# Land Management through Establishment of Land Information System

국토교통부
Ministry of Land,
Infrastructure and Transport

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# 1. The Cadastral System in KOREA

## Current Situation

- Parcels:  37 millions
- Cadastral map: 748,000 sheets
- Type of Land use
  - Forest (65%), agricultural (21%)
  - Residential & commercial (3%)
  - Road & rail (3%), Other (8%)

## Roles in society

- Guarantee of property rights
- Key of spatial data infrastructure
- Support of a secure land market

# 1. The Cadastral System in KOREA (Milestone)

## Establishment Stage (1910 ~ )

- Cadastral Book and Cadastral Map establishment to

  Land survey project(1910~1917), Forest survey project(1912~1918)

## Settlement Stage (1950 ~ )

- Legislation of Cadastral Act

  - Fiscal cadastre(All land parcels are registered)

## Digitalizing Stage (1992 ~ )

- Cadastral book digitization(1992)

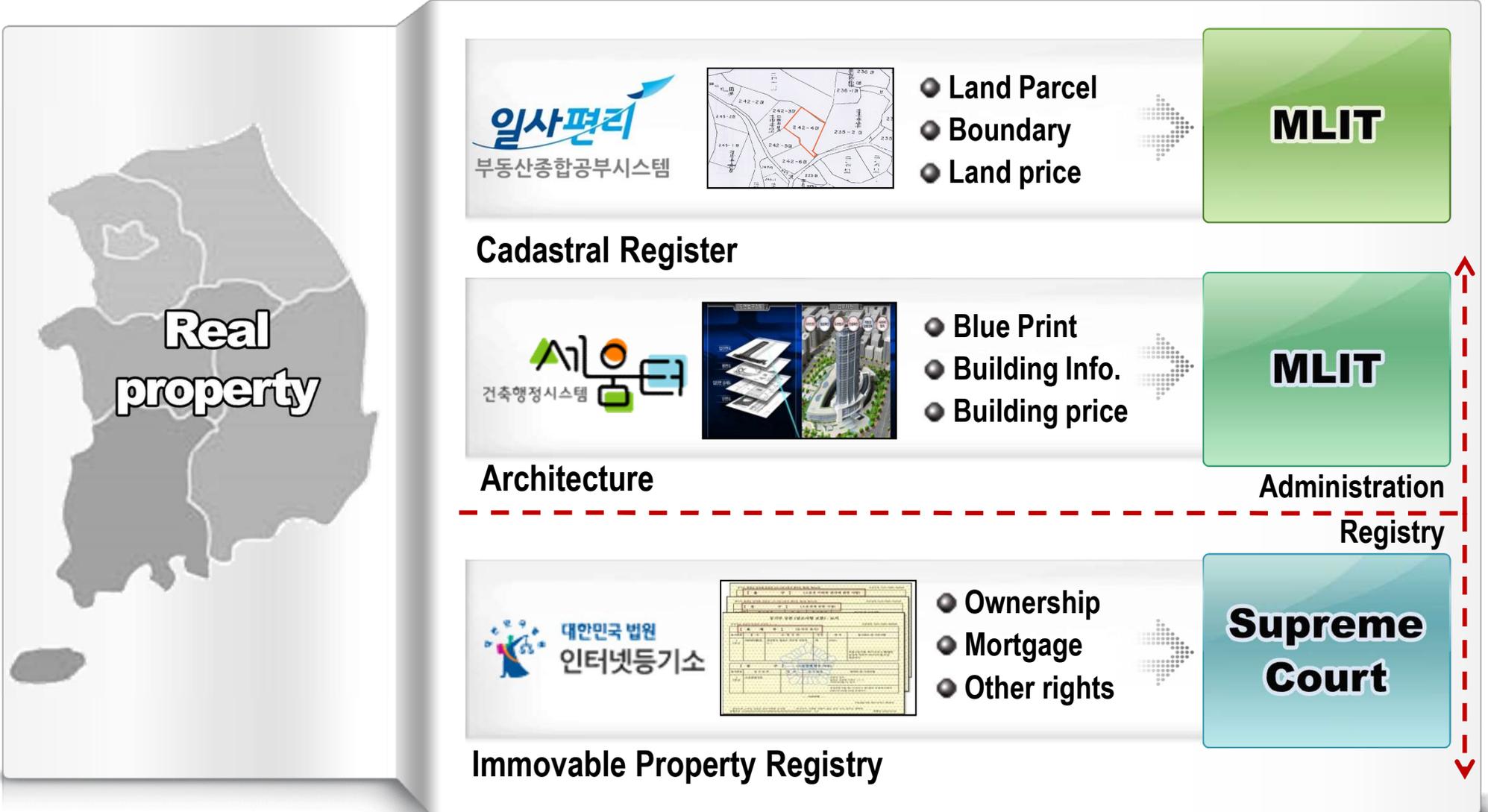  Cadastral map digitization(2005) / On-line network

