An Approach to Integration of Land Administration System

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SUMMARY

Korea's modern land system was enforced after the land survey project performed in the early 1900s during the Japanese colonial period, which was actually focused on tax collection. With various changes in the land markets accompanying the dramatic economic growth from 1970 to 1990 (what so called 'Miracle on the Han river'), soaring land values and demand were generated. As a result, Korea government strived to improve land administration for land usage plan, national decision making, and policy so as to set up strategic plans for land administration. It mainly focused on computerizing and organizing the land administration data, and constructing database because paper-based administration required considerable time and labor. Despite the rapid advancement of digital Land Administration, , there are some issues need to be resolved. As the land administration data (18 type of data) have been operated and managed separately by different authorities, it has brought about duplicated investment, inconsistence, and uncertainty due to lack of compatibility and synchronized update. Furthermore, public carries out complicated and duplicated process in doing land administrative tasks, which leads to unnecessary social expenses and time. In this manner, the Ministry of Land, Infrastructure, and Transport (MOLIT) is pushing ahead 'The project on land administration data integration'. The primary scope of this project is aimed to adjust incorrect and discordant data, and integrate 18 type of land administration data into single type of data.

The main purpose of this paper, therefore, is to deals with an overview and process of 'The project of land administration integration'. it is also to explore the future changes on land administration in Korea.

An Approach to Application of Integrated Land Administration Data

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1. INTRODUCTION

Korea's modern land system was enforced after the land survey project performed in the early 1900s during the Japanese colonial period, which was actually focused on tax collection. With various changes in the land markets accompanying the dramatic economic growth from 1970 to 1990 (what so called 'Miracle on the Han river'), soaring land values and demand were generated. The Korean government realized that land administration had to deal with not only tax collection but also land usage plan, national decision making, and policy. Therefore it set up strategic plans for land administration. In 1995, the government enforced the 'Master Plan for National GIS Establishment' as four plans which have been implemented consecutively every 5 years since 1995. The first and second Master Plan for National GIS were mainly focused on computerizing and organizing the land administration data, and constructing database because paper-based administration required considerable time and labor, and public wanted service faster and more accurate. In terms of system, the Korean land administration has been separately operated and managed by two system: cadaster and registration. 15 types of data related to cadaster, land, land value, and architecture have been managed by the Ministry of Land, Infrastructure, and Transport (MOLIT). 3 types of data related to registration have been controlled by the Supreme Court. Through the National GIS Establishment project, the land administration data (18 type of data) including cadaster, registration, land value, architecture and so on have been changed from paper-based data to digitized and electronic one.

In fact, there are some issues need to be resolved. As the land administration data (18 type of data) have been operated and managed separately by different authorities, it has brought about duplicated investment, inconsistence, and uncertainty due to lack of compatibility and synchronized update. Furthermore, public carries out complicated and duplicated process in doing land administrative business, which leads to unnecessary social expenses and time.

Years ago, the Korean government suggested new national admission named 'Government. 3.0' for the administrative renovation. The Gov. 3.0 indicates new paradigm to promote active sharing of public information and remove barriers existing among government ministries for better collaboration. In particular, the government considered geospatial data as important factor to realize its goal. In this manner, the MOLIT is pushing ahead 'The project on land administration data integration'. The primary scope of this project is aimed to adjust incorrect and discordant data, and integrate 18 type of land administration data into single type of data. After the project is completed, integrated data shall be able to provide public with better

