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On the beat with the Techno Cops

The Royal Canadian Mounted Police may always get its man, but the police in London, Ontario, had trouble identifying and finding outlaws in this suburb of Toronto. The department repeatedly found itself with a backlog of crime data that had to be entered by hand into its central computer, hampering the force's law-enforcement efforts.

To exacerbate the problem, information was frequently incomplete, creating a nightmare for police and the courts. For example, after an incident, statements from witnesses and officers on the scene were often incomplete because the department's computer did not accept textual input. Only basic details such as names and addresses were put into the computer. The result was that criminal investigators and officers in the field were often hampered in their investigations because of the lack of even this rudimentary information.

In addition, information was often first recorded on paper forms by the arresting officer. At the end of a tour of duty, the officer handed the forms over to a clerk for data entry - an outdated procedure that delayed incident reports and often left the department as much as a week behind in getting information online for investigators' use. It doesn't take Sherlock Holmes to deduce that handwriting incident reports was causing the backlog.

The procedure also resulted in court delays. The Crown Attorney, the equivalent of the American district attorney, relies on accurate and timely police records to proceed in a case. Preparing documents for court required photocopying and assembling a stack of papers from a variety of sources, quite often hard-to-find, handwritten records. It was clear to everyone involved that the problem needed to be addressed.

In early 1993, the department started looking for a new dispatch system that would computerize the routing of police units to trouble areas, record the information and keep track of the time spent on each call. When the department sent out its request for proposal (RFP) to a number of software vendors, it had no idea how profoundly the way it did business was about to change.

In addition to dispatching, the RFP solicited bids for software that would initiate, store, track and retrieve police reports. "We weren't looking for bids with the cheapest solution," recalls Eldon Amoroso of the London Police Force. "We were looking for the best solution for us."

In August of 1993, the first piece of the deployment puzzle fell into place. Versaterm, a systems integrator based in Ottawa, Ontario, was picked to develop and supply the new generation of information systems for the London PD. By the following November, the Versadex III Records System and Computer Aided Dispatch system was in place, helping the police get down to their real job: fighting crime. But this was only the beginning.

The next step was car-by-car deployment of what the London PD called its Mobile Workstation project. This meant more than equipping officers with notebooks; it was a plan to give officers in the field access to the same information that was available to the desk jockeys at headquarters.

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1



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The department wanted to accomplish several goals with this mobile deployment. First and foremost, the London PD needed to get data entered as close to the source as possible, but they also wanted to eliminate duplication of work and make data available for following up on crime reports and preparing court cases against suspects.

A nine-month pilot program, started in the autumn of 1995, tested mobile systems from top-tier vendors, including IBM, NEC and Toshiba. In an initial roll-out, five patrol cars were equipped with mobile workstations and 30 officers were trained in their use. In order to make the program as realistic as possible, the test group consisted of officers of different heights, both sexes and differing levels of computer experience.

And the Winner Is...

In the end, the department chose the NEC Versa 2200C as its mobile workstation; full implementation was completed in the late summer of 1996. But then came the thorny issue of how do you mount a notebook in a crowded police squad car. Precision Mounting, a company based in Vancouver, British Columbia, designed the car mounts, which attach a notebook directly to the car's frame for added strength.

Around this time, the department started to look for a way to improve its radio network. The key was that they wanted to consolidate all traffic into one system, managing both voice and data. They specified the needs of the city as well as those of the department, because the two entities share the network.

We couldn't afford to have two networks, so the RFP stipulated the need for one network," notes Amoroso. Eventually, Ericsson's Enhanced Digital Access Communications System (EDACS) was chosen; it was up and running in January 1997. The EDACS network in this case is a three-site 800MHz trunked system customized to the specifications of both the police department and other municipal agencies.

By the time the network was installed, the rest of the project was taking shape. Versaterm was already supplying the department with annual upgrades of the Versadex III software the police force was using to manage dispatch, scheduling and incident reports. So it made sense to turn to the same company to update and develop the software applications that would be used in the mobile workstations.

In order to link the updated software with the EDACS network, however, Versaterm needed a middleware solution to act as a go-between for the mobile workstations and the London PD's servers. The department chose Nettech Systems, a mobile applications developer based in Princeton, NJ. "Nettech's InstantRF freed us to develop our Mobile Workstation Solution without having to worry about the details of wireless communications," recalls Ron Meyer, president of Versaterm.

Since it runs over a broad range of operating systems, Nettech's InstantRF can be easily deployed as a middleware solution between the wireless technology - in this case Ericsson's EDACS network - and Versaterm's Mobile Workstation Solution. "Working with Nettech spared us the adapting and debugging necessary to run our solution over the EDACS network," adds Meyer.

