Web-Based GIS-usage in tourism

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ABSTRACT

Vietnam tourism is growing very fast. The decision maker as well as end user need planning tools and information systems.

We present concepts and real examples for GIS applications that will support both groups of users.

Based on information systems in Europe and Vietnam we will show examples of advanced, but inexpensive information systems for tourism. These portal systems have are distinct from most existing systems. They are only based on standard protocols like OGC WMS and WFS. The administration may be done locally on the web resulting in distributed, reliable systems.

Decision makers and local administration on the other hand need a decision support system. Based heavily on GIS it will support the experts in the administration and analysis of relevant data. The concepts will show the long live and changing needs from first planning of tourism development in a "new" region thru support in the development of the tourism infrastructure to the final stage of keeping a tuorism region alive with as low destruction of landscape as possible.

The examples are based on latest developments using Moskito GIS.

1. INTRODUCTION

Nowadays, the Internet is increasingly making a rapidly development, not only playing an important role in research and education but also serving as a catalyst to a country's socio-economic and cultural development. Therefore, it is not a surprise that the Internet has become a development of the highest significance. With more than a billion internet connected people on the world, a new visual society has been found and spread (Internet World Stats, 2006). In recent years, the GIS applications are connecting with Internet. An example for GIS application for Internet will be showed in this study which focuses on tourism service to apply for Vietnam.

2. TOURISM DEVELOPMENT AND USED-INTERNET GUESTS

In some recent years, Vietnam has been known as a new destination for tourism where cultures, history and sightseeing are all combined. In year of 2005, there are 3.47 million tourist guests visited Vietnam, it takes an increase of 18% in comparison with the year of 2004 (MOFA, 2006). The most guests came from Korea, Japan, America, Thailand, Malaysia, China and Taiwan (Vietnam Agency, 2006). Actually, most those countries are having a very good internet connected condition (Table 1). It is a sound decision for applying Internet for tourism service including Web-GIS.

Table 1. Internet usage and population statistics. The data from Internet World Stats, 2006.

	1995 (%)	1998 (%)	2000 (%)	2002 (%)	2004 (%)	2006 (%)	Use Growth (2000-2006) (%)
World	na	na	na	na	na	16.7	200.9
Vietnam	0	0.01	0.25	0.5	na	12.8	5.255.5
Korea	0.81	6.68	40.26	52.7	na	67.0	78.0
Japan	1.59	13.39	37	48	na	67.2	83.3
USA	na	na	44.1	58.0	68.8	69.3	117.3
Thailand	0.09	0.83	3.74	5.7	na	12.7	266.1
Malaysia	0.2	7	16.59	24.4	na	40.2	197.7
China	0	0.17	1.76	3.5	na	9.4	446.7
Taiwan	1.17	13.73	28.11	49.8	na	60.3	120.4
Germany	na	na	29.2	na	56.3	61.3	110.9

2. ADVANCES OF WEB-GIS

2.1 Why is Web-GIS?

Most people think of GIS as a complicated expert system for specialists. For the future GIS will be used by nearly every end-users. Tourism planning needs to use geo-data to analyze areas and show the results. Here, GIS is located since long time. But end-users, tourists also need GIS. Traveling to a county, everyone have a number of locations, where they want to travel. Therefore, a traveling plan for this is necessary. Next, which hotel is nearby my route but it is also selected by cost, availability, and other factors. This needs Intersections from GIS. We can extend this much more with additional functions.

2.2 Why a new development?

There are many existing applications in tourism planning and management. There are even more applications for tourist information systems. All these systems have some disadvantages.

- They have no capabilities for inoperable use.
- If you buy one, you may use it. Information, collected in other systems, are not available.
- Most of the information systems need a big infrastructure.
- If you are a small company or organization, your budget will spend mostly for the basic system, not for content.
- Most applications have been created specialized on the needs of one organization.
- Applications are created as information system for users or as expert systems for specialists. If you need both, you need two systems/environments.

2.3 Basics in tourism using Moskito GIS aspects for tourism information systems

The following platforms can be used:

- Standard programs
  - This is the solution with the best user interface. There are several information systems, using standard PC hardware. You have to order, in most cases buy them in advance. They are able to provide text, video, audio and pictures. On the side of the provider they introduce the lowest cost. He has to produce the program and prepare the data. All the processing is done on the user side.
  - But on the other hand, the user has to install them. This needs a private PC, most business PCs will not do.
  - To include GEO-information you may use Google Earth or a similar system. This will give the user a perfect presentation, but needs a high performance PC.
  - The most difficult part is keeping the data current. Once produced the data is difficult to be changed.
  - As a second problem you can not take the data with you on the journey.

- PDA
  - Only a small number of tourists carry one.

- Mobile phone
  - Currently most devices are too small.
  - WEB on PC/PDA
  - The tourist can reach users that prepare there travelling. So that, all long term information on a country/region can be provided including hotel and sightseeing information.
  - Backpackers will only partially reach people. They can get information in the big towns, where public internet access is possible. On the other hand, the only better access is a mobile phone, which is still expensive and complicate.

2.3 Why use WEB-GIS?

For the GIS information systems used by tourists there is no other chance better than WEB-GIS. No user will buy and install a program to prepare traveling plans. But in the range of planning systems, WEB GIS are now becoming more popular. Two reasons are:

- Small organizations are not able to buy and operate a big, full featured planning system.
- With a WEB GIS you can include all the data from online sources. They are collected automatically by the connected tourist information systems.

This will not result in all processes to be WEB-Based. But most regular executed operations can be solved or supported this way.

