

# Chatham-Kent, Ontario, Canada

## Chatham-Kent Online

### (2003—Enterprise System)

#### System Summary

In 1998, the municipality of Chatham-Kent was formed by the amalgamation of 23 independent communities with a mandate from the provincial government of Ontario to cut costs and streamline local government procedures. The municipality is largely rural and comprises an area of approximately 2,500 square kilometers that includes several small towns interspersed between large areas of agricultural land. The population of the municipality is approximately 110,000, with 40 percent living in the city of Chatham. The enterprise geographic information system (GIS) implementation at Chatham-Kent was established to serve the business interests of all municipal employees, clients, customers, and the various external consultants that Chatham-Kent utilizes. For this reason, the GIS system was designed around the common theme of open access. Municipal staff with very little knowledge of GIS, spatial concepts, or GIS applications required tools that were readily accessible and relatively easy to use. Internal staff now have full access to the data warehouse via current Web browser technology; furthermore, external GIS clients, such as contractors and consultants, can gain access to the GIS through a secure network connection. This, again, is a time and cost savings to consultants and ultimately the savings will be passed on to the organization and to its taxpayers.

Chatham-Kent has found that the initial phases of enterprise-wide GIS implementation have benefited the organization in profound ways. Staff members now go to the GIS application first for common questions that would otherwise take much more time to answer. As an added bonus, the enterprise GIS also feeds data from the warehouse to Chatham-Kent's community Web portal that has incorporated most of the GIS functionality that exists in the internal system. Now the general public and people around the globe can explore the wealth of data and information that was never before available by visiting <http://www.chathamkent.ca>.

#### Motivation for System Development

The corporation of the municipality of Chatham-Kent, operating under a single-tier government system, was created in 1998 from the amalgamation of 23 urban, semirural, and rural communities; 13 public-utility companies; and 5 police forces. With the amalgamation, the municipality was required to provide many services, including public health, social services, water, hydro and wastewater services, emergency services, economic development, libraries, culture, and recreation. In executing its mandate, the municipality continues to seek innovative and effective means of applying technology to improve its operational and planning capabilities.

From the outset of the amalgamation, the Amalgamation Transition Board recommended that the municipality of Chatham-Kent further investigate a GIS initiative. Following this recommendation, the municipality initiated a strategic plan and later the framework for an AM/FM system to manage the infrastructure assets of the amalgamated municipality. The overall vision then, as developed, foresaw an AM/FM project proceeding primarily with the Public Utilities Commission and the Municipal Engineering department. A GIS project would follow and benefit from the progress of the AM/FM project. The GIS would involve other municipal departments, such as Planning, Public Works, and Economic Development, and would eventually be the storehouse for all land data for all departments within the municipality. Following the success of the AM/FM implementation, a strategic plan for enterprise GIS was initiated.

#### System Benefits Achieved

The municipality of Chatham-Kent has won two Gold Awards from the Urban and Regional Information Systems Association (URISA), Ontario Chapter. Chatham-Kent has the "Best Municipal Geographic Information System (GIS)" and the "Best Web – Geographic Information System (GIS)." Both awards are presented annually to organizations that demonstrate clear

leadership and quality in the management of spatial data. This is the first time that any one community has been awarded two gold awards in the same competition.

The municipality of Chatham-Kent also published an article in ArcNews, a publication of the Environmental Systems Research Institute (ESRI) that has more than 300,000 readers. The Chatham-Kent ArcNews article can be reviewed at <http://www.esri.com/news/arcnews/winter0203articles/chatham-kent.html>.

Microsoft Corporation is in the process of creating a case study highlighting our community Web portal and CKgis integration. Microsoft has recognized that the municipality of Chatham-Kent was able to develop a robust community Web portal that has improved communication between the municipality and its constituents, while expanding community access to services and information. This was achieved using Microsoft's Content Management Solution while partnering with Concept Interactive, Inc., and Orion Technology, Inc.

The project budget is projected to cost approximately \$150,000 less than the originally approved budget amount. This saving is largely the result of actively partnering with other municipalities to share the costs of developing many of the GIS software applications that have proven to be of common need.

The municipality of Chatham-Kent has received a high level of acceptance from staff and residents of the municipality, which has led to the identification of additional applications for the GIS system and integration of GIS with many of the new software applications that the municipality has purchased.

## System Design Issues Encountered and Overcome

The hardware required for the enterprise-wide GIS, in conjunction with the hardware supporting the new Chatham-Kent community Web portal, has increased the demand on the municipal server-room facilities. Additional resources were required to expand the server room, cooling equipment, and a battery backup unit. With more hardware resources, the municipality has used this opportunity to develop a more robust disaster recovery process.

The municipality of Chatham-Kent had anticipated that CKgis, the public GIS service, could be hosted on one server. Because of the overwhelming interest in the site, CKgis has been moved onto seven servers at a Web site hosting facility. Chatham-Kent continues to administer the Web site and software.