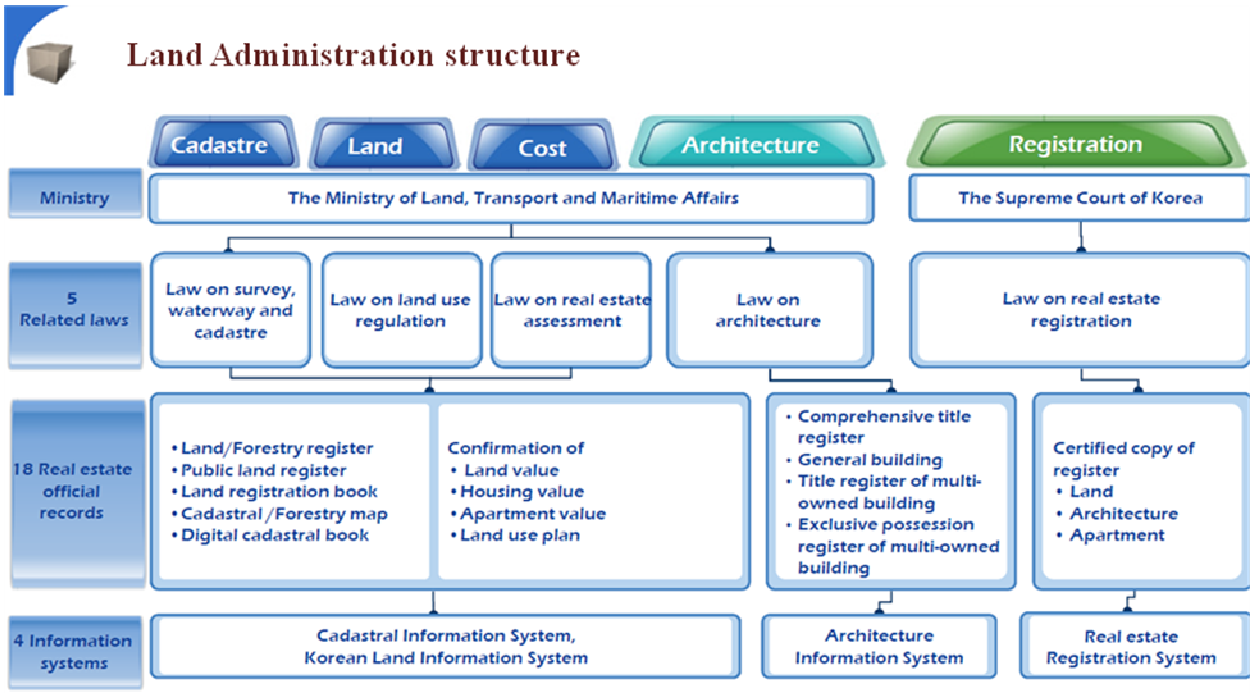
access, precise data, faster and easier process of land administration business. In addition, it shall be able to cut down duplication, inconsistence, inefficiency, and unnecessary waste of time and money. Integrated administration data can be regarded as valuable spatial data, so that it can be utilized for national land use planning, national decision making.

In this paper, it is to deals with an overview and process of 'The project of land administration integration'. it is also to explore the future changes on land administration in Korea.

2. DEVELOPMENT BACKGROUND

2.1 Structure of Korea Land Administration

The Korean land administration system is separately operated and managed by two systems: registration and cadastre. Land administration data is able to be classified as a cadastre, land value, architecture and registration etc.; 18 types and a total number of their data is 712.5 million. 15 types of registers like cadastre, land, land value and architecture data are managed by MOLIT and the registration data are controlled by Supreme Court of Korea. They have been maintained by diversified systems. And they are operated by different laws. More specific information can be identified in the following table.



<Table1: Land Administration structure>

2.2 Title Registration tasks & Computerization

As the registration has a judicial characteristic, which means that conflicting stakeholders are involved in legal interests, the registry offices are controlled by the Ministry of Justice according to the Real Estate Registration Law. The authorities follow the hierarchy in order: the Supreme Court, the High Court, and the District Court. The Supreme Court, as the most significant institution, controls High Court; the High Courts control district courts; and the District Courts have branch offices and registry offices to transact local registration task in the districts. Additionally, the District Courts and branch offices have registry sections which serve as registry offices.

