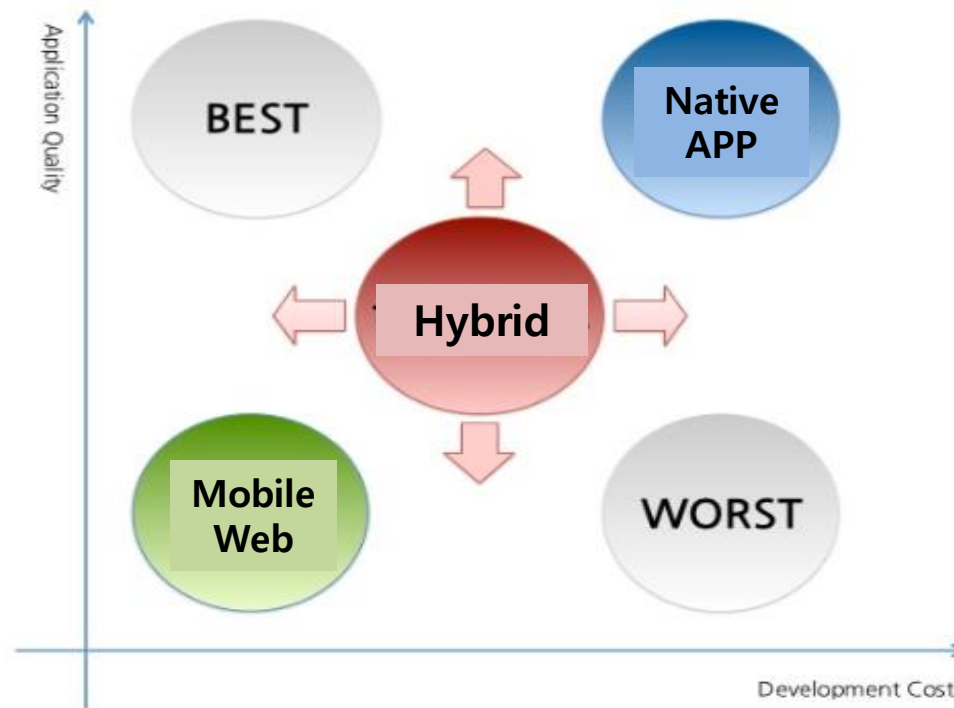
	Native App	Mobile Web
	(Application designed to run on a specific mobile device – download and installation required)	(Website created specifically for mobile device – accessible through mobile browsers, no download or installation required)
Portability	Needs to be developed for each platform (iPhone, Blackberry, Android, Palm and etc.	Common Platform
Hyper Links	It is possible to link to an app but since most users will not have the app installed, the most effective way is to link to the download page for this app. It is possible to link from an app externally to other websites.	Possible to provide links to different pages on your mobile site and to link from your mobile site to other websites.
Supportability & Maintenance	Difficult to support and maintain after app is downloaded. Every new release with bug fixes requires to go through the entire approval process of the app store. After new version of application is placed in the store, it requires all existing users to upgrade.	Easier to support and maintain No need to upgrade
Performance	Able to achieve high performance through app code that runs locally on the device	Performance will largely depend on design of the mobile website and bandwidth.

Hybrid Applications

- Hybrid app is a native app with embedded HTML.
- Hybrid applications access the mobile website through an app, bringing together features of both Web and native applications.
- A hybrid app is a mobile web application wrapped in a native shell, an interesting combination of mobile app and mobile web.
- To an end user, a hybrid app is indistinguishable from a native app.
- For Hybrid approach, you would need one web developer to create one mobile web application by wrapping it in different native shells for each platform.

Choosing Smartphone enabled m-Government Approach

No single approach for developing mobile applications delivers all of the benefits all of the time. Choosing the right approach depends on the specific needs of the government and can be driven by many parameters such as budget and timeframe.





m-Government Implementation Issues

- Developing wireless and mobile networks and related infrastructure;
- Promoting mobile penetration and increasing accessibility;
- Protecting privacy and providing security for the data and interactions; and
- Regulating and developing legal aspects of mobile applications and use of the services.
- Compatibility of the mobile systems with the existing e-Government systems



m-Government Guiding Principles

- m-Government should be developed as part of the overall e-Government strategy and program.
- Choose m-Government applications wisely. Make sure they are non-trivial;
- Make sure that the application is user-friendly;
- In deploying m-Government applications ensure that citizens get exactly what the application claims to be able to deliver in the shortest possible time; and
- Ensure that there are suitable back-office systems in place to deliver on m-Government promises.



