

Wetis – a Web based tourist information system for East Slovakia

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Services like tourism have to use the possibilities of modern advertising and data presentation. In particular, these include the World Wide Web (WWW). This platform brings its products and services directly to the customers. To place the information about a region and its tourist offer in optimal manner, requires an exact definition of elements in the planned tourist info systems and their presentation. WETIS is the acronym of the "Web based tourist information system".

The WETIS elements and their integration into other services, the data structures and types, maps and their interactivity are considered. Furthermore, the paper presents tourism related data of selected Slovakian villages and cities. Finally, a report regarding the demonstration web page and its future development is given.

Usually, the tourist information systems on the web relate to the most interesting historical or cultural sights in the region. In this way, the beauty of the many towns and villages is not appreciable and thus tend to be left out of tourist programmes. In order to fill the gap, a project was initiated at the Institute of Geotourism, where students cooperated in mapping the actual situation in the field and gradually covering all the villages and cities of the region of East Slovakia.

The project is still an ongoing project and the data upload is still incomplete. The WETIS contains useful information on a given locality. The detailed photo-documentation makes it possible to see each building of interest at a given locality. In order to avoid excessive data load for the WETIS users, the detailed data interesting only for professionals are available only on demand.

Key-words: information system, heritage, tourism, East Slovakia, Web, database

Introduction

E-marketing of regions and its settlements as well as tourist areas is of particular economic relevance for the tourism sector. For example, customers nowadays wish to obtain information about locations like hotels, restaurants, routes and tourist attractions directly, without mediation. For a user friendly representation, the data should be related to maps.

There are two approaches to this problem: one is using GIS systems (e.g. Timčák, Vizi 2006, Vizi et al. 2008), the other is using Web technology. The GIS approach can also be implemented in a Web environment, but is far more complicated both for the user and for administrator. On the other hand, its range of services is greater than that of the Web technology. As in this project the aims were simpler, the second approach was chosen.

For a GIS, digital maps with up to 64 information layers are needed. For the Web technology based solution, the number of necessary information layers is low. Many of the digital maps available on the WWW however, are inaccessible for use, due to copyrights (see e.g. Microsoft MapPoint Web Service). However, a short time ago, Google released free maps and their use requires only a registration (see also Google Maps and Google Maps API Tutorial). Yahoo has a similar offer (see at Yahoo!Maps; Yahoo-Maps-Webservice nutzen 2005). In this paper the use of Google maps available on the Internet will be shown, for an optimal representation of the region of East Slovakia (see also Kohler et al. 2006). This example can be extended as needed. The WETIS portal developed by the authors, includes an interactive graphical user interface, a searching facility for objects and the possibility to create own objects. Furthermore, it allows the use of Google geographical search functions. The details of the concept, the implementation and possible extensions in future are described in the following paragraphs. It is a part of the GeoWeb project (see at GeoWeb Projekt). The current version is available on the web (<http://www.wetis-sk.de/>).

The field data needed for the WETIS (Web based tourist information system) were collected mostly by MSc students of the Institute of Geotourism, FBERG, TU Košice. Their full list is on the <http://www.kgptour.tuke.sk/tourist%20guide.htm> page.

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Data collection

The Košice and Prešov County, is divided into 7 subregions from tourism development point of view (Fig. 1). Then Košice County was then divided by us into units of 5-10 settlements, where a comprehensive set of data was collected (Tab. 1; Timčák 2006⁴).

