3
GEOMATICS INFORMATION MANAGEMENT – ANNUAL REPORT 2008

The Planning and Economic Development Committee recommends the following:

1. **Receipt of the presentation by Nancy Prout, Director, Geomatics; and**

2. **Adoption of the recommendation contained in the following report dated November 21, 2008, from the Commissioner of Planning and Development Services.**

1. RECOMMENDATION

It is recommended that:
1. This report be received for information.

2. PURPOSE

This report informs Committee and Regional Council about the Geomatics Information Management activities in 2008 and highlights its achievements.

3. BACKGROUND

Information that identifies the geographic location of features (natural, constructed or conceptual) is known as geospatial information. Such information, along with attributes, is organized into “databases” or “map layers” and can be analyzed, displayed in tables, and maps. Access to geospatial information is fundamental to decision making processes in York Region. It is used by the Region, its partners and stakeholders, in day-to-day operations including police and emergency response, in the understanding of complex growth management challenges, and planning for the future.

Given the range of regional responsibilities along with rapid growth and change, it is essential to create and maintain current, accurate geospatial information. This is accomplished through the development of efficient procedures, standards, data models, quality control, documentation and continuous improvement. New thematic databases are acquired or created and attributes are added to existing databases to meet needs.

4. ANALYSIS AND OPTIONS

Information Management Highlights

Significant advances were made in geospatial information management in 2008. In addition to maintaining core databases and creating new information, the foundation was laid for an expanded knowledge environment including enhanced quality models, applications, standards, further automation of processes and routine scheduling of updates.

Effective operations and decision making enabled by maintained geospatial databases

The maintenance schedule of more than 470 ”databases” and their attributes has continued through 2008 in updating the GIS data warehouse (SDW) to provide current, up-to-date quality geospatial information to the corporation. Updates are performed weekly, monthly quarterly, bi-annually or annually dependent on need or rate of change. Reviews determine need for potential updates, changes or enhancements. Geospatial information from across the corporation and from other organizations such as the Ministry of Natural Resources (MNR), Conservation Authorities and the Ministry of Agriculture, Food and Rural Affairs (OMAFRA) is hosted and updated as a part of the schedule. To date over 224 ”databases” are included in the routine maintenance schedule with over 54 of these added in 2008.

Among the more than 470 ”databases” that are maintained, the three that are core to Regional operations and Growth Management are the Road Network of approximately 26,500 roads in the Region, Parcel Fabric of 293,500 properties, and Address Points for 286,500 addresses. These databases are valuable to the delivery of services such as property notification, development tracking, site location, emergency response and significant growth. In 2008, 46 Plans of Subdivision, 74 Registered Plans, 843 Reference Plans, 114 Site Plans and 48 Condominium Plans were registered which resulted in significant changes to these two databases. The information is used by the Regional Departments, the YorkInfo Partners and the public and private sectors.

Property Parcel Maintenance benefit to Emergency Services and Tracking Growth

New registered plans also precipitated the addition of over 5,100 parcels to the regional Parcel Fabric database. The further subdivision of parcels using the Reference Plans has continued enhancing the completeness of the “databases” for users. This resulted in “virtual” parcels being created for situations such as horizontal condominiums (townhouses and semi-detached) where the Region’s Emergency Services require a parcel to be further subdivided to locate their destination.

Road Maintenance – 473 new and proposed roads segments

In 2008, maintenance of the Road Network Geodatabase (RNG) continued, expanding the database by 58 'proposed' road segments and approximately 415 new assumed roads were added in the Region. The database can be obtained via electronic data, hardcopy maps and through the internet. In addition, a rigorous delivery schedule was followed to provide the most recent information to the York Regional Police and EMS in order to aid in the delivery of their services.

Acquisition and Enhancement of Digital Information

Acquisition and enhancement of spatial information continued in 2008 to assist in the decision making processes of the infrastructure, community and long range planning activities, emergency response, and communication with the public. Detailed digital imagery has proven to be a high-impact tool that provides rich geographic context. A seamless layer of the project area (York/Durham/Toronto) was acquired support the South East Collector Project. This allowed for the most up-to-date information to be accessible to ensure current imagery for the project.

Enhancement of 2006 Census Information and Parcels

There were 139 new "databases" added to SDW, these enhancements related to the transformation of over 20 demographic profiles from the 2006 Census (tabular) information into geospatial information. These profiles included population, age, immigration, ethnicity, labour force and dwelling by census tracts and dissemination areas.

As the demand of York Region parcel increases it was recognized that further control procedures were required to ensure that the spatial information is maintained at the highest quality possible. Topology rules and map topology tools were implemented to allow each editor to verify their modifications to parcels are spatially accurate.

Advancing Information Management towards Knowledge Management through a New Database Structure

Migration of the Region's geographic information into the new relational database structure (ArcSDE) continued in 2008 by maintaining a secure editing environment, Operational Data Storage (ODS) and a warehouse of data called the Spatial Data Warehouse (SDW) allowing for a more efficient environment for users. The ODS is where the Information Management group creates and maintains datasets before being moved to SDW the viewing environment for all data accessible by the Corporation.