2.4 Relevant GIS Standards

Recent developments where based on proprietary systems and the concepts where closed. If you have to use information of several sources to do the tourism planning there is no chance. With this situation as background, we use international standards wherever possible.

- HTML is the base for all information transfer in the WEB.
- OGC WMS will give the system interoperable information transfer.
- OGC WFS provides information transfer including feature data and vector data.
- OGC GAZETEER will provide searchable locations.

3. AN EXAMPLE FOR WEB-GIS IN VIETNAM BY MOSKITO

3.1 History

Moskito GIS started in year 2000 by connections to several universities like Can Tho, Hanoi, Haiphong. The GIS has been translated to Vietnamese language with Unicode support.

3.2 Projects

- Integrated water resources management (IWRM). This research project is located at three areas in Vietnam (Can Tho, Nam Dinh, Lam Dong).
- On the German side, the universities of Bonn, Greifswald and Bochum are the main partners in this project. Several companies in Germany and Vietnam are connected. Moskito is one central partner and will realize important GIS and IT components.
- Training programs at University of Hanoi, University of Can Tho, University of Haiphong, Institutes like IAM (HCMC)
- Cooperation with future University in Hoi An, institute for tourism.

3.3 An examples for Web-GIS

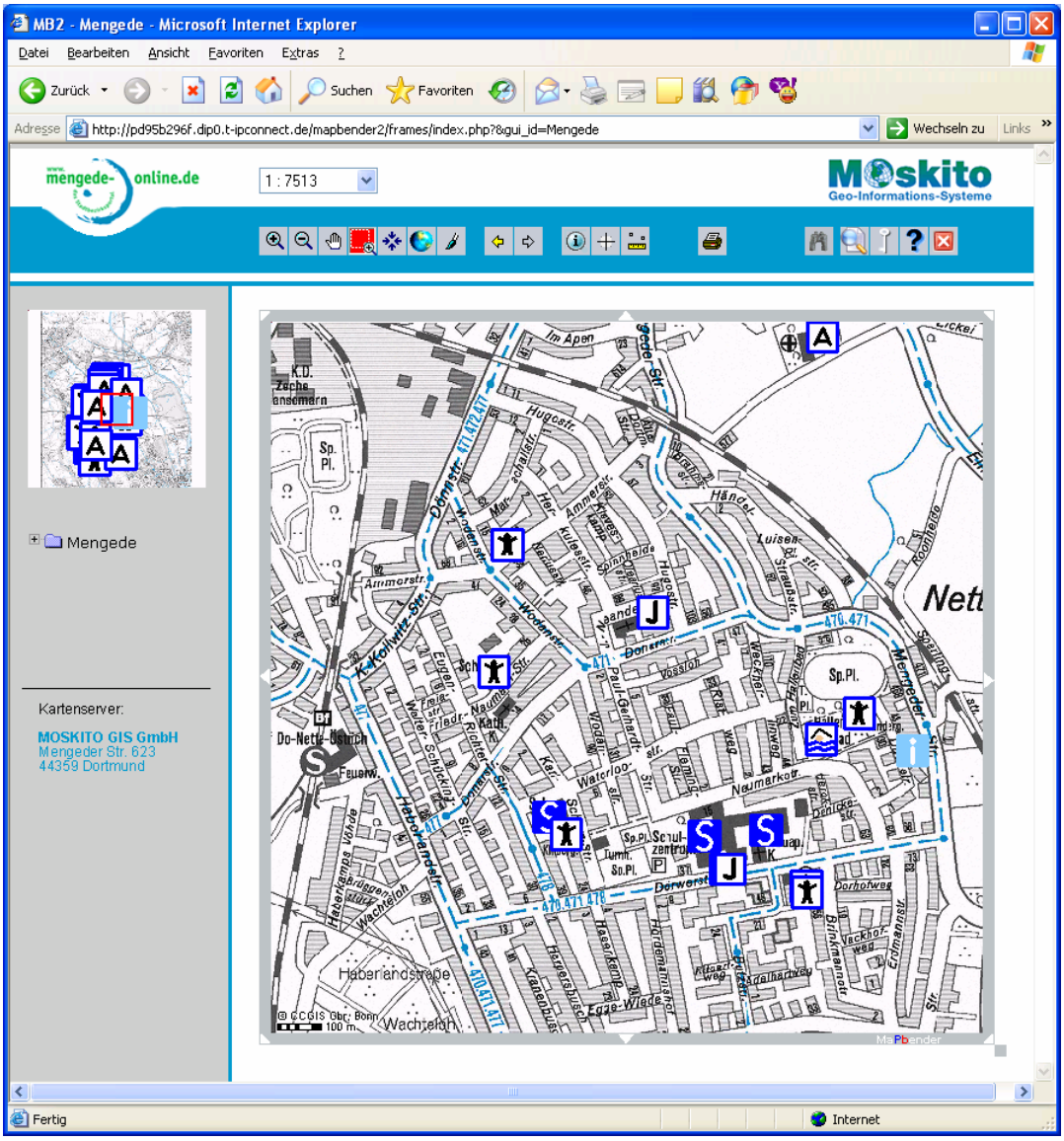

Figure 1. Information System with points of interest.

In the first phase of this projects(s) there will be at least 2 german and 2 vietnamese examples

- Dortmund Mengede
- Greifswalder Bodden
- Hoi An
- Phu Quoc

They have different approaches, but the same kernel. Hoi An and Phu Quoc will start as a web based information system and expand in the direction of planning systems. Mengede, where the head quarter of Moskito is located, will be realized as township information system. Greifswalder Bodden will support the information systems for several townships with geographical information. It will consist of tourist information as well as information for the inhabitants.

8 REFERENCES

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