The modern Korean registration system began in 1912 and was based on Japanese real estate law. However, it was systematically organized after the enactment of the Real Estate Registration Law in 1960. The Korean registration system belongs to title registration system. Registration tasks using paper-based registry books previously required considerable time and labor, and there were problems of accuracy and standardization because of disconnections between related organizations. Accordingly, the computerization of the registration service has started since early 1990, and the Internet Registry Project followed in 2000s. First and foremost, registry book conversion system was developed, which system then has converted the paper-based registry books and stored them in electronic forms; this process therefore completed 45 millions of parcels scattered in registry offices around the country with an outlay of USD 415 million. Next, Automated Registry Office Systems (AROS) have been developed that it enabled electronic services of registration process, access and issuance of certified copies, statistics and so on, improving the productivity and convenience. Furthermore, an Internet registry office service, which enables online issuance, has been developed in order to improve public access to the system. To do this, all registration-related systems were integrated online, and an electronic document management system was developed.

2.3 Cadastre tasks & Computerization

The cadastral planning department of Ministry of Land, Infrastructure, Transport (MOLIT) is undertaking the following tasks: legal administration, policy establishment, supervision and so on. The 16 metropolitan governments of the Republic of Korea offer cadastral information and statistics data. Cadastral sections in 256 cities, counties, and boroughs are responsible for cadastral registration and the management of cadastral books.

The advent of the advanced cadastral system in Korea began with the computerization of cadastral books. Since the cadastral books are composed of property information that is easily converted to electronic files, both land cadastral book and forest book are preferentially made

with a computerized database. It was difficult to determine the history of land records lost during war or natural disaster, and information contained in land books was lost because of negligent management. These difficulties stimulated the implementation of the cadastral computerization project. The first project was carried out to convert paper-based cadastral books to card-type books between 1975 and 1980, and data of the card-type books has been inputted into databases as data files since 1980.

About 32 million parcels in nationwide have been computerized by the end of 1984. In addition, a national online network - which connects 15 metropolitan cities/provinces and 260 municipalities - has been established for instant process, which enabled more improved public services such as the access and issuance of the cadastral books. The land book computerization project contributed to the improvement of public confidence in cadastral books by preventing the falsification of books and establishing a systematic data management system. In addition, land-related information necessary for evaluation, taxation, transaction, usage planning, and so on was provided promptly and accurately. The efficiency of cadastral tasks was improved in terms of improved processing time, which was reduced from over 30 minutes to between 2 and 5 minutes. After cadastral computerization, cadastral maps were computerized. The cadastral map computerization project began for broad utilization among geographic institutions, improved information management, the application of cadastral survey data and the need to provide cadastral services to concerned parties. The first computerization process was divided into numeric surveying areas and graphical surveying areas. To computerize cadastral maps, coordinates and property information for each parcel have to be inputted. For graphical areas, computerization was manually performed in towns and automatically in rural areas with appropriate cadastral maps. The map computerization project in graphical areas was undertaken according to the following procedures. The existing cadastral maps were scanned and digitalized on a one-to-one ratio, vectorized, and then corrected for errors such as the expansion and contraction of lines. The project aimed to establish new digital map database of information that had been computerized and corrected. The existing maps were computerized and errors stemming from the expansion and contraction of maps were corrected. This data was stored and managed in the Land Information System (LIS). A master plan for an advanced cadastral map project to be used throughout the whole country was designed in July 1998, and 759,000 cadastral map sheets were digitized during 5 years from 1999 to 2003 with an outlay of USD 47.5 million as a NGIS project.

3. LAND ADMINISTRATION SYSTEM (LAS) TOOL & ISSUE

Ministry of Land, Infrastructure and Transport (MOLIT) undertakes most of the LAS tasks. Primarily, Korea Land Information System (KLIS), developed in 2006, plays as an engine of LAS with assistances of other systems such as KOPSS, LURIS, UPIS, eAIS, etc. In addition, NSDI, designed in 1995, leads share of spatial data, services, and resources in Korea.

3.1. KLIS (Korea Land Information System)

KLIS, an integrated management system, digitizes land related information such as graphic and attribute data. KLIS is the integration of Parcel Based Land Information System (PBLIS) and Land Management Information System (LMIS).PBLIS manages cadastral books such as cadastral maps and land books, and LMIS generates seamless cadastral maps and edits cadastral maps from each cadastral sheet, and manages land administration tasks.

