



National Geographic  
Information Institute  
Ministry of Land, Infrastructure  
and Transport

# RENOVATION OF THE NATIONAL GEOSPATIAL DATASET IN REPUBLIC OF KOREA

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# CHAPTER

NATIONAL GEOSPATIAL FRAMEWORK DATA IN REPUBLIC OF KOREA



## Background and Objective



# 1. Background

Human life and property loss due to absence of spatial information



Gas explosion in Ahyeon-dong, Seoul (December, 1994)

Fatality : 12, Injured : 101

어째서 또 이런일이...



大邱 가스폭발 百여명 사망

지하철역장 동교·출근길 慘變...百43명 부상



Gas explosion in Daegu subway (April, 1995)

Fatality : 101, Injured : 202



Gas explosion accident was occurred consecutively due to Absence of underground facility information and thoughtlessness excavation

# 1. Background

- Aware dangerousness about absence of spatial information and it can threat human life and properties



- Realize the necessity of spatial information about not only maps but also all geographical features including underground facilities



- Recognize government-led establishment of spatial information

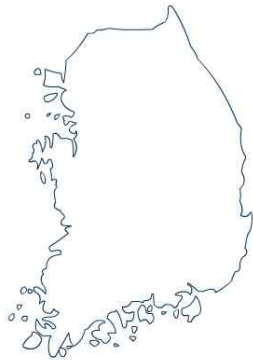


**Recognize the importance of  
the spatial data infrastructure**

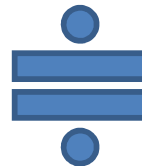
# 1. Background

## NGIS forward

- ✓ NGIS Project was promoted by 5 phases since 1995.
- ✓ Budget : 2,336.4 billion won from 1995 to 2012.
- ✓ Market : From 45 billion won in 1995 to 4,800 billion won in 2012.



The area of South Korea is almost 100,210 km<sup>2</sup>



Its area is almost same as Portugal, Austria and Hungary.

**Duplication, sharing and connection of spatial information  
because of spatial information establishment by each individual department.**

## 2. Objective

- Understanding advantages and limitations of Government-led spatial information establishment and solution suggestion by national spatial framework establishment.

