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GEOMATICS INFORMATION MANAGEMENT - ANNUAL REPORT 2004

The Planning and Economic Development Committee recommends the adoption of the recommendation contained in the following report, February 2, 2005, from the Commissioner of Planning and Development Services:

1. RECOMMENDATION

It is recommended that:

1. This report is received for information.

2. PURPOSE

This report informs Committee and Regional Council about the Geomatics Information Management activities in 2004 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. 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, Toronto and Region Conservation Authority, Lake Simcoe Region Conservation Authority, York Region District School Board and York Catholic District School Board and the public.

4. ANALYSIS AND OPTIONS

4.1 Information Management Highlights

In addition to maintaining core databases and creating new information, significant advances were made in Information Management in 2004 laying the foundation for an expanded knowledge environment in 2005.

4.1.1 Corporate Spatial Database Inventory and Records Management

Since the inception of Geomatics, Information Management has taken major steps in organizing the spatial database inventory in accordance with the Corporate Records Management System. In 2004, to enhance Information Management a full inventory of the databases currently available to GIS users in York Region was completed. The purpose of this initiative was two-fold. One 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 130 projects from 1992 to 2001 were reviewed, documented and archived on CD or DVD which will allow for future retrieval of historical data. Upon completion, over 15 Gigabytes (GB) of data were archived and removed from the server.

The other goal was to enable efficient identification of the databases available to the Region's GIS users and to begin looking at how these existing databases could be improved. In total, there were well over 100 databases currently available. This process laid the groundwork for the current and pending activities surrounding the modelling and migration of the databases into ArcSDE, a new relational database format with a more efficient data storage software system.

4.1.2 Core Database Maintenance

Among the numerous geospatial databases that are maintained, the two that are core to Regional activities are the Single Line Road Network (SLRN) and Parcel Fabric. The information is used by the Regional Departments, the YorkInfo Partners and the public at large. In 2004, over 68 Plans of Subdivision were registered which resulted in significant changes to these two databases. Both databases are valuable to the delivery of services such as property notification, development tracking and site location.

In 2004, the SLRN expanded by over 1,600 segments which signified 'proposed' roads and approximately 215 new roads built in the Region. It 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.

New registered plans also precipitated the addition of over 7,600 parcels to the regional Parcel Fabric database. The Development Tracking System used by the Planning Department is current through regular updates providing up-to-date information on areas of development. The Parcel Fabric was also used to assist in the property notification application that the Transportation & Works Department uses to notify residents within

the Region of impending public meetings, construction on regional roads and public notices.

800 Subdivision and 3,000 Registered plans were scanned and georeferenced to keep the Growth Information Management System up-to-date for Planning and Transportation & Works. The footprints of current Subdivision and Registered plans are now made available to the planners to aid in identifying development in the Region. This will allow the overlay of plans with our current spatial data of the Region to facilitate in decision making.

4.1.3 Advancing Information Management towards Knowledge Management

SDE Migration

Migration of the Region's geographic information into the new relational database structure was initiated (ArcSDE). This migration will improve the way geographic information is managed and used in the Region resulting in an improved infrastructure for spatial data management by:

- Addressing specific opportunities for improvement of the data structure.
- Leveraging industry best-practices and incorporating published data model standards.
- Improving all aspects of how spatial data is created, managed and used.
- Supporting the spatial data requirements for corporate wide business applications.

Historically, spatial data has been maintained using file based formats such as ESRI coverage and/or shapefiles. This advanced method that allows for the storage of spatial information using models in relational databases instead of files which will provide a higher level of security, improved data capture quality, reduce input errors, improve data access for users and applications and will allow for the adoption of information technology standards in data management. The production environment will house live spatial database in a secure environment with high viability. It will be from a linked secure geospatial warehouse that users and applications such as YorkExplorer will access spatial information.

Accomplishments include:

- 15 spatial databases added to YorkExplorer
- 1999 Orthophotography compressed, a savings of 38 GB of disk space in SAN storage area
- Populated the geospatial warehouse with 100 databases
- Migrated data from production environment to the warehouse environment for use by YorkExplorer

Metadata Development

York Region's Geomatics is responsible for the maintenance, creation and storage of over 150 digital map databases. With the volume of databases in the repository, no one person knows the background of the data, such as when or how the data was created. Consistent with good records management there is a need for documentation (metadata),

and an index that describes essential information about each database in order to make the data discoverable and understandable to all users. Metadata could be viewed as the equivalent to a sophisticated card catalogue in a library. Essential elements of the spatial data include abstract, purpose, attribute descriptions, projection information, contact information and more. There could be up to 350 elements of information collected on one data set. Achievements in Information Management related to metadata include:

- Adopted a metadata standard, FGDC V2 was chosen.
- Selected metadata editing software: ArcGIS ArcCatalog 8.3 – 9 metadata editor was adapted.
- Created a detailed manual describing the following topics:
 - What is metadata and why is it useful?
 - Procedures on creating metadata.
 - Step by step processes on filling out the ArcCatalog metadata editor forms.
- Created a Metadata course and provided 8 training sessions
 - Training was provided to Richmond Hill
 - Training provided to York Region's Geomatics staff
- Included the metadata standards and procedures in the work flow for data creation within Geomatics.

4.1.4 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 2005.

As part of the YorkInfo Partnership, updates of spatial data are provided to the Partners quarterly. These updates include development plans, parcels, the single line road network, schools, hospitals, water and wastewater, and a slue of other databases updated by Information Management. Additional databases which were made available in the last quarter were child care centres, places of worship and some transit data.

A database was developed to track ongoing and completed client requests, licensing and fees to improve customer service and provide performance measures.

4.2 Future Directions

Information Management will continue to be a key activity of Geomatics as part of a quality geospatial information infrastructure. The capture, organization, and assess of quality information in efficient processes are in demand by stakeholders. Information Management will do this through the implementation and completion of the ArcSDE

environment and with the modelling and migration of the required databases and the creating and updating of metadata. Also, the creation of new databases such as address points would give us precise locations of buildings which would be available to the Police and EMS for dispatching purposes and assist the York Region Mobility Transit in location where a passenger resides.

With the magnitude and pace of growth in the Region, acquisition of new digital Orthophotography is proposed for 2005. This imagery has become essential information in the support of Regional operations, programs and strategies. These 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.

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.

The Senior Management Group has reviewed this report.