

**United Nations Expert Group on the Integration of
Statistical and Geospatial Information
First Meeting
New York, 30 October - 1 November 2013**

Agenda: Item 6

**Korea Land Information Survey Platform:
Dynamic Statistical Mapping System for
Spatial Decision Making Support ¹**

Prepared by Republic of Korea

¹ This document is being produced without formal editing

KLISP

Korea Land Information Survey Platform
: Dynamic Statistical Mapping System
for Spatial Decision Making Support

2013.10.29



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Introduction of NGII & KRIHS



Ministry of Land, Infrastructure and Transport

Department of NSDI Policy

NGII(National Mapping Agency)

▶ 6 departments, 112 people

Policy&Plan

General Affairs

Geodesy

Geospatial Imagery

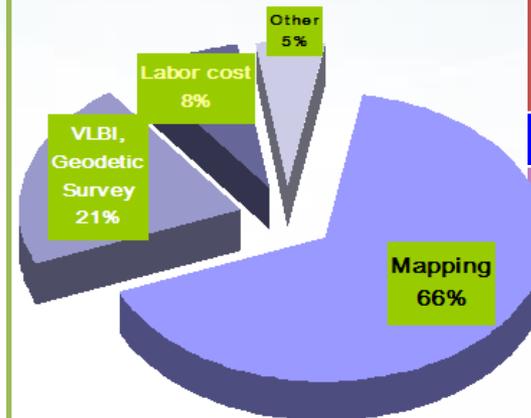
Geographic Information

Reconnaissance for Land

Mission

- To establish Geodetic datum & Geodetic control
- To make National Base map & Geo-spatial Imagery
- Geographical Names, Gazetteers and the related publication
- R&D, International Cooperation
- Dissemination of Products

Budget



FY2011, USD

Mapping	42,335,000
Geodetic Survey, VLBI Projects	19,497,000
Labor cost	359,500
Other	193,500
Total	62,385,000



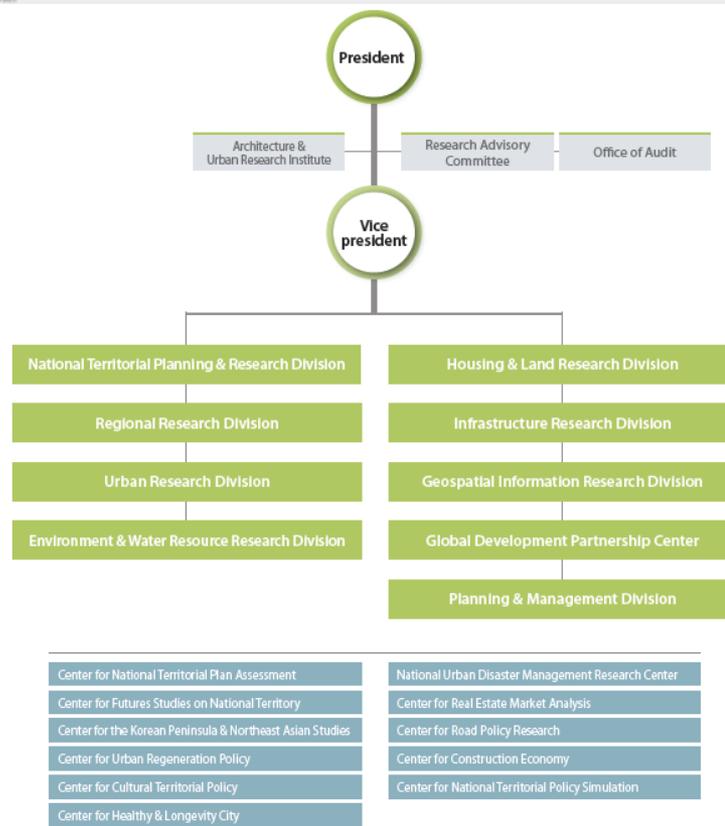
Smile Land

KRIHS will lead the way to realize an affluent and safe territory in the 21st Century



QuickSearch

Popular





Project Background

Demand Change[1]...Paradigm Shift in Planning

- Government is committed to establishing National Territorial Policies for Improving Happiness of People
- Opening public big data accelerates the utilization of decision making tools for establishing scientific policies.



Demand Change[2]...Easy Map-making by Anyone

New communication channel, community mapping



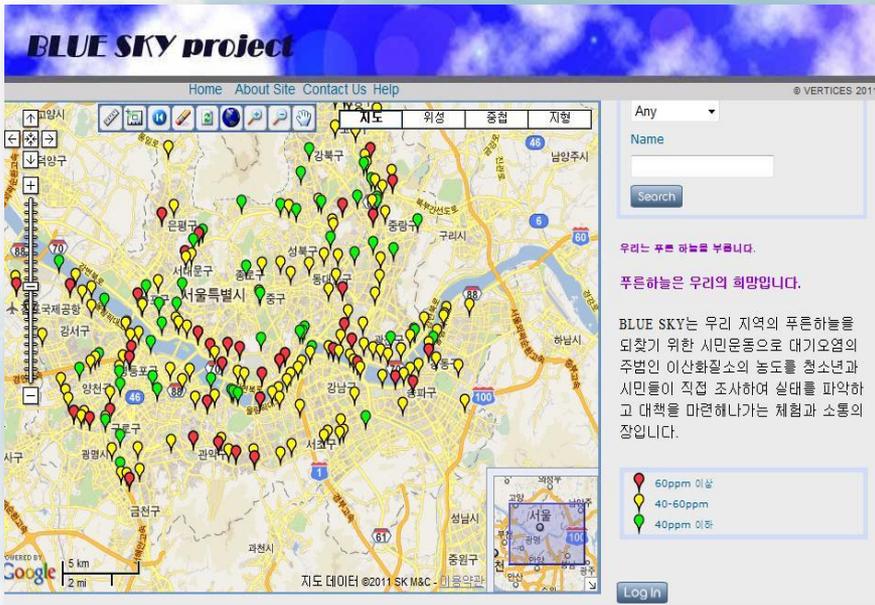
High school students made community map quickly by locating areas running short of gas; this substantially helped decision making for prioritizing gas supply when Hurricane Sandy hit the northeastern U.S.

