PLANNING AND APPLICATION OF THE REAL ESTATE INFORMATION SYSTEM

Ass. Prof. M. Ümit GÜMÜŞAY
Yıldız Technical University , Türkiye
Department of Geodesy and Photogrammetry Engineering
Gumusay@yildiz.edu.tr

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ABSRACT

Importance of land ownership has been notably great for centuries. Needs for residences have increased nowadays owing to the overpopulation and sudden expansion of industry. Residences are required to take shelters in. Furthermore, they have been considered as valuable investments due to the sudden increase in their prices. For these reasons, the real estate agencies in Turkey have had crucial functions in society.
In real estate business in Turkey, computer and other information systems are being applied by only a few big companies involving such business.
In the pilot project digital photogrammetric maps are given as graphic data and data concerning the residence given as non graphic data.
This study attempts to offer some ways in order to carry out the procedures in real estate business economically, effectively, and appropriately and so as to make those procedures standard. To be able to succeed in doing this kind of project, the information system of real estate will be analyzed and planned. As a last step, a pilot area will be selected and the results of this project will be presented.

1 INTRODUCTION

The history of using computers for mapping and spatial analysis shows that there have been parallel developments in automated data capture, data analysis, and presentation in several broadly related fields. These fields are cadastral and photographical mapping, thematic cartography, civil engineering, geography, mathematical studies of spatial variation, soil science, surveying and photogrammetry, rural and urban planning, utility networks, and remote sensing and image analysis. Military applications have overlapped and even dominated several of these mono disciplinary fields. Consequently, there has been much duplication of effort and a multiplication of discipline-specific jargon for different applications in different lands (P.A. Burrough, 1996).

People who want own a real estates, naturally, have rights to learn some details such as information of previous owners of these real estates, information related to parcel, location, sale or rent. To meet these needs, real estate agencies should obtain accurate and up-to-date data from different institutes. To be able to succeed in gaining effective and current data for real estates, it has been advised to apply to GIS.

In this study, an analysis and design of real estate information system have been presented in a pilot area in order to make procedures in selling and renting of the real estates easier, more effective, more economical and more standard. The proposed study is restricted one concerning with only selling and renting of a real estate due to the very detailed Real Estate Information System.

2 BASIC COMPOMENT OF GEOGRAPHIC INFORMATION

Geographic information is commonly broken into the components of space, time, and attribute. Space, though an obvious component of geographic information, deserves careful definition.
Time often plays a silent role in maps, there is always some implicit or explicit temperal reference.
The third component of geographic information can range from observable physical properties to aeshetic judgments, all described by the term attribute (N. Chrisman, 1997).

2.1 Definition of Real Estate Information System

The term of 'real estate' means houses, lands and immovable things belonging to people.
As the population has been increasing and people's demands for better life conditions have been changing, suitable lands to be used for building have strongly demanded. In addition to this, developing industry in Türkiye requires lands to be used for plants. These strong demands have brought serious problems, especially in big cities in Türkiye. Forests have been destroyed to obtain some more fields for blocks or factories. People have been struggling with each other to have those limited areas. As a result, people believe that having a real estate, especially in the big cities, is an incredible advantage. Thus, estates are considered as valuable investment means.
Real estate agents are the persons who mediate between the owners and the buyers. Therefore, the agents are expected to inform accurately the owners and the buyers. In order to carry out such responsibility, a Real Estate Information System is required. A Real Estate Information system store all the relevant information belonging to real estate, such as utility services, register, car parks, kind of the construction, and transportation services. A real estate agent who is willing to make use of a well planned and satisfactory Real Estate Information system will gain all the benefits of this system. Making use of such system, a real estate agent is able to see the estate's photo, its register, its air photo, its utility services and surrounding buildings in a certain area.

2.2 The System Analysis and Feasibility Study

System analysis defines the components, its aims, requirements, and to determine the degree of their realizations according to the relations of the components to each other. What to do is determined during the analysis (Ü. Gümüşay, 1997).

Determination of existence status in real estate activities.
The following studies were made for determination of status in real estate activities.