Development Phases of m-Government in Korea

- Phase 1 (late '90s ~ 2006)
 - ✓ Launched mobile service based on cell phone or PDA by individual ministries and agencies
- Phase 2 (2006 ~ 2009)
 - ✓ Integrated mobile delivery system by NCIA
 - ✓ 321 services from 195 agencies such as SMS & MMS
- Phase 3 (2010 ~)
 - ✓ Smart-phone based mobile services



Practical Guidelines for m-Gov Service Development

- Encourage mobile web service
 - ✓ Native apps should be minimized to cost-effective cases
- Establish the government-wide integrated infrastructure for m-Gov services
- Facilitate m-Gov service development by opening up data to the private sector
- Focus on personalized services such as Location-Based-Services, while expanding the capability of the government to reach citizens and businesses

m-Gov Services in Korea



m-Gov Services in Korea

Government 24 (App): MOIS

Enabling citizens and businesses to access civil services via smartphone

- 34 types of frequently asked civil affairs
- Building Management Ledger and Land Registry are offered for reading



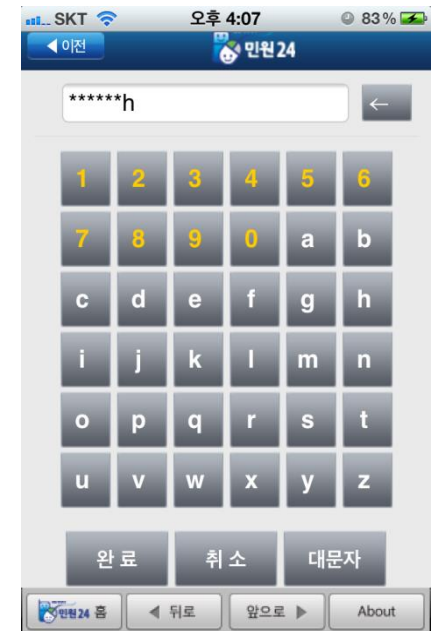
Frequently Asked Civil Affairs



Application for Land Registry



Login



Keyboard Security

m-Gov Services in Korea

Inconvenience Report (App) : MOIS

Report inconveniences and local problems

- Illegal parking, offensive business in school zones, damaged road, waste, street lighting, etc.



Main Screen



Types of Reports



Response to Report

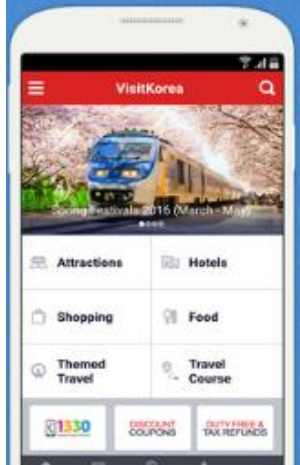
m-Gov Services in Korea

Visit Korea (App) : Korea Tour Service

Providing users with useful and timely travel and tourism information

- Tourist destination, travel information, transport, events, food, map-based point of interest, exchange rates, and what's popular

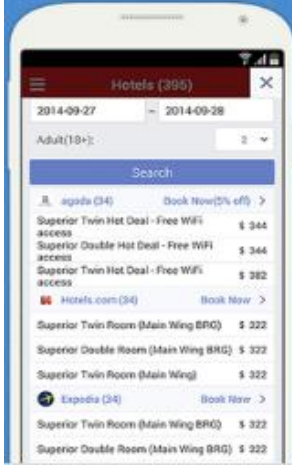
Various Travel Information
More than 6,000 tourist attractions



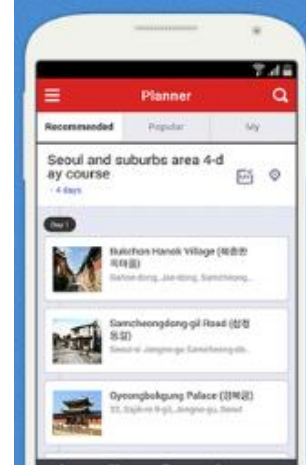
Customized search results
Recommend tourist sites and attractions depending on your interests



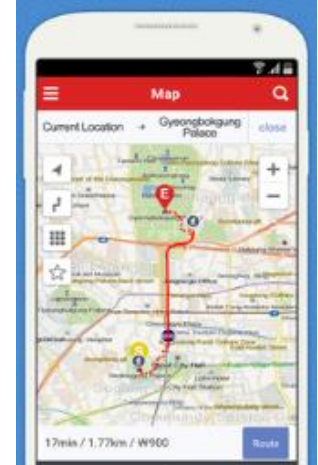
Compare hotel rates
Search for hotels and compare rates



Trip itinerary
Planning becomes easier with recommended itineraries



Smart navigation
English map and route search are also available!



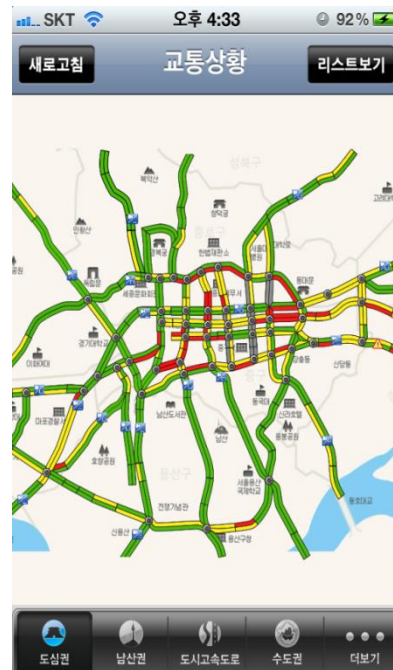
m-Gov Services in Korea

The Fastest Way Finder (App) : Seoul Metropolitan City

Real Time Traffic Information in Seoul



Main Screen



Traffic Information



m-Gov Services in Korea

Korail Talk (App): Korea Railway

Checking train times and booking tickets, paying online

- Ticketing (no paper ticket), departure/arrival time, reservation, return of reserved ticket