Dr. Im, Wansoo (Founder and CEO of VERTICES, LLC, The Center for Community Mapping, NGO), an expert of developing public participatory Web GIS based on communicative decision making support system



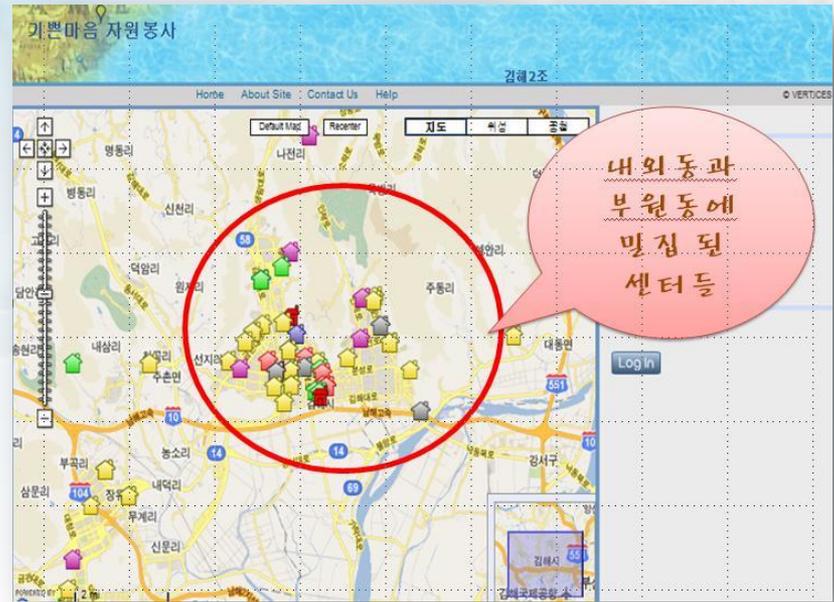
Other Cases in Korea

❖ Blue Sky



Juveniles and citizens participated in the programs for measuring the concentration of nitrogen dioxide in the air and provided data voluntarily as a result of citizens' campaign for recovering blue sky.

❖ Mapping for Volunteers



Places that are not well known to volunteers are mapped in order to identify where to volunteer. This map was developed by students in Inje University



Producing dynamic spatial statistical information

As Is



To Be

- Indirect data collection system using periodicals (e.g., statistical yearbook)
- Problematic due to collection error, precision, currency, etc.
- Focusing on producing administrative boundary maps such as province and city/county/district
- Outdated maps are not quickly updated by public providers

- Direct data collection system synchronizing real time changes in areas of interest
- Location-based, rapid map production system with hierarchical, pyramid structures of spatial units
- Dynamic map provision framework to satisfy policy demand and encourage use by prosumers



Overview of KLISP



Framework Act on The National Land

❖ Article 25 Survey of National Land Information

The Minister may survey in advance the population, economy, society, culture, traffic, environment, land utilization and other matters prescribed by the Presidential Decree, when deemed necessary in order to formulate any plans or policies for the national land, or to establish the national land information system, and to prepare the annual report, etc.

Organization

❖ Ministry of Land, Infrastructure and Transport : National SDI Policy



❖ NGII: Producing and Managing of National Spatial Information.



❖ Center for Land Survey DB : Planning and Implement of KLISP



Structure of KLISPlatform



Supporting scientific decision-making for national policies

National Atlas

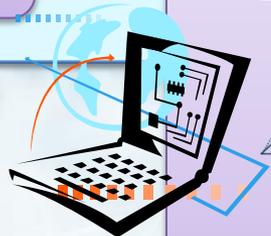
Dynamic Statistics Mapping System

광역수준(시도/시군구)

지역수준(시군구/읍면동)

소지역수준(격자/500, 1000)

Annual Reports



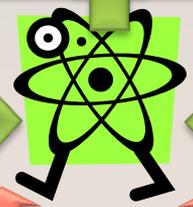
NTI: National Territorial Indicators

quantitative /formal data

- National Base map
- Land indicators
- Diagnostic indicators

qualitative/informal data

- Human
- POI
- Sentiment indicators



National Base Map

- topographic ...
- Image

NSDI

- Land.. ...
- Information Systems

Survey Data

- statistics ...
- Big data

Land Information Survey Platform

Dynamic Linking Statistical & Spatial Data.



