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GEOMATICS INFORMATION MANAGEMENT - ANNUAL REPORT 2005

The Planning and Economic Development Committee recommends the following:

1. The presentation and demonstration by Nancy Prout, Director, and Kimberly Gray, GIS Analyst, Geomatics Branch, be received; and

2. The recommendation contained in the following report January 30, 2006, 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 2005 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 as part of continuous improvement and 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, Toronto and Region Conservation Authority, Lake Simcoe Region Conservation Authority and the public.

4. ANALYSIS AND OPTIONS

4.1 Information Management Highlights

Significant advances were made in Information Management in 2005. In addition to maintaining core databases and creating new information the foundation was laid for an expanded knowledge environment in 2006 including enhanced quality models, standards, processes and routine scheduling.

4.1.1 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 2005, a continuation of the inventory of databases was reviewed for projects created in 2001. 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 273 projects from 2001 were reviewed, documented and archived on CD or DVD which will allow for future retrieval of historical data. Upon completion, over 11 Gigabytes (GB) of data were archived and removed from the server.

4.1.2 Core Database Maintenance

Among the more than 100 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 and private sectors. In 2005, 80 Plans of Subdivision, 81 Registered Plans, 1065 Reference Plans and 30 Condominium Plans 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, site location and emergency response.

In 2005, regular maintenance of the SLRN continued, expanding the SLRN by over 1,200 segments of which 600 signified ‘proposed’ roads and approximately 669 new roads built in the Region. As well, the geometry of the SLRN was adjusted to align with the 2005 Orthophotography with adjustments being most significant in areas of rapid change. 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.

New registered plans also precipitated the addition of over 7,500 parcels to the regional Parcel Fabric database. In 2005, the Region began the process of adjusting the existing parcel geometry to the Orthophotography. The vicinities targeted for the adjustment process were the urban/town areas of Aurora, East Gwillimbury, Georgina, King, Newmarket and Whitchurch-Stouffville.

The adjustment process utilized a combination of georeferenced scans overlaid on the 2002 Orthophotography. Additional scans were collected from the participating YorkInfo Partner municipalities where needed and when available. The parcel geometry was then altered in relation to these two sources of data with the Orthophotography taking precedence. The conversion process was completed in December of 2005 with the final QC finishing up in January of 2006.

4.1.3 Acquisition of Digital Information

Digital Orthophotography has become essential information in support of Regional and local municipal operations, programs and strategies as reported in the report to Council in January 2006 (2005 Digital Orthophotography Project Status). 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 and proven valuable through the adjustments of core databases. The digital information is available to 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 2005 by establishing 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:

- 27 spatial databases added to SDW
- 2002 Orthophotography compressed, a savings of 38 GB of disk storage space
- Populated the geospatial warehouse with 100 databases access the new efficient environment
- Migrating 100 Corporate users of Geomatics information to access the new environment

Single Line Road Network Modelling

York Region's Single Line Road Network (SLRN) was migrated from a simple Coverage model to a relational Geodatabase model specifically developed to meet York Region, and York Region's client needs. This model, currently called the "Road Network Geodatabase" (RNG) was created by deriving best practices and methods from three existing Road Network models. The three models referenced included: the Municipal Infrastructure Data Standard (MIDS), the Unified NEtwork-TRANSportation model (UNETRANS) and the Ontario Road Network (ORN).

There are several advantages of moving to a Geodatabase model. For example, all users have immediate and easy access to up-to-date information. The creation of a robust, flexible model also enables geocoding, multi-modal routing, asset and activity tracking and still supports legacy information and procedures.

The geometric accuracy of the roads data was improved by aligning it with the 2005 Orthophotography of the Region. This process involved visually aligning each road segment with the road centreline in the photos.

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 2005.

As part of the YorkInfo Partnership, updates of spatial data are provided to the Partners quarterly. The partners received approximately 56 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 2005 were child care centres, places of worship and some transit data.

The work that Information Management undertook in 2005 included the consolidation of the Regional Official Plan (ROP) and transforming the information into georeferenced GIS layers. A total of 26 layers were created and revised to reflect the latest Regional Official Plan Amendments, making 26 new layers available to the Corporation. For example:

- Greenlands
- Corridors
- Planned Road Widths.

As well, Information Management participated in generating databases for number of projects such as:

- the 2005 Visitor's Guide
- York Region Rapid Transit Trip Finder Application
- State of the Environment Report
- East Gwillimbury Custom Base Map
- Vacant Land Inventory
- Call Demand Mapping for EMS.

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 assessment 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.

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.