The importance of GIS has been appreciated for years. GIS consists of some systems such as City Information System and Land Information System. In Türkiye, there have been some attempts to obtain data related to such systems. It has been observed that the real estate agencies hardly ever utilise graphical data. Some real estate agencies has been storing non-graphic data in their hardware. Most of the agencies have not been computerized. The Ministry of Finance and National Real Estate Institute reports that there have been some steps to store graphical and non-graphical data for the lands and buildings belonging to the national treasury. As soon as these procedures have been completed, it will be possible to reach accurate and current data needed.

2.3 The Design of Information for Real Estate Information System

For an effective and accurate Real Estate Information System, the analysis of the selected data and feasibility have been evaluated and the system has been designed.

System design
Hardware and software of the system were designed.
- Hardware; PC with mathematics coprocessor, expandability, colour monitor, mouse, digitizer, printer.
- Software; independent from hardware, user friendly, speed, various data types and data entry, exchanged data with other geographic information system software, large volumes of data, ability of geographic analysis, meet requirements, layer type of graphics data, relational data base.

Data design
The requirement data (entities, attributes, relations), which are presented in the Table 2.1. and the Table 2.2. and the required processes for system were evaluated for design of layer and data base.

Geographical Entity	Data Source[1]	Scale	Type	Level Number	Feature Type	Attributes
Building	SFH	1/1000	DIGITAL DGN	30	Line String Text	Block Code
Road	SFH	1/1000	DIGITAL DGN	15	Line String	

1 SFH; base map generated by İstanbul Municipality with method of analytical photogrammetry, DGN; Intergraph graphical design file.

Table 2.2. Designed the Data Base Table and Attributes

Table Name	Attributes
Flat	**Block Code,** Flat No, Square, Which Floor, Restoration, Renter/without Renter, For Rent/For Sale, Rent/Sale Price, Central/Self Heating, Who has the key, Owner's Name, Address, Aerial Photography, Block Picture, Flat Plan

Process design
Data input, data update, draw, query, geographical analysis and forms, delete and output process.

Physical design
Hardware and software, which have been used for this work, have been certainly determined.

- Hardware

PC CELERON 400 Mhz
HP Laserjet III and HP Deskjet 660C
SCANNER

- Software

MicroStation, Microstation GeoGraphics, MicroStation GeoExchange, ArcView 3.a

The data and process design (logical design) were transformed to the physical design.

- DGN format does not convert in the software. Therefore, DGN-DXF-ARC/INFO conversion should be made for data input
- The application programs flowcharts were created for the processes.

2.4 The Implementation of Information System for Real Estate

The aim of this study is to implement a system design and application for solutions of the problems in real estate activities with geographic information systems. To do so, the activities of the Real Estate Office have been analyzed, system design was performed and a pilot study was applied in a selected region.

Data Base
The tables of the relational data base and the code, symbol files were defined in the hard disk. Data have been entered in the pilot project.

Data Input

Data input covers all aspects of transforming data captured in the form of existing maps, field observations, and sensors (including aerial photography, satellites, and recording instruments) into a compatible digital form. A wide range of computer tools is available for this purpose, including the interactive terminal or visual display device (VDU), the digitizer, lists of data in text files, scanners (in satellites or aeroplanes for direct recording of data or for converting maps and photographic images) and necessary for recording data already written on magnetic media such as tapes, drums, and disks (P.A. Burrough, 1996).

In this project study; The digital graphic data stores as a base for further applications has obtained by fhotogrammetric consisting of digitizing and photography. These digital data include a ward of İstanbul-Beşiktaş, called Yıldız ; a photo taken by an ordinary camera and scanned for the purpose of this study.
Manual data input has been carried out for the non-graphical data.

2.5 Application and Maintenance

Query of an ArcView System is carried out by means of some certain menus. An examples for a query have been demonstrated in the Figure 1, Figure 2 and Figure3.

