

1998

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Recommended Citation

Pat Newcombe, Libraries Turn New Leaf with GIS, *GOV'T TECHNOLOGY*, Oct. 1998, at 34.

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Libraries Turn New Leaf with GIS

Public libraries are turning to GIS to beef up their services.

In St. Charles County, Mo., a couple visited the local library for reference assistance. Planning to move into the county, the couple were concerned about finding a home within a subdivision and school district that would allow their children to mingle with others of Asian background. Using a geographic information system (GIS), the librarian showed them which areas were most populated by people of Asian descent, and then layered the data with the school district map, allowing the couple to determine which neighborhoods and schools would be the best location.

In a growing number of libraries, patrons use GIS to determine the best places to open small businesses, launch community projects or apply for grant applications. GIS software has been used for some time by local government, natural resource agencies and utilities, but lately librarians are discovering and implementing this technology and integrating it into their patron services.

Geographic data in digital form is becoming more common in libraries. Many librarians were first exposed to GIS by the TIGER files distributed with the U.S. Census Bureau's 1990 census data. More than 1,300 government-depository libraries receive information from the federal government, including the TIGER files, which can be used to produce street maps of the entire United States.

In 1992, the Association of Research Libraries initiated the GIS Literacy Project, convinced that libraries could harness the power and capabilities of GIS. By teaching librarians the skills needed to provide access to spatial data, the association enabled participating libraries to design GIS programs suited for their particular needs.

As desktop GIS software become less costly and easier to use, and as increasing amounts of data become available, more librarians are bringing the technology into their operations. According to GIS vendor ESRI, its software is used in 300 libraries of various types, 100 of which are public libraries.

Public libraries are facing global-

By Patricia Newcombe

Special to Government Technology

ization of information, increased competition for public funding, the rapid pace of technological improvements in computing and telecommunications, demographic changes and increasing alternatives to library services. To remain competitive, libraries have responded by developing initiatives to provide quality services that meet and anticipate the needs of their user communities.

"The time of passive sitting and waiting for a patron is gone. We compete with other information providers, and we'd better be very proactive," says Anna Sylvan, GIS/government information resources coordinator of the St. Charles City-County Library District.

Libraries are appropriate facilities for the management and distribution of GIS maps and data. They are neutral, unbiased institutions, and are an established nationwide infrastructure. People who need access to information automatically think of libraries. It is libraries that users depend on for their data needs, and for resources that can interpret data. In addition, librarians are proficient in collection development, cataloging, access and preservation issues. All this makes for a strong case to provide GIS services in libraries.

Patterns of Use

The St. Louis Public Library, in partnership with the Southern Illinois University at Edwardsville, began providing patrons with GIS services in 1992 with the development of the St. Louis Public Library's Electronic Atlas. The library's GIS atlas replaced the federally developed Urban Atlas, an electronic atlas of St. Louis city and county that had not been updated since 1970.

The atlas is accessible on a Pentium workstation in the library's public service area and provides 35 thematic city and county maps containing selected data elements from the 1990 census. These maps were created and saved as files using ESRI's ArcView

software and are estimated to meet 80 percent of patron needs. The atlas also allows patrons to match addresses and map their own data. Use of a color printer is available at no charge.

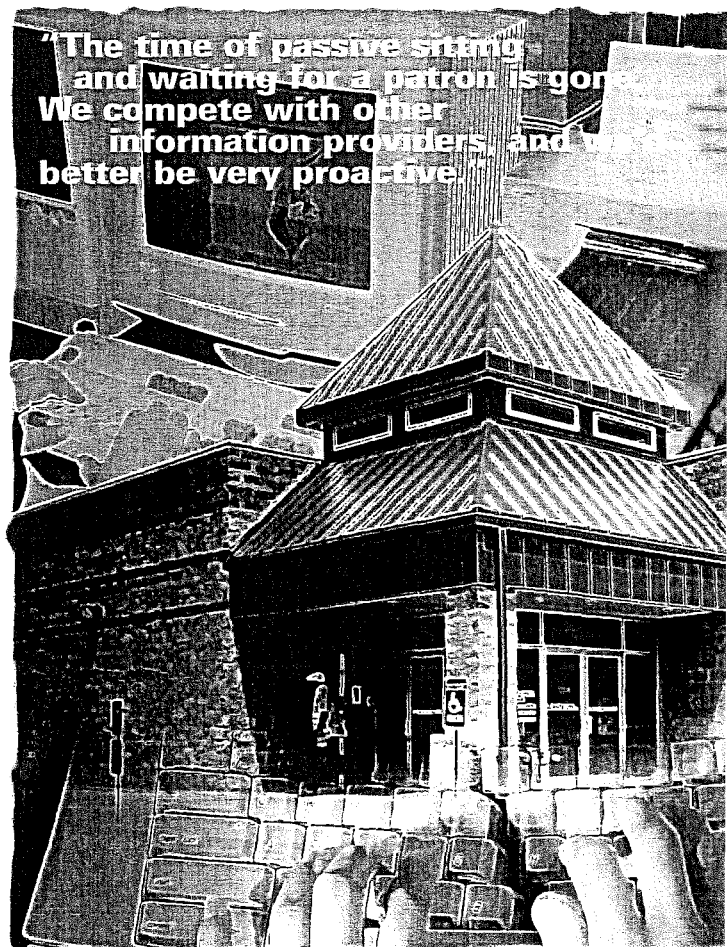
The system offers a simplified, customized user interface so that users of varying expertise can try GIS. Many patrons use the system quite easily. Staff assist those patrons who require help working with the system. Those patrons with more complex inquiries are referred to the Illinois and Missouri state data centers, which offer full GIS service. Conversely, the centers refer users to the library when the library is able to meet their needs.

