TURKISH NATIONAL IMMOVABLE CULTURAL HERITAGE INVENTORY SYSTEM

Levent BOZ, Yasin GÜLBAY, HakanMelih AYGÜN, Ergün ERDOĞMUŞ

Republic of Turkey Ministry of Culture and Tourism, Directorate General for Cultural Heritage and Museums, Ulus 2. TBMM Binasi, Ankara, Turkey, Phone: +90.311.508.64.08, Fax: +90.312.508.64.14, Emails: leventboz@hotmail.com, yasingulbay@gmail.com, hakanmelihaygun@gmail.com, ergun.erdogmus@kultur.gov.tr

Corresponding author email: leventboz@hotmail.com

Abstract

National Immovable Cultural Heritage Inventory System (Tescilli Kültür Varlıklar Tasınmaz Ulusal Envanter Sistemi / TUES) is a centralized web-based GIS system, which is capable of cross-querying 10,000 protected areas (archaeological, urban or historical), 100,000 monuments and registered historical buildings, more than 500,000 Conservation Council decisions and nearly 20 million pages of archival documents for all provinces of Turkey. In one word, aim of this project is inventorying of immovable cultural heritage of Turkey on a web-based GIS system for Ministry of Culture and Tourism and other national governmental agencies. This system is also important for Turkish National GIS Project called TUCBS (Turkish National GIS); the mainframe of all GIS based e-government projects. In this paper, we’re going to analyse the necessity of centralized Web/GIS based inventory system for cultural heritage, agriculture, stockbreeding, mining industry and many more sectors; and then we’re going to discuss main design elements and modules of the application.

Keywords: GIS, inventory system, immovable property, cultural heritage, protection zone, Turkey.

INTRODUCTION

According to Law No. 2863, the Turkish Ministry of Culture and Tourism is the authority for making decisions concerning the protection of the country's cultural heritage. The ministry has decentralized this authority to 35 Regional Conservation Councils (RCC) nationwide. The identification of immovable cultural and natural property and natural sites will be coordinated by the Ministry of Culture and Tourism. This will be done by obtaining information about the relevant institutions and organizations and how their activities will be affected. Such identification shall take into account the history, art, region and other characteristics of the cultural and natural property. Following identification, the immovable cultural and natural property to be protected will be registered with a decision to this end by the Regional Council for Conservation. Immovable Cultural Properties need to be protected within the spaces they occupy. As a result of this necessity, problems concerning agricultural activities may arise. In Turkey, there are four different types of cultural protection zones: archaeological, historical, urban and urban-archaeological (Figure 1). In these four protection zones, all agricultural and urban activities are strictly forbidden, as these zones are considered scientific reserves for their highly important historical and cultural value.

Another protection status concerns monumental and architectural cultural heritage. Single buildings, monuments or building complexes like mosques, churches, caravanserais, baths, cemeteries, manors, etc., are common in Turkey’s agricultural areas. It is important for other national government agencies to provide their own data to a centralized national GIS. The Republic of Turkey's Ministry of Transport, Maritime Affairs and Communications need to know if new highway or railroad projects will interfere with a protected cultural heritage zone, a mining area or a special agricultural zone (Figures 2-3).
In this paper, we will discuss the purpose of the TUES Project and the main design elements of the application. In conclusion, we will analyse the necessity for a national GIS-based inventory system for tracking cultural heritage, agriculture, stockbreeding, the mining industry and other governmental and private sectors.

MATERIALS AND METHODS

GIS is an information technology capable of displaying and analysing all forms of geographically referenced information when used as a management tool. Improving the abilities of this tool and making it ready to be used in the context of different subjects depends on knowledge of software programming and analysing the structure of data. GIS became a detached expertise and an important field of science; it consists of five main components: human, data, software, method and hardware (Box 1998; Yomralıoğlu 2005; Akçin 2007).

Turkey has taken important steps in terms of these five components in its GIS Projects. Because GIS is an effective management and evaluation system, it provides time, effort, cost and reliable/accurate analysis benefits. We can refer to these benefits as the expected level of development in concurrent e-government systems. Additionally, GIS is an internet compatible system that provides all data incorporated or generated in it as ready to be shared with the whole world (Aşık, 2007).

TUES is a GIS-based project created by the Republic of Turkey's Ministry of Culture and Tourism for managing, analysing and displaying immovable cultural properties (Figures 5-11). With this system, we will be able to acquire all data about immovable cultural properties and protection zones digitally.

The TUES project was created by the Republic of Turkey's Ministry of Culture and Tourism and financed by the Republic of Turkey's Ministry of Development between 2010 and 2015. In 2011, we created the server room with enough servers and required software, and in 2012, we organized regional trainings for the Conservation Council staff. In 2013, Regional Conservation Councils began entering data and TUES became a very powerful system. This year, we have also upgraded our centralized server hardware, Regional Conservation Councils' client systems, emergency plans and disaster recovery/backup systems and CORS (Continuously Operating Reference Station) GPS equipment for more accurate coordinates. TUES broadcasts from centralized servers via http protocol and we are planning to make this system available to more than 400 users from our 35 Regional Conservation Councils nationwide, simultaneously. Additionally, we are planning to share information with other national governmental organizations using the Turkish E-Government system and the Turkish National GIS Project called TUCBS.
RESULTS AND DISCUSSIONS

We began entering data to the system in 2012. At present, we have digitized 38% (4.124) of protected zones, 8% (8.616) of monuments and single buildings, and 70 000 Regional Conservation Council reports into the system (Figure 4).

All data is collected by highly sensitive and accurate CORS GPS devices. Then, collected data is converted to the ED 1950/3° coordinates system by the NETCAD desktop GIS application. Finally, converted accurate coordinated data is uploaded to central TUES servers.

For now, TUES is only accessible to authorized users of the Republic of Turkey's Ministry of Culture and Tourism. When the project is completed, we open some modules to the general public and most modules to other governmental agencies.

Figure 7. Coordinate Based “Area” Query Example

Figure 8. Detailed Results of Coordinate Based “Area” Query (Query resulted with 1 province, 3 districts, 4 urban protection zones and 1 archaeological protection zone)

Figure 9. TUES utilizes Google Street Maps and Satellite Images under its web based spatial data

Our plans for the year 2014 are to encourage our Regional Conservation Councils to enter more data into the system. We also need to find partners and prepare policies for how to share our data via Web services.
registered cultural heritage to avoid conflicting with protected zones.
In conclusion, we believe that TUES will be an important source for the General Directorate of Land Registry and Cadastre, General Directorate of Mining Affairs, Republic of Turkey's Ministry of Food, Agriculture and Livestock, Ministry of Forestry, Ministry of Environment and Urbanization, General Directorate of Highways and many more relevant governmental institutions.
We therefore strongly recommend developing the national GIS systems for every possible type of spatial data. Our project team would like to share our knowledge with those interested in the subject.

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REFERENCES


CONCLUSIONS

At first, TUES was planned as an Immovable Cultural Heritage Inventory System only to be used by the Turkish Ministry of Culture and Tourism. However, we realized that other Turkish governmental agencies needed TUES much more than the Ministry of Culture and Tourism.
Because of the compulsory policies on preservation of cultural heritage of Republic of Turkey, governmental and non-governmental organizations need a spatial database of