SERVING MAPS ON THE INTERNET: A RECREATION AND TOURISM EXAMPLE

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Abstract: This paper will illustrate the steps necessary to deliver recreation and tourism maps on the Internet. In addition to the pragmatic need to introduce some basic cartographic and computer concepts, examples of the usefulness to recreation and tourism planners and managers will be illustrated. For example, a tourism bureau may wish to employ this technology to promote visitation to a region by mapping locations of B and B's, restaurants and other support services. Then the park manager can provide advance information about camping opportunities or cross-country ski trail routes. The Westfield River Watershed Interactive Atlas (http://river.wsc.ma.edu) is currently commissioned by the Commonwealth of Massachusetts to deliver such information. Lessons learned about the development will also be noted.

Introduction

Web cartography or Internet Mapping Servers, is a recent means to display information in a graphic form on the World-Wide-Web (Kraak and Brown 2001). The surfing public demands high quality maps for directions to hotels, attractions and state parks. This public is no longer satisfied with crudely drawn sketch maps for directions. As the fields of GIS (Geographic Information Systems) and the Internet have grown together in the last decade, the natural evolution of web cartography is a logical step for planning and managing our tourism resources.

The Westfield River Watershed Interactive Atlas (WRWIA) was premiered during the early Spring 2001. As a response to the growing demand for information about Massachusetts' first Wild and Scenic River, the Westfield River, and to provide an educational forum for social and natural environmental data via the Internet, the WRWIA project began. Since the GIS lab at Westfield State College had been involved with mapping projects for several years, the next logical step was the publication of these data via the Internet. Using the software called ArcIMS (ESRI, inc.) and Servelet Exec 3.0 MS IIS/Windows, and a computer server, Westfield State College offered the first mapping server in the Massachusetts State College nine campus system. The River, as the server is called, is available at the web address http://river.wsc.ma.edu. Figure 1 highlights the regional focus of the Internet Mapping System.

Background

Westfield State College (WSC) is currently working with the Westfield River Watershed Association (WRWA), the Westfield River Watershed Team (WRWT) and area trail groups to develop trail maps for the Lower Westfield River Watershed. Included in this area are the communities of Agawam, Blandford, Granville, Montgomery, Russell, Southwick, Westfield and West Springfield. This inventory includes land-based trails as well as water-based trails and access points along river corridors. The primary goal of this project is to identify and map all recreational trails in the Lower Westfield River Watershed.

Data are collected from user groups, field checked with GPS technology and digital maps conforming to MassGIS (http://www.state.ma.us/mgis) standards are provided. A printed user guide will be published and will also be found on the Westfield River Watershed Interactive Atlas in Adobe Acrobat (tm) format. Maps for each community and a composite map will also be delivered. Four major tasks are involved in the project. Each of the major tasks is described next.

Task 1. Interview trail groups, community representatives, public and private agencies to inventory trails.

The project leader will oversee the collection and dissemination of trail data from a variety of organizations including non-profits such as WRWA, Appalachian Mountain Club (AMC), Sierra Club, Trout Unlimited (TU), and The Trustees of Reservations (TTOR). Also researched are public agencies including Conservation Commissions, Massachusetts Department of Environmental Management, Municipal Water Supplies, and others as deemed necessary. Private

landowners who permit "Officially" sanctioned trails will also be catalogued. Since some trails are in the planning stage, mapping these trails will provide managers with base-line data for planning purposes.

Task 2. Collect existing maps and field checking with GPS (where necessary).

During task 1, where existing digital databases are available, this information will be used to create maps of the trails. Should new trails be identified, field researchers will use Global Positioning Systems (GPS) technology to map trails, access points and other relevant data. At the same time, written descriptions of the trails will be prepared for later inclusion into the user guide.

Task 3. Geographic Information Systems.

WSC interns will digitize trail locations from field data collection and create necessary layers to be included with MassGIS and other data files. Eight community maps and one regional map will be printed. Eight community maps (scale 1:25,000) and one regional map (scale 1:50,000) will be published.

Task 4. User Guide.

Using the maps created in Task 3 and the detailed trail information written in Task 2, a Lower Westfield River Trails Inventory Guide will be published. In the guide, the reader will find trail maps and detailed information about each. While only Two Hundred copies of the guide will be published, the guide will be available on http://river.wsc.ma.edu for free downloads. Maps can also be printed from the website.