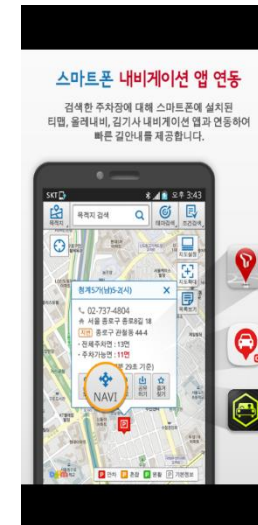


m-Gov Services in Korea

Mobile parking (App) : Seoul Metropolitan City

Enabling drivers find nearest parking spot

- Notify users if the location of parking lots, parking rates, the number of parking spaces available, and interconnection to navigator



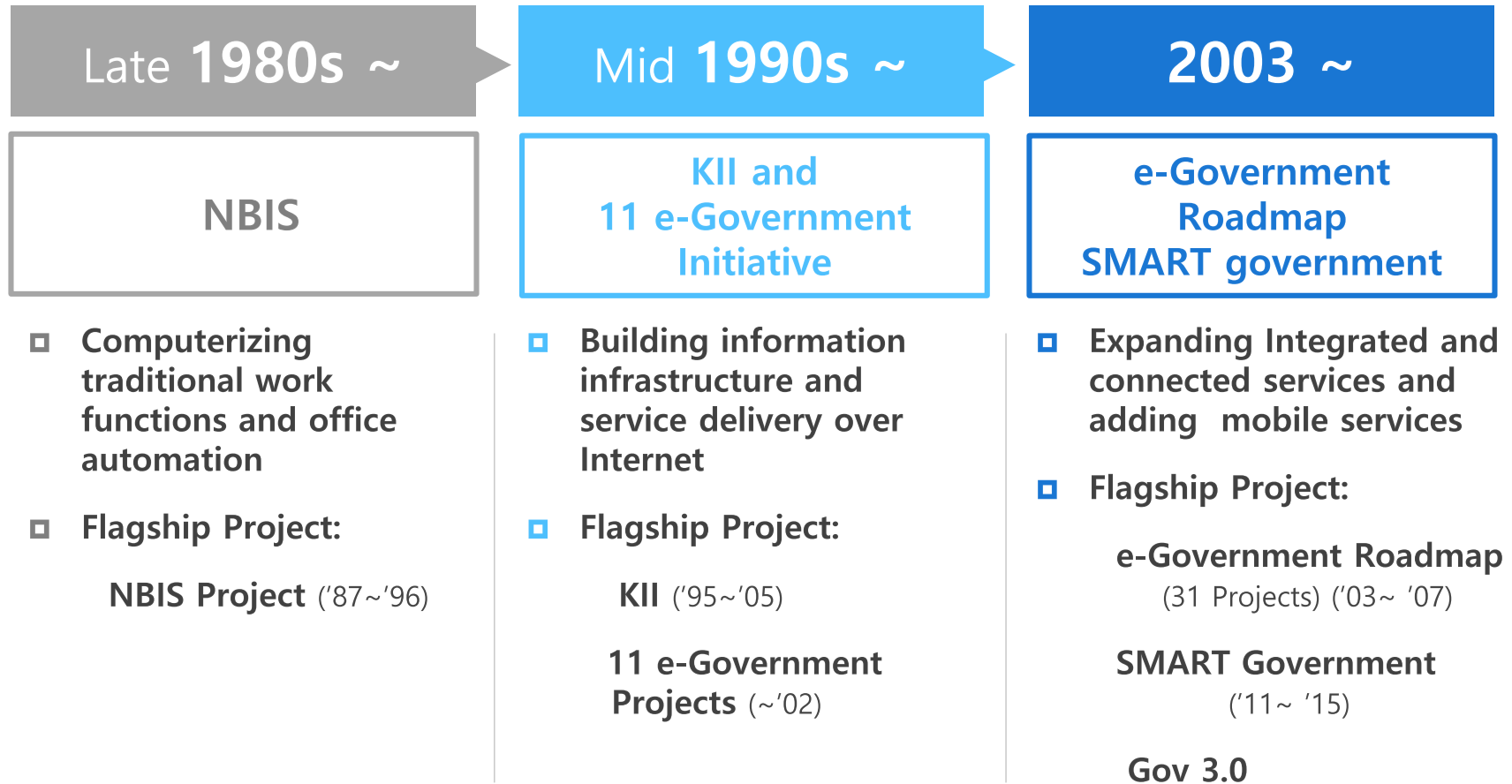
Nat'l Central Library



Job Openings and Recruitment

Weather Service

Korea's Journey to e-Government





1st Phase: National Basic Information System

Spearheading the national computerization effort

Automating traditional work functions and reducing paperwork

Making efforts to move up to the value chain and focus on capital and technology-intensive activities in the mid 80s

