How To Build An Ideal Property Information System

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Key words: Property Information System, Land Register and Cadastre Information System, NSDI, Cadastre

SUMMARY

Each country has a Property Management System operated in accordance with its own legislation. Some countries may be applying this with classical systems and some with modern methods. The management systems in which information technologies are used are often called "Information Systems". In this article, "Property Information System" refers to the Property System used by Information Technology.

The Property Information System has a crucial place in both the spatial data infrastructure and e-government applications of an country. The Property Information System both automates the institution responsible for ownership and meets the need for external access to databases. On the other hand, the Property Information System is one of the most basic e-government applications that provide direct service to the citizen. In this respect, the importance is increasing even more.

It is possible to collect the most important components of the Property Information System in four main groups. The first is the geodetic infrastructure. The second is the software component that acts as the intermediary for the title deed and the cadastral works and transactions in the computer environment. The third is the component of sharing the data with the internal and external institutions. The fourth is the title deed and the cadastre data update and the archive component.

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1. INTRODUCTION

The only planet we know that the life exists in it is our world. The world faces with some problems such as Increasing Population, Descending Resources, Climate Change, Distorted Urbanization, Natural disasters, Environmental pollution. Geographic information system (GIS) is an important tool for understanding and solving these problems. Problems can only be solved by the effective application of GIS facilities such as Accurate Planning, continuous monitoring of positional changes, Selecting the Right Location, Accurate Analysis, Decision Support. Because the value of spatial position is getting better day by day,the geospatial sector has been growing in importance in recent years. as shown in Figure 1, Spatial Industry includes many sectors.

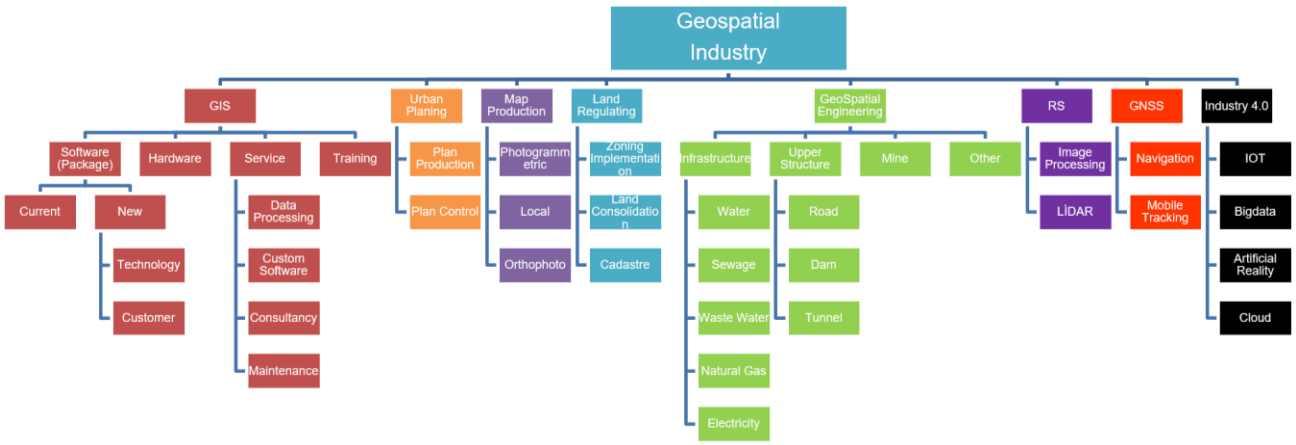

Figure 1: The Coverage of Geospatial Industry

There are many works in these sectors and spatial data is produced by these works. It is necessary to regulate and appropriately manage these spatial data which are costly and time consuming to obtain. Today, countries are becoming more and more aware of the importance of spatial data and are creating spatial data infrastructures at the national level to organize and manage these data. National Spatial Data Infrastructure (NSDI) is a framework for managing spatial data.

NSDI contains many data sets. Figure 2 shows INSPIRE data sets according to their priorities. Each country can take these data sets as an example and prioritize them accordingly. There are three important components in these data sets that directly concern the Property system. Geodetic infrastructure, orthoimagery and cadastral parcels. In an ideal property system, address data should be considered indirectly related to parcels.

