

County jumping into high-tech world of mapping

By TIM JAMISON
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Imagine the Waterloo Police Department having the ability to tracking the movement of patrol cars on a computer image of the city and instantly knowing which officers are close when there's a call for help.

Or a street worker being able to push a button on a hand-held device that could fire a signal off an orbiting satellite to relay information about utility lines or street conditions directly below his feet — within a centimeter of accuracy.

Such gadgetry is no longer the domain of science fiction movies or top-secret military defense systems. In fact, many communities throughout the United States are already getting results from this new technology.

Black Hawk County is planning to join this high-tech world of computer mapping and satellites by starting two projects known as Geographic Information System and Global Positioning System, or GIS and GPS.

"The high technology we've got available to us now came to us through the military," said Black Hawk County Engineer Harold

Jensen, who is spearheading a drive for a countywide GIS system. "A lot of this technology was used during Desert Storm.

"There's a lot of applications for the county, cities and private business that are going to be available in the future on this system," he said.

Airplanes from Aerial Services Inc. in Cedar Falls are already taking photographs of the county that will form the base of the GIS system. With the help from The Sidwell Co. of Chicago, those photographs will be turned into accurate digital images for display on a computer screen.

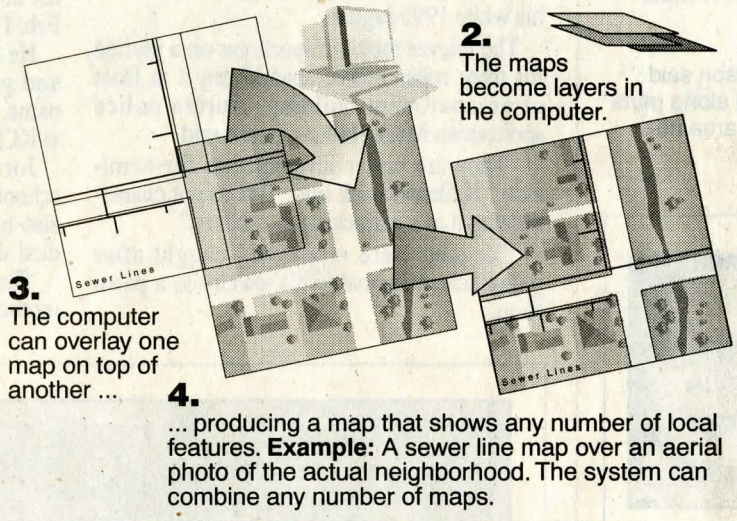
Other entities — including cities and private utility companies — will be encouraged to create digital maps showing utility routes, property lines, road signs, wetlands, easements and other information typically stored on paper maps at different locations around the community.

On the computer, those additional "layers" of maps can be stacked on top of the base map to show virtually everything that exists in a particular neighborhood at one time with incredible accuracy, Jensen said.

The county has committed \$500,000 to develop the base maps that will be provided free to other

New mapping method

How the Graphic Information System would map Black Hawk County:



Source: Black Hawk County Engineer's Office

COURIER graphic

government entities and private business. That money is coming from federal reimbursement for flood damage last spring, and state money the county will get for taking

over the maintenance of old Highway 218 between Cedar Falls and Janesville, Jensen said.

It will be up to the private businesses or cities to cover the cost of

developing the additional "layers" that can be used with the base maps.

"We want them to use it. It's designed to be used," Jensen said. "If the Water Works uses it, great, because they will provide back to us the location of the water mains in the county."

"If it's not used, it's not very valuable," he said. "But I'm thinking there's going to be quite a call for it."

Jensen called a special meeting of local government and business leaders last week to explain the GIS and GPS systems and attempt to earn their support. That support is especially important when tight budgets might restrict the amount of information that could be added to the system.

"It's important for the elected officials and CEOs to say, 'It makes sense. Go ahead with it,'" he said.

Many of those attending Jensen's meeting — sponsored by Midwest Power and the Chamber of Commerce — were enthusiastic about the applications of a local GIS system.

"I think it's really exciting," said Waterloo City Engineer Eric Thor-

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County launching two new high-tech projects

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son. "For the Engineering Department, the fact that they are going to do a 1-to-100 scale is great for us because we can do design work at that level."

The system could save a lot of time and money when designing road projects, especially when it comes to locating underground utilities, he said. Those utilities would be available on GIS at the touch of a button.

"Now we draw a map of the project, send it to the utility company, and they draw in the utilities and have to send it back," Thorson said.

"Of course, there's definitely a cost to develop all these layers in the future. It's going to take everybody's involvement so you can spread out the cost."

Tom Watt, a vice president and Waterloo Division manager with Midwest Power, said that electric utility and its sister utility, Midwest Gas, are already using GIS systems in other parts of its service territory.

"I think the important thing is we'll be able to pinpoint with accuracy power lines and water mains underground, and we'll know where property lines are before we start installing services," Watt said. "You're talking about things that take hours or days to sort out that will now just take an instant."

Cedar Falls' municipal utility service began developing their own GIS system in 1986 and would be interested in tying into whatever Black Hawk County develops, said Curt Johnson, manager of engineering.

"If I want to build a power line down the street, I can look at any gas lines that I'm going to step on or cross," Johnson said. "I used to have to look at three sets of maps."

"We are definitely improving efficiency with the (GIS) system," he said.

Although the Global Positioning System was established to ensure the accuracy of the aerial maps, Jensen said GPS and GIS can be used in con-

junction with each other to do some amazing things.

The GPS was developed by the U.S. Department of Defense and is based on a constellation of 24 satellites orbiting the earth 11,000 miles up. A hand-held device that bounces signals off the satellites allows a person to measure points to centimeter-level accuracy by simply walking from point to point and occupying them.

That application has been used in some cities to track the movements of emergency or public safety vehicles.

Scott Taylor, president of Cartegraph Systems in Dubuque, is providing technical assistance to Black Hawk County in developing uses for the GIS system. His company develops software for GIS applications.

Taylor said many other Iowa counties are looking at what happens here as a model for their GIS systems.

"Black Hawk County is taking a unique approach by making the base maps available to anyone free of charge," Taylor said.

Other counties — including Polk — have taken a more political route by organizing a committee of potential users to get the project off the ground. Those efforts often bog down when it's time to decide who pays for the base maps.

In other parts of the country, those wishing to use a public GIS system are charged a flat fee for the base maps. But Jensen said he believes providing the maps free will encourage use of the system and foster a spirit of cooperation between all levels of government, while building partnerships with the private sector.

Hawkeye Community College is also hoping to become a partner in the effort.

"It works into the civil engineering curriculum really well," said HCC instructor John Meyer, who attended last week's meeting. "We're looking into the course work to develop a curriculum to train people how to use this new system."

Jensen said it may take a year to have the base maps finished. He has suggested that a policy committee be formed to set up guidelines for the GIS system.