## Development Stage (2011 ~ )

- Establishment of Special Law on Cadastral Resurvey (Sep. 2011)
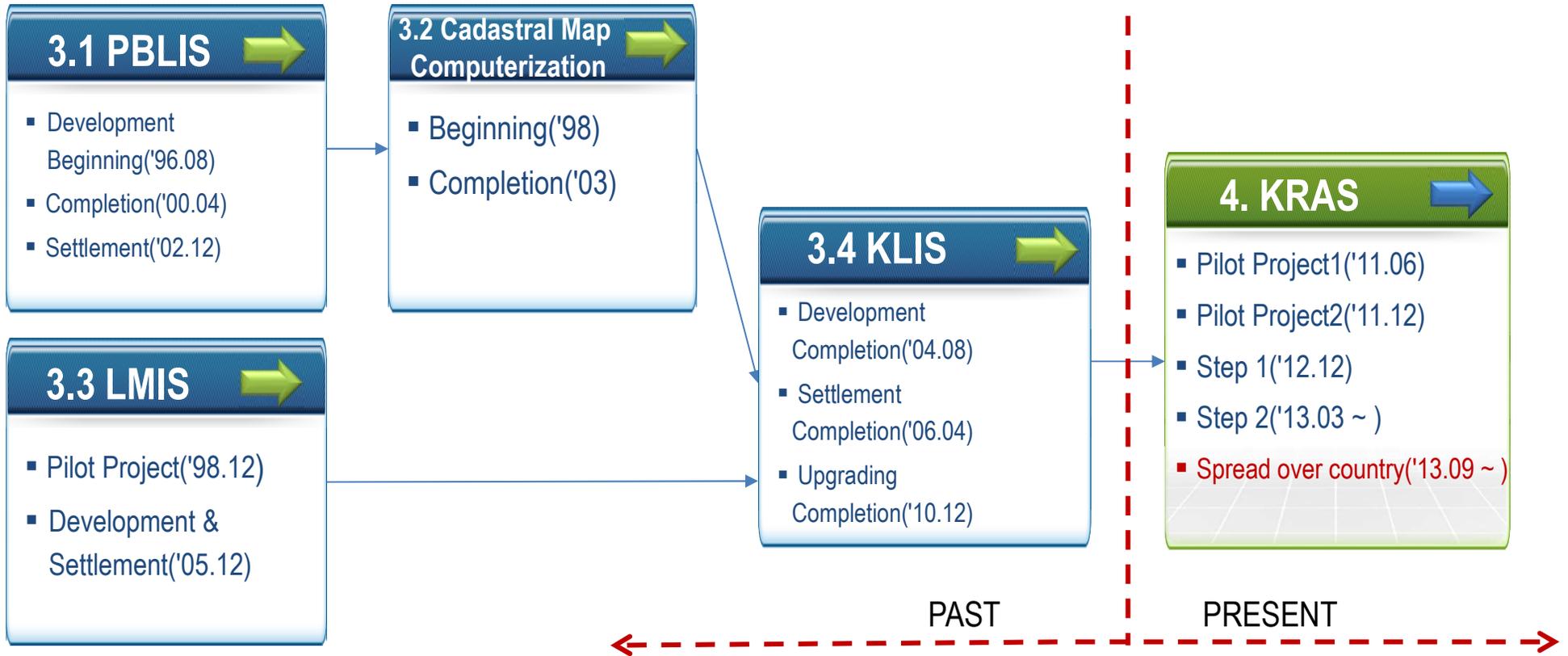
  18 Real property Information Unification Project(2011~)

# 2. Management of Real property Information

**Real property**

### Cadastral Register
- Land Parcel
- Boundary
- Land price

**MLIT**

### Architecture
- Blue Print
- Building Info.
- Building price

**MLIT**

Administration

Registry

### Immovable Property Registry
- Ownership
- Mortgage
- Other rights

**Supreme Court**

MLIT : Ministry of Land, Infrastructure and Transport

# 3. Development phase of Real property Information

## 3.1 PBLIS

- Development Beginning('96.08)
- Completion('00.04)
- Settlement('02.12)

## 3.2 Cadastral Map Computerization

- Beginning('98)
- Completion('03)

## 3.3 LMIS

- Pilot Project('98.12)
- Development & Settlement('05.12)

## 3.4 KLIS

- Development Completion('04.08)
- Settlement Completion('06.04)
- Upgrading Completion('10.12)

## 4. KRAS

- Pilot Project1('11.06)
- Pilot Project2('11.12)
- Step 1('12.12)
- Step 2('13.03 ~ )
- Spread over country('13.09 ~ )

PAST | PRESENT

PBLIS(Parcel Based Land Information Systems

LMIS(Land Management Information Systems)

KLIS(Korea Land Information Systems)

KRAS(Korea Real Estate Administration Intelligence System)

# 3.1. Parcel Based Land Information System(PBLIS)

## ■ Objective

- To support land administration linked to cadastral map & land register in order for management of cadastral records, surveying computation, documentation of surveying results

## ■ Summary

- (Duration) Aug. 1996 ~ Dec. 2002(about 5yrs)
- (Budget) U$1.1million

## ■ Involved Bodies

| MOSPA | Provincial Gov. | LX | Ssangyong |
|---|---|---|---|
| ▪ Overall consulting<br>▪ Providing pubic cadastral data | ▪ Checking user's requirements<br>▪ Function inspection | ▪ User's requirements<br>▪ Directing system development<br>▪ System development & Technical instruction | ▪ Application program development<br>▪ Distribution & Training<br>▪ Linking to other cadastral system |

# 3.2 Computerizing Cadastral Map

## ■ Objective

- Concluded in Jul, 1998 to computerize entire cadastral maps
  (about 740,000 sheets)

## ■ Summary

- (Duration) 1999 ~ 2003(about 5yrs)
- (Process)  Scanning & Digitizing(STEP 1) ⇒ Correction & DB Set-up(STEP 2)

## ■ Involved Bodies

| MOSPA | Provincial Gov. | Local Gov. | LX |
|---|---|---|---|
| ▪ Overall leading | ▪ Organizing district works<br>▪ Detail plans | ▪ Supervising work implementation<br>▪ Collecting data & DB Set-Up | ▪ Conducting works<br>▪ Collecting data & DB Set-Up |

# 3.3 LMIS

## ■ Objective

- To improve land administration process based on integrated data of topographic, cadastral, and landuse information

## ■ Summary

- (Duration) Dec. 1998 ~ Dec. 2005(about 8yrs)
- (Budget) about U$100 million

## ■ Involved Bodies

| MOLIT | Project Offices | SK, Samsung |
|---|---|---|
| ▪ Overall leading | ▪ Organization : KCSC, LH,  Association of GIS Professionals<br>▪ Planning, Project management, information analysis & service, system management, research | ▪ Analysis/Design/Realization /Test<br>▪ Distribution/Training |

# 3.4 KLIS

## ■ Objective

- To integrate into one system(LMIS & PBLIS -> KLIS)

