A CASE STUDY OF WIRELESS-ENABLING LEGACY APPLICATIONS

HENRICO COUNTY, COMMONWEALTH OF VIRGINIA : Projects by Inglenet Business Solutions, 2000

Summary

Henrico County is an independent jurisdiction in the Commonwealth of Virginia, encompassing 245 square miles, with a population of 243,000. The county includes urban areas, including several Fortune 500 companies, and large rural areas. The Henrico County police department employs 474 officers. Inglenet's terminal emulation software, *TIP Studio Workstation*, allows laptops in patrol cars to communicate directly with the Unisys mainframes over mobile radio frequency protocols. The custom application has worked so well for the police department that the county plans to roll it out to the fire department.

The Problem

The police department wanted a more efficient way for police officers on the road to obtain information from local, state and national mainframe databases, which are either stored on or accessed via Unisys mainframes. Previously, officers obtained this information by calling in the query to a dispatcher by radio, waiting for the dispatcher to query the database and get a response, and then listening to the dispatcher read back the results. This approach was inefficient, as it took up the time of two people and limited the amount of information that could be transmitted.

In 1995, the police department decided to create a mobile environment that duplicated their office environment – one that would allow the officers to access the databases directly. For hardware, the team chose Windows 95-based laptops with backlit touch screens and a Mayday emergency key, installing them in squad cars in such a way that the officers could use them while driving. For software, they brought in Inglenet to customize *TIP Workstation* – both to allow the laptops to communicate directly with the Unisys mainframes over mobile radio frequency protocols and to integrate the solution with Office.

The Solution

Using VBA (Visual Basic for Applications) Inglenet made the long character-based strings needed to access the Unisys mainframe databases into command and toggle buttons. The officer could then enter a query by touching the appropriate button. Inglenet also used Microsoft Visual C++ to add a cascading inquiry capability that automates the process of doing multiple queries. For example, an officer making a routine traffic stop can initiate a series of queries simply by entering the car's license plate number. The system will query the Department of Motor Vehicles' database to determine to whom the car is registered; check a drivers' license database to determine license status; and query state, local and national crime databases to determine whether there are any warrants out for the driver. The officer can obtain several pages of data on the driver, and know what kind of person he or she is dealing with before exiting the police car.

With the new system, Henrico County officers can now access:

- Local Henrico County police data, such as incident reports or arrest reports, stored in the Unisys System 80.

- Commonwealth of Virginia data stored in the Virginia Crime Information (VIN) system, and the Department of Motor Vehicles and Driver Registry databases. These databases also reside on the Unisys System 80.

- National information stored in the National Law Enforcement Telecommunications Services (NLETS) and National Crime Information Center (NCIC) databases. The former interconnects all state systems, so officers can run checks on out-of-state vehicles and drivers' licenses; the latter is an FBI database. Both databases are accessed by connecting through the Commonwealth of Virginia's Unisys 2200 Series.

In addition, officers can connect to a server running Windows NT and Microsoft Exchange Server to send and receive e-mail and Internet mail from their car.

Queries are transmitted via radio frequency modems, using MOBITEX protocol from Bell South Communications. Both the laptops and the server run Nettech's RFLink, which allows TCP/IP packets to be carried on a mobile radio frequency. Queries go to a message switch, running under Windows NT, which routes them to the appropriate

database (s). The response is then routed back to the appropriate officer. The message switch handles the cascading inquiries and also tracks user and service IDs (due to the mobile nature of the laptops, this is necessary to ensure replies go back to the right unit). A page buffer on the laptop stores responses on the hard drive, so the officer can go back and access them later.

Although the custom application was written for the police department, it was to be maintained by the Henrico County IT department. The IT department wanted the ability to modify the application (for example, adding new screen formats) without going back to the vendor, so they asked to have a scripting language to be included as part of the application. "We were really pleased to find out that *TIP Workstation* came with VBA, because we use Visual Basic a lot in our department," said B.R. Carson, a project manager with Henrico County's Information Technology department. "That means our people don't need any special training to be able to maintain the code." A second benefit, according to Carson, was that having VBA already present in *TIP Workstation* made it easy to integrate the custom application with Microsoft products used by the department, such as Microsoft Office.

The Conclusion

Henrico County police department has experienced many benefits from its new laptop application:

Time Savings. With the officers able to query the databases themselves, dispatchers' time is freed up for other purposes.

Security. Ordinary citizens with police scanners can pick up conversations between police officers and dispatchers; the laptop queries are secure from such eavesdropping.

Increased Information. With the ability to store responses on the laptops' hard drives, officers can access a wealth of information – many times more than they could get by talking to a dispatcher. There's no need to worry about accuracy in transcribing information received orally; the officers end up with a permanent record that they can review later.

Safety. The enhanced quality and quantity of information makes the officers' jobs safer. "This is the most important benefit, in our opinion," said Lt. Col. Middleton, deputy police chief for Henrico County. "With all the information the mobile application makes available to the officers, they know what they're up against before they get out of the police car, and that dramatically enhances their safety."

The custom mobile application has worked out so well for the police department the county plans to roll it out to the fire department. Certain groups within the county public works department have also expressed interest in the application. "In fact, we have received queries from all over the Commonwealth of Virginia," said Middleton. "We've also been asked to give a presentation to law enforcement groups in Louisiana and West Virginia.

Perhaps the greatest external recognition of the value of the application, though, has come from the FBI, which recently selected the Henrico County police department as one of five law enforcement agencies in the nation to participate in its newest law enforcement technology initiative, National Crime Information Center (NCIC) 2000. This technology initiative will enable officers to us3e their laptops to request and receive visual data, such as mug shots and fingerprints. Officers will also be able to capture a subject's fingerprints and send them to the FBI, where they can be matched against the prints of wanted criminals. "This technology will take law enforcement into the next century," said Middleton. "And it was because of our mobile data project that the FBI invited us to participate."

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