"There are advantages in limiting patron options," said Ann Watts, the St. Louis Public Library's special coordinator. "We don't want a full-blown

GIS. We have it available administratively, and we use it for internal planning. But we have removed certain degrees of functionality from the public workstation because, if you don't, patrons lose their file or they rename your files."

Watts explained that the library has steered away from the fully-functional GIS a university library might offer for assistance. "We're trying to create a reference problem-solving tool which makes it very different from use in an academic institution," she said.

The St. Louis Public Library (SLPL) does not purchase data sets, but uses public domain data customized by an outside consultant. The typical patrons are from the not-for-profit community and students working in the health-care field.



Others are small-business developers working on business plans, and people doing grant applications.

SLPL reference librarians use the GIS as an integral part of their services. "We have no plans to be mapping beyond our immediate area. That's where our patron needs are and we are entirely patron driven," said Watts. "To me, GIS is a very traditional reference service."

St. Charles Goes Spatial

In 1995, Anna Sylvan was hired into her current position despite having no background in GIS. She realized that if she wanted to develop GIS within the library district, she would have to rely on herself, because no one within the county was really interested in the project.

"We had to come to a very definite understanding within the district as to what it is that we expect GIS to do for us," commented Sylvan. "Because we have financial restraints and a lack of

GIS professional know-how or expertise, we came to the conclusion that GIS for us would be to supply information based on public domain data primarily."

The library also required that data be formatted for ArcView, because staff did not have the technical or financial means to do it themselves.

According to Sylvan, the library couldn't afford to purchase commercial data sets, which can cost several thousand dollars each. Instead, she turned to CARES (Center for Agricultural Resources and Environmental Systems), a consortium developed at the University of Missouri-Columbia for GIS information.

"CARES received a huge grant to develop a user-friendly application with custom programming that would offer people an easy way to access information on demography and physical attributes on a county level," Sylvan explained. "The director said

they chose St. Charles County as a pilot test and he would gift me with that set." The library also received street-address data free of charge from ESRI and was able to purchase, at a reasonable cost, a commercial data set of the businesses in St. Charles County.

The St. Charles County Library uses ArcView 3.08 on a single stand-alone Pentium workstation running Windows NT. The computer has 48MB of RAM, a 2GB hard drive, a 21-inch monitor and a color printer. In July, patrons began using the workstation to view maps created from data sets provided by the library.

The library promotes its GIS through in-house brochures, publicizing it in local papers and by spreading the word to the Chamber of Commerce and businesses within the county.

"If all goes well, and we do expect it to, within one year, probably fiscal year 1999, we are definitely moving toward putting GIS on the Internet," added Sylvan. "This means that the county is going to be offering interactive online services with GIS capabilities to anybody who is going to hit our site."

According to Sylvan, to use GIS successfully and effectively as a reference tool in libraries, first state the mission and then decide what you want to use the GIS for. "You can't have everything for everybody," she cautioned. "It's just simply too massive, too expensive. I was able to argue that GIS is nothing more than using the same type of information that we get in different formats, just simply used in a geospatial way."

The biggest hurdle to offering GIS in a library is having data readily available, converted to a format that libraries can use. "In public libraries, we don't have programmers, nor do we have ArcInfo [a sophisticated GIS software package], which costs \$20,000," Sylvan said. "We don't have people who can create data and I think that is the biggest limitation."

"We have to really develop a very cohesive, coherent plan for promoting our services," she said. "Public libraries will survive only if they have the support of the community, because with that goes the tax base and everything else."

Just as important, Sylvan said, GIS requires teamwork in the library, networking with other librarians and partnerships with outside entities. Librarians need to be entrepreneurial. While data sets are usually expensive

to produce, by talking with data producers, especially in local, regional and state government agencies, librarians are often able to get the data free of charge by pointing out that agencies will then be able to refer users to the library instead of burdening themselves with answering queries.

A Director's Tool First

GIS presents a new way of thinking for libraries and their patrons. Among librarians, an understanding of GIS technology has grown steadily. More and more libraries are providing GIS services. However, libraries still have a way to go in making GIS available to the public.

Boston's Simmons College offers one of the country's leading library sciences programs. Peter Hernon teaches GIS at Simmons and feels that the technology will take on a stronger, more visible role in libraries once librarians take advantage of GIS in their own strategic planning. For instance, librarians can use GIS to analyze patterns of patron use in public libraries and their branches. According to Hernon, librarians can employ GIS to answer a host of questions:

- From what areas of the community are the patrons coming to use the various branch libraries?
- What are the characteristics of the populations served by each library?
- Do the materials used vary by area served?

By using the volumes of data available in their computerized circulation systems, together with GIS, librarians can find the answers to many of these questions. Information generated by GIS can assist librarians in making more effective decisions about the location of library facilities, the number of branch locations required and the provision of appropriate services for different populations.

"GIS needs to be marketed not to reference librarians, but library directors, as a management tool," said Hernon. "A lot of libraries are not going to adopt GIS until they understand that it has a management application to it that offers real value to libraries, and that library directors could be using GIS for their own planning processes. Then we will see more widespread use of GIS in libraries."

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