Empowering Partnerships and Community Data

By Paul Beach, GISP

In 1998, an economic downturn resulted in major layoffs at Sault Ste. Marie's largest employer, Algoma Steel. The municipal government decided to diversify the local economy and reduce the reliance on the steel industry. As a result, the Sault Ste. Marie Innovation Centre (SSMIC) was created to diversify the local economy in the area of Information Technology. SSMIC developed three areas of focus: business incubation for startup IT companies, support for small and medium sized IT companies and IT related market development projects.

During the same period of time the City and Public Utilities Commission of Sault Ste. Marie were starting to become more serious about the use of GIS. The two organizations were on parallel but not connected paths. Each was about to release requests for proposals to design and implement enterprise GIS solutions. SSMIC became involved and initiated the creation of a multi-enterprise GIS solution involving both organizations as the first SSMIC market development project.

In the past, Sault Ste. Marie has always been very reliant on Southern Ontario consultants for any form of IT related work. SSMIC's approach for this project was to engage the external consultants in a knowledge transfer capacity and train locally hired staff to carry the project forward.

The Sault Ste. Marie municipal/utility GIS solution was one of the most ambitious GIS projects attempted in Canada. The design and implementation was a five million dollar, five-year project to capture all information required for the municipality and utility to manage their assets and operations.

Four years of effort working with municipal and utilities staff were required to design the data models that would form the intelligence of the GIS system. The data models contained all the information related to features, attributes, database relationships, connectivity rules and editing constraint rules. The data models allow digital representations of real world assets and their interrelated functionality.

The data capture process to populate the data models involved capture from field inventory or original source documents. Any existing data was not used because accuracy and completeness was not guaranteed. This data capture included all electric, water, wastewater, transportation, telecom and administration features. As the data was being captured, processes were put in place to ensure that it would never get out of date again. The current process ensures that almost all GIS data is no more than thirty days out of date compared to reality. All building permits, engineering plans and work orders flow on a daily basis to SSMIC to be captured into the GIS system.

In 2004, a request was made by Public Works asking if GIS could be used to prioritize sidewalk sanding based on the demographics of the neighbourhood. The inclusion of demographic data and other sources of information from health and social services organizations opened the door for what was to come. During this year the GIS Department of SSMIC branded itself as the Community Geomatics Centre (CGC) as the focus changed from a GIS project to a community service organization.

During the past five years the CGC has expanded the municipal/utilities GIS solution in innovative ways to address health and social issues in Sault Ste. Marie. Using the established CGC GIS solution and the extremely comprehensive municipal dataset as background layers, health and social agencies were approached to join the CGC partnership in an attempt to improve the overall health of the community. Problems tackled include: early childhood development, accessibility service enhancement, public safety, environmental health and many more. Early results indicate improvements in public safety, reductions in municipal liabilities and more effective use of budgetary resources.

The CGC now provides service to dozens of organizations including the Municipality, Public Utilities, Public Health, Hospitals, Emergency Services, Social Services, the Conservation Authority and most other government service agencies in the District of Algoma. The CGC is a unique model of GIS service delivery in that it functions as a not for profit agency to promote and establish the partnerships and technological means to efficiently share data, tools and knowledge amongst community organizations to create safer, healthier and more prosperous communities.

The CGC GIS solution has been designated as the most comprehensive municipal/utilities GIS in Canada (ESRI Canada 2003), the first Information Utility in Canada (Urban Institute of Canada 2006), the most comprehensive community GIS in the World (ESRI Inc. 2008) and the winner of the Best Municipal/Public Sector GIS in Ontario (2003, 2006, 2009).

The CGC model is one in which the CGC provides a data warehouse, provides services to maintain the interrelated community data, facilitates the sharing of data and tools and leverages the full value of public data to bring about public

good. Huge volumes of public data are collected every day but little is used to its full potential and almost none is shared or combined with other agencies data to bring about positive results. What the CGC has actually created is the world's first Information Utility. Just as there are electric utilities and water utilities, there can be community information utilities that collect, manage and disseminate public data to improve the quality of life in our communities. In the past couple of years, CGC staff have been traveling across Ontario presenting and promoting the Community Information Utility model as an option for GIS and community information implementations and as a means to enable Ontario to gain competitive advantage in world markets as a smart region.

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Representative Client Benefits: Social, Economic and/or Environmental

Client(s)	Project	Brief Project Description	Benefits to Client
Algoma Public Health, PUC Inc.	West Nile Virus Surveillance	GIS is used to map APH's WNV surveillance program, which includes birds, mosquitoes, and larvae. Illustrating this information weekly since 2004 has allowed APH to plan during and after the season, while displaying this information with municipal infrastructure has led to new discoveries related to mosquito breading source.	• Reduction of possible negative health effects to citizens • Improved collaboration between partners • Cross organizational data sharing • Centralized analysis team • Information learned can be transferred to any vector-borne disease
City of Sault Ste. Marie – Public Works Department	Prioritization of Audible Pedestrian Signals	Comprehensive GIS analysis of where to prioritize the installation of audible pedestrian signals. Variables included: CNIB client neighbourhoods, facilities CNIB clients frequent, speed limits, intersection geometry, pedestrian collisions, and more.	• Identified intersection of highest need • Prioritized signalized intersections based on factors • Increased safety for individuals with a vision disability • Labour efforts and costs were reduced • Removed political pressure • Cross organizational data sharing • Collaboration between community stakeholders
Sault Ste. Marie Police Service, Ontario Ministry of Natural Resources	Mapping Reported Bear Calls	Mapping of bear encounters weekly and annually since 2004 has allowed planners to determine where educational efforts need to be focused. Public display of this information has also allowed the public to be aware of where bears have been sighted within the community.	• Increased public safety • Identified neighbourhoods to focus educational efforts • Reduction of costs • Focused staff resources
Algoma Public Health, PUC Inc., City of Sault Ste. Marie – Social Services Department	Lead in Drinking Water - Determining At-Risk Homes	GIS analysis of PUC Inc. water infrastructure in relation to homes with young children or pregnant women. Also analyzed the infrastructure against individuals on social assistance, allowing these people to obtain a free water filter.	• Quickly identified at-risk homes • Use of GIS saved staff time and effort • Improved public safety • Distributed free water filters to priority homes quickly • Continuous tracking of at-risk homes implemented by partners
Sault Area Hospital, Algoma Public Health	C. difficile Outbreak	A 3D GIS model was developed to assist with the problem. The data was analyzed and questions were presented back to the partners. Information gathered from this cooperative effort assisted with curbing the problem and SAH was thought of as a leader in the province.	• Effectively assisted with the identification of infectious areas • Increased public safety • Saved lives
Private Sector	Economic Site Selection	GIS and multi enterprise data is used to quickly identify available land and related infrastructure or conditions meeting specific criteria to accommodate business requirements	• GIS has been used to locate: ◦ Brookfield Power – Prince Wind Farm ◦ Pod Generating Group – Solar Farm ◦ Heliene Inc. – Solar Panel Manufacturing ◦ Superior Energy Solutions – Rooftop Solar projects ◦ Elementa Group – Energy from Waste ◦ Pond Biofuels Incorporated ◦ Ellsin Environmental Ltd. – Tire Recycling Plant
	Vulnerable Persons Registry	The VPR is a voluntary registry for those who may be vulnerable in the case of an emergency. The VPR provides information to emergency personnel through their respective dispatch systems allowing first responders to be more prepared for a situation.	• Increased public safety • Increased information to first responders • Useful in localized emergencies and for municipally declared emergencies • Can potentially save lives