Presidential leadership for national ICT strategy and policy



1st Phase: National Basic Information System

Bold ten-year plan with primary focus on five pillars

- ▣ **National Administration Information System**
(Resident Information System, Vehicles, Real Estate, etc)
- ▣ **Defense Information System**
- ▣ **National Security Information System**
- ▣ **Financial Information System**
- ▣ **Education/Research Information System**

Laying the foundation for taking a lead in e-Government

- ▣ **Developing applications and creating DBs necessary for public management**
- ▣ **Delivering services via public offices connected to back-end databases**



2nd Phase: Korea Information Infrastructure (KII)

Key enabler to today's broadband access

An essential factor for national competitiveness in the 1990s

Comprehensive Plan for Korea Information Infrastructure
(1995-2005)

- ▣ Mapping out strategies and programs
- ▣ Three-stage approach subject to revision

Infrastructure-driven e-Government policy

- ▣ Information infrastructure had been upgraded before new e-Government services emerged

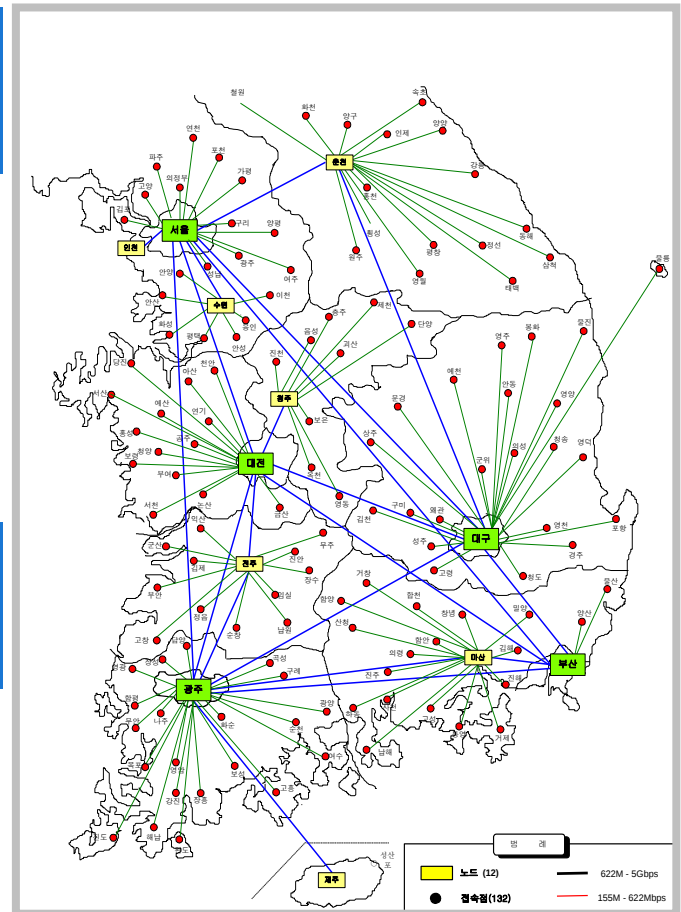
2nd Phase: Korea Information Infrastructure (KII)

KII-Government : Nationwide Optical Backbone

- Connect all 144 call zones in 2000
Investment : 437 billion Won
(1995~2000)
- STM + ATM + Internet

Provide broadband services to Government & public institutions

- 37,036 lines to 30,820 institutions
(June, 2004)
- Connected all K-12 schools (Dec., 2000)