### *Establishing Spatial Framework Data*

Analyzing NGIS process of 1st~5th phase

Figure out the effects and issues by NGIS establishment

Introducing background of importing national spatial framework

Introducing process of NGIS in stages

Analyzing establishment effects and limitations

Providing spatial framework establishment plan and application model

# CHAPTER

NATIONAL GEOSPATIAL FRAMEWORK DATA IN REPUBLIC OF KOREA



## NGIS Plan

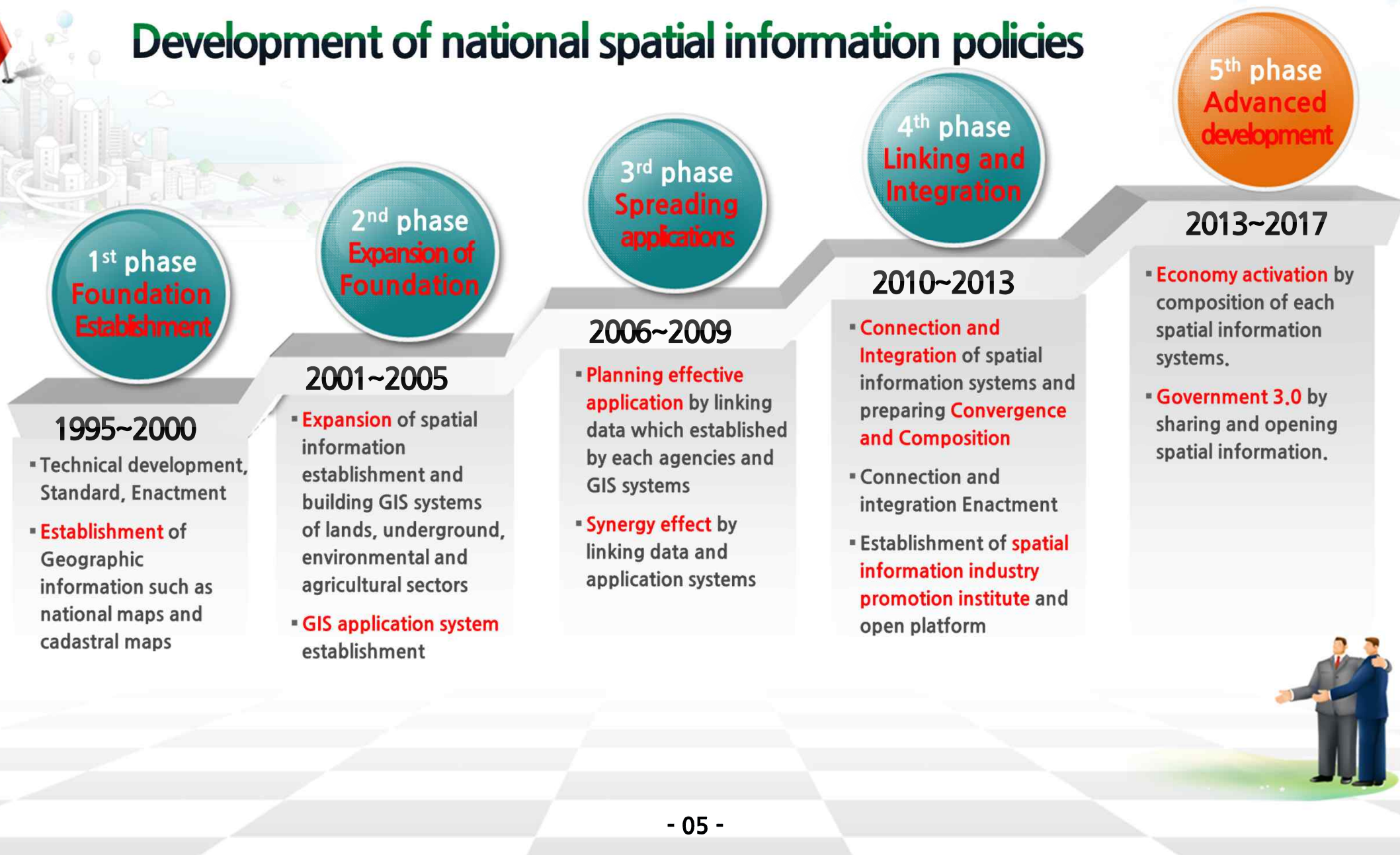
1. Establish the NGIS
2. Performance of NGIS policy
3. Limits of NGIS policy





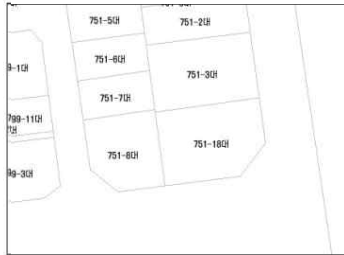
# 1. Establish the NGIS

## Development of national spatial information policies



# 2. Performance of NGIS policy

< Cadastral Maps >



< Road network Maps >



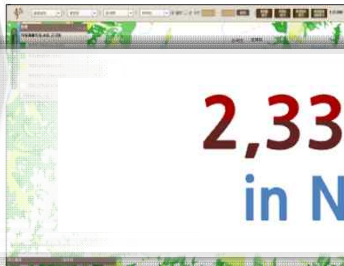
< Land use maps >



< Usage region district maps >



< Land cover maps >



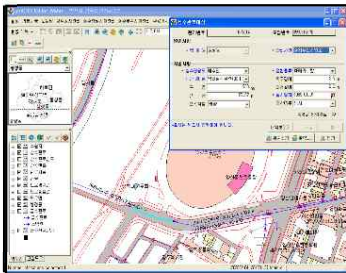
< Satellite and Aerial imagery >



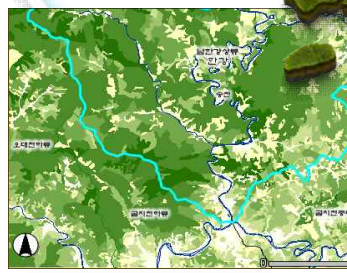
**2,336.4 billion won was invested**  
**in National Spatial Framework policy**

