

GOVERNMENT BUYER

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Close-up on the street

Integrating street-level photography into GIS systems makes permitting, planning and enforcement easier for municipalities

by Lee Toop

Maps have grown up, thanks to the Internet. Google's Street View system – where photography taken from a vehicle driving along city streets is integrated with the company's mapping, allowing people to see how those particular streets and buildings look from ground level – has opened a door for uses of mapping programs that were never considered even a few years ago.

The development of GIS systems that can incorporate a vast array of data and interface with GPS systems to pinpoint locations of installations and services has also been a benefit to many communities. Combining street-level photography with GIS and GPS has the potential to create a time- and money-saving opportunity for municipalities.

The city of Hamilton, Ontario has been using street-level imagery for some time, with some level of success, explained Gord McGuire, with the city's Surveys and Technical Services section. The previous system was incorporated in 2004 as a way to assist asset management and utility design with visuals.

"That system used a three-camera capture; we could locate things by street location, but to pinpoint specific drive-ways we would have to look at the aerial photography, and it couldn't link street

segments," McGuire explained. "The problem is that to find a specific location we would have to go to the website, pull up a file, and access specific locations – it took time."

The system was used heavily, with 430 unique visits to the system monthly, and indications were that many of the users were able to stay in the office instead of visit the site directly, saving money in the process. McGuire estimated that the savings per month was in the \$16,000 range thanks to removing the need for site visits to resolve staff queries.

Imagery required update

Combined with a large investment into mapping products, the system worked well until the 2004 imagery started to become dated.

"It got to the point in 2007, 2008 where the product was three or four years old, and at some point in time we needed to circle back and get it updated," McGuire said.

Users who were happy with the use of street-level images asked for a number of improvements to the system that would benefit their work, including better layout for the interface program, ability to access individual photos, and other changes. The city went looking for a new system, and settled on Canadian visual data intelligence company iLookabout.

StreetScape is a product that provides

street level perspective visual data, geocoded with latitude and longitude coordinates attached. McGuire said the system has a range of upgrades compared to the previous product.

"It has a 10 megapixel camera that was taking shots every 15 feet; the photos are to the front, and to both sides of the street," he said. Each shot is geocoded with GPS and other proprietary techniques, and has a wide field of view.

StreetScape is a Web-based product, with a viewer that provides a range of attribution information – time, date and orientation, for example – while an inset map makes it easy to see how the image relates to mapping.

Users can drag the screen to move around through the images, which provide nearly seamless shots with minimal distortion. Side-facing photos include the specific address information for that location. The viewer can choose a specific camera angle, and when the location is changed that camera angle remains for ease of viewing.

Integration a benefit

Integration is a key benefit of the StreetScape system, allowing GIS users to access the photography directly. When a user of the city's GIS system wants to compare a location to a permit application, for example, a click brings up a popup window that is the same in

whatever program it's accessed from, McGuire noted.

"For example, if a telephone company asks for a variation to place a pedestal further forward on a particular lot, we can use the GIS to search that, find the coordinates, then bring in the popup window and see the site through the photos," he said. "That saves us a site visit, and saves our utility designer a lot of phone calls."

The StreetScape system can also be linked into CAD programs as well, he added.

iLookabout shot new images of Hamilton in late 2008 and early 2009, and the new system went live in July of 2009, McGuire related. Feedback has been very positive since the system went into operation, and the system is building a strong business case for itself. An estimate of 80 full-size images are being viewed daily, and with a conservative estimate of 25 percent of those replacing a staff site visit the cost savings could be in the range of \$36,000 a month.

Hosted solution

Having the system hosted and managed by iLookabout in a central location means the city doesn't need the storage and access for what adds up to 2.7 terabytes of photos and data, McGuire noted, though there are on-site backups in the city's possession. It also means there's no need for in-house Information Services staff to handle implementation and other issues surrounding the product. Impact on the city's bandwidth was negligible, as well.

Some privacy concerns were expressed after a local newspaper reported on the system, but McGuire said there are a range of factors ensuring that personal information is protected. Algorithms are used to automatically blur license plates and faces on the original photos, and any remaining issues can be reported to iLookabout for adjustment. As the photos are kept in a secure location and can only be accessed through the custom viewer, there are few potential problems with regard to private information being accessed outside of the city's intended use, McGuire said.

iLookabout

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