◆ Dynamic Linking

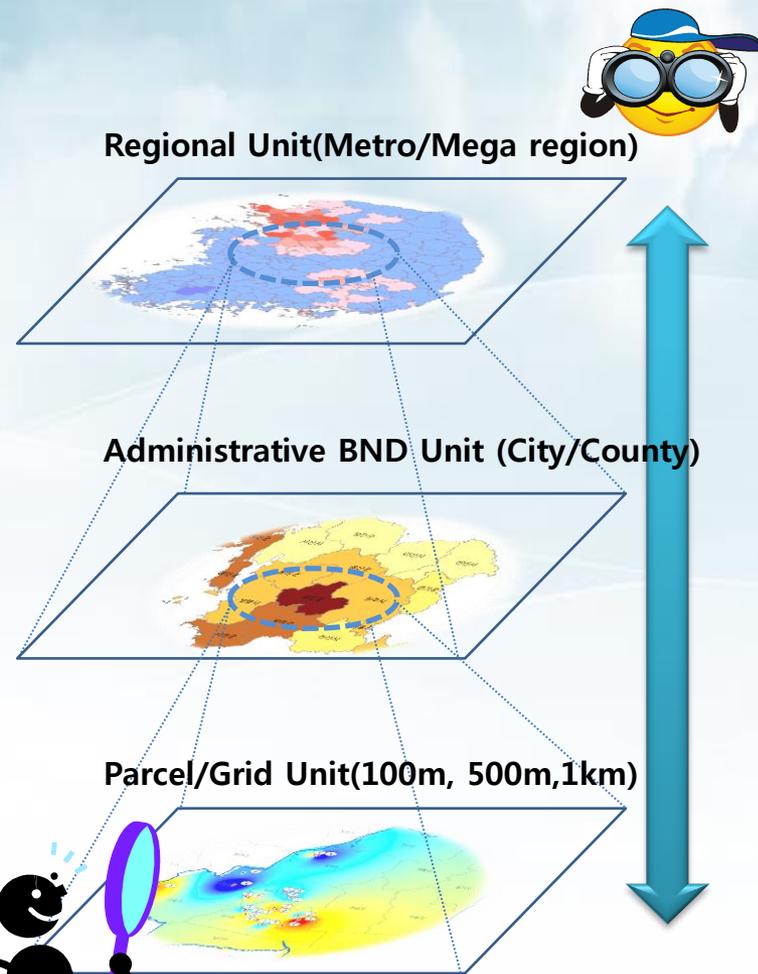
◆ Pyramid of Indicators

Spatial Information Platform

Socioeconomic Data



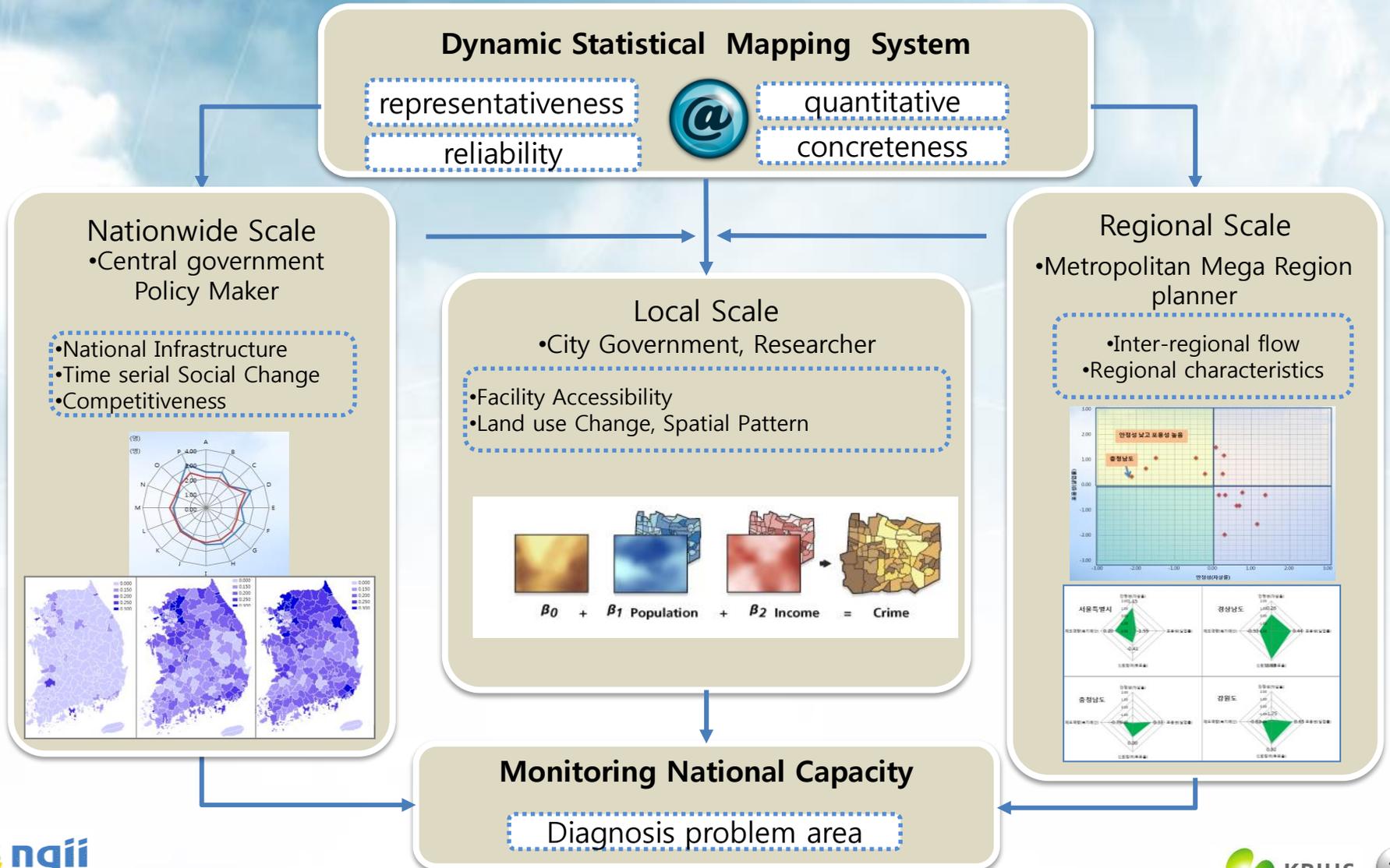
Linking via Address
(Geocoding/Mapping)



Application of Statistical Mapping



◆ Who and what statistical map targets for?





Dynamic Statistical Mapping

Building Statistical Map (Daejeon Metropolitan City)

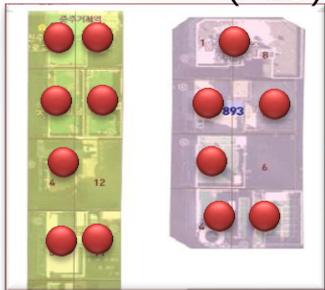


◆ Grid-based statistical maps of building locations and related attributes

Building in Parcel(LIS)

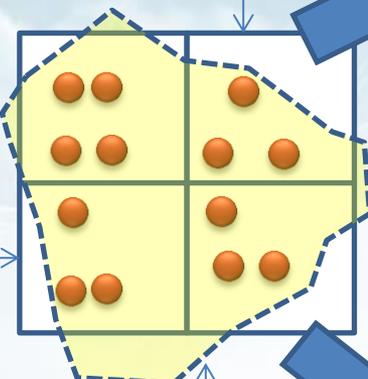


Architecture Information (AIS)