## ■ Summary

- (Duration) Jun 2003 ~ Aug 2004 (about 14 months)
- (Budget) U$3 million

## ■ Involved Bodies

| MOLIT | Local Gov. | KHRIS | LX , LH | Project Offices |
|---|---|---|---|---|
| ▪ Suggesting KLIS VISION | ▪ System management<br>▪ DB Maintenance<br>▪ Data inspection | ▪ Consulting<br>▪ Research on master-plan & regulations<br>▪ Defining standards & modeling | ▪ Advising project implementation<br>▪ Detail plan<br>▪ Project management<br>▪ Quality inspection | ▪ Analysis/Design/Realization/Test<br>▪ Distribution<br>▪ Operating Call-Center |
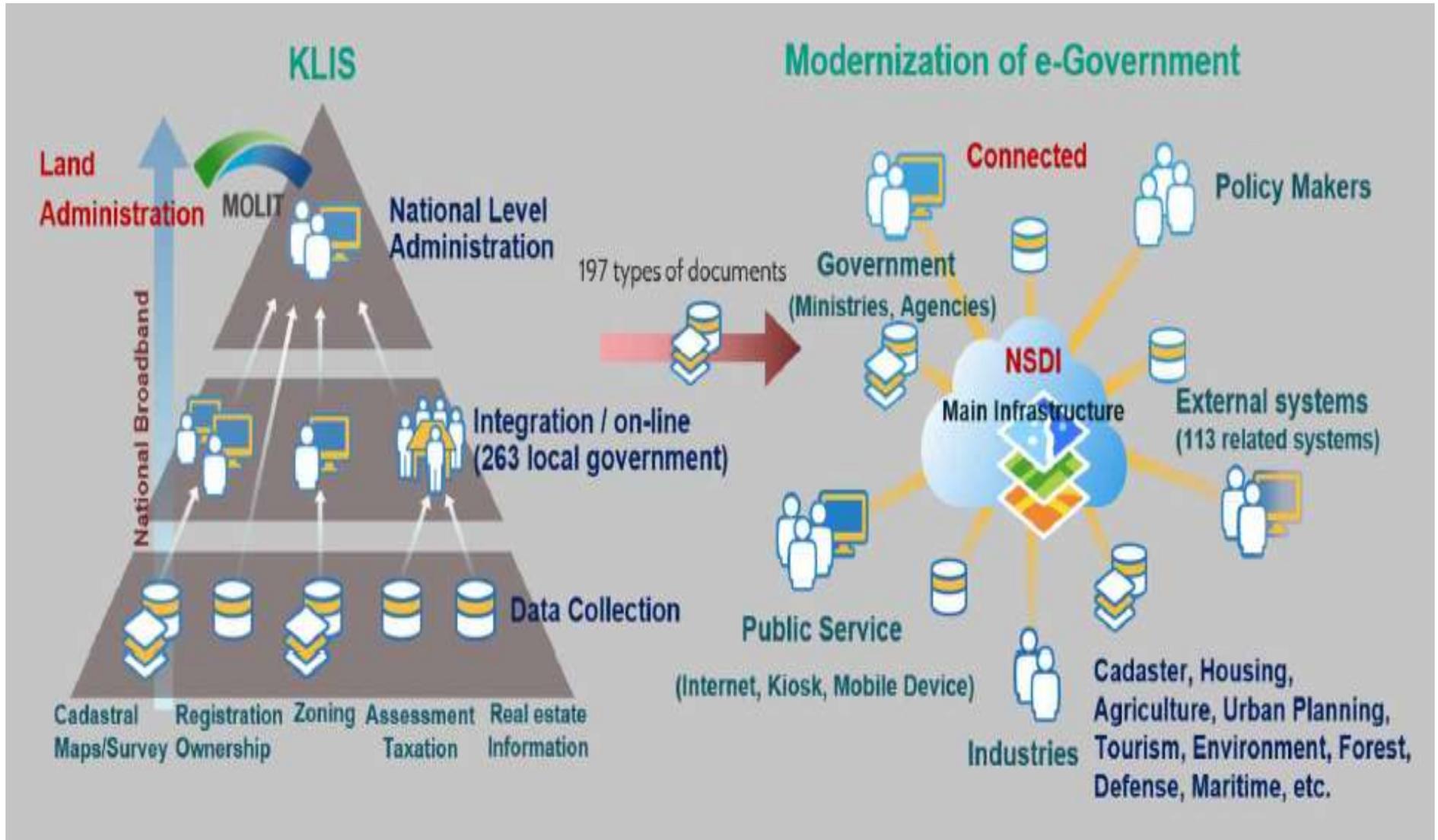
## ■ Background of the System

- Increasing interest in real property related information
- Managing cadastre, architecture and registration information separately
- Errors with each register and  non-coincident errors with other registers

⇒ **Difficulties with spatial data integration**

## ■ Purpose of the System

- To correct real property data errors
- To establish a real property integration system

## As-Is   2 ministries, 4 systems, 18 registers

**1975**  국토교통부 Ministry of Land, Infrastructure and Transport — **Cadastral administrative system**
· Cadastre · Forest · Building site
· Boundary coordinates · Joint ownership
5종 types

**1990**  대법원 SUPREME COURT OF KOREA — **Real property registry system**
· Land register · Building register
· Collective building register
3종 types

**1996**  국토교통부 Ministry of Land, Infrastructure and Transport — **KLIS**
· Cadastral map · Forest map
· Land use planning certificate
· Individual public land & house price
· Collective public land price
6종 types

**1997**  국토교통부 Ministry of Land, Infrastructure and Transport — **Architecture administrative system**
· Building register(Individual)
· Building register(Collective)
4종 types

## To-Be   Integrated property register & Tailor made

| 고유번호 | 4143010100-1-0084-0000 | | | | | | | 부동산종합증명서(토지, 건물) | | 건축물명칭 | | 장번호 | 6 - 1 |
| 소재지 | 경기도 의왕시 고천동 84 | | | | | | | | | 동명칭 | | 대장유형 | 일반 |

토지 표시 (관련필지가 다수일 경우 별도 발급)

건물 표시 ( · 표시항목이 총괄일 경우 합계를 표시)

토지 소유자 / 건물 소유자 (집합건축물일 경우 기재하지 아니합니다)

토지이용확인도[등록축척 1:1200 / 출력축척 1:1000]

이 부동산종합증명서는 부동...

- ☑ 토지기본정보 — ☑ 도면정보 **Plan info.**
- ☑ 건물기본 — ☑ 토지,건물소유 **Ownership of land, building**
- ☐ 건물층별 — ☐ 공유지 **Common land**
- ☐ 건물인허가 — ☐ 소유이력 **History of owner**
- ☐ 건물호별 — ☑ 토지이용 **Land use**
- ☐ 토지이력 — ☑ 공시지가 **Appraised value of land**
- ☐ 건물이력 — ☑ 주택가격 **Housing price**