## What Differentiates This System from Other Similar Systems?

The municipality of Chatham-Kent has taken a planned, proactive approach to GIS implementation. Through the Strategic and Implementation Plan, we are able to clearly identify priority applications and uses. This allowed the municipality to accurately anticipate demand on the data warehouse and servers. The creation of the Center for GIS has provided a concentration on GIS that exists in few other municipalities.

The municipality has focused on potential partnerships in development and data sharing. In developing the community Web portal and CKgis, the municipality of Chatham-Kent partnered with two outstanding companies. First, Concept Interactive (Chatham, ON) developed the Internet Web connection, the content management systems, the community directories, and the "map it" gadget tool that makes the Web site so unique. Second, Orion Technology (Richmond Hill, ON) provided the database and geospatial software that powers the external Web-based GIS and the internal intranet-based GIS.

The objective of the municipality is to make GIS a basic tool available to all staff members. In this sense it will be as pervasive and common to users as applications such as word processing or e-mail. The municipality is keen to identify and pass on savings to residents and businesses. The intent is to have GIS fully funded through chargebacks to departments based on calculated cost savings. This full-cost-recovery approach is unique among municipalities in Ontario.

## System Hardware, Software, and Data

### Hardware

The present server hardware/software configuration includes:

Server Purpose	GIS Application Production Server
Description	OnPoint Enterprise Application Server
Make, Model	Dell 6450, Dual Xeon 900 2 MB
OS	Windows 2000 Server Raid5-108 GB disk space, 2 GB memory
Disk Space (GB)/RAM	
Primary Data Formats	
Other Software:	

Server Name	GIS Application Development Server
Description	OnPoint Enterprise Application Server
Make, Model	Dell 6450, Dual Xeon 900 2 MB
OS	Windows 2000 Server Raid5-108 GB disk space, 2 GB memory
Disk Space (GB)/RAM	
Primary Data Formats	
Other Software:	

Server Name	GIS Data Warehouse
Description	ArcSDE Data Warehouse Server SunFire V880 2-750 MHz
Make, Model	CPU
OS	UNIX – Solaris
Disk Space (GB)/RAM	216 GB disk space, 4 GB memory
Primary Data Formats	Oracle database
Other Software:	

**Present Standard Client GIS Viewing Machines (PC Workstations)**

Standard Client Machine	
Processor	Pentium IV 2 GHz
RAM Memory	512 MG
Storage	20 GB
Total Number of Workstations:	900 approximate possible viewers
Primary AM/FM/GIS Data Formats Supported	Internet Explorer
Other AM/FM/GIS Software Supported:	5.5 +
OS Version	Win. 98 2nd edition

**Present Standard GIS Edit “Power User” Machine**

Standard GIS Power User Machine	
Processor	2 GHz P4
RAM Memory	1 GB memory
Storage	72 GB SCSI
Primary Edit Software	ArcView/ArcGIS/ArcSDE
Other Desktop Software	Toad
OS Version	XP Professional

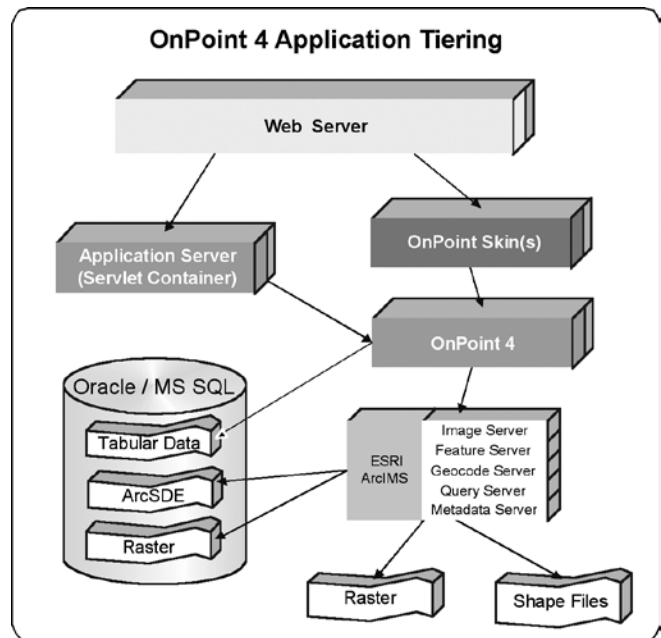
**Software Components**

Software used within the Center for GIS include:

Product Name	Description	Quantity	Version
ArcView	– Concurrent Use	2	8.2
ArcEditor	– Concurrent Use	1	8.2
ArcInfo	– Concurrent Use	1	8.2
ArcSDE		1	8.2
ArcIMS		1	4.0
Orion OnPoint Enterprise		1	3.1
Orion “Instamap”		1	1.0
Orion OnPoint		1	4.0
Oracle		1	8.17
Quest “TOAD”		4	7.4
Safesoft “EME”		1	859-2003

CKgis, the public GIS site, is hosted by a Web site hosting company. The configuration of CKgis is shown in Figure 1.