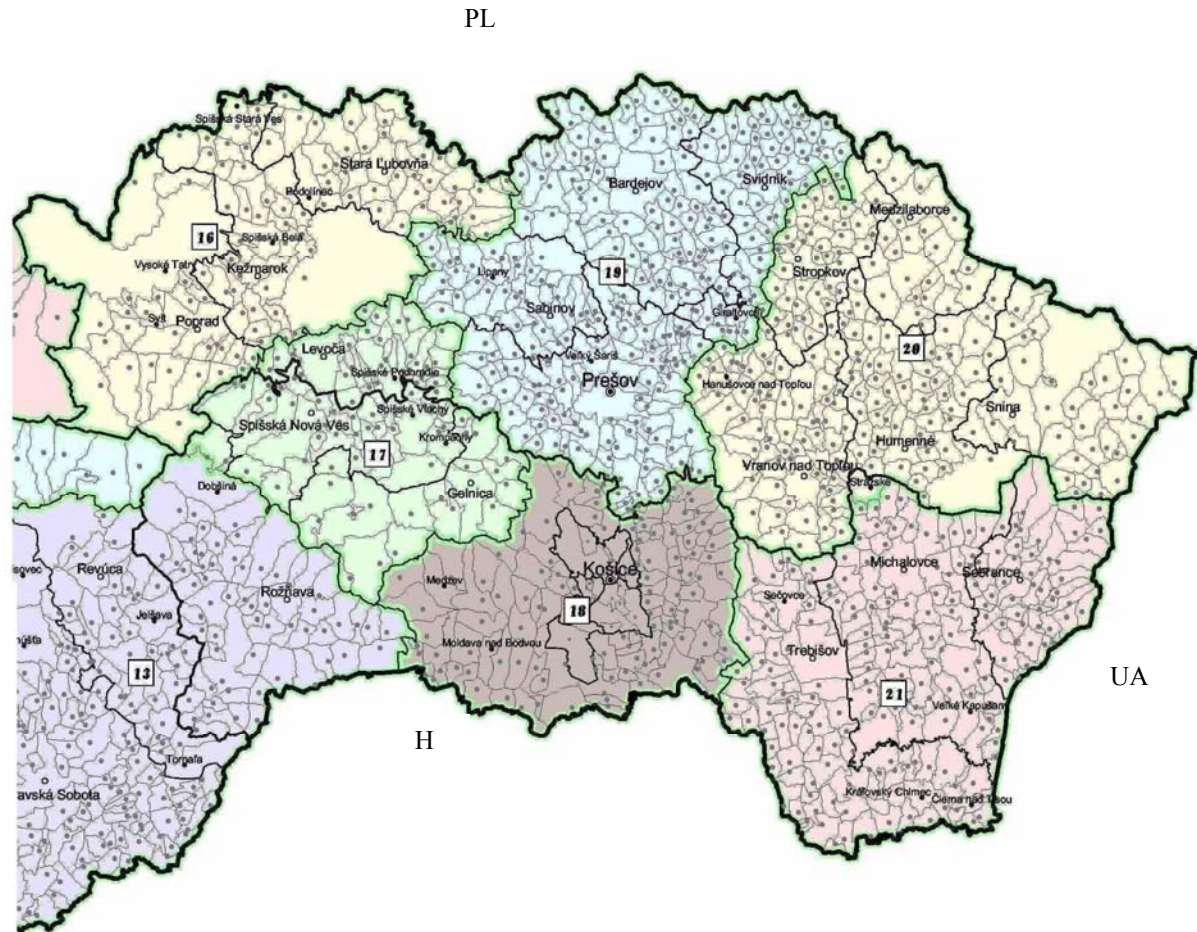


Fig. 1. East Slovakia with the tourist regions marked by numbers.
 Explanations: 13 – Gemer, 16 – Tatra, 17 Spis, 18 Kosice, 19 Saris, 20 Upper Zemplin, 21 – Lower Zemplin (Source: www.economy.gov.sk).

As already mentioned, field data were mostly collected during work on MSc theses. The coordinates were taken by Garmin Venture Cx GPS unit. Digital photographs were taken not only of objects of historical, cultural, leisure or administrative interest, but also hospitality related objects. Furthermore, photographs were taken of traditional rural buildings that could be of interest in case of countryside tourism development.

The data on photograph localisation were also inserted to 1:10 000 map sections for double checking the XYZ coordinate values (Fig. 2). The data types that are collected for the database are given in Tab. 1.

At present, 63 villages, cities and their surroundings were investigated (cf. <http://www.kgptour.tuke.sk/tourist%20guide.htm>). The resulting data-sets were and are being reworked into forms suitable for the web portal.

The inserts (Fig. 2) localize the photographs of objects of interest. The codes identify the photographs. This identification has also a corresponding XYZ coordinate set that is given in Hric (2008).

⁴ The works were supported also by the VEGA – Science Grant Agency - project No. 1/3801/06

