

Applications for you

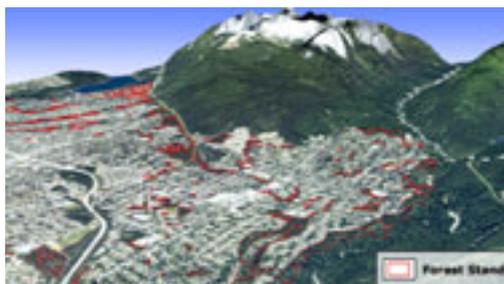
GIS is used to improve the efficiency of and simplify public services, city planning, emergency operations and travel logistics. Applications are as wide as the human imagination. Geographic information about physical landmarks in many forms is continuously distributed across departments at all government levels, in special jurisdictions and in all utilities. The range of information varies from demographics and traffic patterns to school locations and floodwater landmarks.

What it is

A geographic information system (GIS) is technology that integrates computer hardware and software to translate geospatial information into topographic, demographic, utility, facility, image and other resource data that is geographically referenced.

How it works

GIS is used to build large databases of anything that has a physical location. The information is typically related to a map or graphic. Spatial data collected via global satellite positioning, remote sensing and aerial photography is served to a technology platform. A GIS interface allows the creation of a single database or a network of shared databases to locate and track anything – fossils, taxi cabs, sewage pipes, geological fault lines, manhole covers, home robberies, invading fire ants or a hydro-electric power grid.



Over the years, GIS technology has shifted to a Windows operating system, a critical development that helped propel GIS beyond the technical and scientific world of surveyors and hydrographers into mainstream applications. The shift also made it easier to adapt software tools and incorporate overlays of data into business IT systems.

“The databases by themselves and the ability to produce all this data mean nothing unless you can ask questions,” says Roger Tomlinson, the Ottawa scientist who invented GIS in the 1960s. “That’s where the power of the computer comes in. GIS allows you to take all the geographic information and data and ask a specific question.” Such as? What is the optimum location for a health clinic, the fastest route for a fire truck, the best site to put a garbage dump?

Where to get it

The Canadian leaders in GIS development are ESRI Canada, headquartered in Toronto, Ontario, (www.esri.ca), whose parent company ESRI was founded as Environmental Systems Research Institute in California, and Intergraph Canada Ltd., with headquarters in Calgary, Alberta, (www.intergraph.ca), whose international parent is based in Huntsville, Alabama.

CARIS, with world headquarters in Fredericton, N.B., (www.caris.com) is considered a market leader in marine-related GIS. Another Canadian leader is PCI Geomatics (www.pcigeomatics.com), headquartered in Richmond Hill, Ontario, which specializes in remote sensing applications.

Information can be obtained from the Geomatics Industry Association of Canada (www.giac.ca), the trade association representing industry members who deal with geographically referenced information, and the Canadian Institute of Geomatics (www.cig-acsg.ca), founded in 1882. It is a non-profit scientific and technical association devoted to advancing the development of geomatics in Canada. The term geomatics encompasses surveying, mapping, remote sensing and GIS.



Fusion GIS

The larger GIS developers such as ESRI and Intergraph are re-engineering software packages to create components as plug-ins for customized services. Another critical goal is to merge GIS with other IT systems and existing management database systems.

Internet GIS is a new, special category of GIS, which makes GIS databases available to anyone with an Internet connection. The District of North Vancouver, for example, adopted an industry solution (ESRI Canada) to create its GeoWeb (www.geoweb.dnv.org), which allows residents to download property maps, search for maps of parks around the city and do a three dimensional flight over various districts around the city (using an appropriate multi-media plug-in).

Off-the-shelf software packages can be used as map locators on any home-based personal computer. Similarly a municipal atlas can be downloaded from the Internet from several cities including Ottawa.

A made-in-Canada solution



Roger Tomlinson is regarded internationally as the “father of GIS.” A geographer who immigrated to Canada in the late 1950s, Tomlinson pioneered the use of GIS worldwide surmising that computers would be the most effective geographical analysis tool. The first GIS ever implemented was the Canada GIS in 1963, which he helped develop for the Agriculture Rehabilitation and Development Agency initially as a means of providing assistance to farmers. The subsequent Canada Land Inventory involved a massive mapping exercise that combined aerial survey and computer technology, which was still in relative infancy. He believed Canadians devised GIS because, he says quoting a well-known Canadian maxim: “Canada has more geography than history.” Adding to a long list of international honours and awards, Tomlinson was recently awarded the Order of Canada for his work in GIS technology.

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