Accomplishments include:

- Migration of all spatial information from the 9.1 to 9.2 ArcSDE environment.
- Of the 153 Corporate users of Geomatics information 41 were new to the SDW environment.

New Processes to Create Efficiencies for Access and Distribution

Ongoing efforts continue to increase the efficiency at which data is distributed from the secure editing environment of the Operational Data Store (ODS) to the corporately available Spatial Data Warehouse, data distribution to clients, applications and partner agencies. This has been accomplished by developing various Extract Transform and Load (ETL) routines that can be scheduled to run during off peak hours to limit service interruptions. These processes also allow the de-normalization of complex data models into easy to use, scaled down versions for corporate use.

These ETL routines have enabled the provision of application specific data formats to clients in various departments including Transportation and Works, EMS, and Police on a regular schedule, incorporating other non-Geomatics' data sources on the fly. This technology has also enabled the ability to collect data from departmental silos and provide access to a wider audience through the Spatial Data Warehouse. By incorporating Scheduled Task and FTP technology, some of these data delivery process have been completely automated.

Accomplishments include:

- Implementation scheduled automated data extraction and transformation from the YRT Trapeze Bus Stop Management Application into the Spatial Data Warehouse that allows the most up to date bus stop location information to be available to the entire corporation.
- Update and enhancement of ETL delivery processes to deliver data to York Region Transit in support of Transit Planning, Operations and Mobility Plus CAD/AVL and Scheduling applications.

Information Access and Distribution to YorkInfo Partners and/or Consultants

Numerous requests are made for snapshots of the Region's various databases, usually originating from consultants working on behalf of the Region or the YorkInfo Partners. These requests may be for various databases (roads, parcels, infrastructure) relating to a specific area for their study and decision making purposes that may be required for the completion of a project. Licence agreements are provided to the consultants before they receive any Region data so that there is an understanding of what is allowable use of the data received. In some cases, the version they receive may be modified slightly to remove information that cannot be released to the general public or are covered by intellectual property issues. We foresee these requests increasing as the quantity, quality and awareness of these databases continues to increase in 2008.

As part of the YorkInfo Partnership, updates of spatial data are provided to the Partners quarterly. The partners received approximately 81 databases in total of which updates were provided for development plans, parcels, the single line road network, schools, hospitals, water and wastewater, and numerous of other databases updated by Information Management. Additional new databases which were made available in 2008 were 1m and 5m contours and 2001 and 2006 census profiles.

In 2008, Information Management undertook the GIS support for a partnership between Richmond Hill Fire Department, Vaughan Fire and Rescue Service and York Regional Police to share a Computer Aid Dispatch (CAD) system that is currently in use by York Regional Police to support fire dispatching. The system requires access to not only Regional information, but information from the local as well as surrounding Municipalities and Regions. In addition to the regular delivery of information quarterly, the CAD system requires parcels, the single line road network (region and surrounding regions), hydrants, storm water ponds and numerous of other databases updated by Information Management.

In addition, Information Management participated in generating spatial information for number of projects such as:

- Topology Implementation for Emergency Response Related "databases"
- Fire Services Alarm Areas and Fire Zones Review and Design
- Colour Shaded Relief
- Natural Heritage System
- Atlas Plus Planning application

Corporate Spatial Database Inventory and Records Management

Information Management continues to organize and maintain the spatial database inventory in accordance with the Corporate Records Management System. Therefore in 2008, a continuation of the inventory of databases was reviewed for projects created in 2002. The goal was to reduce the data storage space used on the server by minimizing duplication, archiving old and unused databases, or projects and removing or correcting files that had been corrupted. Data for 256 projects from 2004 were reviewed, documented and archived on DVD which will allow for future retrieval of historical data. Upon completion, over 77 Gigabytes (GB) of data were archived and removed from the server.

5. FINANCIAL IMPLICATIONS

There are no financial implications associated with this report as ongoing Information Management activities are included in the operating budget.

6. LOCAL MUNICIPAL IMPACT

The Region, along with the members of the YorkInfo Partnership, recognize the impact of managed spatial data and are working together to achieve this through the sharing of existing data and the collaboration on the creation of new databases. This allows for the creation of robust databases, participation in creating standards and data sharing protocols. Sharing knowledge amongst the Partners will allow for the reduction of the duplication of information. Partners as well as residents of the Region will have access to these databases.

7. CONCLUSION

The goal of managed information has been established and is being delivered through processes, standards, models, documentation and records management to ensure up-to-date and easy to access spatial information in a dynamic environment. Having the databases in an ArcSDE environment will allow for a managed environment and faster, easier access to data, either over the Intranet or the Internet.

For more information about this report, please contact Susan Chin Snelgrove, Manager, Information Management, Geomatics Branch at (905) 830-4444 ext. 1564 or Nancy Prout, Director, Geomatics Branch at ext. 1529.

The Senior Management Group has reviewed this report.