GIS FOR THE EUROPEAN CAPITAL OF CULTURE 2021

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Abstract

The present paper brings forward proposals and trends in implementation of a dedicated geoportal for the management of heritage objects to complete the existing urban GIS primarily aiming to contribute to fostering the urban planning and the sustainability of the "European capital of culture" project. The need of this geoportal arises from the fact that Timişoara has the widest architectural heritage area in the country, of important value to both Romania and Europe. The preservation of this cultural heritage is a duty for the authorities and also for the owners.

Key words: cultural heritage, historical sites, WebGIS, Timişoara, cultural centre

INTRODUCTION

The Timiş County has a total area of 8,687km2 and is situated in the western part of Romania, on the border of three countries: Romania, Hungary and Serbia. The capital city of Timiş county has a population over 300,000 inhabitants and besides being the most representative university centre of the area, Timisoara stands for the most important economic and cultural centre. Along the capital city-Bucharest, Cluj-Napoca and Iași,Timişoara is one of the biggest cities of Romania.

Located in the western plains, throughout history the city was the capital of Banat, a region populated mostly by Romanians, who cohabited in harmony with other ethnic groups such as Germans, Hungarians, Serbs, Hebrews, Turks etc. On the other hand, its location in the Banat plain, has as disadvantage, the fact that natural resources are poor, so the richness of the region consists in the arhitectural and touristic potential.

As a national strategy, a key component in the policies of growth poles is promoting urban development, through the development of sustainable transport. According to national legislation, urban mobility plan represents a complementary documentation to urban/Metropolitan territorial development strategy and to the general urban plan, but also the territorial strategic planning tool by which spatial development of localities is related to the mobility and transportation needs of persons and goods.

The actuality of the paper is given by the fact that preserving cultural heritage and historical sites represents an important issue that must be taken into account when urban planning projects are required for developing the model of urban growth.

Figure 1. Romania, Timisoara

MATERIALS AND METHODS

The first record of the city of Timisoara, built on the site of an ancient Roman fortress called Castrum Regium Themes, dates back to 1212.

The charm of this city, settled on the northern bank of the Bega River, lies in its distinct.architectural character and vibrant cultural life. Frequently referred to as "Little Vienna," Timisoara is home to year-round musical and theatrical performances, art galleries, museums and a buzzing nightlife. A progressive, cosmopolitan place, Timisoara was the first city in Europe and second in the world after New York, to use electricity to illuminate its public streets.

Timisoara abounds with churches of several denominations, a Jewish quarter, an elegant baroque square and a pedestrian-only downtown area. Some of the monuments in the heart of the city afford panoramic views, while the many parks in this "city of flowers" provide an idyllic spot to take a break from sightseeing.

All these historical sites should be promoted at a high level, especially because the city has won the title of European Capital of Culture 2021.An effective way of promotion would be to create a Geoportal that would allow us to view all the historical sites of the city on an interactive map, as is the one in the following figure.

Figure 2. Timisoara, centre map with historical sites

The implementation of the GIS started in 1996 and covered a total area of 129.2 km^2; 34

Cadastral Sectors; 900 blocks and 27000 property sheets. Main objects defined in this Urban Information System of Timișoara are illustrated in Figure 3:
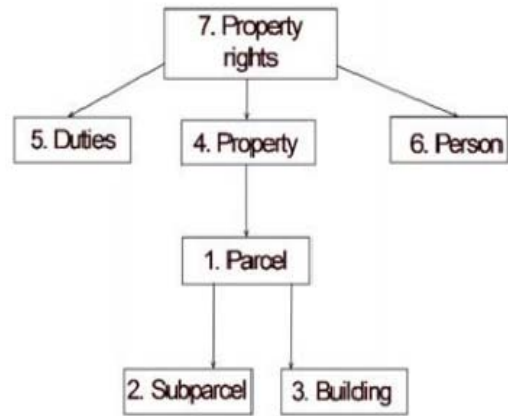