These systems had been integrated in 2004 and expanded its services into national scale by 2006. KLIS, operated by province and city level, provides online services on land transaction permit, real estate intermediation, development charges, land value, etc. Now, KLIS plans to provide individual-centeredweb services.

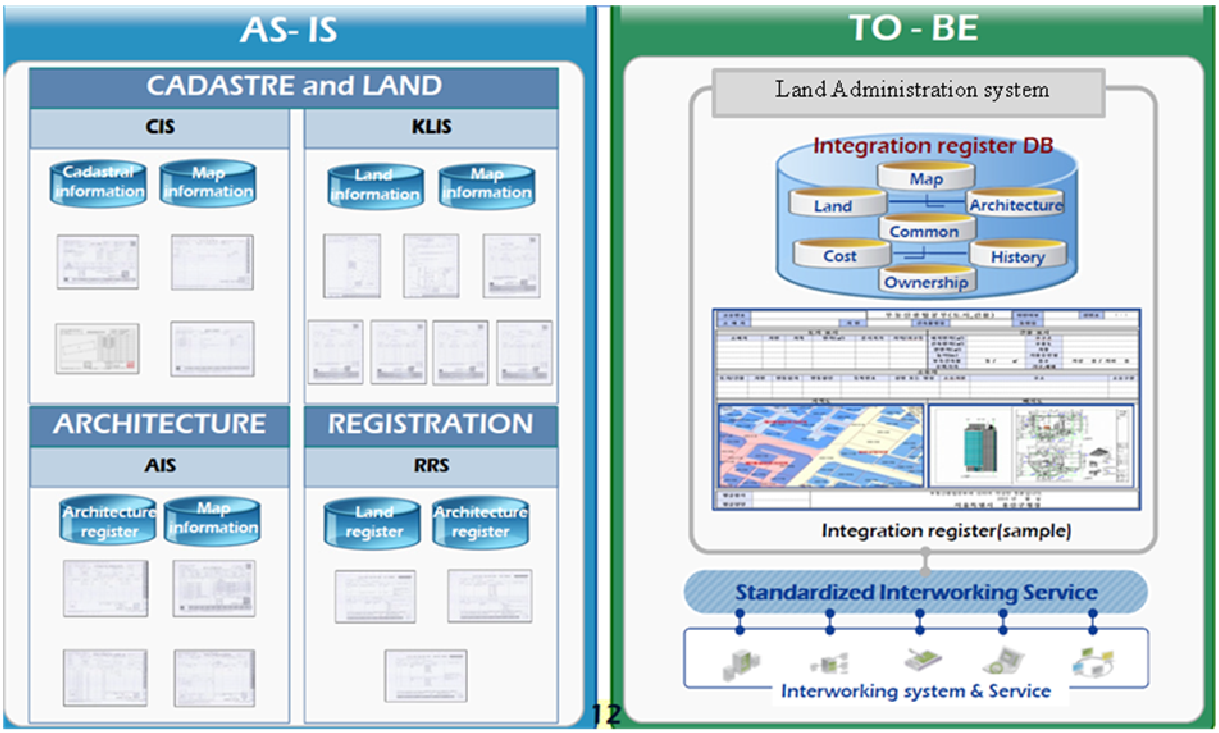
3.2 LAS Tool Issues

Such diverse tools of Korean LAS have been developed by intensive government influence on policy legislation and ICT adoption. As introduced, KLIS serves the main part of LAS, but nevertheless, there are implications, such as data disclosure, standardization, 3D cadastre, etc.
KLIS performs efficient land management and ownership protection by data consistency. However, due to working-level-oriented interface and failing horizontal relations with private sectors or individuals, its public service remains unfavorable. Thus, further effort is required to develop the system and related policies.
KLIS has weak data interoperability with other systems. The same holds true for other LAS tools. Standardization is a prerequisite to data share and data analysis. Thus, LAS data standardization is highly required.
Furthermore, it has brought about duplicated investment, inconsistence, and uncertainty due to lack of compatibility and synchronized update. Furthermore, public carries out complicated and duplicated process in doing land administrative business, which leads to unnecessary social expenses and time.