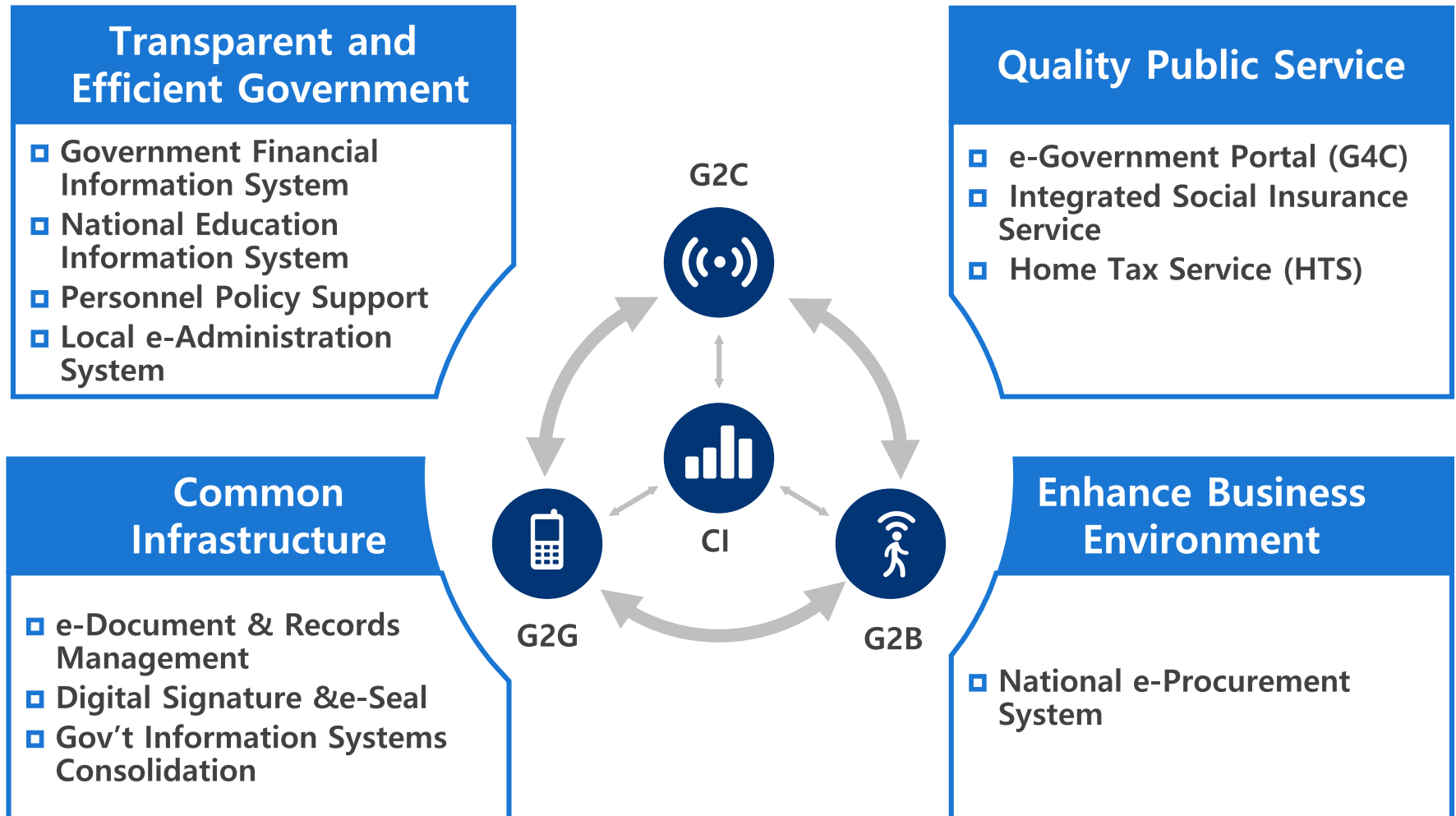


2nd Phase: 11 e-Government Initiatives

Principles and Strategies

- ▣ Identifying highest payoff initiatives that can be completed by the end of 2002
- ▣ Eliminating inefficiencies and preventing redundant and overlapping activities through business process reengineering
- ▣ Focusing mainly on cross-agency initiatives to improve services while reducing costs
- ▣ Safeguarding an enabling environment with a right regulatory and legal framework

2nd Phase: 11 e-Government Initiatives



3rd Phase: e-Government Roadmap

Goals & Principles

Government Work Process Reform	Paper-based	→	Electronic
	Stove-piped	→	Integrated
Civil Service Reform	Multiple contact points,	→	Single contact point, No visit,
	Visits, Face-to-Face Early stage of online participation	→	Online Full-fledged online participation
Information Resource Management Reform	Departmental resource management	→	Government-wide management
	Individual standards	→	Common standards

3rd Phase: e-Government Roadmap

Agenda

Government Work Process Reform (G2G)

- 1 Connecting back offices online
- 2 Expanding information sharing
- 3 Streamlining work processes

Public Service Reform (G2C, G2B)

- 4 Enhancing online civil services
- 5 Enhancing business-related services
- 6 Expanding online engagement & participation

Information Resource Management Reform (Common Platform)