Figure 3.Object definition

Positioning of each entity is made on the reference given by the cadastral digital plan, 1:500. Updating this plan is based on a photogrammetric plan by using existing records, parcelling projects, urbanism certificates, documentations from achives, documents on land retrocession, and modifications the street scanning as a consequence of systematization etc. aiming to extend this system throughout the metropolitan area. An eloquent example of updating of the database for the Urban GIS (Figure 4) implied the acquisition of all information regarding the cemeteries, a project carried out between 2007 and 2009.
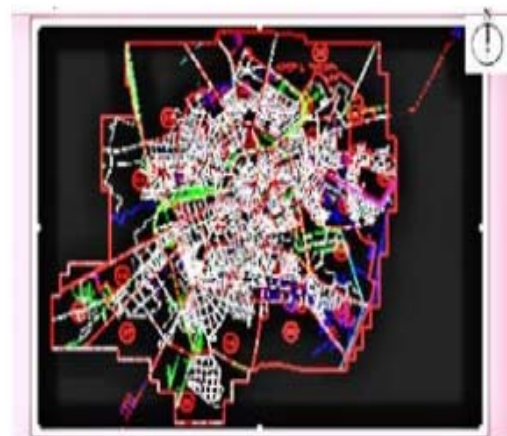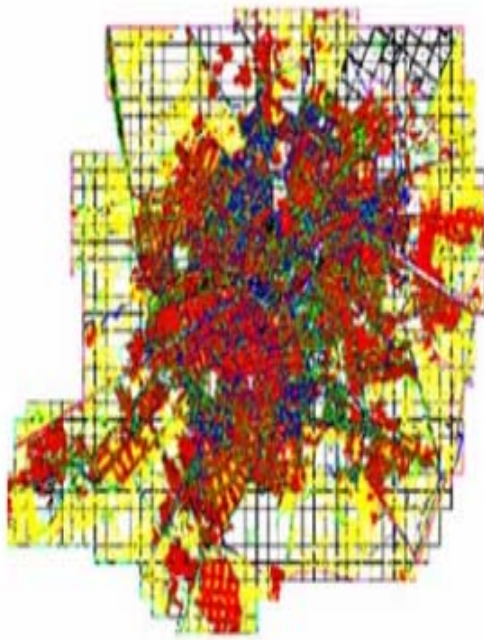

Figure 4. (a) Map of cadastral sectors;

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(b) Overview of Urban GIS

RESULTS AND DISCUSSIONS

A Geographical Information Systemuses geographically referenced data as a well as non-spatial data and includes operations that support spatial analysis. The common purpose in GIS is decision making for managing use of land, resources, transportation, retailing or any spatially distributed entities. The connection between the elements of this system is geography (location, proximity and spatial distribution).

In this context, many definitions have been given to GIS, but all of them converge in that GIS is a system of hardware, software and procedures designed to support the capture, management, manipulation, analysis, modeling and display of spatially-referenced data for solving complex planning and management problems.

Although many other computer programs can use spatial data (e.g. AutoCAD and statistics packages). GIS include the additional ability to perform spatial operations.
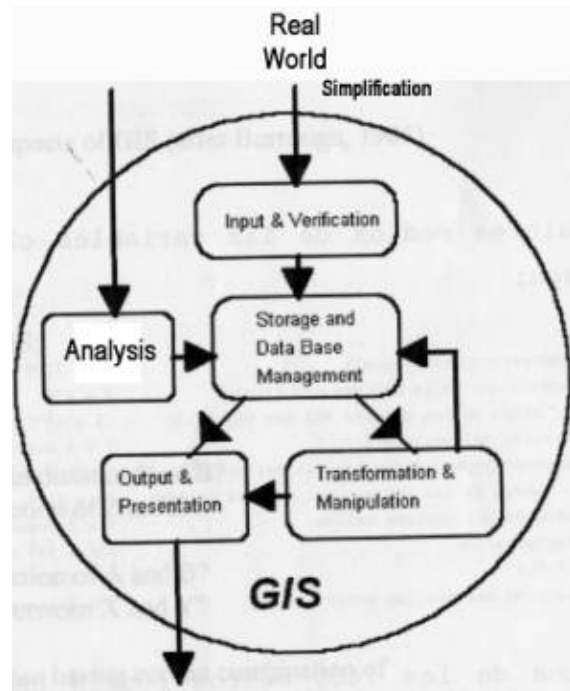

Figure 5. Information Flow in GIS

A GIS allows you to visualize your data as a map.