As this paper is written, we are presently finishing up Task 3. The remaining portion of the paper will highlight an example of one of the trail inventories (note: as this document is published one year later, the project is complete).

Sodom & Drake Mountain Ridge Trail Planning Project

The Sodom & Drake Mountain Ridge Trail was proposed in the latter 1990s as means to link public protected lands in the western hills of Westfield and Southwick, Massachusetts. As a

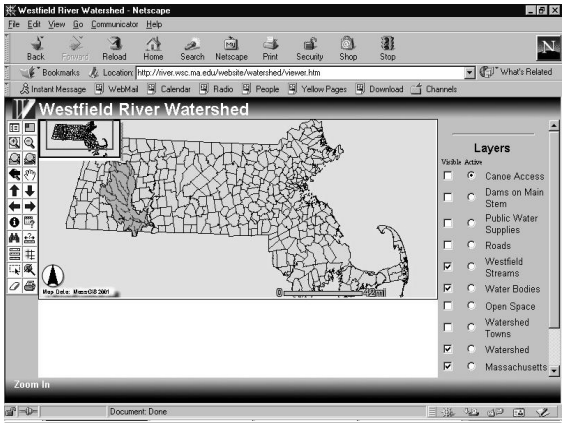

Figure 1

joint initiative between the Town of Southwick and the City of Westfield, this project seeks to curb the rapidly dwindling open space. Following the example proposed by the Father of the Appalachian Trail, Benton MacKaye, the trail corridor can act as a dam to stop the urban sprawl threatening much of America (MacKaye 1921). Further, the plan seeks to provide additional open space and habitat protection as a goal for the proposed Greenway. Current motorized and non-motorized trail related recreation is present along the ridge, while the objective of the project is to identify an appropriate route for the trail system and acquire appropriate easements from the private landowners where necessary.

For a description of the trail system, the author refers to the Massachusetts Greenways Grant Application (Noonan and Fitzgerald 2000). The proposed trail system's northern terminus begins in Southwestern Westfield near the Granville Town line at an approximate elevation of 195 meters and heads south for Drake Mountain (349 meters elevation). Continuing south for another 2.5 kilometers it reaches the Granville Gorge (90 meters). The Gorge is publicly owned and provides an excellent swimming hole for hot summer days! Crossing Massachusetts Route 57 and after a steep climb, the proposed trail reaches Sodom Mountain (315 meters). The trail meanders southeasterly for another 2 kilometers to Sodom Mountain Road (200 meters).

The proposed trail system is unique for a variety of reasons. First it links the two communities that share a common interest in protecting open space. Second, the ridge line already has numerous trails

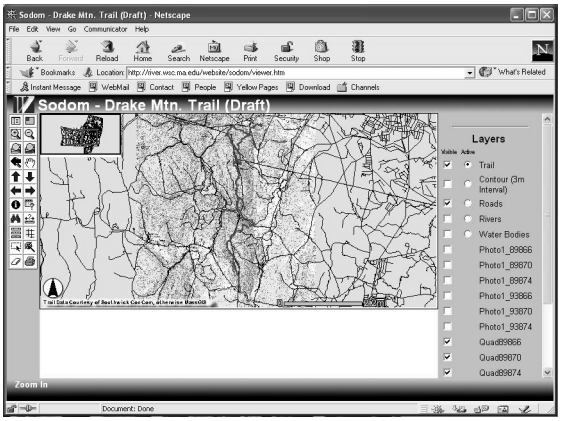

Figure 2.

criss-crossing the area. And third, there is already a significant amount of public land in the area. Public lands are managed by the local communities or conservation easements are found for agricultural reasons.

During the summer of 2001, The Trustees of Reservation was hired to conduct a GPS survey of the proposed route. The Trustees of Reservation (TTOR) is the oldest land trust in America. More information can be found at their website (http://www.thetrustees.org/).

The data files were then incorporated in a GIS project and are illustrated next. The overall area of the greenway is illustrated in Figure 2. This is the view from the Internet mapping site and thus is interactive to the user.

For this view, the geographic layers in an ArcView (ESRI, inc.) format are simply overlaid on top the scanned USGS topographic maps of the area. The topographic sheets provide the regional context and a tremendous amount of base data on which to use for planning. A detailed section of the trail system is shown in Figure 3. Drake Mountain, near the northern terminus of the trail is highlighted. As you can see, several alternative routes are proposed, each with unique views and provide different approaches to the summit.