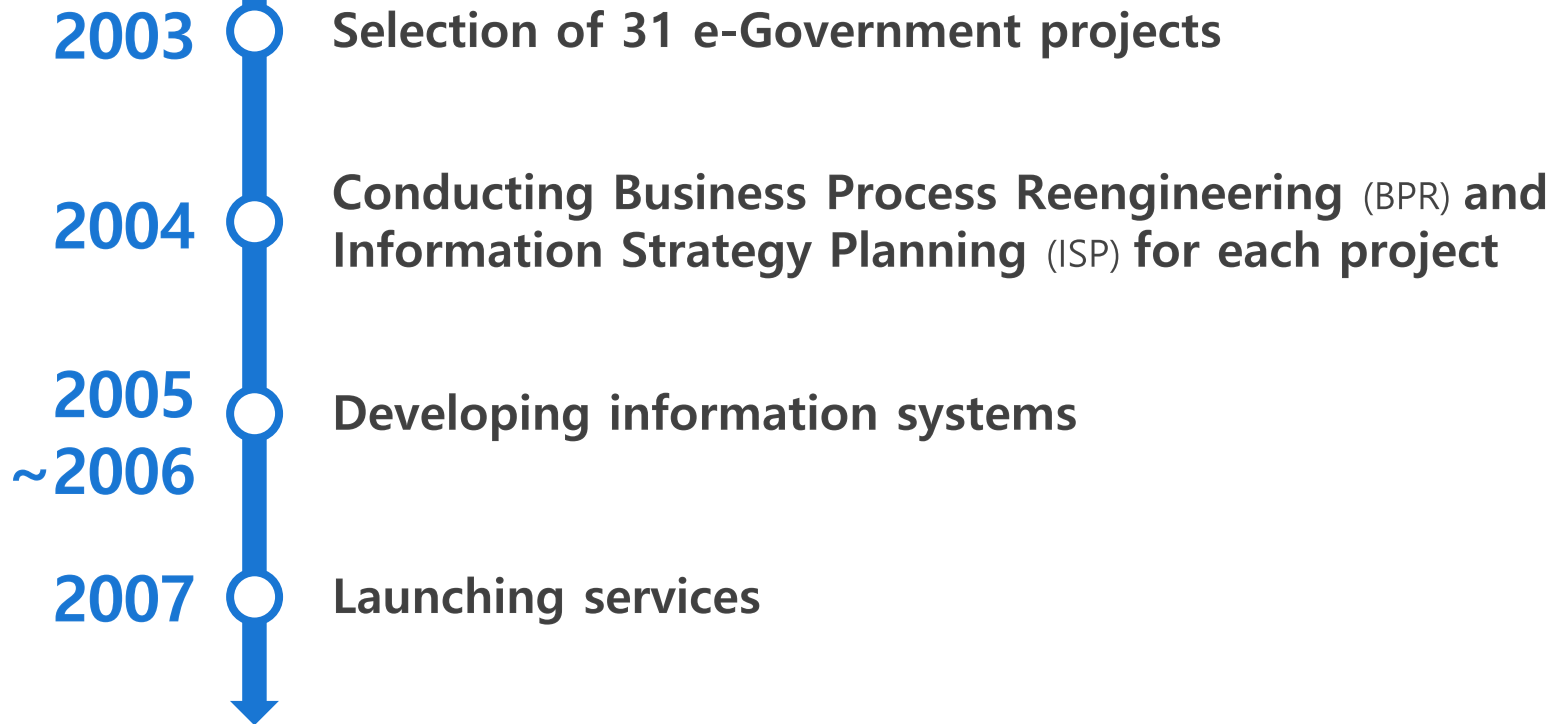
- 7 Integrating/standardizing info. resources
- 8 Strengthening information security
- 9 Enhancing the expertise of the IT manpower and organization