Figure 6. Maps + Data = GIS

The necessity of introducing a city database, concerning the historical sites:
➢ large amount of data
➢ quick access to information
➢ effective management
➢ frequent change of data
➢ avoid data loss

A clear example of interactive map was the one successfully implemented in 2008 in Liverpool. It was created a map that contained different colors for each type of tourist locations. Any person could have access to those data, being more maps. For example, on a map could very well see areas for young people in another one cultural areas and finally a map of the city combine the two areas.

Such a map it might accomplish in the case of Timisoara, which can be structured into three categories. One of these categories may be intended the entertainment, where it can see the parks, such as the Botanic Park, Roses Park, Children's Park, the promenade places, for example Piata Victoriei, Piata Unirii, Piata

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Libertatii. Another important category is represented by university area of Timisoara, where there are four public universities representing the academic center for the eastern part of Romania. One last category and perhaps the most important is the cultural area, which includes Palace of Culture, Theater and Opera, Palace of Culture, Theater and Opera, The Romano - Catholic Dome, Baroque Palace etc.
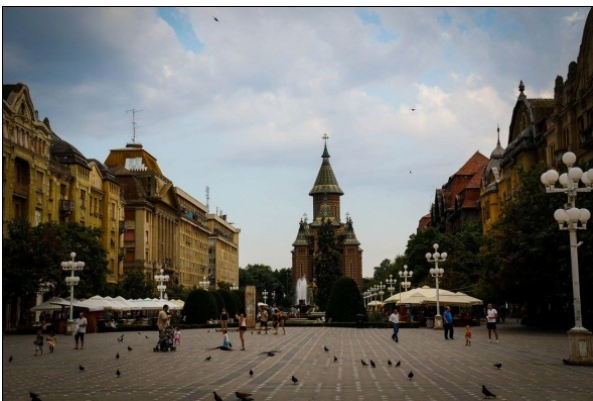

Figure 7. Timişoara, PiaţaVictoriei

Figure 8. Timişoara, Theater and Opera, Palace of Culture

Currently, in Romania there is a national project that provides implementing a geographical information system (GIS) for the protection of national cultural heritage. This program is called eGISpat and through it information about archeology and historical monuments are recorded.
The program allows editing and updating geo-spatial database in real time, historical monuments are treated as space objects. The recorded data processing program will outline strategies for conservation and integration of cultural heritage in contemporary society.
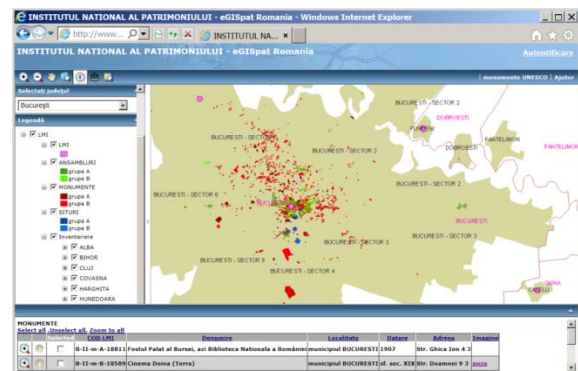

Figure 9. eGISpat program interface

CONCLUSIONS

An efficient urban planning strategy implies creating WebGIS for cultural heritage as the next natural step forward for both conservation and preservation of these objects, and also for understanding and promoting them. Also, together with the unlimited possibilities offered by the World Wide Web, creating physical virtual replicas of Cultural Heritage objects has become more and more attracting and interesting.

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