Basic land info.
Basin building info.
Building floors info.
Permission of the building
History of the land
History of the building
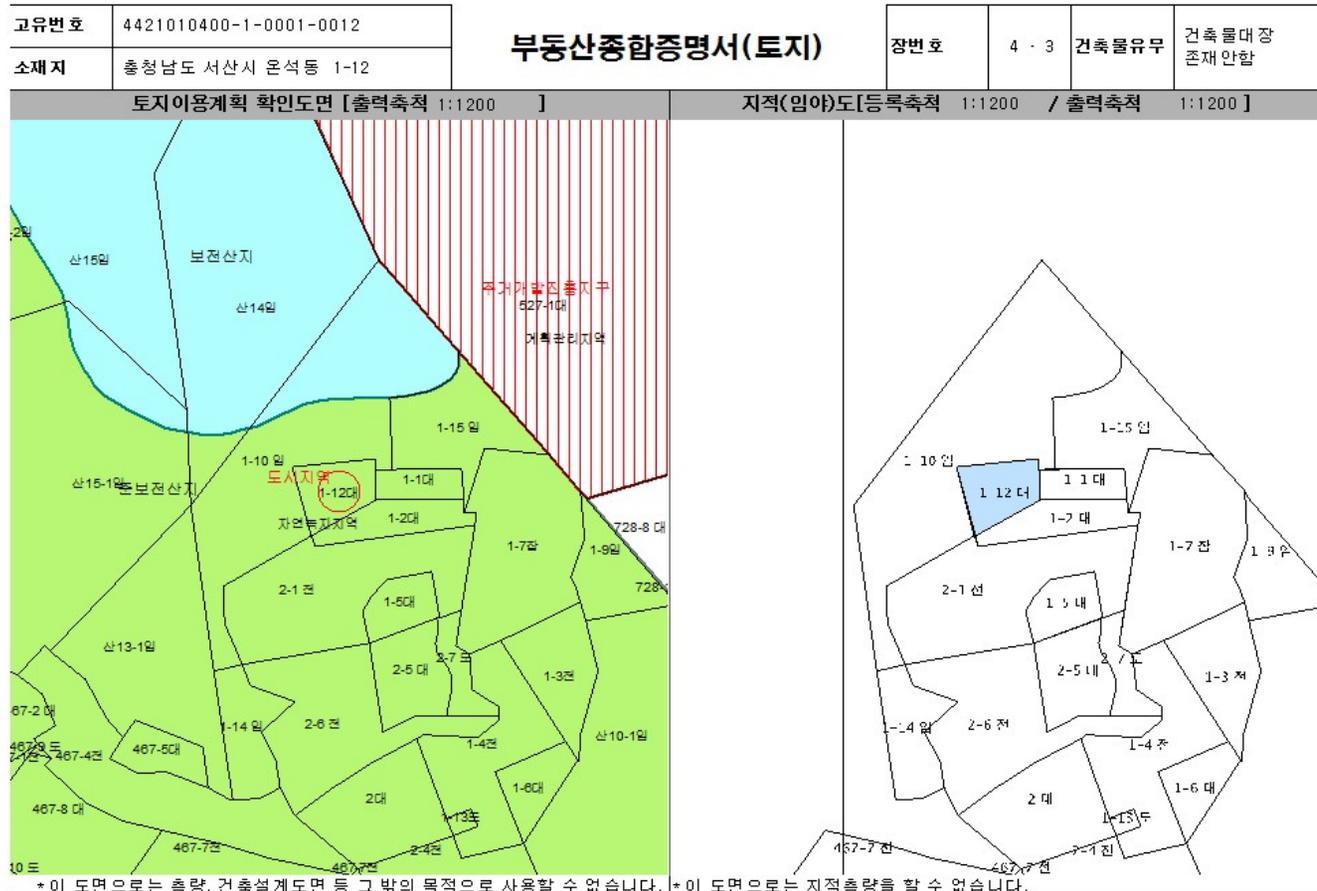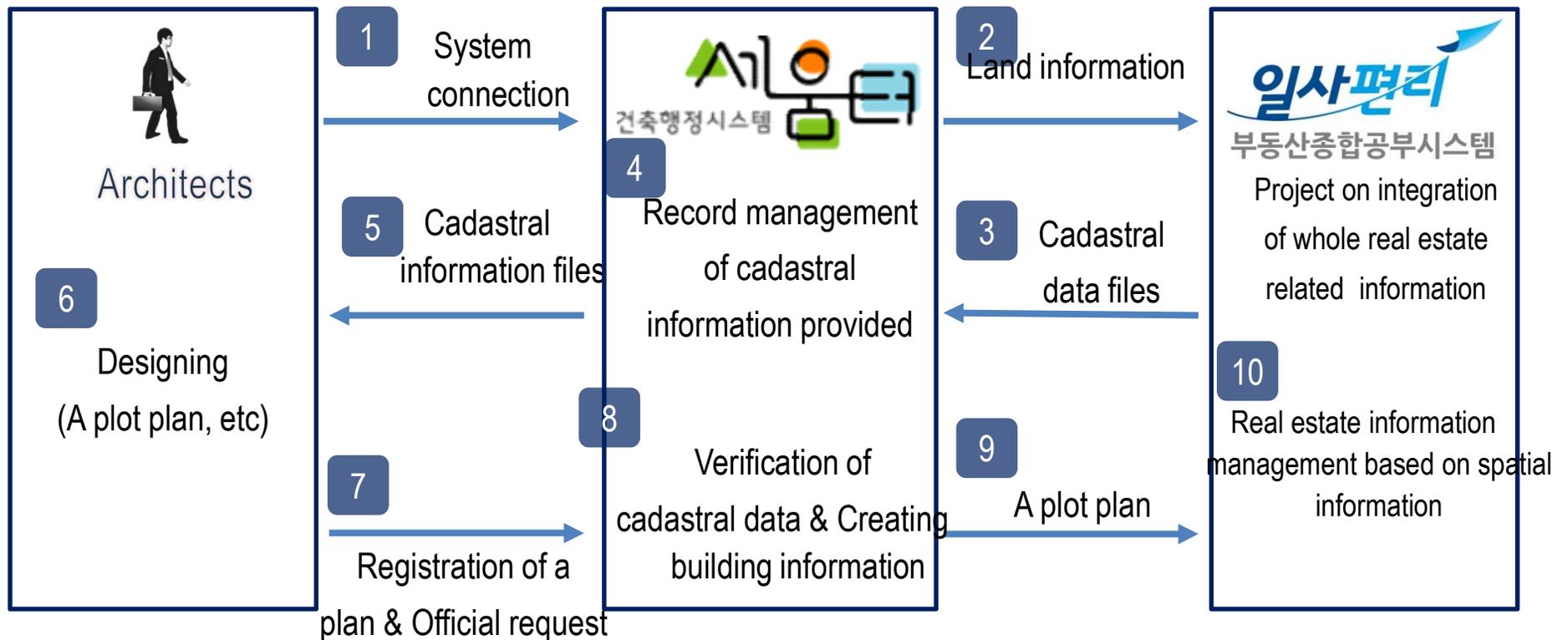
# 4. Real Property Unification Register System(Reengineering)

**Based on Cadastral Information, Architecture Designing!**

**Then, to be real-time updating condition "Cadastre + Building information"**

Enhancing confidence in the real property administration &
protecting public's property rights