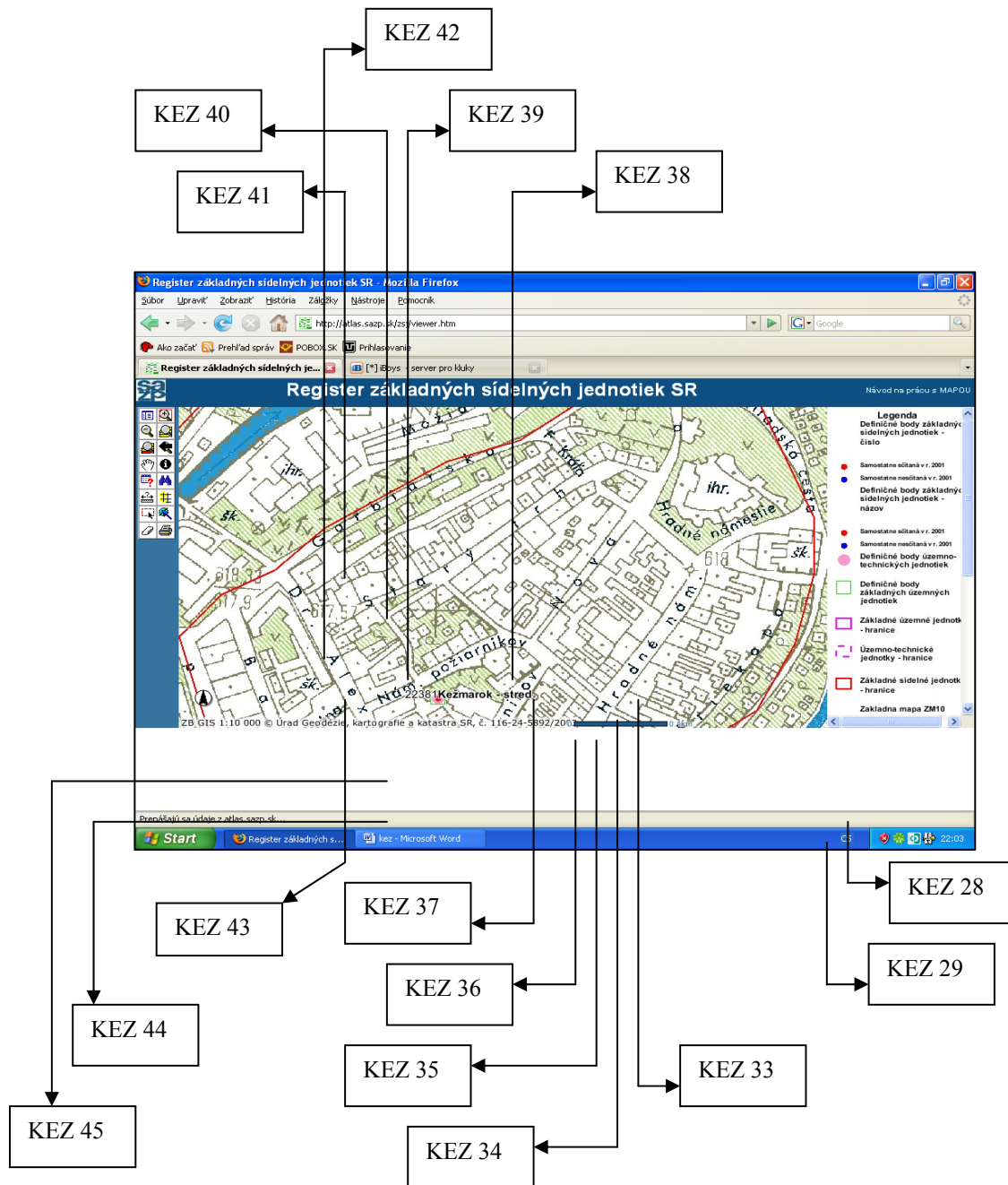


Fig. 2. A 1:10 000 map of Kežmarok city with the localization of indexed photographs (Hric 2008).

Tab.1. Primary data types collected for the WETIS. For illustration, for the descriptor 1 - Environment type and quality, field 1.1 is "Geomorphology" and consists of data on Geomorphological unit, list of important peaks/mountains, list of attractive valleys, aesthetic values of the locality. Field 1.2 "Geology" consists of data on rock types at the locality, list of rock exposures, list of localities with mineral occurrences, list of paleontological sites. The rest of fields are 1.3. Hydrology, 1.4. Speleology, 1.5. Climatic conditions, 1.6. State of the environment, 1.7. Protected areas, 1.8. Scenic values of selected places and of the locality.

Descriptor type	Number of subgroups	Descriptor type	Number of subgroups	Descriptor type	Number of subgroups
1.Environment type and quality	8 fields, 30 data types	4. Services	5 fields, 19 data types	7.Demographic data	3 fields, 15 data types
2. Man-made objects	9 fields, 36 data types (including XYZ coordinates and photos)	5. Transport and telecommunications	8 fields, 33 data types	8.Projects	3 fields, 15 data types
3. Tourism related enterprises and facilities	11 fields, 42 data types	6. Existing tourism related programs	6 fields, 26 data types	9.Information (books, guides, maps) and promo materials	5 fields, 12 data types

The WETIS architecture

As regards the architecture, a web-based map application like the WETIS consists of two essential components – the server and the client part. Typically, the server component is responsible for providing geographical information according to the client's request and returns the data and images suitable for the visualization back to the client application. The client component provides the user with a graphical user interface (GUI). Its main tasks are collecting the user input data and communicating with the server in order to retrieve the information as well as to provide interactive mechanisms for representing and analysing the results. The communication between the client and the sever component via a HTTP port is based on a defined request-response protocol. Typical solutions are implemented using JavaScript, Java applets or Flash and are discussed in more detail in Gocek, Hartmann (2006).