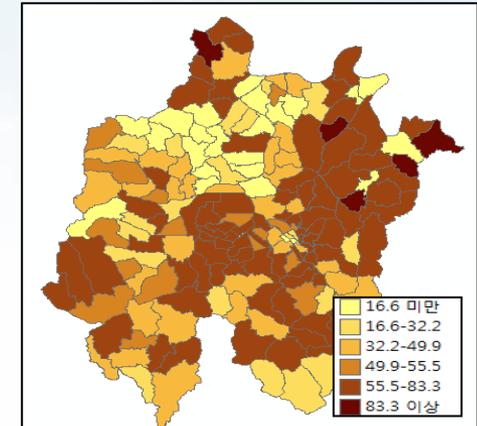
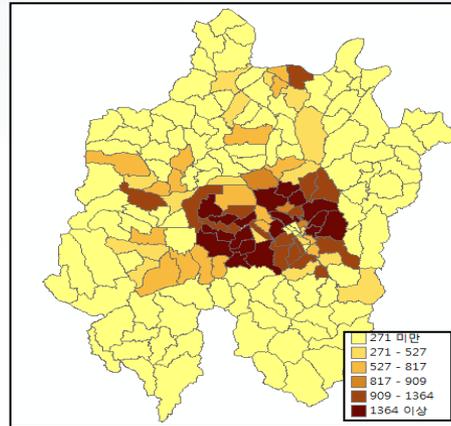
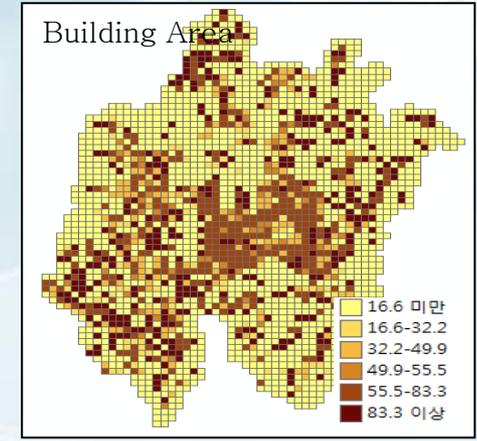
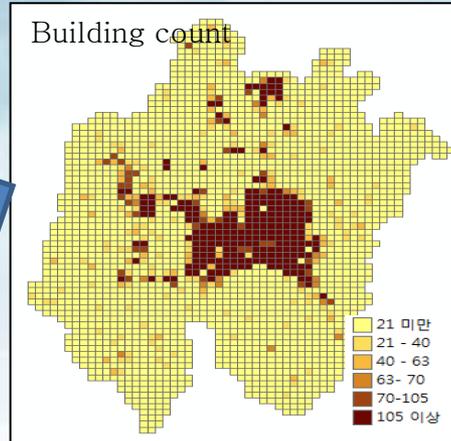


Spatial Query

Grid Unit



Admin.BD



Parcel based Address Matching

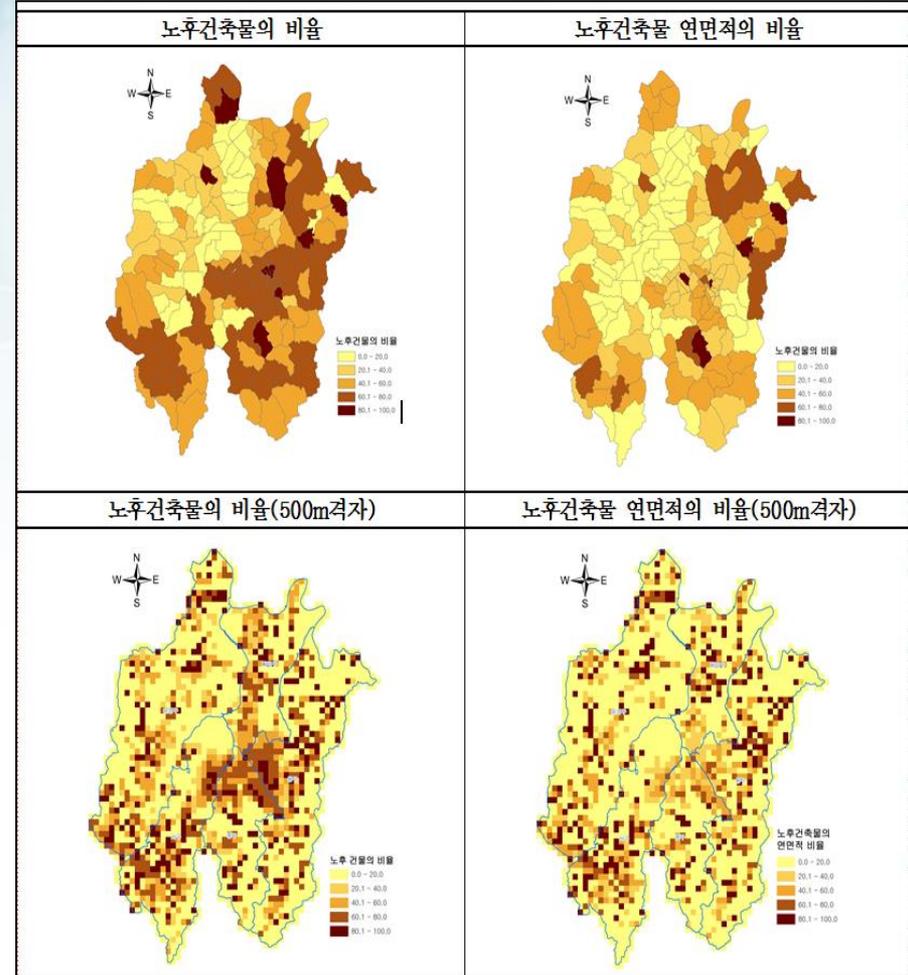
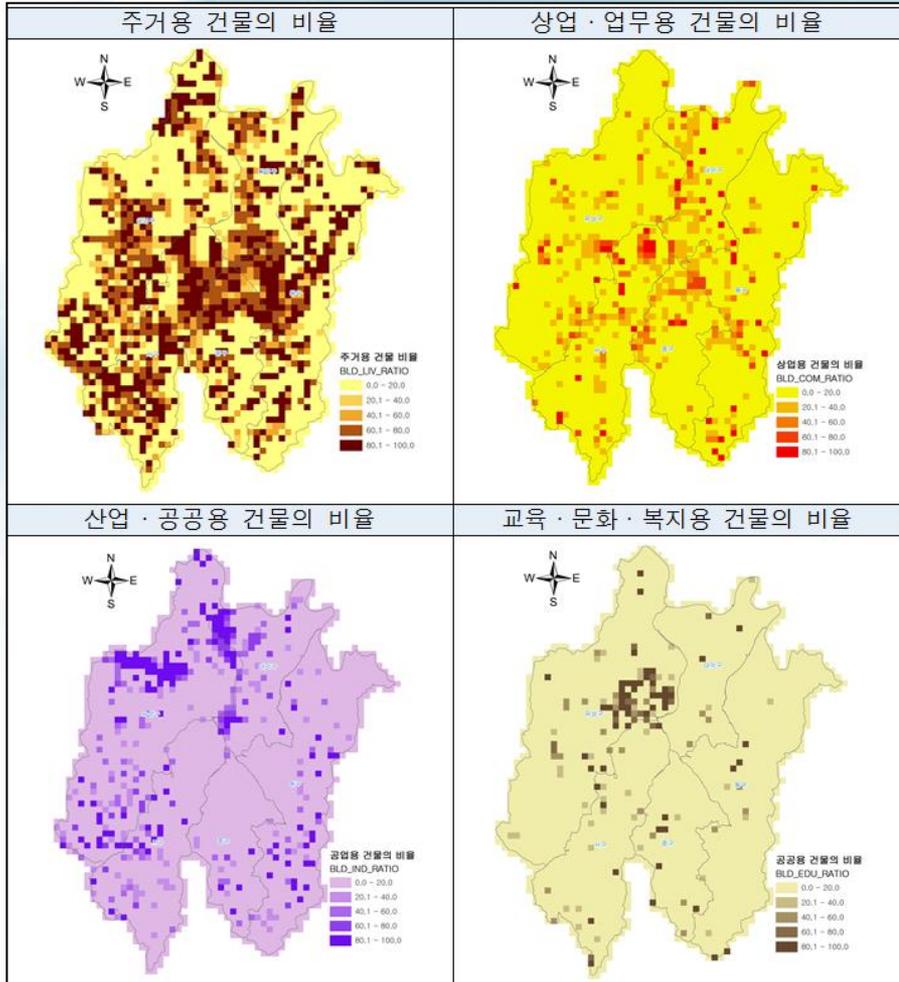
Building Statistical Map (Daejeon Metropolitan City)



