An approach to real estate information unification

2011. 5

Ji-Yeon, JEONG

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4. The real estate integration system
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Introduction

BACKGROUND
- Increasing interest in real estate 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
- To correct cadastral data errors
- To establish a real estate integration system

REAL ESTATE INFORMATION

Current status (1)
Current status(2)

**TYPES OF ERRORS**

- **Cadastral Information System**
  - Discrepancies between land register and cadastral map: 0.47 million
  - Doesn’t apply to altered land & land value information: 2.7 million

- **Architecture Information System**
  - Errors with apartment value: 7.7 million
  - Errors with ownership arrangement: 5.75 million
  - Errors with land alteration & registration commission: 1.03 million

- **Korea Land Information System**
  - Errors with ownership arrangement: 5.75 million
  - Errors with land alteration & registration commission: 1.03 million

- **Real Estate Registration System**
  - Errors with ownership arrangement: 5.75 million

**PURPOSE**

- Improvement in the quality of cadastral maps
- Establishment of a system for a consistent data correction process

**PROCEDURE**

1. **Database establishment**
   - Reconnaissance surveying data
   - Aerial photos
   - Cadastral map
   - Original cadastral map

2. **Data analysis**
   - Attribute data
   - Graphic data
   - Error analysis

3. **Data correction**
   - Reference data
   - Correction
   - Cadastral data

4. **Output**
   - A Correction manual
   - A Correction system

**The pilot project on cadastral data correction**

Korea Cadastral Survey Corp.
1. DATABASE ESTABLISHMENT

- Land register
- Forestry register
- Original cadastral map
- Cadastral map
- Reconnaissance surveying data
- Cadastral map
- Aerial photos

Scanning

Scanning

Vectorizing

GPS survey

Geo-referencing

Cadastral Database

Causes of errors

- Map redrawing (Manually)
- Map computerization (Different algorithms)
- Land alteration (Errors in writing)
- Surveying results (Different control points)

Types of errors (16)

<table>
<thead>
<tr>
<th>Overlap</th>
<th>Gap</th>
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<tbody>
<tr>
<td>Divided parcel</td>
<td>Double line</td>
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<td>Polygon omission</td>
<td>Attribute data omission</td>
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<td>Area allowance</td>
<td>Linear distortion</td>
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<td>Wrong arrangement</td>
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<td>Double parcel number</td>
<td>Double polygon</td>
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<td>Boundary overlap</td>
<td>Boundary omission</td>
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<td>Registration omission</td>
<td>Etcetera</td>
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</table>
### 3. CORRECTION

#### 1. Historical survey
- Control point account book
- Original cadastral map
- Surveying result

#### 2. Comparing boundaries between on the ground and map
- Reconnaissance surveying data
- Aerial ortho photos
- Actual surveying

#### 3. CORRECTION – Reference data for each type of error

<table>
<thead>
<tr>
<th>Types of errors (16)</th>
<th>Reference data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overlap</td>
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- Control point account book
- Original cadastral map
- Surveying result

- Reconnaissance surveying data
- Aerial ortho photos
- Actual surveying
The pilot project on cadastral data correction

CADASTRAL DATA CORRECTION SYSTEM (1)

CADASTRAL DATA CORRECTION SYSTEM (2)
The pilot project on cadastral data correction

CADASTRAL DATA CORRECTION SYSTEM (3)

Real estate integration system

AS-IS

CADASTRE and LAND

CIS

KLIS

ARCHITECTURE

REGISTRATION

TO - BE

Real estate integration system

Integration register DB

Land

Map

Architecture

Common

Cost

Ownership

History

Standardized Interworking Service

Interworking system & Service

Integration register(sample)
Real estate integration service

- Approval of housing
- Approval of form
- Approval of mountain
- Approval of development

Inquiry
- Inquiry for land alteration
- Inquiry for land ownership
- Inquiry for graphic data

Confirmation
- Notification
- Notification
- Notification
- Notification

Utilization of data
- Internet
- Smart phone

Automatic reception
- Batch processing
- Interworking

Institution
- Efficient information management
- Economical management cost of the integrated register

Administration
- Supplying reliable information for future improvement in land policies
- Reducing duplicated or similar activities

Public Service
- Solving public complaints
- Improving the quality of public services
Thank you for your attention!

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The Real Estate Information Unification Project

**OUTLINE**
- **Project Name:** The Real Estate Information Unification Project
- **Authority:** The Ministry of Land, Transport and Maritime Affairs
- **Period:** Feb. 2010 – Dec. 2014

**GOAL & TASKS**

*Enhancing confidence in the real estate administration & protecting the public’s property rights*

- Correction of the real estate information
- Establishment and management of the real estate integration register
- Optimization of the process for the real estate administration
FIG Working Week 2011
Bridging the Gap between Cultures
Marrakech, Morocco, 18-22 May 2011

Key-In

DB establishment

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</tbody>
</table>

Overlap

Type of error

Neighboring two polygons are overlapped

1  farm  20  Kim
2  paddy  40  Shin
3  ground  25  Jeong
4  farm  30  Kim

...  ...  ...
**Gap**

There is a gap between neighboring two parcels

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>farm 20 Kim</td>
</tr>
<tr>
<td>2</td>
<td>paddy 40 Shin</td>
</tr>
<tr>
<td>3</td>
<td>ground 25 Jeong</td>
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<td>4</td>
<td>farm 30 Kim</td>
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**Polygon omission**

An attribute data for a parcel on the land register but, no parcel on the cadastral map

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<tbody>
<tr>
<td>1</td>
<td>farm 20 Kim</td>
</tr>
<tr>
<td>1-1</td>
<td>farm 10 Kim</td>
</tr>
<tr>
<td>2</td>
<td>paddy 40 Shin</td>
</tr>
<tr>
<td>3</td>
<td>ground 25 Jeong</td>
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<td>...</td>
<td>... ... ...</td>
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</tbody>
</table>
**Type of error**

**Attribute data omission**
A parcel on the cadastral map but no attribute data on the land register

```
1-1  1
3    2
```

```
<p>| | | |</p>
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</table>
|...|...|...|...
```

**Type of error**

**Area allowance**
An area of a parcel over an area allowance

```
4    1
3    2
```

```
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</table>
|...|...|...|...
```

**Area allowance : 5.13**
**Actual Area : 34**
**Double parcel number**

More than two same parcel numbers in the one administrative strict.

**Double polygon**

The same polygons are registered differently.
**Type of error**

**Registration omission**
A parcel without a parcel number

1. farm 20 Kim
2. paddy 40 Shin
3. ground 25 Jeong
4. paddy 30 Lee

**Correction Record**

A detailed correction record with maps and listings of parcel numbers and descriptions. The record includes a registration omission correction and a farm parcel listing.
Computerization

Scanning → Digitizing

Correction → Computerized Cadastral Map

Rubber sheeting → DXF format

Korea Cadastral Survey Corp.