**Figure 1.** CKgis Configuration.



## Data Warehouse

Data Description	Data Format	Data Source or Maintainer and Frequency of Updates	Data Files Location DW=Data Warehouse GIS App=GIS Application Server
Core GIS Data Sets			
Parcel Fabric/MPAC	SDE Layer	Updates: Quarterly Provider: Teranet/Municipal Property Assessment Corporation	DW
SLRN – Road Network	SDE Layer	Updates: Periodic Maintenance: Center for GIS	DW
Address Points	SDE Layer	Updates: Bimonthly Source: AM/FM Maintenance: Center for GIS	DW
Planning Communities, Wards	SDE Layer	Updates: Periodic Maintenance: Center for GIS	DW
Zoning – Partial In Progress	SDE Layer	Updates: By request Maintenance: Strategic & Development Services	DW
AM/FM Water and Wastewater Data	SDE Layer	Updates: Periodic Maintenance: Center for GIS	DW
Major Waterways(Polygons)	SDE Layer	Updates: By request Maintenance: Center for GIS	DW
Ortho Photos	Mr Sid Images	Updates: 5-year cycle First Base Solutions, Inc.	GIS App
Business Specific Data Sets			
Bus Routes	SDE Layer	Updates: By request Maintenance: Infrastructure & Engineering Services	DW
Drainage (Progress –Partial)	SDE Layer	Updates: By request Maintenance: Center for GIS–Engineering	DW
Electoral Districts	SDE Layer	Updates: By request Maintenance: Strategic & Development Services	DW
Emergency Service Boundaries – Police, Fire, Ambulance – Station Locations	SDE Layer	Updates: By request Maintenance: Police, Health & Family Services	DW
Municipal Parking Lots	SDE Layer	Updates: By request Maintenance: Infrastructure & Engineering Services	DW
Parks and Recreation – Park Boundaries, Facility Locations	SDE Layer	Updates: By request Maintenance: Strategic & Development Services	DW
Public Works Supervisor Boundaries	SDE Layer	Updates: By request Maintenance: Infrastructure & Engineering Services	DW
Railways – Crossing Inventory and Network	SDE Layer	Updates: By request Maintenance: Infrastructure & Engineering Services	DW
Snow Removal Maps	SDE Layer	Updates: By request Maintenance: Infrastructure & Engineering Services	DW

Data Description	Data Format	Data Source or Maintainer and Frequency of Updates	Data Files Location DW=Data Warehouse GIS App=GIS Application Server
Inventory of Vacant Industrial Lands – Eco. Dev.	SDE Layer	Updates: By request Maintenance: Strategic & Development Services	DW
Waste-Disposal Sites	SDE Layer	Updates: By request Maintenance: Infrastructure & Engineering Services	DW
Linked Documents (Eco. Dev. – Data Sheets, Digital Photos)	PDF, JPG	As supplied by departments	GIS App
Landmarks/ Points of Interest	SDE Layer	Updates: By request Maintenance: Strategic & Development Services, Infrastructure & Engineering Services, etc.	DW

## Where Are We Now?/Future Directions

### Internal GIS

Since implementation, more than 350 users have been trained in Onpoint Enterprise, our corporate GIS software. In June of 2005 we will be upgrading to Onpoint Professional, the next version of corporate GIS software from Orion Technology, Inc. As part of the upgrade, we will be providing short training sessions for experienced users to highlight changes and improvements in the new version.

Onpoint Professional provides Web-based administration tools that make it easier to maintain and update the system. This application also enables linking to external databases such as our tax system and Hansen permit and licensing system. The user interface is more intuitive and “wizards” are used for more complex tools such as buffering and notification.

### Public GIS

The Community Directory on the community portal has been expanded to include more than 6,000 public and private points of interest, 75 percent of which have a “Map It” link. While authors and editors can still customize the directory to match the content page, users now have the ability to search the entire directory from any page within the portal.

In August of 2004, the municipality of Chatham-Kent launched the “Site Selector” tool. This Web tool allows potential investors to locate properties and generate demographic and site reports for properties of interest. This site lists more than 100 public and privately owned properties for sale or lease. Next steps for the Site Selector include the ability to update listings using a log-in and Web-based GIS editing tools.

### Changes and Challenges

The original intent was to have the GIS system fully funded through chargeback to departments based on cost savings and

efficiencies gained by each department through using the GIS. As a result of an organizational restructuring in April of 2003, the costs of the GIS were absorbed by the savings to the corporation. Executive management recognized that having a GIS system in place was one key element that positioned Chatham-Kent to reduce operating costs through this restructuring effort.

A major challenge that we have faced is the coordination of our AM/FM system with our GIS system. The AM/FM system, using Intergraph FRAMME, includes water, wastewater, and electric infrastructure for the municipality of Chatham-Kent. The GIS system, in ESRI ArcSDE, contains property fabric, addresses, roads, municipal drains, and other municipal data sets. Coordination and support for two disparate systems with limited resources has proved to be a challenge. The municipality has recently decided to bring the water, wastewater, and electric infrastructure into the ESRI ArcSDE environment. This will provide one source for all information and one software and hardware system that needs to be maintained, which we anticipate will lead to further cost savings for the organization.

## Examples of System Images and Screen Shots

No images or screen shots.

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