Correction of the
real property information

Real property business
process reengineering

Establishment and
management of the real
property integration register

| 2011 | 2012 - 2013 | 2014 -2017 | 2018 ~ 2019 |
|---|---|---|---|
| **Gaining the Sympathy** | **Sympathy Diffusion & Inducing Participant** | **Stable Settlement** | **Activating Business** |
| ▪ 11 types information<br>▪ Pilot Operation<br><br>Cadastral (7) + Architecture (4) | ▪ 11 types information<br>▪ Whole Country | ▪ 15 types information Whole Country ('14)<br>▪ 18 types information Whole Country ('16) | ▪ Encrypt personal information<br>▪ KRAS pilot project based on block chain |

## MOLIT

- Related

  Division

| Land Policy Bureau | National Spatial Data Infrastructure Policy Bureau |
|---|---|
| - Land Policy Division | - Territorial Information and Policy Division |
| - Real Estate Industry Division | - National Spatial Information center |
| - Real Estate Valuation Division | - Cadastral Planning Division |

- Role - Planning for intelligence automation

    - Overall organizing

## Local Gov.

- Related divisions

Technical Guidance/Land Survey

Land Information/Land Administration

Land price survey/Land Management

Cadastral Management/Cadastral Administration

- Role – Collecting technical problems,

    - Verifying function & data

**Mutual Assistance
for Successful Project!!**

## Project Management Org.

- LX KCSC

- Role : Advising project implementing plan, Project

  management support, Quality inspection, Technical training

Full charge of real estate related information repairs

## Implementaion Org.

- SamsungSDS, WAVUS, Allforland, Solideosystems

- Role : Defining & analyzing

  requirements/Analysis/Designing,

  Realization/Test/Data conversion, Distribution &

  Installation, Operating Call-Center

# 6. KRAS pilot project based on block chain

* **KRAS** (**K**orea **R**eal estate **A**dministration intelligence **S**ystem)
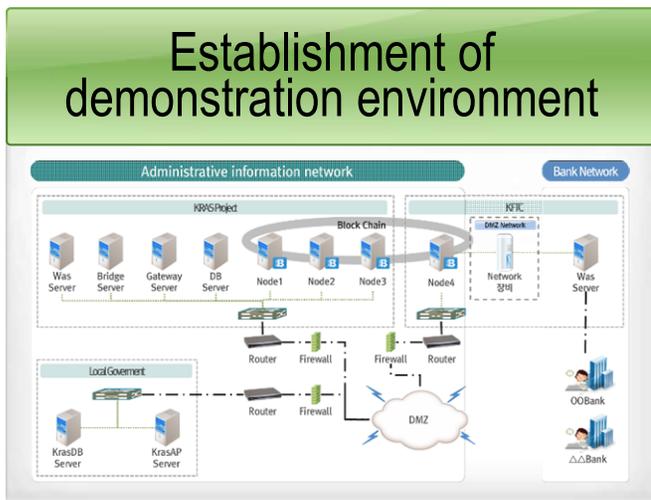
## ◼ Objective

- ● Examination of applicability of block chain technology to KRAS

## ◼ Summary

- ● **(Target organization for pilot service)** KFTC(Korea Financial Telecommunications & Clearings Institute), Jejusi, Seogwiposi

- ● **(Type of pilot service)** Land register, Site right register, Publicly owned land register

## ◼ Method

| Establishment of demonstration environment | Development of pilot system | Verification and testing |
|---|---|---|
|  | ▪ 블록체인 내 부동산종합공부 저장<br>▪ 개인정보 암·복호화<br>▪ PNU 기반 검색<br>▪ 노드현황 조회<br> | ▪ 데이터 누적에 따른 속도 변화 테스트<br>▪ 토지대장 데이터 크기별 응답속도 테스트<br>▪ TTA 성능시험평가<br> |
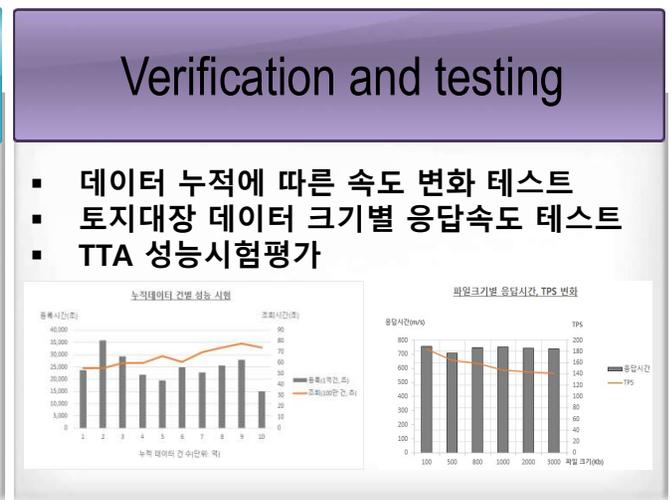
Real estate one-stop trading system based on smart contract that
supports complicated and troublesome tasks such as real estate transactions, bank loans,
transfer of registered ownership, declaration of real transactions, proof of income
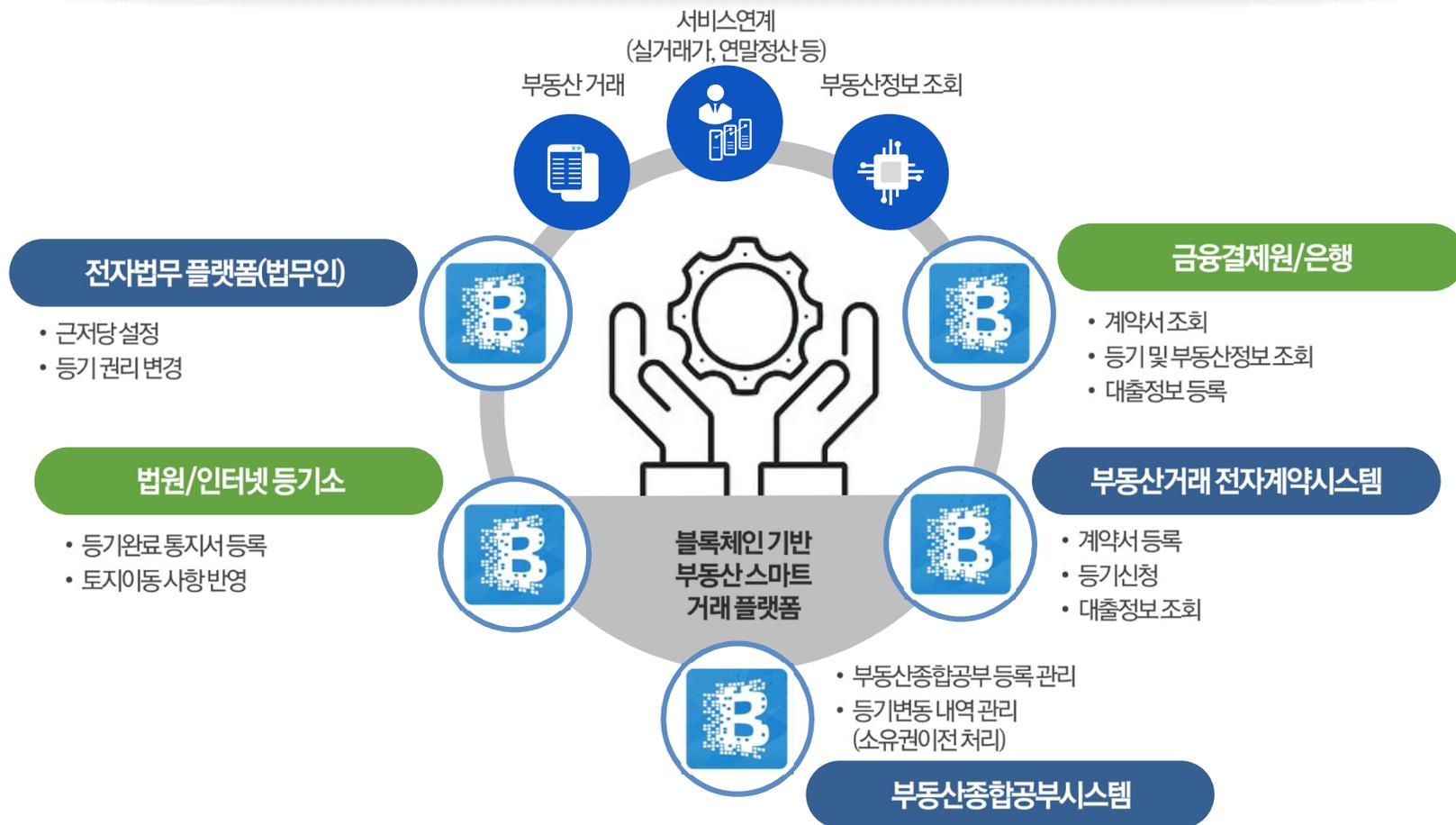
## ■ Expect Effect