Previously, workflow in the police department was time-consuming, tedious and frustrating for all involved. An officer in the field would request information over the radio, which - if it was in the computer - would be relayed to the officer when the operator handling requests had the time. The system was slow, inefficient and ripe for mistakes.

Under the new system, officers can query both the central and national police computers about license plates or suspects directly from the safety of the patrol car. The result is a reduced workload for computer operators at the station and better information in the field.

The NEC notebooks are used extensively out of the car as well. Officers take them into homes and businesses to take witness statements and incident reports. The move from notepad and pencil to notebook has had a huge payoff. Says Amoroso, "When we uncovered a chop shop where stolen cars were being cut up and sold, our officers walked around with the notebooks and portable radios running checks on the serial numbers of parts found and license plates."

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...Voice and Data, Together

All data flows through the EDACS network. All voice and data information is sent from squad car to headquarters using an Ericsson Orion radio connected to a NEC 2200C notebook running Windows 95. Officers can now take a witness's statement at the crime scene using the notebook and the Versadex III software, and transmit it moments later via the EDACS network directly to the department's communications server. "We felt that the right way to do the job was to capture information as soon as possible," says Amoroso.

At headquarters, a Windows NT-based communications server, which is connected to the radio data system, takes in information, which is automatically uploaded to the Unix-based central computer. At that point, it is ready for officer queries or use by the province's prosecutors.

For instance, in the case of a recent bank robbery, an officer on the street entered information on an individual he had detained in downtown London. Investigators did a search through case records using keywords that were pertinent to the crime. This led to a suspect and an arrest within 24 hours of the crime. Criminal investigators are sold on the system because when it comes to a major case, such as a homicide, up-to-the-minute statements of officers and witnesses are now at their fingertips.

The system's benefits don't end with the arrest of a suspect though. The police worked with the courts and Praeda Management Systems, a London systems integrator, to streamline the production of court documents. Rather than photocopy everything, the Crown Attorney gets everything needed for trial using Praeda's inCharge system, which gathers all the relevant case records stored on the computer.

Before the introduction of inCharge, the department needed five people to get information ready for court. With inCharge, one or two people manage the task. The paperwork now comes straight out of the laser printer.

Technical Support

By June of 1997, the London PD was ready to go mobile. Each member of the London PD was trained in the use of the mobile technology, and the following February they got a refresher course that taught them some of the finer points of the equipment and applications they were using. "After they'd been using the technology for a while, we wanted to bring them back and teach them some shortcuts that they might not have learned during the first round of training," says Amoroso.

A key to the acceptance of the mobile technology was peer training. The department trained some of its officers as instructors, which encouraged other officers to use the technology to its fullest. "This way, officers were taught by their peers," recalls Amoroso, "They felt free to ask specific questions related to the job."

The peer-to-peer training technique also allowed the instructors to assist students on the job. "From day one, officers trained officers," notes Amoroso. "Now we have field officers as our training experts, and other officers can turn to them for immediate technical assistance. They teach in the classroom when needed, but normally they're on the street working with their patrol groups. We've put technology experts on the street 24 hours a day."

Cost and Cost Savings

The city of London made one million dollars available to the police department to fund the Mobile Workstation Project. The budget included the cost of the 105 NEC Versa 2200C laptops, including spares. According to the department, software costs were lower than expected because the police force helped develop the programs in partnership with Versaterm.

In the first year of deployment, over 784,000 data transactions were sent over the radio network each month, a number that continues to grow as officers become familiar with the technology and learn the ins and outs of the system. The resulting increase in productivity allowed the department to eliminate ten positions from the data-entry staff.

To no one's surprise, the London PD didn't baby the NEC Versa 2200s. But during the time the units have been in use, only one notebook was destroyed—in a car accident. In addition, one display was cracked when an officer fell down a flight of stairs, but the department keeps five spares on hand to replace those that fail.

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In the future, the department hopes to take the next step in terms of mobility. They plan to integrate other useful technologies into the network, including Automatic Vehicle Location (AVL) software and the ability to transmit a small photo of a suspect over the radio system.

"We want to increase the amount of data available in the patrol car," offers Amoroso. Comnetix Computer Systems, of Mississauga, Ontario, which supplied the Boston police with a system that sends photos, identifying data and fingerprints to squad cars, is now working with the London PD on a similar system. Final development is well underway, and mug shots should be available in the patrol cars by early 1999.

As their communications systems become outdated, other city agencies will begin using the network as well. Parking enforcement officers have already been added, and all of the city's agencies may eventually find themselves on the network.

Once that happens, the rest of the city's services will likely become as efficient as London's police force has become.

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