Improving laws

- 10 Improving laws & regulations to meet the realistic needs of civil lives

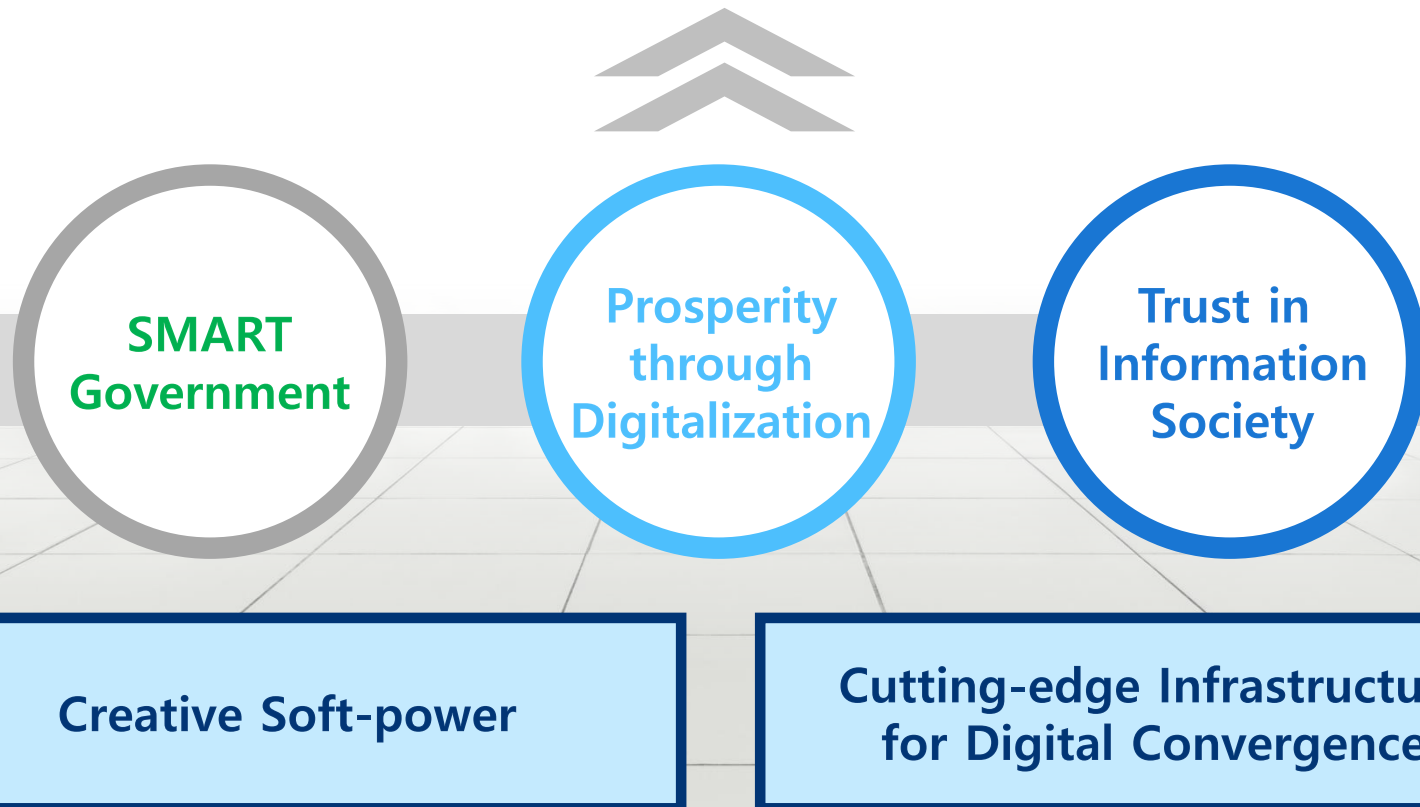
3rd Phase: e-Government Roadmap

Implementation Schedule



3rd Phase: SMART Government

**Advanced Knowledge Information Society
Based on Creativity and Trust**



3rd Phase: SMART Government

Supply-push	Fragmented	Insufficient User Confidence	Government-led
Increasing take-up	Seamless & Integrated	Privacy & Security	Partnership & Collaboration

Value-Creation

Creativity & Trust

Sound ICT Culture

Evolution of e-Government in Korea

3rd Phase: SMART Government

Providing integrated and citizen-centered government services that create substantial values for citizens and businesses

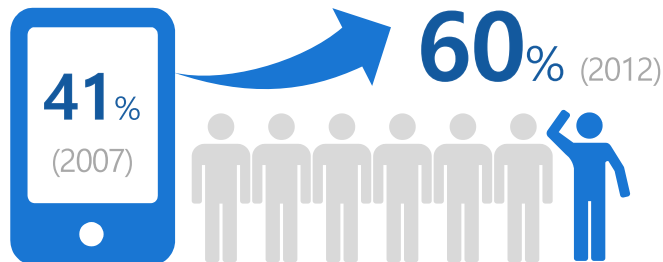
"islands of automation"



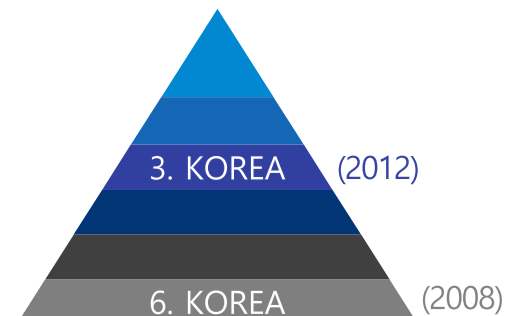
"Whole-of-Government Approach"

- Integrate government services across ministries and agencies in a more citizen-centric way.
- Pooled investments and process integration to leverage common components
- Establish a government-wide EA and information resource sharing system