Central  
Govern  
ment

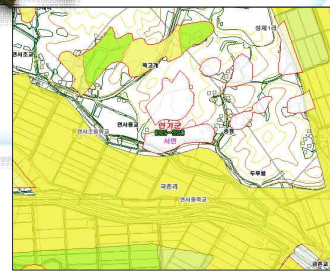
Local  
Govern  
ment



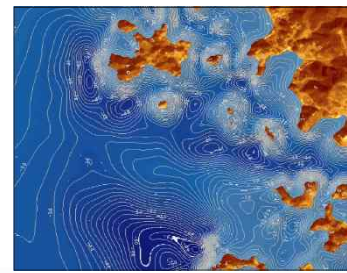
< Amenity resources maps >



< Forest shape maps >



< Agricultural promotion region map >



< Maritime framework maps >

## 2. Performance of NGIS policy

### Base production of spatial information establishment

- Digitizing paper maps such as national maps
- Establishing 23 framework data such as roads, buildings, rivers...
- Enacting 140 spatial information standards and providing
- Lead the standardization of indoor spatial information
- Establishing the National spatial data distribution system and spatial information open platform.
- Reorganization related national spatial information institute and enactment to establish systematic NSDI and raise spatial information industry(2009)

### Industrial ecosystem production of spatial information

- Spatial information relates market was created to 4.8 trillion won by NSDI projects(2.3 trillion won) from 1995 to 2012.
- Spatial information industry was registered 11th special individual industry after logistic, sports, energy and contents industries(2012)
- Spatial information industry promotion institute was established(2012)
- Smart Geospatial Expo to raising spatial information industry(since 2008)
- Research and development to support industry such as high-tech survey, imagery information, DBMS, application platforms, sensor network development...

### Widespread application of spatial information

- Innovation of administration works and public services by Korea Land Information System, National spatial information system and Spatial open platform.
- 32,117 cases of supporting administration works, 172 cases of data provision such as continuous cadastral maps and 64.2 million cases of land use confirmations issued by Korea Land Information System(2012)
- Application result of spatial information using OpenAPI is 73 million cases of unified national spatial information system(2012), 120 thousand cases of spatial information open platform(2013)

### 3. Limits of NGIS policy



#### Limitations of NGIS policies

- ✓ Cannot meet the user's satisfaction because of always user's needs is ahead of policy.
- ✓ Do not correspond to production standard and application standard
- ✓ Difficulty to access and gain source data because of inactive release of spatial information
- ✓ Difficulty to use of Integrated application because it does not consider connected application, it is made by each institute for different purpose
- ✓ Waste of budget and discordance occurs among spatial information because of overlapped establishment by each departments