- ◆ Convenient to understand the distributional properties of buildings by zoning code, total floor areas, old buildings, etc.

📍 zoning code, total floor areas

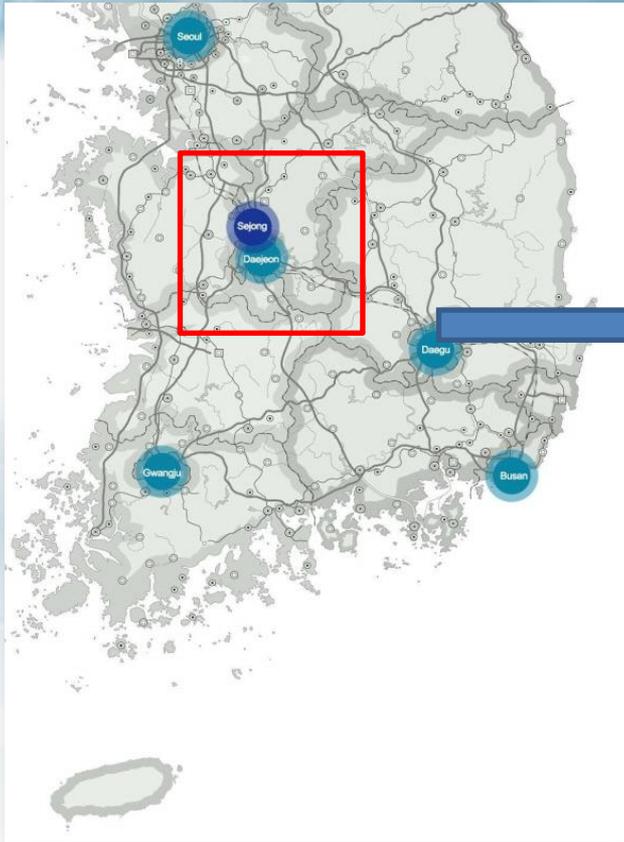
📍 Old buildings, total floor areas



Land price Statistical map(Sejong City)



◆ Sejong Special Self-governing City



- City Government
 - First of its kind in Korea
 - Established on July 1, 2012
 - Incorporating Yeongi, parts of Gongju and Cheongwon