E-Government User Take-up

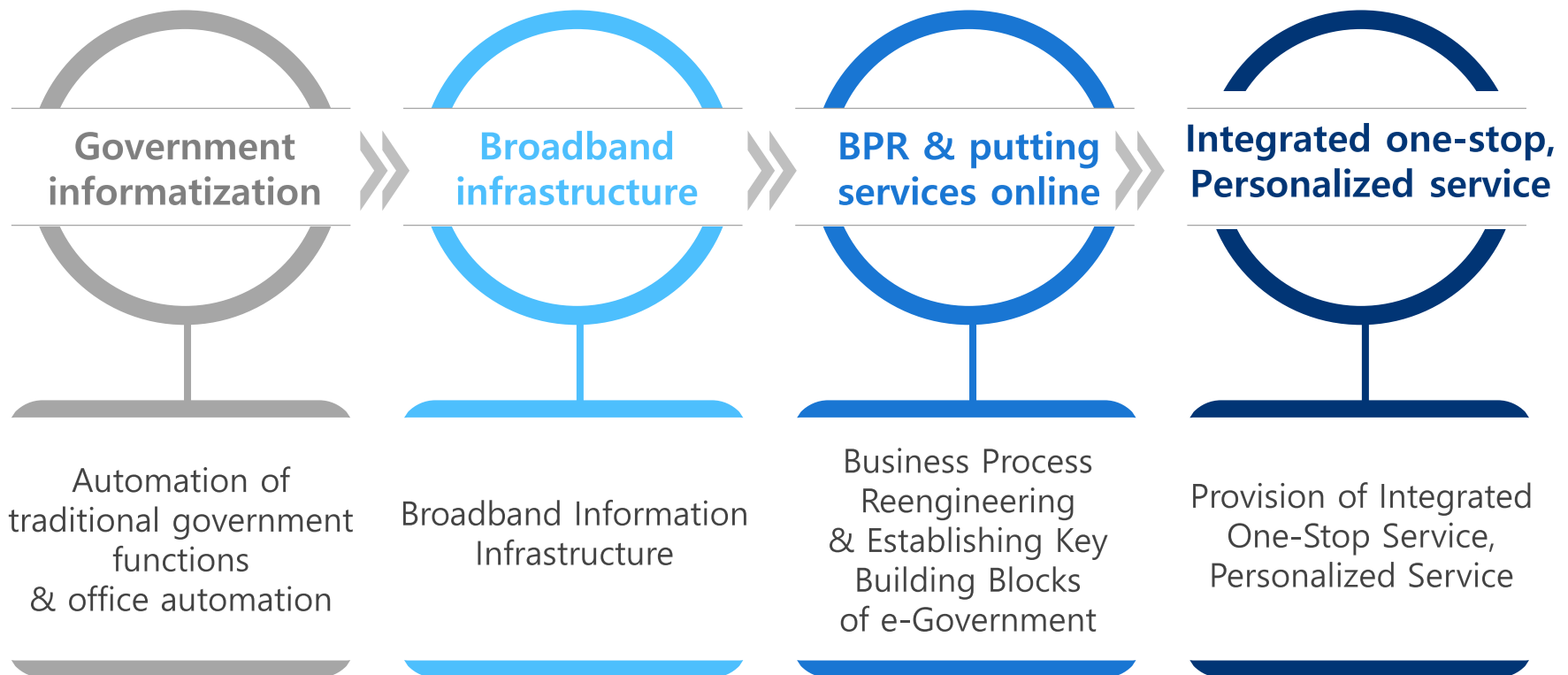


E-Government Development Index



Evolution of e-Government in Korea

Change of focus in Korea's e-Government



Critical Success factors

Political Leadership and Commitment

Institutional Arrangement

Funding

Legal Framework

ICT Capacity Building

Evolution of e-Government in Korea

Presidential Leadership



"For the second nation-building, we will focus on establishing a knowledge-based economy where information and leading technology play a central role."

Address by President Kim Dae-jung commemorating the 50th Anniversary of the Republic of Korea August 15, 1998



"I will promote the continued expansion of the infrastructure for a knowledge and information society and cultivate new industries."

Inaugural Address by President Roh Moo-Hyun
February 25, 2003



"We have to prepare for our future. Therefore, our full-scale promotion of informatization is valuable as a new growth engine for the future of Korea."

Address by President Lee Myung-Bak 'Visionary Announcement for IT'
December 3, 2008



"I will raise our science and technology to world-class levels. And a creative economy will be brought to fruition by applying the results of such endeavors across the board."

Inaugural Address by President Park Geun-hye
February 25, 2013



Political Leadership and Commitment

Initiated the National Basic Information System project

Sponsored KII , 11 e-Government Projects, e-Government Roadmap, and SMART Gov

Created a culture for innovation

Ensured all relevant ministries' support and collaboration by strongly signaling Presidential commitment

Accompanied commitment of resources and expertise



Institutional Arrangement

A whole-of-government approach to safeguard cross-agency collaboration and expedite implementation

Informatization Strategy Meeting and Special Committee for e-Government under the President

Informatization Promotion Committee chaired by Prime Minister in close consultation with the Advisory Committee from the private sector

Ministry of Science and ICT & MOIS as the focal point

Technology support agencies: NIA, KISA, NIPA, ETRI, KLID, NCIA, and etc.



Funding

“Settlement after Investment”: National Basic Information System

Informatization Promotion Fund

- ▣ Key ICT projects: KII Project and 11 e-Government Projects
- ▣ R&D, ICT workforce Education and Training

Public-Private Partnership

- ▣ Co-investment: KII Backbone and Subscriber's network
- ▣ BTL (Build, Transfer, and Lease): **Army Broadband Network**

Share-in-Revenue: Electronic Payment Systems for on-line civil services (Supreme Court, G4C, etc.)



Legal Framework

The success of e-Government initiatives and processes is highly dependent on government's role in ensuring a proper legal framework for their operation

The application of ICTs to government often encounters legal or regulatory issues because laws designed for the paper world can hinder e-services

- ▣ The legislative framework of a country should have clear-cut provisions for accepting 'electronic equivalents' of traditional paper procedures, such as personal identification, signing and filing.

Legal Framework

A total of 187 laws had been enacted or updated based on the 7 rounds of review during '95-'03 in Korea.

- A sum of 86 laws, including the Framework Act on Informatization Promotion, were enacted or revised for informatization promotion in the public sector.
- An aggregate of 101 laws, including Electronic Signature Act and Online Digital Contents Industry Promotion Act, were enacted or revised for the development of the IT industry and informatization of the private sector.





ICT Capacity Building

Mass digital literacy campaigns sponsored by Korean government

- ▣ Massive e-literacy training campaigns for various target groups: the elderly, the disabled, farmers, government officials, soldiers and officers, housewives, low-income groups and etc.

-1st phase (2000. 7 ~ 2002. 6): 13,805,192

-2nd phase (2002. 7 ~ 2004.12): 11,811,145

Partnership with private computer academies, colleges, welfare organizations, and etc.

- ▣ Grant, matching fund, etc.

Boosting up ICT and e-Government demand by training programs

it's
Q & A
TIME!