# CHAPTER

NATIONAL GEOSPATIAL FRAMEWORK DATA IN REPUBLIC OF KOREA



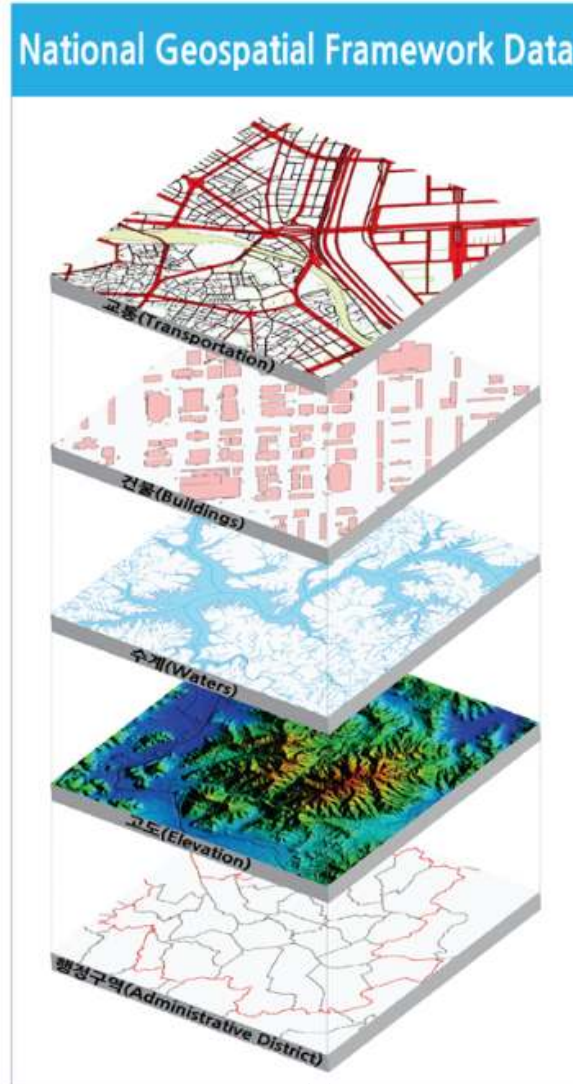
## National Geospatial Framework Data

1. Establish and Associated Targets
2. Process of National Geospatial Framework Data
3. Expected Effects
4. Conclusions

# 1. Establish and Associated Targets

## Shared Geospatial Framework Data which useful for Everywhere & Everyone」

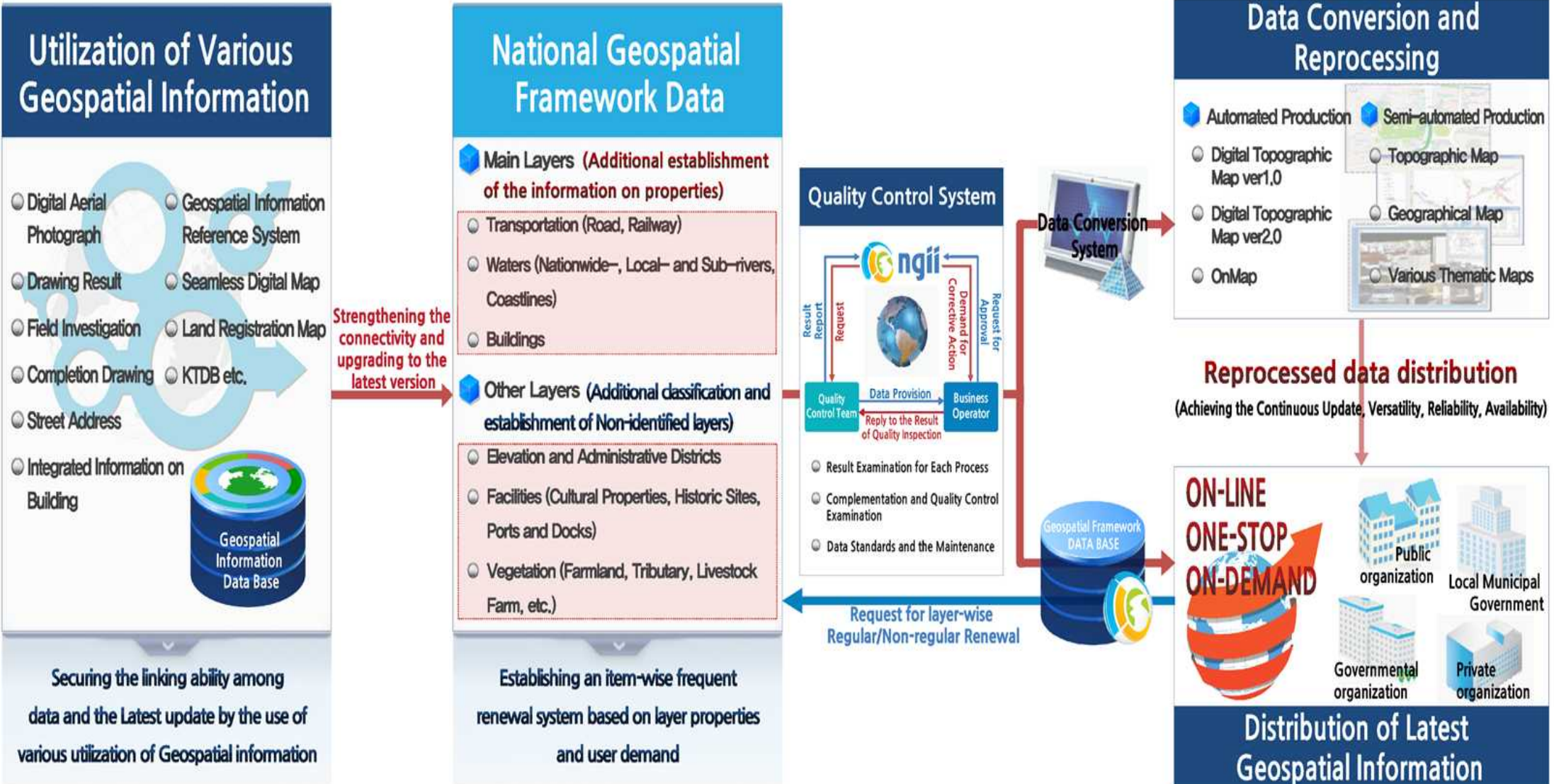
Data Model for Transportation	
<b>KTDB</b>	<ul style="list-style-type: none"> <li>Confined to major mid-level roads in expression range of road level (about 92,000 km)</li> <li>Speed limit information</li> </ul>
National Geospatial Framework Data	<ul style="list-style-type: none"> <li>All levels of roads demonstrated (about 603,600 km)</li> <li>Speed limit information</li> </ul>