Sejong	465 sq km
MAC	73 sq km

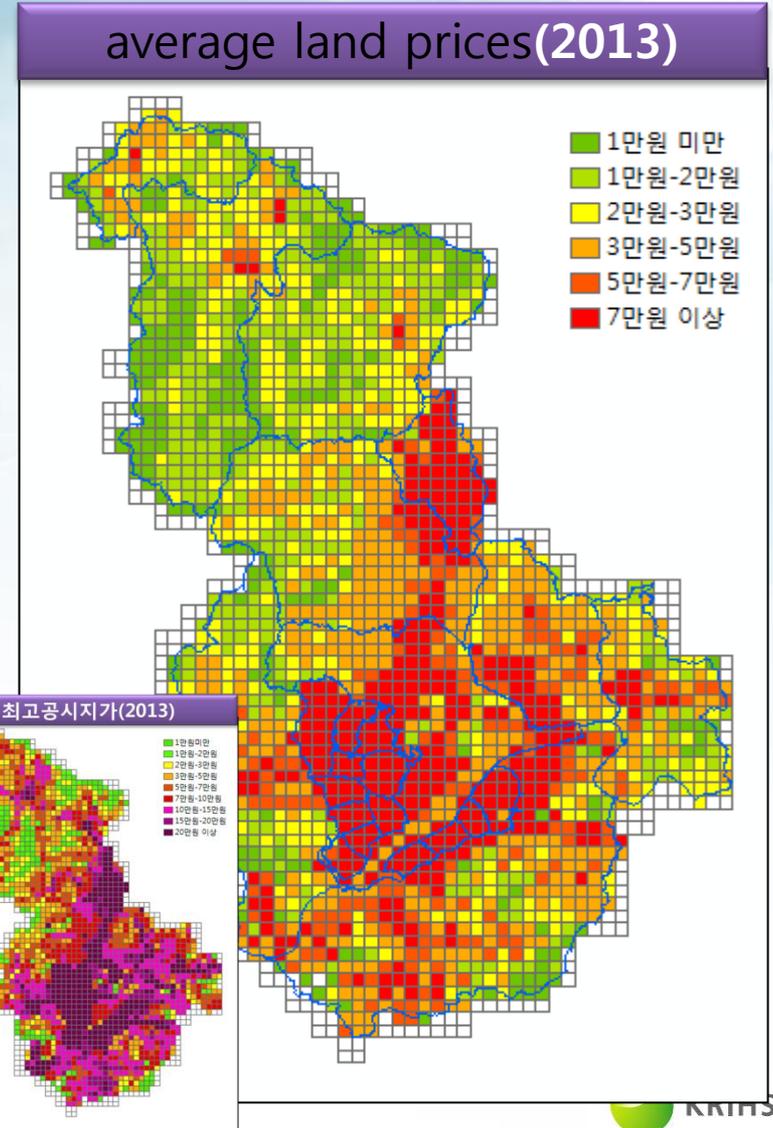
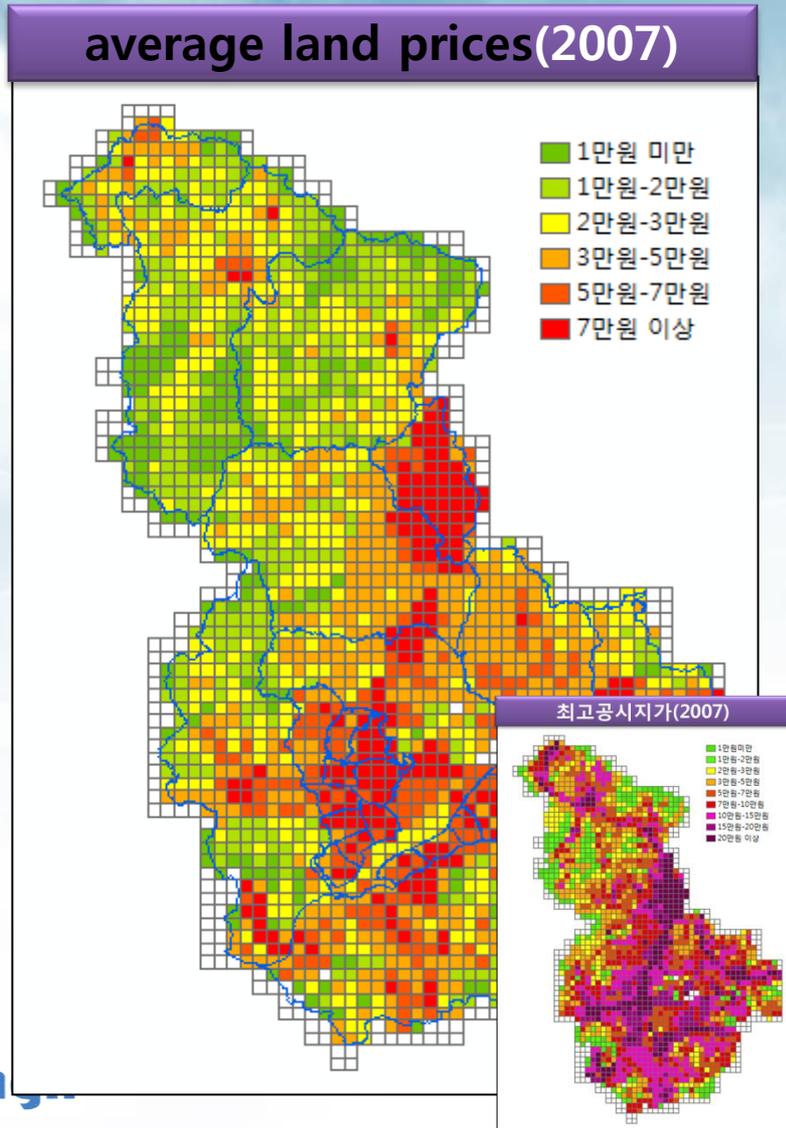
- Project area: 73 sq km
- Project cost: KRW 22.5 trillion committed 9.7 trillion as of Feb 2013
- Population target: 500,000 density: 68 person/hectare
- Completion: 2030
- Developer: Land & Housing

Multifunctional Administrative City

Land price Statistical map(Sejong City)



