Map software pinpoints environment hotspots

Services utilize convergence of tools like Google Earth, EPA data

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Web connoisseurs have grown accustomed to going online and getting an aerial view of their neighborhoods, or even their houses, using software like Google Earth.

Now they can look at the same world and get a subterranean view.

A sophisticated new breed of mapping software on the Web is allowing users to pinpoint toxic hot spots and hazardous sites beneath the ground using a wealth of new information

and mashed-up existing technology. Those developments have opened up business opportunities for consulting firms and new ways for government and advocacy organizations to inform the public about hazardous, environmentally dangerous sites.

Take Locus Technologies in Mountain View, which, using Google Earth's satellite imagery, has created an online program that pinpoints problem sites throughout the country, including the infamous Superfund sites designated as super-toxic by the Environmental Protection Agency.

Type in a ZIP code, and yellow stars indicate the Superfund sites on or near the designated area. A version of the Locus software available to corporate subscribers offers a detailed look at each site, including the types of toxic materials and contamination levels under the ground.

"This is the kind of information engineers and geologists need to know: What's going on at this refinery," said Todd Pierce, a senior database developer with Locus.

"This is going down beneath your site 10 feet, 20 feet below," he added. "We've got some that go 200 to 300 feet. It's seeing what's underneath your site."

The interest in environmental mapping increased even more in January when the EPA began making available online huge amounts of digital data. The emergence of the so-called software-as-a-service business model, in which businesses can pay for computing services they use and not have to spend a bundle building an in-house data center, has also made environmental mapping affordable to more companies.

"Google has given you the platform," said Pat Garvey, a system manager with the EPA.

"EPA is giving you the data. It's a convergence of software and of source data. The software is there. The Internet is there. Now the data is available."

Government environmental data, from the EPA and state agencies, have been available to the public for decades.

In California, for example, the State Water Resources Control Board has made water contamination data available through GeoTracker. The agency plans to make even more data in geospatial format available this year, said Nancy Miller, the board's deputy director of information technology.

Corporations use the information to comply with government regulations related to cleaning up and monitoring hazardous-waste sites.

Because of stricter accounting rules as a result of the Sarbanes-Oxley Act, companies now also must report more-detailed financial liabilities stemming from their properties with environmental problems.

Erroneous reporting or disclosure of such liabilities could lead to penalties for CEOs or chief financial officers, Locus CEO Neno Duplancic said.

Then there are the growing concerns over global warming and other environmental problems, which have led more companies to focus on so-called green issues.

But plowing through huge amounts of technical data became a problem for a host of companies. Many of them have turned to environmental consulting firms to analyze and present the information in forms that can be easily understood.

"We have witnessed over the years how the information overload grew like a cancer," Duplancic said. "Everything was landing on spreadsheets and large databases. Clients found themselves with piles of data and nobody knew what to do with it."

Getting access to publicly available environmental information was even tougher for community and advocacy organizations, said Gina Solomon, senior scientist with the Natural Resources Defense Council.

"It's a critical problem if you are a community group trying to figure out what a factory near you is putting out and the information is in an EPA cabinet hundreds of miles away," she said.

Advances in mapping software, known as geographic information systems, or GIS, also made it possible to present the data visually. But Garvey said that, while the EPA had volumes of data available, it was not easily accessible.

That changed in January, when the agency unveiled the EPA Geospatial Data Project. The download service offer detailed information on environmental conditions by location.

Environmental consulting firms, such as Locus, immediately pounced on the opportunity to expand their services by using the EPA data.

Another company, Enviro-score, also has accessed the EPA data to offer site assessment services.

The Baton Rouge, La., startup produces environmental reports that include ratings of specific sites based on the presence of toxic or hazardous sites.

"This data being released like this allows for many businesses and us to accomplish more with less time," Enviroscore CEO Diane Baum said. "Just five years ago, this business wasn't possible. GIS and mapping software was costly and government data was not available to merge into a businesses' system.

"Now, mapping software and GIS has become cheaper and everybody is using mapping to some extent in their businesses," she added.

Andres Ferrate, CEO of Terra Internet Mapping Solutions, a Portland, Ore., startup that offers services to help businesses integrate Internet maps into their operations, echoed this view, saying Google has revolutionized online mapping services.

"I'm just amazed by what Google has done," he said. "They have essentially made a multimillion-dollar GIS application available for free."

The Stanford Linear Accelerator Center, a research lab operated by the university for the U.S. Department of Energy, uses Locus' services to keep track of groundwater contamination on its site.

Susan Witebsky, an assistant department head there, said that in the past the lab had to rely on Microsoft Excel spreadsheets to manage data and created maps by hand. That work got done faster with Locus, which charges businesses and organizations a few hundred dollars to a few thousands dollars a month depending on the size and the number of databases a customer wants to access.

Solomon of the Natural Resources Defense Council said nonprofit and community groups will benefit "from this democratization of information."

But she also lamented that these organizations probably will not be able to afford the more-sophisticated services offered by many environmental consulting firms.

Still, the public may eventually get easier access to more-detailed -- and free -- environmental data.

The EPA's Garvey said the agency, inspired by the growth of such sites as YouTube and eBay, hopes an "environmental channel" on the Internet will emerge.

"We think there is an awful lot of public appetite for environmental information from a geospatial view," he said. "We certainly think that if we make the data readily available, we're going to see an environmental channel just grow."

Added William Rukeyser, the California water board's public affairs director: "This is the democratization of data. We're making sure that it is available easily and speedily and it is no longer the province of specialized knowledge."

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