4. ESTABLISHMENT OF INTEGRATED LAND ADMINISTRATION SYSTEM

An integrated system has to be built to provide a consistent service of Land administration system. The Land administration system is managed by integrating the Cadastral Information System(CIS), the Architecture Information System(AIS), the Real estate Registration System(RRS) and the Korean Land Information System(KLIS) managed individually. Digital data and 3 dimensional cadastral information as well as main real estate information are needed to integrate into one system annually to use and issue them.
For this, first of all, land registers(CIS) and cadastral maps(KLIS) are integrated to manage integrated cadastral data systematically and secure an infrastructure providing a stable service. And, based on this, architecture registers will be integrated and the integrated information will be provided. Then, the integrated cadastral information including architecture registers will be improved by integrating land value related information(appraised value of land, private house, apartment) and land use planning information(serial cadastre, zoning, land use). Finally, registration information(land, building, multi-owned building) managed by the Supreme

Court of Korea will be integrated to make unification of real estate information. A future real estate integrated system will be built based on the above-mentioned plan. The following figure shows the current 4 systems and the future integrated system.



<Figure1: Integrated system>

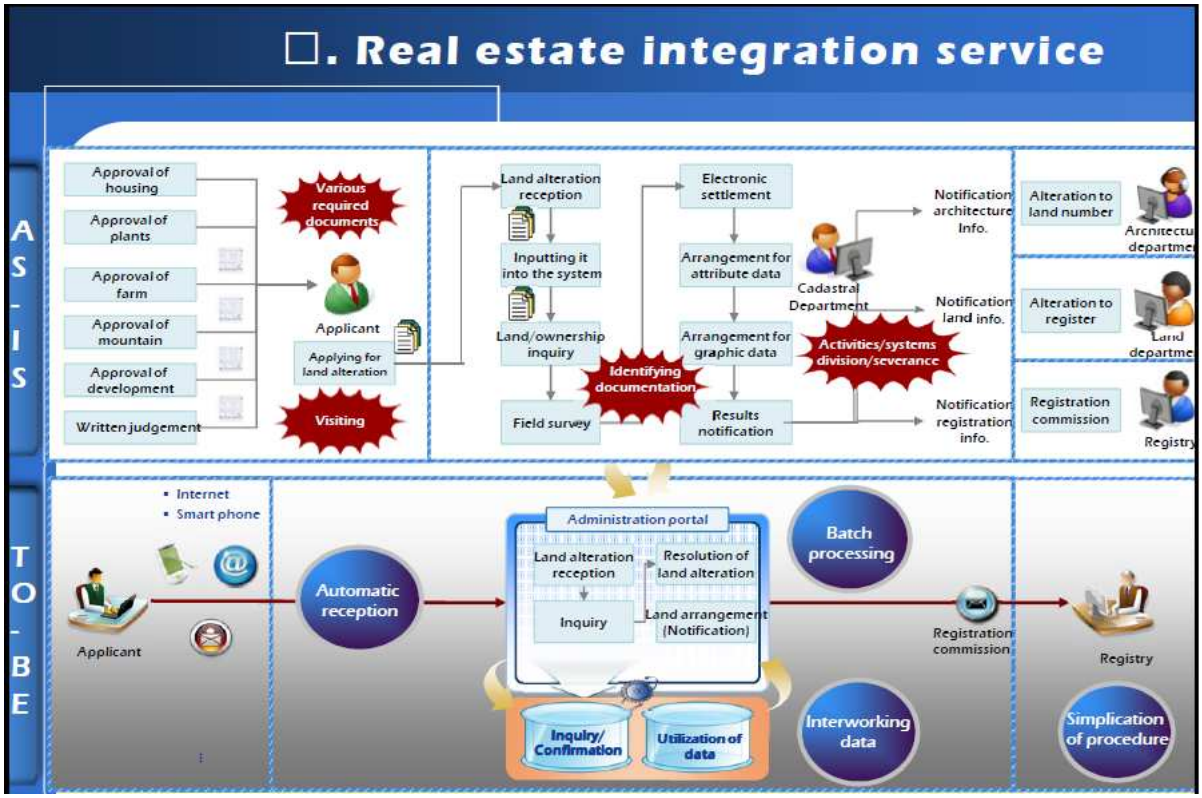
Various effects are expected by building the integrated system. Cadastral information including information of land use, land value and registration makes various services possible as analyzing land information synthetically and multidimensionally. And it is convenient to manage superficiary rights as building the integrated system which contains three dimensional cadastre and right relations related to land categories of ground, surface and underground. It is expected that the integrated cadastral information can be analyzed synthetically and accurate land value information can be computed as standards of taxation and compensation. Protection for rights and improvement of reliability can be accomplished by applying spatial scope, land category and right relations of superficiary rights which have three dimensional cadastre to the integrated system.

