9
GEOMATICS INFORMATION MANAGEMENT - ANNUAL REPORT 2007

The Planning and Economic Development Committee recommends the following:

1. The presentation by Nancy Prout, Director, Geomatics Branch and Debra Kelloway, Manager, Analytics and Applied Mapping, be received; and

2. The recommendation contained in the following report dated November 28, 2007, from the Commissioner of Planning and Development Services, be adopted:

1. RECOMMENDATION

It is recommended that this report be received for information.

2. PURPOSE

This report informs Committee and Regional Council about the Geomatics Information Management activities in 2007 and highlights its achievements.

3. BACKGROUND

Geospatial information and knowledge management is fundamental to the decision making process in York Region. Access to current, accurate information is essential to address complex growth management challenges and is used in current practices and planning for the future by York Region, its partners and stakeholders.

The focus of Information Management is the efficient creation and management of quality spatial data to address growth management. This is accomplished through the development of procedures, standards, models and documentation. Efficiencies are realized in the reduction of duplication and the enhancement of sharing with clients and partners through standards and continuously improving and documenting data quality.

Information Management provides access to spatial data to the corporation and the YorkInfo Partners which consists of the Towns of Aurora, East Gwillimbury, Georgina, Markham, Richmond Hill, Whitchurch-Stouffville, Township of King, City of Vaughan, Lake Simcoe Region Conservation Authority, Toronto and Region Conservation Authority, York Catholic District School Board, York Region District School Board, and the public.

4. ANALYSIS AND OPTIONS

4.1 Information Management Highlights

Significant advances were made in Information Management in 2007. In addition to maintaining core databases and creating new information, the foundation was laid for an expanded knowledge environment in 2007 including enhanced quality models, applications, standards, processes and routine scheduling.

4.1.1 Core Database Maintenance

Among the more than 340 geospatial databases that are maintained, the three that are core to Regional Operations and Growth Management are the Single Line Road Network (SLRN), Parcel Fabric, and Address Points. These databases are valuable to the delivery of services such as property notification, development tracking, site location, emergency response and significant growth. In 2007, 75 Plans of Subdivision, 84 Registered Plans, 680 Reference Plans, 126 Site Plans and 39 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.

New registered plans also precipitated the addition of over 4,700 parcels to the regional Parcel Fabric database. The further subdivision of a parcel using the Reference Plans has continued and has enhanced the geospatial information available to the corporate users and partners. This resulted in “virtual” parcels being created for situations such as horizontal condominiums (townhouses and semi-detached) where the Region’s Emergency Services require to see a parcel further subdivided to better route and locate their destination.

In 2007, maintenance of the Road Network Geodatabase (RNG) continued, expanding the database by 537 ‘proposed’ road segments and approximately 625 new segments 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.

4.1.2 Maintenance of Digital Information

The maintenance schedule has continued through 2007 in updating the GIS data warehouse (SDW) to provide current, up-to-date quality geospatial information to the corporation. Information is updated weekly, monthly quarterly, bi-annually or at a minimum, annually. There may not be changes every cycle; however it is reviewed for potential updates, changes or enhancements. As well, we hosted geospatial information from other York Region departments and from other organizations such as the Ministry of Natural Resources (MNR), Conservation Authorities and the Ministry of Agriculture, Food and Rural Affairs (OMAFRA) which is updated as a part of the schedule. To date over 270 feature classes are included in the maintenance schedule with over 100 of these feature classes being added just this year.

4.1.3 Acquisition of Digital Information

Digital Orthophotography (air photos) has become essential information in support of Regional and local municipal operations, programs and strategies which supports the acquisition of Orthophotography. Detailed digital aerial images and elevations have proved to be a high-impact tool that provides rich geographic context for infrastructure, community and long range planning activities, emergency response, and communication with the public. The Region has received quality information which has proven valuable through the adjustments of core databases and supporting projects such as the 3D modelling program. The 2007 digital information is available through the warehouse and the web for use by the Corporation and the YorkInfo Partners.

4.1.4 Advancing Information Management towards Knowledge Management

SDE Migration

Migration of the Region's geographic information into the new relational database structure (ArcSDE) continued in 2007 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:

- 34 new spatial databases added to SDW
- 2007 Regional Orthophotography and accompanying information loaded into SDW
- Of the 200 Corporate users of Geomatics information 48 were new to the SDW environment

Customized Tool to Edit and Update Roads, Parcel Fabric and Address Points

In 2007, Geomatics acquired a custom editing to improve the update and editing of the core databases used in Regional Operations.

The edit tools were created with three specific modules to allow complete editing of the three core databases: Road Network Geodatabase (RNG), Parcel Fabric and Address Points. It was built to enable both spatial and attribute editing of the features; they also manage all of the different unique identifiers to maintain connectivity to all of the tables that participate in the RNG, the Parcel Fabric, and the Address Points Databases.

Extract, Transform and Load (ETL)

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.

4.1.5 Information Access and Distribution

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 2007.

As part of the YorkInfo Partnership, updates of spatial data are provided to the Partners quarterly. The partners received approximately 67 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 2007 were address points, Land Evaluation and Area Review (LEAR) and 2006 census information.

In 2007 Information Management undertook the hosting of the 2006 Census data in the Spatial Data Warehouse. Traditionally, census data has been held in standalone databases requiring Geomatics to repeatedly create extracts as staff required. Hosting this data in SDW creates efficiencies as York Region staff will now have direct access to all current Census information in a useful and understandable format at the Municipal, Census Tract and Dissemination Area Levels, eliminating the need for multiple copies in various locations.

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

- Topology Implementation for Emergency Response Related Feature Classes
- York Regional Police District and Patrol Area Review and Redesign
- Vacant Employment Lands Inventory
- Deployment Planner/Marvlis

- 3D Subway Expansion Initiatives and
- Source Water Protection/Clean Water Act.

4.1.6 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 2007, 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 352 projects from 2003 were reviewed, documented and archived on CD or DVD which will allow for future retrieval of historical data. Upon completion, over 28 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 susan.chinsnelgrove@york.ca.

The Senior Management Group has reviewed this report.