The USGS Quadrangles were scanned by MassGIS (http://www.state.ma.us/mgis/) at a 500 dots per inch (DPI) resolution in 2000-01 from current maps. Each file was registered to the MA State Plane NAD83 coordinates. Since the USGS Topographic maps are nearly 20 years old, information necessary for planning must be more current. Note this is not a criticism of the usefulness of the USGS maps, since topographic features are likely to be accurate, while cultural features may not be up to date. As such, aerial photography has become a necessary element in any planning application, since features will be more current and any recent construction will be visible.

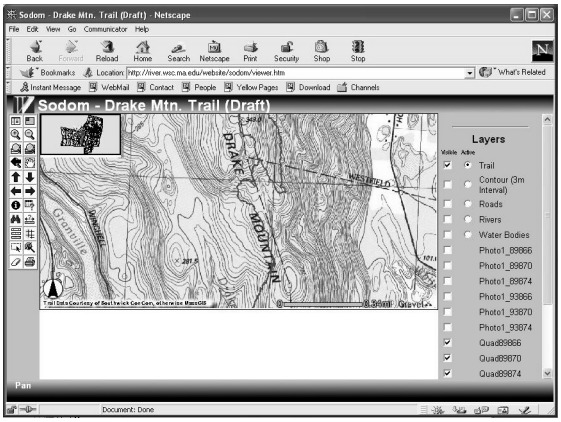

Figure 3.

The one-meter resolution aerial photography was obtained in 1997 and thus is more current then the 1983 base topographic maps. Figure 4 illustrates the proposed trail system on the more recent aerial photography.

The next phase of the trail project involves contacting landowners to secure a right of way for the trail to cross their lands. Since this a "sticky" situation, we will not display this information on the web. It is sticky since although land ownership is public information, citizens do not like this information made public. An interesting note is that this information is publicly available in any town's Tax Assessors office but publishing this information on the web is not widely accepted.

In any case, once the proposed route is accepted, trail construction can begin. And once the trail is constructed the Internet Map Server can provide the hiking public information about the trail. Anticipated information made available on the web will include not only the base maps, tailored made to the liking of the individual user, but also a trail guide, information about access points, nearby attractions as well as support infrastructure for the tourist.

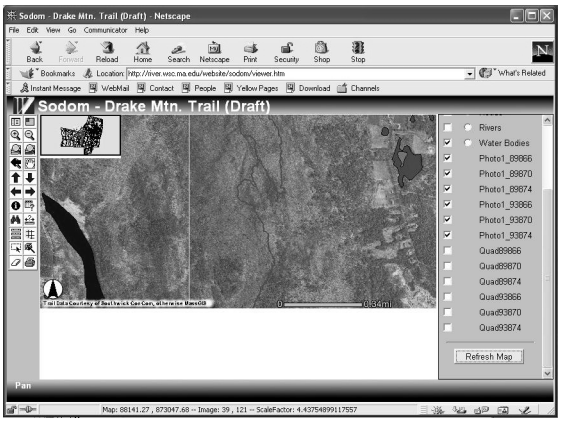

Figure 4.

Discussion

As the Internet continues to grow, practical tourism information will become more important in the travel industry. It is estimated that there are 550 million Internet users worldwide (www.nua.ie). Of this figure, nearly 200 million live in the US or Canada. Further research conducted by NUA Internet Surveys (http://www.nua.ie/) recently found Online travel spending rose by five percent to 1.3 billion dollars while non-travel consumer spending declined by 5 percent to 373 billion dollars. Travel information sites were up in unique "hits". For example AAA.com was up 28 percent to 102,000 daily visits. Internet mapping sites like Mapblast (www.mapblast.com) was up 21 percent (119,000 daily) and Mapquest (www.mapquest.com) was up 16 percent. Obviously Internet mapping information is destined to grow.

Resource managers may wish to include interactive maps to their web site. By allowing the surfing public to create maps for tourism needs, the web site can provide a greater service for promotion or planning. For a management application, the next phase of this project will explore the usefulness of having field managers contribute information to the Internet mapping server. Thus the maps and related data bases will truly become interactive with up-to-date information from the field.

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Contains articles presented at the 2003 Northeastern Recreation Research Symposium. Contents cover planning issues, communications and information, management presentations, service quality and outdoor recreation, recreation behavior, founders' forum, featured posters, tourism and the community, specialized recreation, recreation and the community, management issues in outdoor recreation, meanings and places, constraints, modeling, recreation users, water-based recreation, and recreation marketing.

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