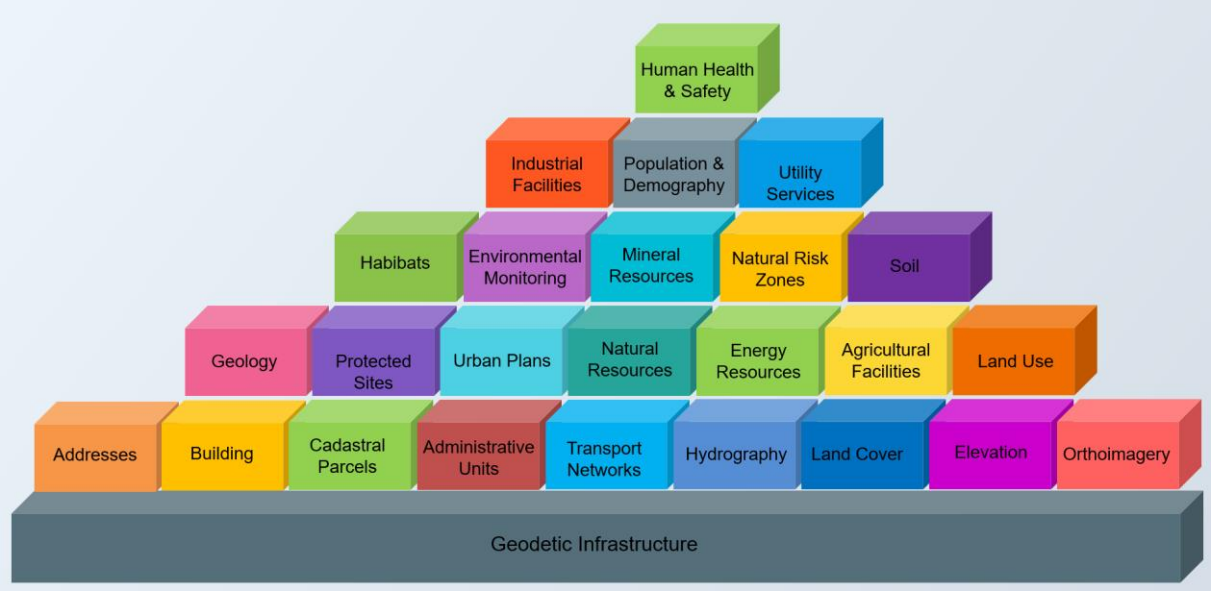

Figure 2: INSPIRE Spatial data sets arranged according to their priorities

2. WHAT IS EXPECTED FROM AN IDEAL PROPERTY INFORMATION SYSTEM

In the past, the product was produced first, then offered to customer and purchased if approved. But today, that system changed completely. Now, the producers determine the customer needs first and then produce their products accordingly.

We should not consider the property information system as a storing of records in state security.

It is important to determine how the client institution and the citizen benefit from the property information systems in use and which functions are most useful. A system should be established to meet these needs while the property information system is being created.

Turkey land registry and cadastral applications have a very old history. The classical system has been used for many years. For 15 years, the computerized Property Information system is in use. Turkey Land Registry and Cadastre Information System for an ideal property information system is a good example. It would be beneficial to examine the benefits that external stakeholders provide.

In Turkey, the first land registry studies began in 1847's and then the present General Directorate of Land Registry and Cadastre founded in 1924.

That history could be summarized as below;

- According to the development of technology, first computer aided applications began to be used in 1990s and having human resources in that field was seen as an important issue as well. Many successful projects were developed as computer aided in institution by himself.
- But the computer-aided workings within the institution decreased due to the attempts of the private sector in these issues in those years. Private sector studies became important and accelerated.
- e-transformation process in Turkey had accelerated at the beginning of 2000. It was necessary for the institutions to meet the needs of the current land registry cadastre data quickly. On the other hand, the speed of land registry services had to be increased. Because of these needs, the establishment of a proprietary information system in the computer environment has become a necessity.
- As a milestone, the first step was taken for the Land Registry and Cadastre Information System (TAKBIS) project in 2000's. The project started in 2001 as a pilot. Pilot studies were completed in 2004. Dissemination studies were completed within 3-4 years. It is currently used all over the turkey. It can be said that cadastral works are not in full automation. We can express cadastre studies as semi-automation.

If a very general evaluation should be made for TAKBIS project, the first thing to say is that the data can be shared quickly and up-to-date. Actually, this is the benefit of the project. It is not the basic aim to conduct the business and operations of the institution in computer environment. The main goal is to meet the needs of the customer as up-to-date, quickly and accurately.

When we look at the technological studies carried out by the General Directorate of Land Register and Cadaster (GDLRC), TAKBIS is at the forefront. TAKBIS is one of the 4 main e-government projects, which are citizenship, juridical and social security systems.

TAKBİS is basic e-government project, aiming at uploading all ownership information within the country and allow people to search all kinds of answers in electronic environment.

May be the most important output of TAKBIS is the serving of land registry and cadaster information from the e-government portal. With this service, which has been used intensively since 2010, enables auto-control of the records by the citizens.

When we look at user statistics today, we see remarkable results.

- That system is used by about 1000 external stakeholders on an institutional basis.
- There are more than 2000 e-government services that are still active in Turkey. Title Deed and Property Query Service is ranked as 7th by usage and the quantity of the queries made is 1.000.000.
- With the development of smartphones and internet infrastructure, parcel inquiry application was developed to meet the information needs of the real estate markets.

