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The GISt of IT

by Richard Bray

Geographic Information Systems poised to revolutionize public sector

Imagine a computer display that takes information from a dozen different sources: aerial photos, satellite images, conventional maps and charts, handheld GPS (Global Positioning System) terminals, electoral areas, forest databases, soil characteristics, census data, satellite photos, weather information, business directories, crime statistics, traffic patterns, and spending habits, creating a living, dynamic picture of any given area. Then imagine using that tool to fashion a series of "what-if" scenarios, ensuring that decisions today have the best probability of producing the desired outcomes tomorrow. Roly Tinline is director of the GIS Lab at Queen's University in Kingston, and one of his goals is to make GIS a standard tool for public sector managers. "What is and has been missing is a really good handle on spatial information," Tinline said. "Think of emergency services, facilities management, property management, any kind of thing that deals with delivery, anything that delivers with the analysis of environments and accessibility to services. Those are all questions that are properly answered with the analytical tools in GIS." In emergency situations, for example, government agencies should be able to share lists of assets that would be useful. "You'd like to be able to merge that list with perhaps information about where police services or fire services are and improve

emergency response," he said. Across Canada and around the world, public sector managers are already using GIS to design and deliver their programs, but so far success, compared to potential, has been limited and local. One of the major barriers has been incompatibility. Different hardware and software packages not only do not 'talk' to each other, but much of the information that has been painstakingly gathered into datasets cannot be shared without long and expensive conversion. "I spend 80 percent of my life in GIS working with diverse datasets and putting them together, and most people in the GIS industry agree," Tinline said. "We spend so much of our time putting things together into a common format, and we shouldn't have to."

Beyond that, he said, there is a mindset within government that information is a resource that should be hoarded, not shared. "We have a lot of public data that should be available to businesses, to municipalities. Why isn't the Census on the Web, free, for everybody?" he asked. "The problem is that we Canadians, we are very loath to give information away or to share it. Now that is changing, but what you really want to do is come up with ways to make sure that software can share data from diverse sources without enforcing a lot of 'thou shalts' at those agencies," Tinline said.

Not surprisingly, the federal government is on the case. Jeff Labonte is the Director of GeoConnections, a federal agency based in Ottawa whose function is to ensure that every Canadian's investment in GIS pays the maximum dividend in efficiency, compatibility and usability.

"What we are trying to do is spell out the standards, the specifications and the data so that public sector agencies in Canada use a common infrastructure for GIS activities," Labonte said. "One of the issues in GIS is that as an industry it is very exciting, dynamic and very scientifically driven in the sense that there is new innovation coming all the time, but in terms of challenges there are not a lot of standards. Our understanding of infrastructure involves the policies, the technology, the standards and the people to support the development of exciting GIS applications."

The Canadian Geospatial Data Infrastructure (CGDI) program hopes to both harmonize Canada's geospatial databases and make them accessible on the Internet.

Until recently GIS was expensive, with expensive software, high personnel costs, and endless headaches acquiring and using data. Today, when Government On-Line (GOL) aims to provide more services electronically, ease of use and wider availability are becoming more important.

"We're working through the GOL process," Labonte said, "and GeoConnections and NRCan and about 10 other departments are looking at common requirements for using GIS for GOL type delivery, so the citizen will be able to say, 'I am on

Second Street in Regina and I want to find the closest place to get my passport and at the same time I want a visa for the Ukraine.' They start to look at those kinds of scenarios using GIS at the back end."

Vic d'Angiolo, a GIS Technician with the Canada Food Inspection Agency in Winnipeg, works with scientists, technicians, and veterinarians, and uses GIS technology on a daily basis to monitor and control animal disease outbreaks.

D'Angiolo said most managers quickly realize what GIS can do. "What I find is they do get that initial 'wow' effect, but what it does is allows them to develop new ideas. I find [that] when you demonstrate it, then they start to ask all kinds of questions and they develop new strategies. They start because it is so visual and the answers are there quite quickly."

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Armed with a diploma in agriculture from the University of Manitoba, a BSc. in geography from the University of Winnipeg and a certificate in Remote Sensing from the College of Geographic Sciences in Nova Scotia, d'Angiolo first saw the potential of GIS in the mid- to late1980s. But he found it difficult to apply, "Simply because the technology hadn't evolved to the point where it was user-friendly and affordable. The technology was there, the applications were there; we just didn't have the tools at an affordable price." Now, he said, "It is much more possible for people to use the technology today than it ever was."

In essence, GIS is really a decision support tool for managers. "One of the important things that we have to understand," said d'Angiolo, "is bad information is worse than no information because bad decisions are made from bad information. So this allows us, with the help of epidemiologists, veterinarians, whoever the application side professional is, to apply a set of rules or methodologies that are valid and then extract general information from those questions."

The closer it gets to managers' desktops, the bigger the difference GIS will make The Internet is the delivery system of choice, and as Tinline points out, going on the Internet solves other problems as well. "The Web virtually demands that some of these issues of interoperability be resolved so the information is useful to people. In that sense it is a driving force," he said.

Web accessibility is also a top priority for Jeff Labonte. "The industry and the whole global community are trying to create a worldwide infrastructure," he said.

Richard Bray is an Ottawa-based freelance writer specializing in the IT sector. He has been published in magazines and newspapers in Australia, the US and Canada. Before freelancing, he worked as a producer, reporter, and senior writer for CBC in Toronto.