The title page of the WETIS web site is shown in Fig. 3. The “ Search an object on the map” service page is given in Fig. 4.

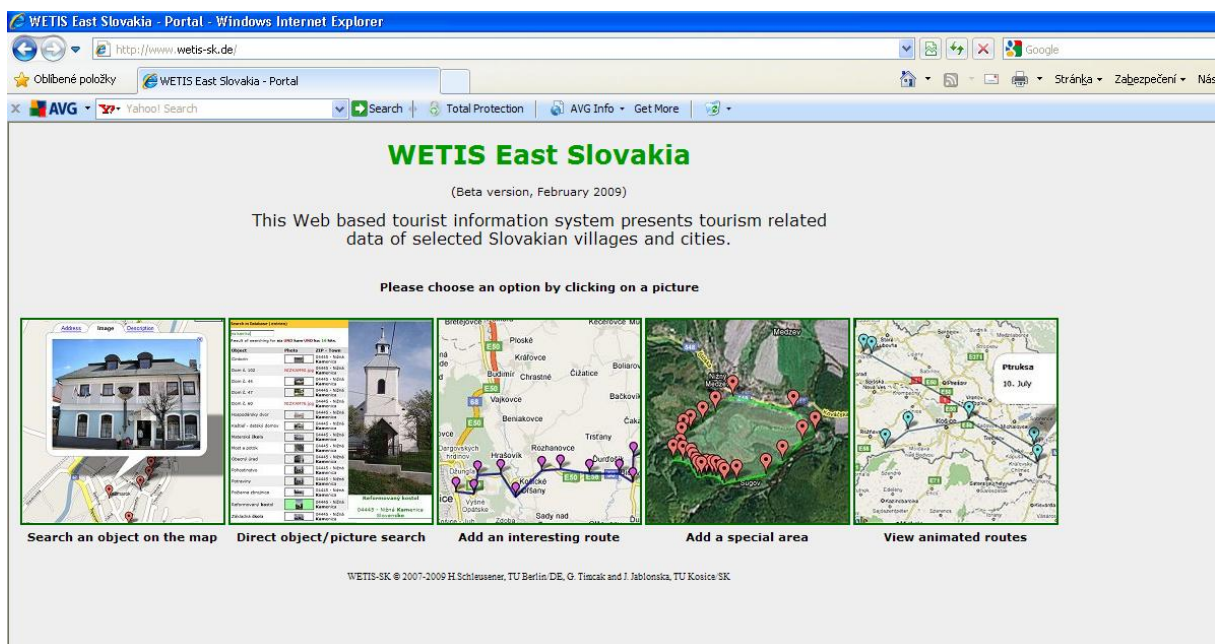


Fig. 3. The title page of the WETIS, showing the possible service choices.

Implementation

Programming

In order to incorporate Google maps, on the client side JavaScript is used. This allows also the application of AJAX (Asynchronous JavaScript and XML) concepts (see AJAX Tutorial).

The georeferenced elements to be represented on the map are stored in a MySQL database. The readout of the data is performed on the server using PHP.

The Google Maps API key

Google Maps-API (API: Application Programming Interface) lets embed Google Maps (cf. Google Maps) in own web pages with Java Script code. A Maps API key is necessary for using this API. It can be generated by a Google Account. The Google key is limited for the use of one domain or directory.

Fig. 4. The WETIS project “Search an object on the map” page - showing the image of the wooden church in Kežmarok. If the map is enlarged, more and more points can be made visible. Using a right mouse button click, the available information on that point can be retrieved.

Design of the graphical user interface

The structure of the page is given in figure 4. It contains the navigation on the left hand side below the head and the map on the right hand side. The Login field of the Administrator is located in the heading [Admin].

Functionalities of the Google map in the map window

In the upper left corner there is a tool to move, to centre and to zoom the map. On the right hand side there are buttons in order to switch the type of the map. These concern (fig. 5):

- Map: Map view
- Satellite: satellite view
- Hybrid: satellite view with overlaid road map



Fig. 5. Buttons for changing the type of map.