● Reduced commission from paper reduction : 17billion ~ 65billion won

● If you build a link chain-based linkage system, your time and manpower will be shorter than building it with an existing system

⇒ Reduced time: 3 months -> 1 month
⇒ Reduced labor cost: about 4,692 hours / 695.6 billion won

## ■ Utilization Plan

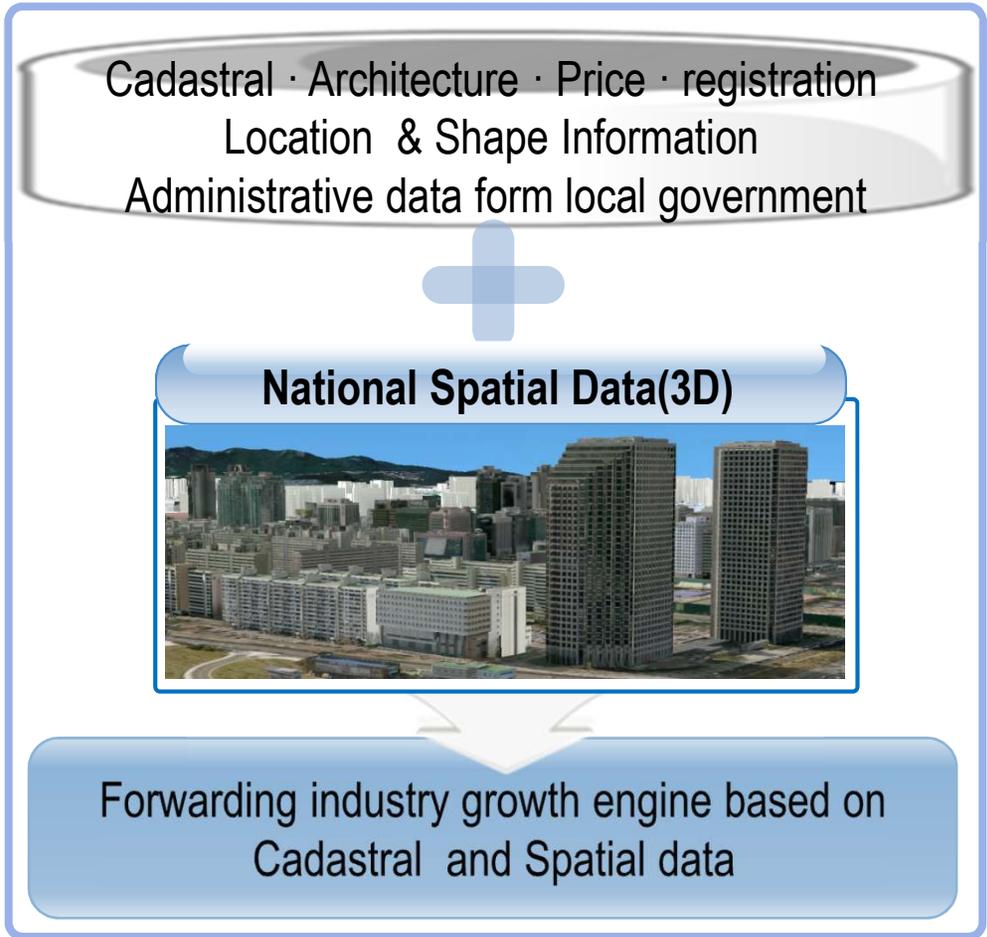| Promotion of national convenience |
| --- |
| ▪ Minimize complicated and troublesome tasks such as lending, change of registration, notification of actual transactions, year-end settlement<br>▪ Providing services through system linkage based on block chaining without providing separate supporting documents |

| Establishing reasonable policy |
| --- |
| ▪Tracking real estate-related crime, including illegal inheritance, bestowal, and tax evasion<br>▪ Ability to analyze convenience and unusual transaction patterns by electronically documenting real estate transaction information |