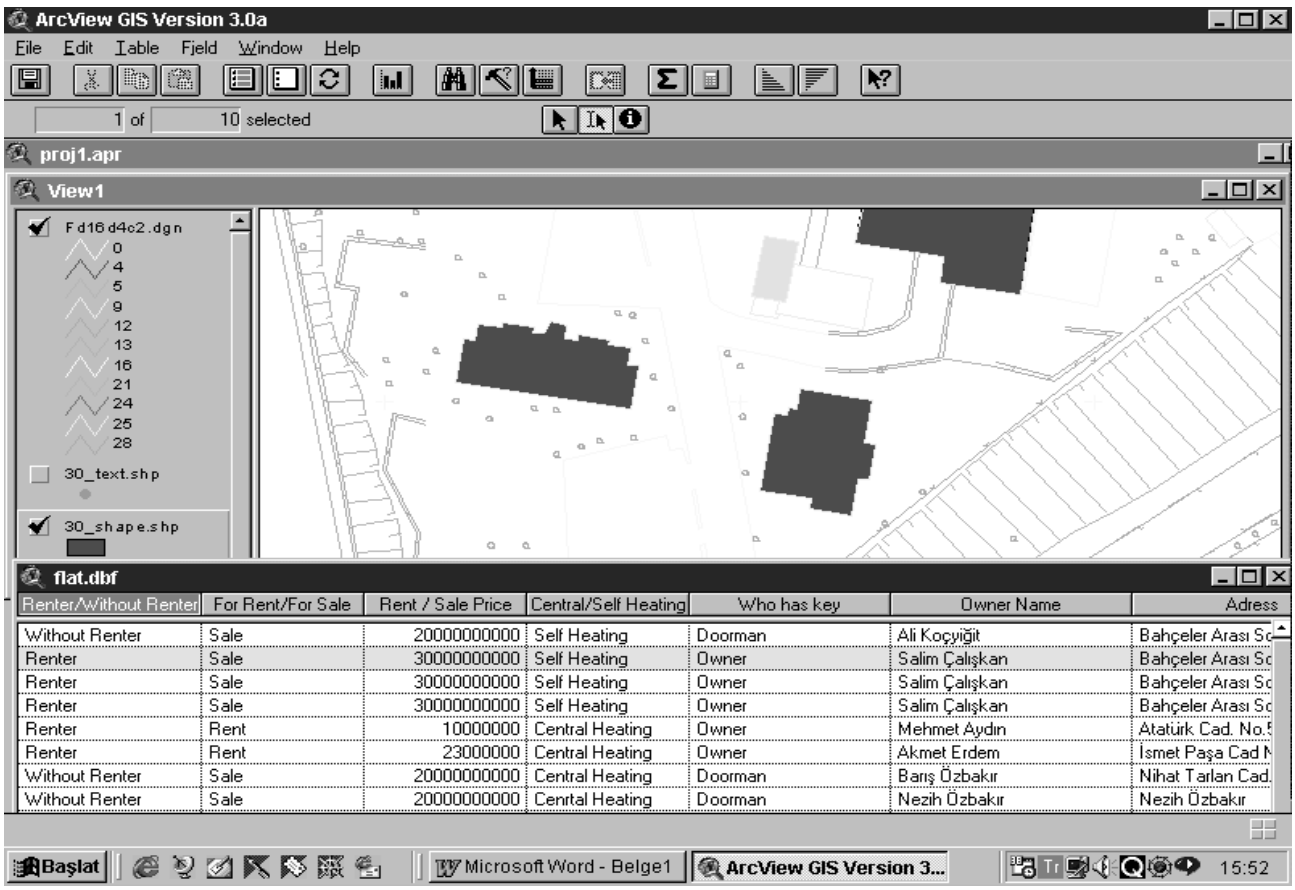

Figure 1

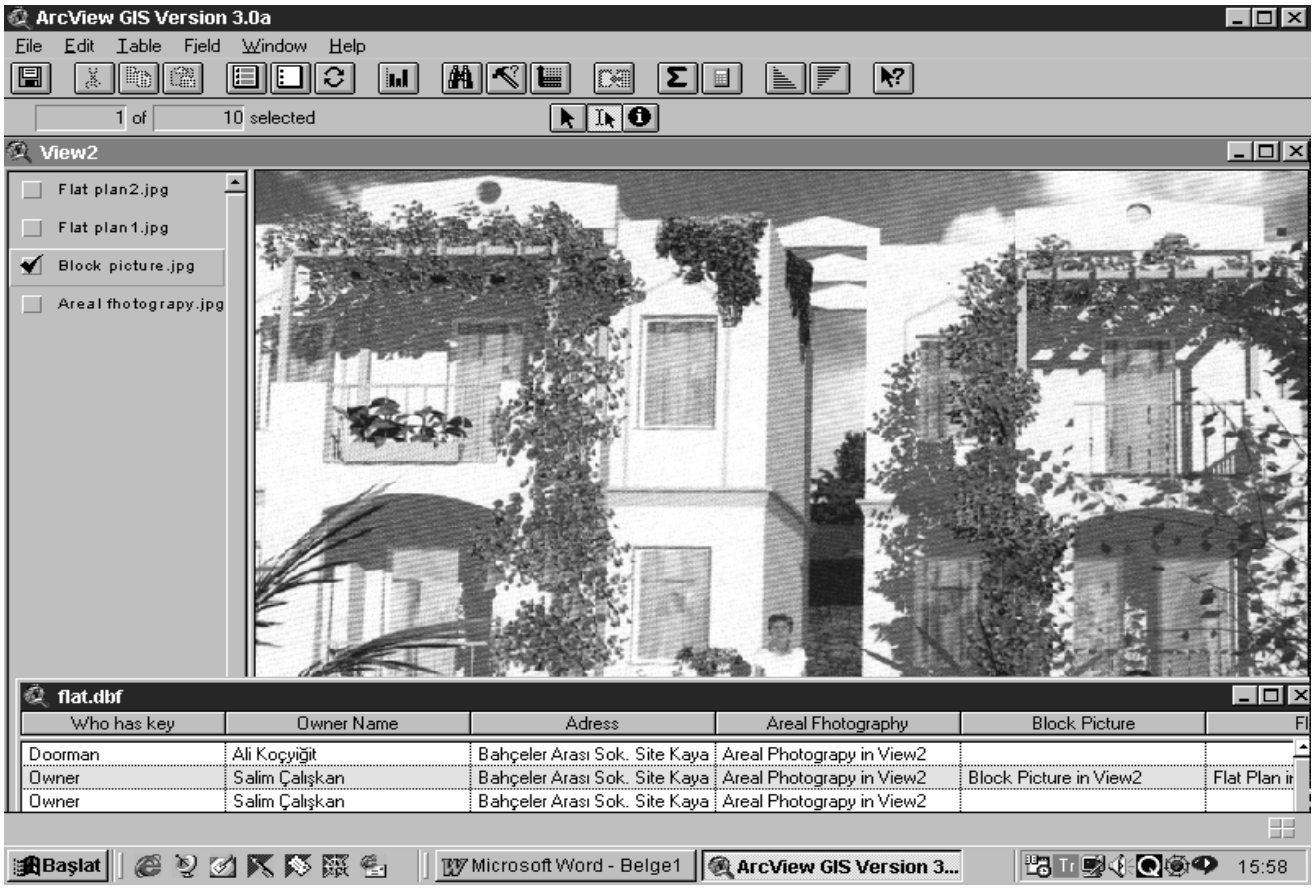

Figure 2

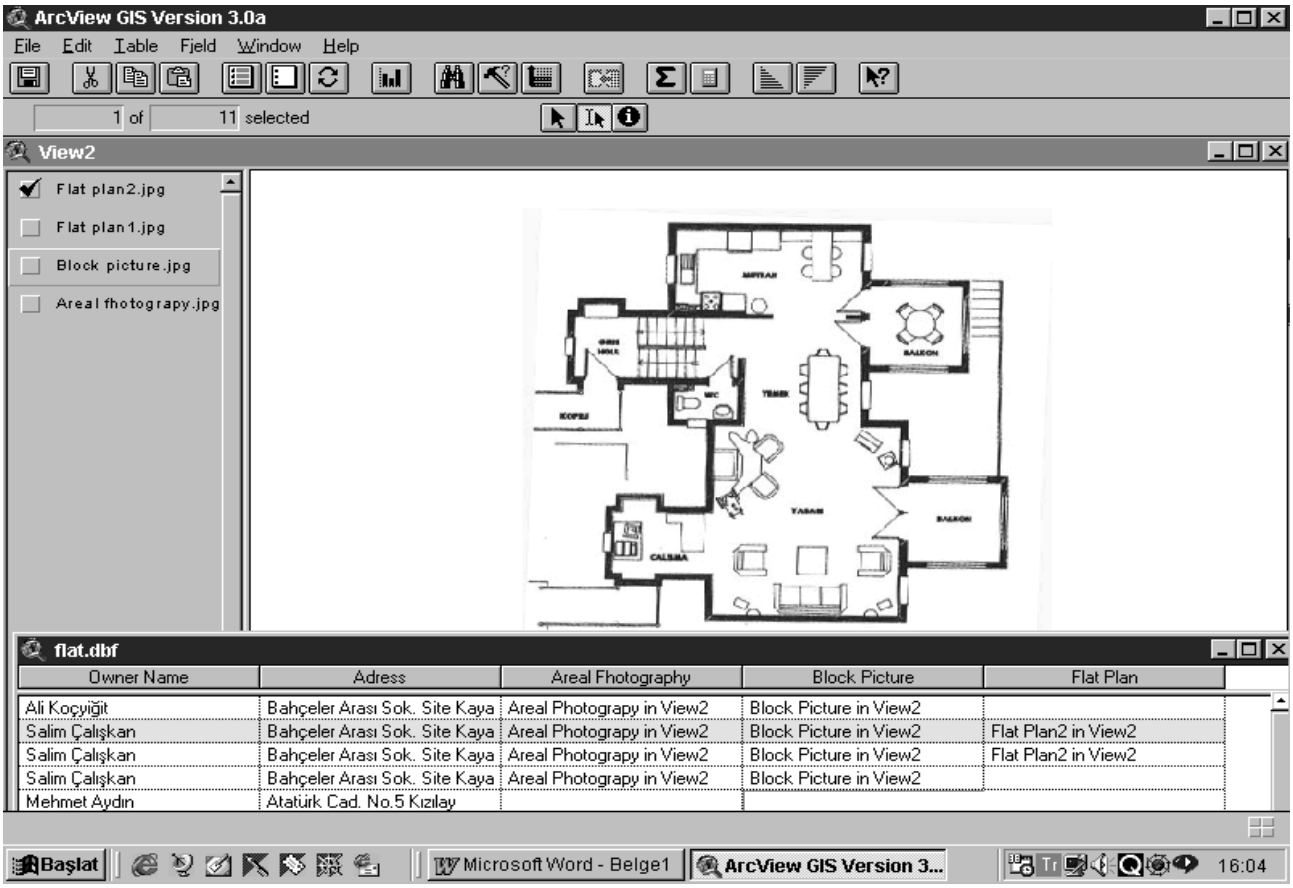

Figure 3

CONCLUSION

Resent researchers have shown that GIS provides possible solutions to solve complicated problems. In the proposed study, ways of dealing with affairs in the process of selling or renting of the real estates have been examined. In addition, the data used by the real estate agents have been determined. After seeing some inefficient procedures in storing data, the system has been established in accordance with the data needed for an accurate Real Estate Information System. The system can enable the buyers to choose the best alternatives for themselves.

Hardware which are the most vital elements in the information systems have been improved rapidly. This improvements have resulted in huge progress of software. Therefore, these advantages could make the procedures in the information systems easier and more current. All information systems should gain those advantages as much as possible to meet several needs.

To conclude, for more effective and current use of the information systems applying to both graphical and non-graphical data should be appreciated and supported.

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