Data Model for Buildings	
Street Addressing	<ul style="list-style-type: none"> <li>No regulation on accuracy of Buildings location</li> <li>About 1,060 cases of Buildings</li> <li>Street addressing, Zip code</li> </ul>
National Geospatial Framework Data	<ul style="list-style-type: none"> <li>Regulation on accuracy of structure location (1:5,000)</li> <li>About 1,630 cases of Buildings</li> <li>Street addressing, Zip code</li> </ul>
Integrated Information on Building	<ul style="list-style-type: none"> <li>No regulation on accuracy of Buildings location</li> <li>Approval Date</li> <li>Management based on building registration</li> </ul>
National Geospatial Framework Data	<ul style="list-style-type: none"> <li>Regulation on accuracy of structure location (1:5,000)</li> <li>Approval Date</li> <li>Management Based on the Building Register (Individual Division of Buildings)</li> </ul>
Geospatial Information Reference System	<ul style="list-style-type: none"> <li>Connecting the Spatial feature registry number</li> </ul>
Seamless Digital Map	<ul style="list-style-type: none"> <li>Connecting to Spatial information on features and basic attribute data</li> </ul>
Land Registration Map	<ul style="list-style-type: none"> <li>Connecting to address information such as lot numbers</li> </ul>

Data Model for Waters	
River Management Geographic Information System	<ul style="list-style-type: none"> <li>Expression on grades of the national and local rivers</li> </ul>
National Geospatial Framework Data	<ul style="list-style-type: none"> <li>Extra expression on grades of sub-rivers in addition to the national and local rivers</li> </ul>

# 2. Process of National Geospatial Framework Data



## 3. Expected Effects

### 『 Customized National Geospatial Framework Data on Demand 』

*Overcome problems and limitations due to  
NGIS establishment*

#### Offer of the National geospatial framework data on the Establishment of Geospatial framework data

- Laying the groundwork for the production of Geospatial framework data by establishing the work guideline, standard guideline and quantity per unit
- Building an institutional and technological foundation for pushing to National geospatial framework data by establishing the relevant laws and organizing plans

#### Off of the Utilizing Service for the Latest User-oriented Geospatial Information

- Establishing the base of for a creation of customized Geospatial information by converging the latest Geospatial information provided by the government with that demanded by individual users
- Creation a non-regular renewal system for available areas such as transportation, structure, water system, elevation and administrative regions

#### Laying the Groundwork for Utilizing the Geospatial Information through High Availability and Universality

- Securing Geospatial information for public sharing in which all users universally in all systems
- Prevention from redundant government investment and budget saving by allowing other relevant projects to use



## 4. Conclusions



### Conclusions

- ✓ It is not easy to build spatial information which will be integrated and shared in government-led spatial information establishment project because of the each purposes
- ✓ So, the most basic and fundamental spatial information should be selected as the National spatial framework data from various spatial information
- ✓ The most typical national spatial framework data in Korea are traffic(roads, railways), hydrography, buildings, DEMs and administrative boundaries
- ✓ The national spatial framework data are need to be produced, managed by NMA and distributed to other agencies
- ✓ Agencies can use by making necessary spatial information based on national spatial framework data
- ✓ The national spatial framework data can contribute to consistency, the latest, sharing, open, expansion and standardization of spatial information

# Question & Answer



# Thank You