# 3. Real Property Information Reform Project(Strategy)

**Government will be management of multi Dimension(2D, 3D)** (Real Property and Geo information)

**Forwarding industry growth engine based on Cadastral and Spatial data.**

**Land Use, Area, Category**

**398-11**

**Underground Facilities**

**Architecture Use, Structure, Current state**

**Floor Use, Business Establishment**

Government will be management of
multi Dimension(2D, 3D)
(Real Property and Geo information)

Cadastral · Architecture · Price · registration
Location & Shape Information
Administrative data form local government

**National Spatial Data(3D)**

Forwarding industry growth engine based on
Cadastral and Spatial data
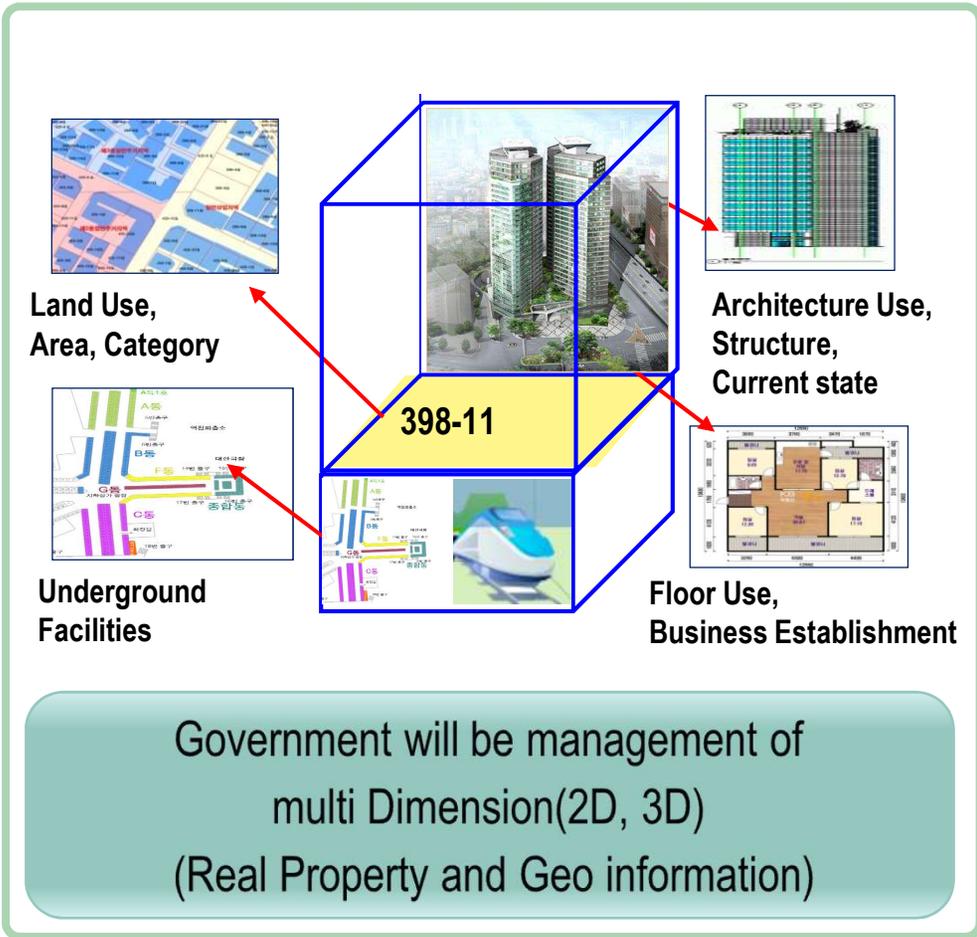
# 4. Real Property Unification Register System(Practical use)

**Application Service (Public, Private Sectors)**

| | | | | |
|---|---|---|---|---|
| Eradication of junk food | Management of domestic animals' disease | Navigation | Updating portal maps | Mobile App. |

Utilizing integrated real estate information

**Application Distribution**

Administration Innovation ··· Spatial-Big data ··· Cloud Service ··· Service platform ··· Mobile APP ··· Mash-up Service ··· OPEN API ··· Updating Portal maps

Providing integrated real estate information

**Creating Integrated Real Estate Information**

Integrated real estate information

Integrated DB of whole real estate information

Real Estate Spatial Information ➕ Real Estate Attributes

➕

Administrative DB Link into other divisions

Permission | Citizen | Tax | Business Operator

## Administrative Process Innovation!

As-is : Examining map sheets and field(parcel)

To-be : One-Stop process based on spatial information



Floor plan

Possible to register

Impossible to register
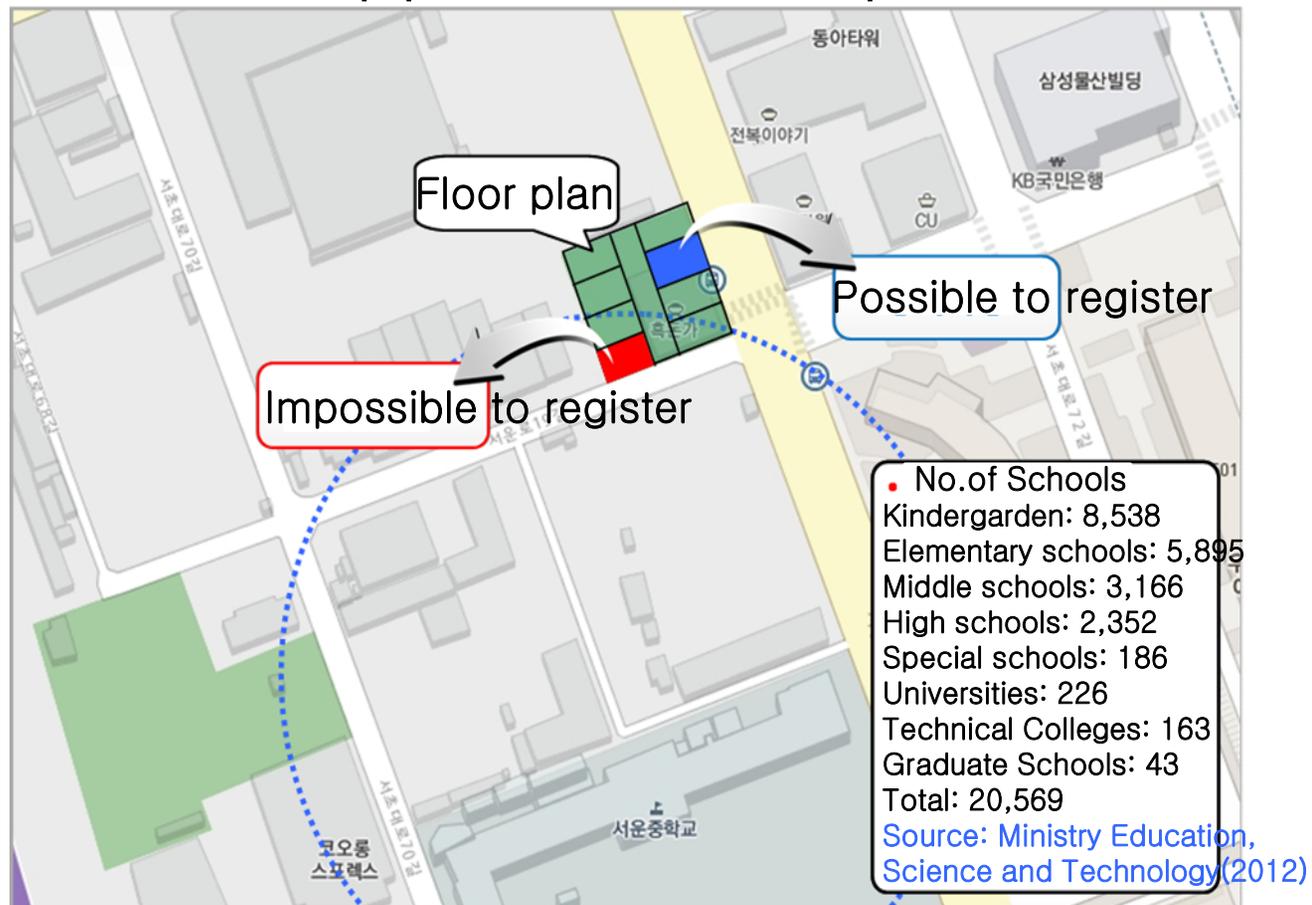
. No.of Schools
Kindergarden: 8,538
Elementary schools: 5,895
Middle schools: 3,166
High schools: 2,352
Special schools: 186
Universities: 226
Technical Colleges: 163
Graduate Schools: 43
Total: 20,569
Source: Ministry Education,
Science and Technology(2012)

