

Project *Detour*

The City of Montreal monitors all traffic impediments from its intranet



A familiar traffic signal on the island of Montreal

The Context

The City of Montreal is the second largest municipality in Canada. Located on an island in the Saint Lawrence River, with suburbs sprawling on the north and south shores, the greater Montreal area is home to 3.4M people (the city itself has 1.8M residents). The bridges that link the island to both shores are among the busiest in the country – one of them, the *Champlain Bridge*, sees over 125,000 vehicles every business day. The main highway that connects the Eastern provinces of Canada to the Western part of the country runs across the island, with some 7,000 trucks using it on any given day.

Adding to these traffic challenges, Montreal receives about 2.5 meters (over 8 feet) of snow during an average winter. In the summer, the weather is remarkably nice and Montrealers are known for partying in the streets: 110 street festivals are organized every year, and 5.4M tourists join the locals in the celebrations. The most important event, the *Montreal Jazz Festival*, blocks all vehicle traffic over 16 central city blocks for an entire week.

With statistics such as these, it is not surprising that the city strives for optimal management of its road system. Indeed, traffic management, whether on the main highways or in the narrow cobble-stoned streets of *Old Montreal*, has been a top concern of the City ever since its establishment in 1642.

In 2000, all 28 independent municipalities on the Island of Montreal merged to form the new amalgamated City of Montreal (comprised of one central government and 27 semi-autonomous boroughs). This administrative makeover created some serious challenges for municipal IT systems, but it also represented a great opportunity to build a new architecture capable of reaching the 16,300 full-time employees spread out in their municipal offices. One of the most urgent needs was to put in place the best management system for the traffic impediments that block the streets of Montreal.

The Decision

Every year, the city experiences over 20,000 traffic impediments of one kind or another. Utility companies, local street fairs, construction sites, etc. must obtain a permit prior to blocking street traffic, even for a few hours. The system in place before 2001 was only partly automated and based on a file system with no dynamic mapping capabilities. As a result, it was not only error-prone, it lacked global vision. Without any GIS capabilities, it was impossible to check whether two permits might create a huge backlog in a particular neighborhood.

By mid-2001, the City decided that it needed a new system with the following characteristics:

- All permits in the database would be georeferenced
- Dynamic detailed maps would be available for any part of the island
- Time-sensitive spatial analysis could be done with minimal effort
- Employees in various departments and various locations would be able to query the system in real time.

After a review of existing mapping technologies, the City chose to build a system based on JMap, the spatial online solution developed by K2 GEOSPATIAL. Known as Project *Detour*, the system became operational on April 3, 2002.

“The challenge in managing a large city in the 21st century is to bring economies of scale while making sure that every citizen and every neighborhood receives the best quality of service. The gain in productivity provided by an online solution like Detour offers a significant opportunity to forge a new relationship between residents and local governments. Montreal makes sure it leverages new technologies to make this new paradigm a reality and remain a world-class city.”

Yves Provost, Assistant City Manager, City of Montreal

The Solution

Detour is an intranet-based system that directly accesses the relational and spatial records of an Oracle database. The JMap-based interface allows users to visualize all traffic impediments at any given time or over any period of time.

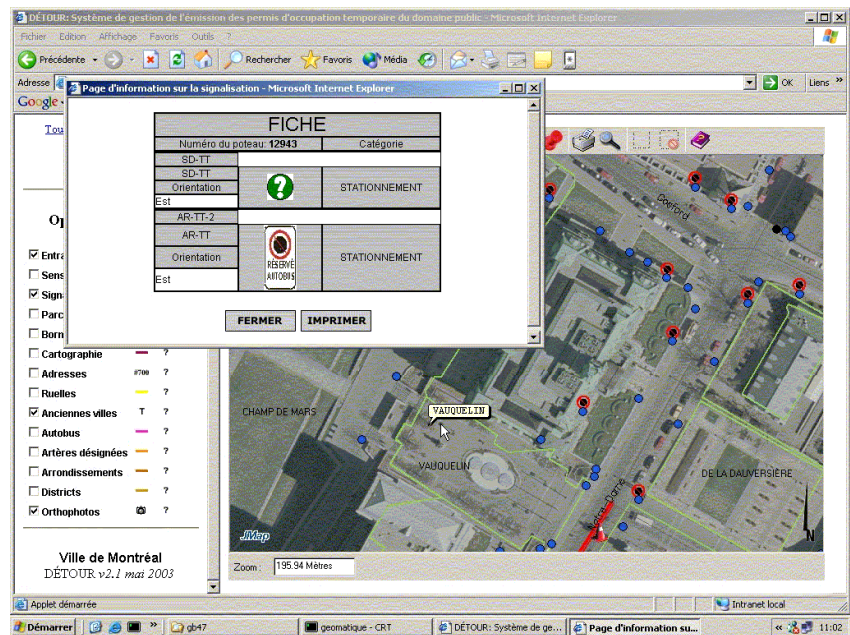
When positioning the location of a permit on screen, employees are able to notify the system of all street segments affected by the impediment, whether directly (traffic shut down for a period of time), or indirectly (traffic flow affected by the impediment).

When visualizing existing permits on screen, color-coded icons show the different types of impediments. All icons contain a mouse-over tooltip that provides an instantaneous summary of the characteristics linked to the permit. By clicking on the icon, the user opens a detailed report that can be printed or saved immediately.

The database can be queried by permit number, address, or intersection. Such queries open a large-scale map of the area of concern.

The ability to conduct spatial analysis in real time allows city employees to optimize the dates of the permits granted and avoid traffic congestion based on too many simultaneous road blocks.

During its first year of operations, the *Detour* system handled over 22,000 permits, bringing the city C\$4.3M in revenues. For 2004, the City is projecting more than 25,000 permit requests. The system was very well received by the employees who use it. The main feedback was that *Detour* is quick and easy to learn, and that the human-machine interface is extremely user-friendly. The successful implementation of *Detour* made it clear to many city employees that an online spatial solution is a tremendous tool for making fast and accurate decisions, and that the success of the *Detour* project could be duplicated for many other municipal systems involving the management of public space. As a result, spatial online solutions have become a strategic factor in Montreal's future information systems.



An instantaneous snapshot of all permits in a neighborhood, with all impacts on traffic displayed on screen. The entire Oracle database is just

Technical Environment at the City of Montreal (January 2004)

Server: Dell PowerEdge 4600
Dual processor 1.8GHz
2 GB RAM

Operating System: Windows Server 2000

Web Server: Tomcat

Relational Database: Oracle 9

Spatial Database: Oracle 9

Number of *Detour* registered users: over 160

Spatial Data:

City of Montreal vector data in Oracle format – over 20 layers used in *Detour*

City of Montreal 33cm photographic database – over 26GB of data used in *Detour* (Copyright © 2002 Hauts Monts Inc.)

Spatial Online Solution: JMap 2.5

Number of permits handled by *Detour*: over 90 per day



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