5. INTEGRATED LAND ADMINISTRATION SERVICE

To serve integrated land administration for users, the service based on three goals has to be revitalized. The first goal of the service is “Registration issued for one”. In case of existing service for real estate registers, those registers are drawn up and maintained depending on management purposes, and accessed and issued by receptions and Government for

Citizen(G4C). A part of their items is extracted when accessing or issuing real estate registers and a function of reading the declared value and urban planning is serviced as a form of a confirmation.

So, a customized service which issues necessary items depending on usage of real estate registers and a service for issuing confirmations at the same time are needed. And an usage of real estate registers is classified depending on purposes of certification, approval and confirmation so on, and component categories of the customized register are classified into general spatial information and necessary information depending on use. Also, component categories are grouped by combining necessary items depending on use and can be printed out after editing in order to provide public services.



<Figure2: Civil Petition Service>

Next goal is “A civil petition service settled at one go”. The current process of administration is that applicants have to visit related offices several times to add required documents. As attribute and graphic data of land registers are managed separately, it makes the process inconvenience. And there are cumbersome to identify results of civil petitions by mail or visit. Therefore, the cumbersome and complex process will be improved to deal with at one go. The public can apply for civil petitions and identify a process of them and issue results on the Internet regardless of time and place. This makes the process of civil petitions convenient significantly. Also, as connecting required documents like every approval, convenience of

activities can be maximized. The improved process is shown in the above figure.
The final goal of the service is “Provision from one spot”. Duplication and discrepancies of data are generated in the existing service because processes are managed separately depending on each operating system. So, it is difficult to develop and manage with interworking functions. As operating systems are connected in a complex way, errors of one system are delivered to other systems and those data are serviced after editing again.
Thus, there needs a standardized interface for users to provide accurate and stable Land administration data.

6. CONCLUSION

There are a lot of problems such as administration wastes caused by duplication, inconvenience caused by individual visit and limitations of political supports caused by absence of integrated data, as Land administration data are operated in 18 different registers and 4 different systems. To solve these problems, a need of the integrated Land administration system comes to the fore.
The integrated register will be operated in one system. And there are a lot of efforts to provide effective services like 'The customized service', 'One-stop service on the Internet' and 'Accurate and stable service through the standardized interface'.
The following effects can be expected through the integrated system and service based on accurate integrated land administration system. In terms of institution, efficiency of data management will be enhanced by registering location based on cadastral maps, the existing process operated separately will be run out through the synchronization of land and architecture registers, and management cost of the integrated register will be reduced by simplification of the process. In terms of administration, the value and status of data will be increased as information for policy making by securing accuracy of information through the integrated management. And duplicated or similar activities will be reduced significantly by establishing the integrated system. Lastly, in terms of public service, the unified service for application and issue, and one-stop service for complex civil complaints can make public complaints solved. Also, as Integrated system will provide services regardless of time and place, efficiency of activities and qualitative improvement of services can be expected.
The system and service which will be established can be vitalized by improved system and law. Therefore, basic researches are needed to vitalize the service for the integrated register institutionally and legally.

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