## Increasing welfare facilities!

## By Spatial analysis of residence's features

## (assets, age, family numbers)



No. of facilities
Population of more than 65 years old: 5,424,667
Facilities for elder: 70,643
Limit of number accepted in facilities for elder:158,839
Population of less than 12 years old: 6,264,398
Facilities for kids: 280
Limit of number accepted in daycare center: 1,621,948
Number of kids in daycare centers: 1,348,729
Areas without daycare center: 474
Source: Ministry of Health and Welfare(2010~2011)
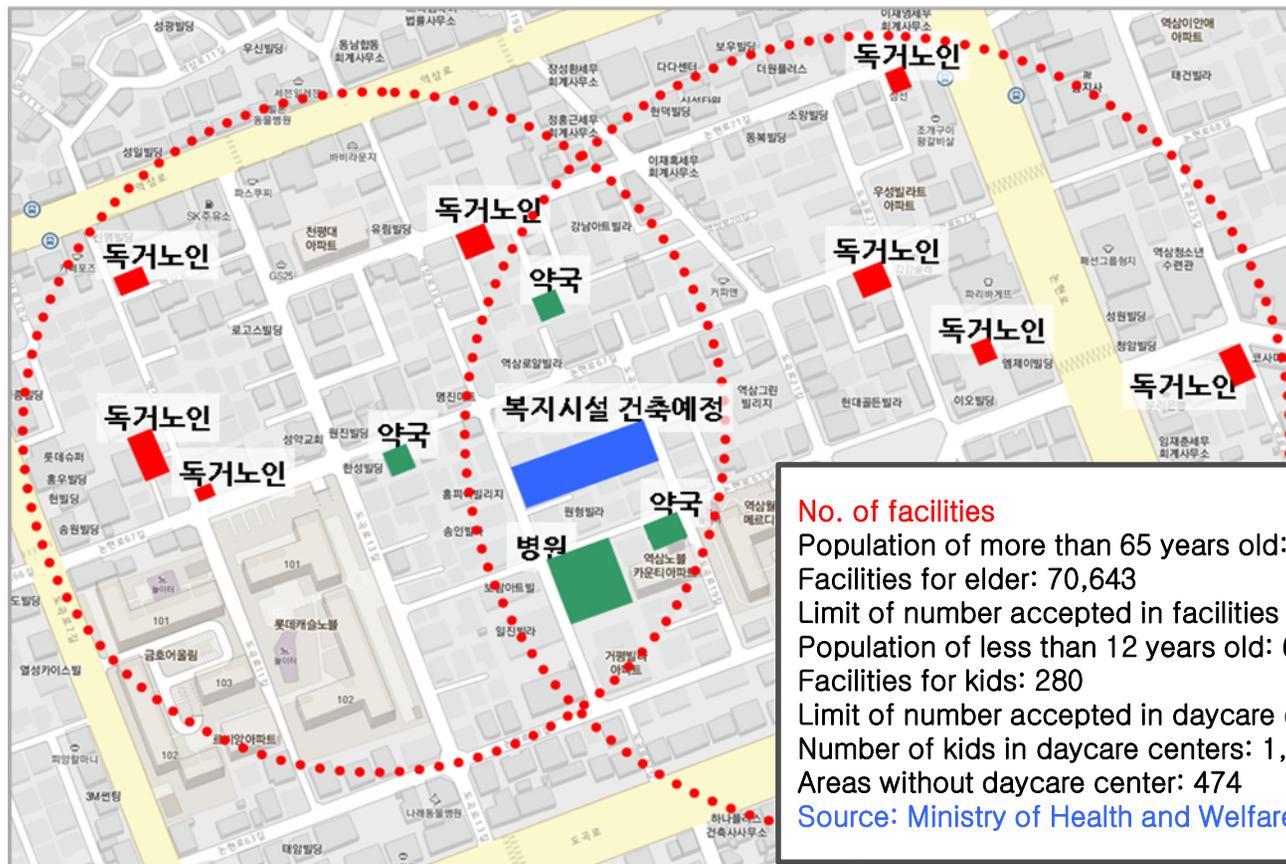
Taxation equality and Corruption Elimination.

HOW ? Can compare tax imposition rate with adjacent parcels

by analysis of geographic conditions!



Gross Real Estate Tax
Target for charge: 39
Less than 600million won:10
Less than 1.2billion won:10
Less than 5.0billion won:12
Less than 9.4billion won: 2
More than 9.4billion won:1
A house for a family of more than
60 years old: 4
Amount of levy: 1232800thousand won
Account due: 98,624thousand won
Tax collection rate:92%

Thank you.
감사합니다.