◆ spatial distributions of average land prices



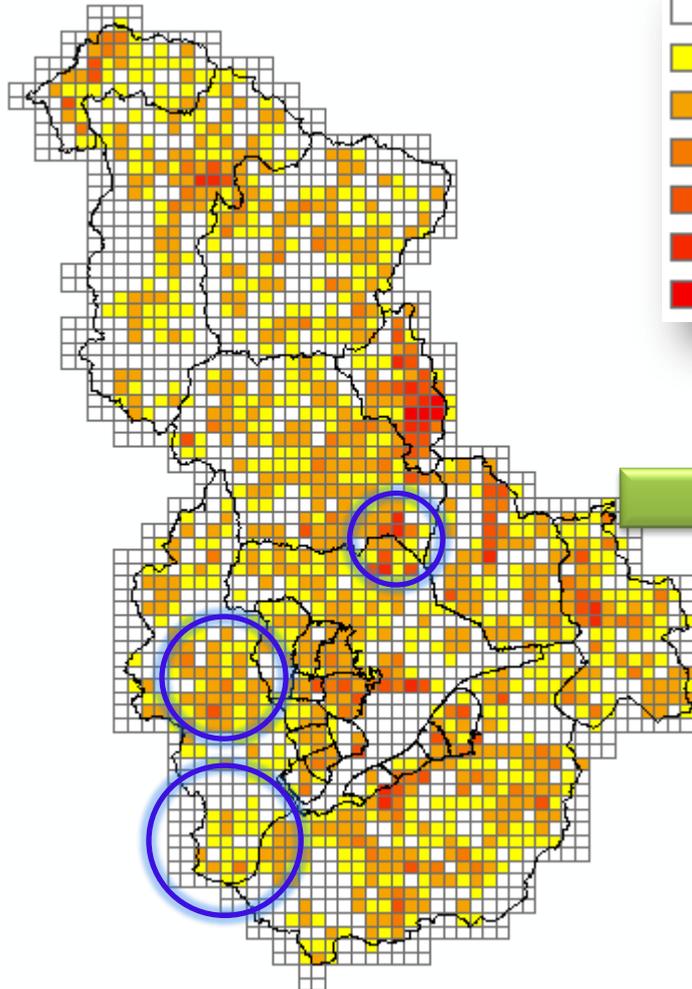
Building Statistical map(Sejong City)



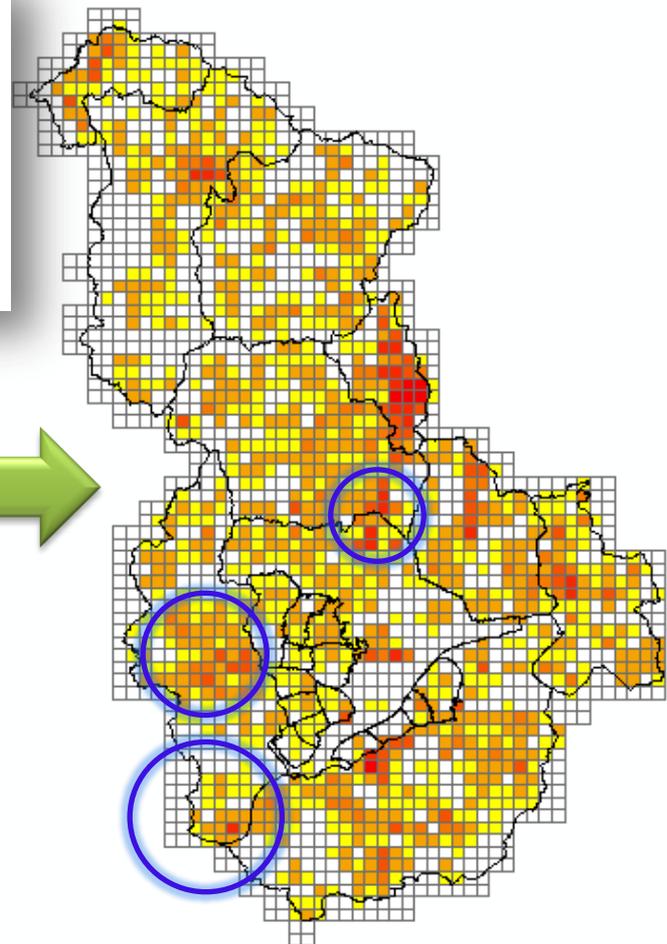
◆ Spatial distributions of residential houses

residential houses (2007)

residential houses (2013)