A scale is located in the lower left area and an overview of the map is given in the lower right area. The georeferenced objects stored in the database are shown on the maps by arbitrary icons. A mouse over icon function delivers information of the object like address, picture with links or a detailed description.

Center

A mouse click move the click position to the map center. The coordinates (latitude, longitude) are shown. The administrator can use the *[add to DB]* function in order to insert an object into the database.

Search in Database

Objects, regions or cities can be searched for (fig. 6). If search failed, it is announced by „*Nothing found. Try again*“. In this case the inserted text should be checked or replaced by a different request. A successful search represents 10 results per page which could be selected in a list.

Fig. 6. Search form and results for query “stan”.

The check mark in front of the results allows to fade in or to fade out the corresponding object on the map. The function *[hide all]* hides all objects on the map whereas *[show all]* makes all objects visible.

In the case that the georeferenced object is a company, it will be indicated by square brackets on the map. An arrow appears on the map when moving the mouse over the results showing the corresponding object. A click opens the bubble with details.

Search by Google's Geocoder

This function (fig. 7) allows the search for an arbitrary address. The input has to be done in the sequence *street, city, region*. Maximum five results are displayed. In this case the request should be specified. There are also functions *[hide all]* and *[show all]* as in the foregoing part *Search in Database*. The administrator can insert data via the link *[add to DB]*.

Fig. 7. Google's Geocoder form (left) and result on the map (right)Inserting data into the database.

The administrator can add entries into the database. This is carried out by the function *[add to DB]* in the window *Center* (Fig. 8) or *GeoCoder*. The link *[Add to DB]* opens a new window.

Fig. 8. The Center part of the admin tool link .

WETIS offers a form for the object data (input by the administrator, see fig. 9,10) and uses the geographical coordinates from the Google map. After having filled-in the fields, the input is finished by OK followed by the conformation of the entry. The object is shown after a refresh of the main page.

Object, related person and address Object: <input type="text"/> Title: <input type="text"/> First Name: <input type="text"/> Last Name: <input type="text"/> Address: <input type="text"/> Nr.: <input type="text"/> PLZ/Postal Code: <input type="text"/> City/Town: <input type="text"/> Country: <input type="text"/> Telephone Phone Number: <input type="text"/> Fax: <input type="text"/> Internet Webpage (www.mypage.com): <input type="text"/> Email Address: (me@me.com) <input type="text"/>		Coordinates Lat: <input type="text" value="48.9477589"/> Long: <input type="text" value="20.5828857"/> Height: <input type="text"/> meter Map Settings Map Icon: <input type="text" value="bed"/> Description: <input type="text"/> <input type="text"/> Image <input type="text"/> <input type="button" value="Durchsuchen..."/> This image is shown in the bubble in the register "Image". Video <input type="text"/> Here you can define a link to your video.
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Fig.9. The admin tool window for inserting new objects.

Project WETIS-SK: Edit data base entries		
Object, related person and address Object: <input type="text" value="Club hotel **"/> Project-ID: <input type="text" value="KEZ 41"/> First Name: <input type="text"/> Last Name: <input type="text"/> Street: <input type="text"/> Nr.: <input type="text"/> PLZ/Postal Code: <input type="text" value="06001"/> City/Town: <input type="text" value="Kežmarok"/> Country: <input type="text" value="Slovensko"/> Telephone/Fax Phone Number: <input type="text"/> Fax: <input type="text"/> Internet Webpage (www.mypage.com): <input type="text" value="www.clubhotel.sk"/> Email Address: (me@me.com) <input type="text"/>		Coordinates Lat: <input type="text" value="49.13701"/> Long: <input type="text" value="20.42845"/> <small>(in: dd.gggggg) (in: dd.gggggg)</small> Height: <input type="text" value="624"/> meter Map Settings Map Icon: <small>Icon actually used: no icon defined</small> <input type="text" value="bed"/> You can select an icon for replacing the current one here: Description (text is shown in the bubble in the register "Description"): <input type="text"/> <input type="text"/> Image <input type="text" value="KEZ41.jpg"/> <input type="button" value="Durchsuchen..."/> This image is displayed. -- Choose an other to replace it. Video <input type="text"/> Here you can define a link to your video.
<input type="button" value="Write your changes into the data base"/>		Icons

Fig. 10. The admin tool window for editing objects.

Summary

The WETIS (Web based tourist information system) project is intended to offer detailed information for describing and advertising regions in Eastern Slovakia. It includes all steps from capturing data to publishing on the web. The data are stored in a data base and contain historical, cultural, geographical, geological, leisure, administrative and hospitality related information made complete by photographs and object descriptions. At present, a demonstration web page is available on the Internet.

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