- The number of users is 750,000 on the Google Play Store and 300,000 on the App Store.
- On the other hand, there are 1 million queries per day on the mobile platform.

All these statistics proves the benefits of this work.

Why do I present you these statistics today? To have you seen the results of an experience as a sample to create an Ideal Property Information System.

Let's go back to the drawing board from these results. What we should do to create an Ideal Property Information System in a country? This is a very beneficial work and it is proven by the usage amounts. What should be done to found that system and how? Let’s take a glance at questions now.

In order to establish a good, ideal Property Information System, the process should be well established in a classical or traditional way. It is difficult to work as computer aided for the Institutions that can not solve classical functioning. Because, in classical operation, continuous development and change is necessary. In this case, it will be necessary to realize rooted revise in the computer environment as well.

Having something realized in a computer environment does not mean that it is a good or ideal job. It is easy to transfer the systems of which classical or traditional work process working regularly to the computer environment.

Moving processes into automation is not a goal but a tool. The goal is to present the updated and accurate information to the users quickly. Because this is the task expected from the institution. In order to carry out this task, the processes need to be automated.

An ideal property information system should be expected to meet at least 4 basic needs. These are;

- Establishment of geodetic infrastructure
- Establishment of process automation
- Up-to-date data sharing with internal and external stakeholders,
- Establishing a dynamic, up-to-date, Trusted Electronic Archive system

2.1 Establishment of Geodetic Infrastructure

The geodetic infrastructure should be established not only for the property system but also for the basis of the mapping activities of that country.

The establishment of geodetic infrastructure can be achieved either by the establishment of horizontal and vertical networks through classical mapping, or by the establishment of GPS network by modern mapping.

All maps and plans produced in the country should be produced based on this infrastructure, and all spatial data including cadastral boundaries should be based on this infrastructure.

2.2 Establishment of Process Automation

Process automation involves the execution of all operations and processes of the central and provincial organization in an electronic environment.

When the work flow of land registry and cadastre works is generally evaluated, the boundaries and the owners of immovable property are determined first. Then any rights, restrictions and explanations related to these immovables are entered into title deed.

After that, boundary change works such as separation and consolidation on the immovable are continued with cadastral works. The rights and restrictions on the immovable are also changed by title deeds.

It is possible to describe cadastral works as technical and title works as legal. It is important to coordinate with the technical or the legal, since the works are on the same property. This requires the integrated work of land registry and cadastral affairs.

Land Register and Cadastral works are carried out in provincial units. The data generated here should be instantly transferred to the central database to be created in the center, and the central unit should be able to share this data with internal and external stakeholders.

2.3 Up-To-Date Data Sharing With Internal And External Stakeholders

One of the most important components expected from the property information system is that the data can be shared up-to-date.

Many institutions, organizations and citizens want quick and easy access to property information. Authority and confidentiality should be emphasized in the sharing of ownership data.

Persons can only access their own data. Institutions can also access their own inventory data. However, institutions need to be empowered to have access to external data. Such matters should be regulated by each country's own regulations.

2.4 Establishing A Dynamic, Up-To-Date, Trusted Electronic Archive System

Archive Systems is the place where the data stored in the current operating system is stored and backed up.

The classical archive system may have a problem of up-to-date and physical storage difficulties.

The electronic archive system should be expected to provide quick and easy access to information, ensure information security, and ensure that information can be backed up and reconstructed when necessary.

CONCLUSION

A system should be measured by the benefits it provides. What is expected from an ideal property information system? the answer of the question can be answered as the benefit provided by the user.

TAKBIS applied in Turkey today is one of the most important practical e-government in Turkey. It has increased the speed in both processes, enabling both institutions and citizens to quickly access the current title deeds and cadastre data.

In order to establish the ideal property information system in the computer environment, it is important that the operation can be implemented completely in the classical system.

Otherwise, it would be costly and time-consuming to apply a system that is not fully implemented in the classical system in the computer environment.

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BIOGRAPHICAL NOTES

Dr. Emin Bank is Geodesy and Photogrammetry Engineer. He has been completed Master and PhD education in the field of GIS. He has served 20 years in the General Command of Mapping as GIS Expert in mostly Spatial Data Infrastructure projects in national wide.

After retiring in 2000, he has served 7 years in the GIS private companies as GIS Expert.

After, he has served 4 years in the Ministry of Interior as GIS and e-Government Expert. After that he has served 2 years in the Scientific and Technological Research Council of Turkey (TUBITAK) as GIS Expert and 2 years in TUBITAK Space Technologies Research Institute as Deputy Director. He was retired in 2013 from TUBITAK and he has been serving in NETCAD software company since April - 2013 as the Corporate Representative

Dr. Emin Bank is experienced in Intergraph, ESRI and NETCAD software platforms.

He is also experienced in the implementation and the project management of enterprise GIS projects in national wide.

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