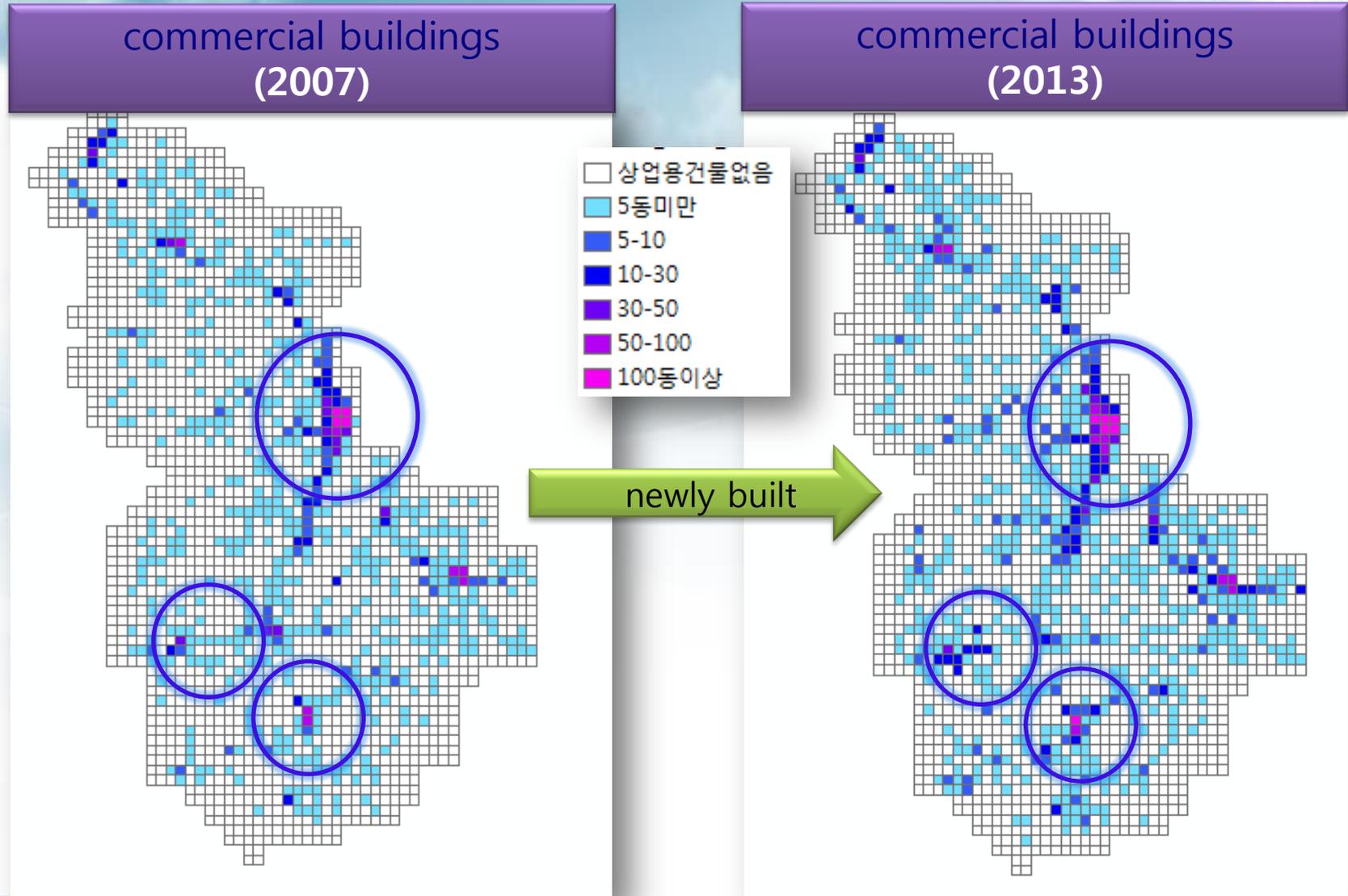
newly built



Building Statistical map(Sejong City)



◆ Spatial distributions of commercial buildings

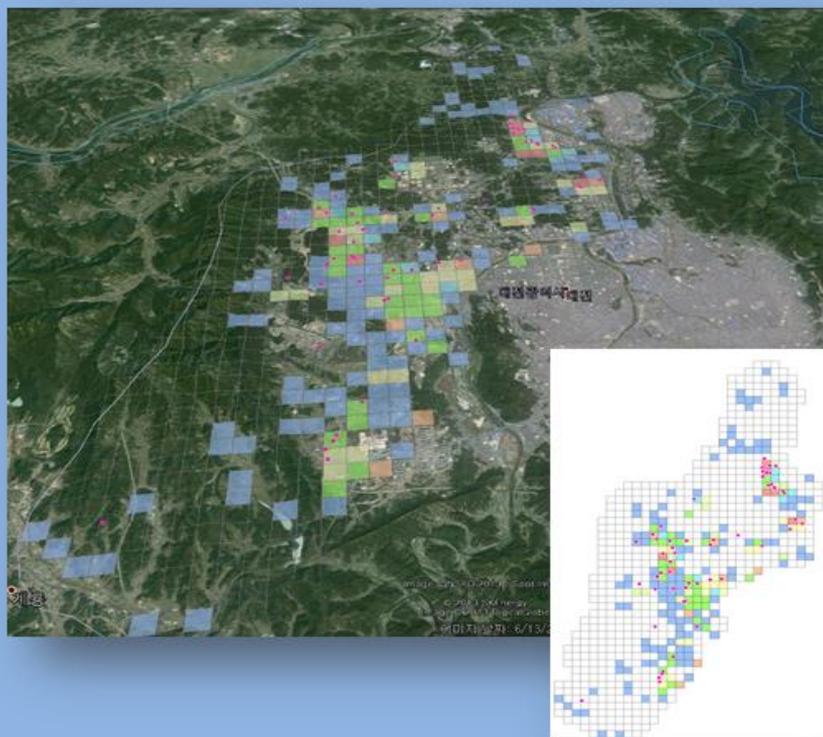


Application of Grid-based Statistical Map

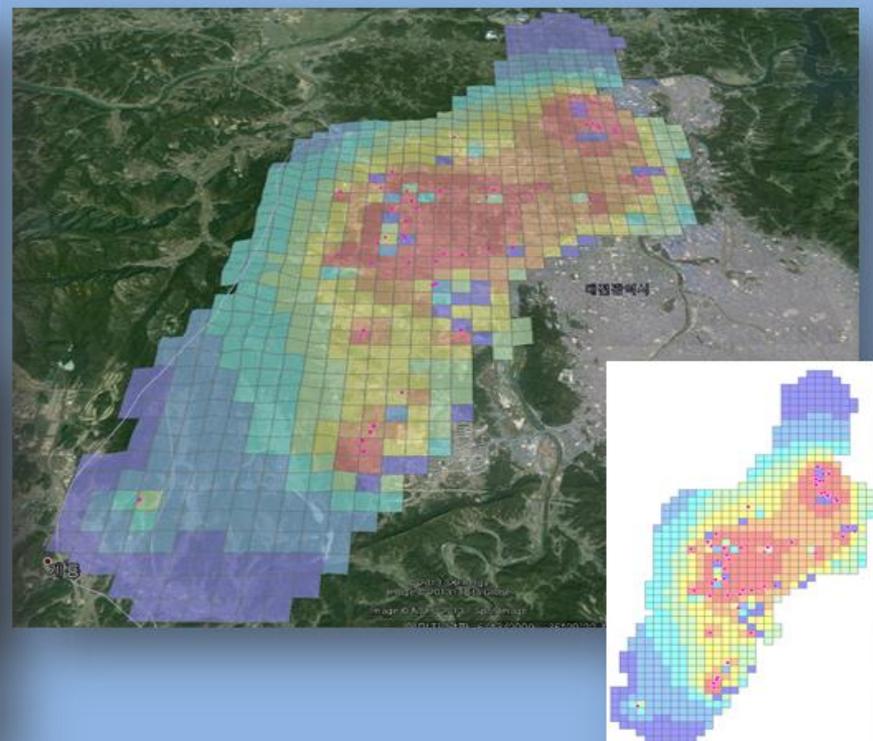


- ◆ To identify where accessibility to day care are problematic in the sense that the number of day care facilities is relatively smaller in the areas with denser population.

Distribution of infants & children



Insufficient day care facilities





Summary

- Address-based linking of heterogeneous data has enabled the dynamic production of statistical maps at a varying range of spatial unit.
- Extending this data-linking framework to other government information systems would further improve the usefulness of land survey information.

Future work

- Standardization of diverse systems for geo-addresses
- Enhancement of the methodological framework for address-based data matching

Thank you for your attention

