Both public safety and transportation agencies need quick, accurate information to fulfill their missions to protect the public, safeguard crash sites and respond appropriately to emergency situations.

In Utah, the Departments of Public Safety and Transportation collaborated to optimize data sharing by integrating their computer-aided dispatch (CAD) systems. They’re funding the effort with $1.3 million in federal and state grants, and the results of their field operational test will become a nationwide model.

Although the Federal Highway Administration officially awarded the grant to the Utah Department of Transportation (UDOT), several agencies are partnering with UDOT on the project, including the Utah Department of Public Safety (DPS), the Salt Lake City police and fire departments, the Valley Emergency Communications Center and the Utah Transit Authority. These agencies collaborated to draft the grant application, and also had signed agreements in place before UDOT submitted the application.

Each partner agency has its own CAD system, which provides emergency responders with real-time incident information. Although these agencies have shared data in the past, this was usually done by phone or fax. The goal of the field ops test was to automate the sharing of information between CAD systems through electronic data interfaces.

Eventually, the project will integrate six CAD platforms: UDOT’s Advanced Traffic Management System (CommuterLink), Versaterm, Spillman, Computer Integrated Systems, FDM Software and the Transit Authority’s in-house system.

“In a time when resources are scarce for most public agencies, it’s a great boon to collaborate,” says Chris Rueckert, shift supervisor for the DPS’ Salt Lake Communications Center. “Agencies can do more through cooperation than they could do on their own.”

A history of cooperation

This integration venture is just another step in a series of collaboration projects completed by UDOT and DPS. More than five years ago, the agencies decided to share office space and resources at the new UDOT Traffic Operations Center to improve their operations.

“In the beginning, the biggest reason DPS decided to partner with UDOT and coexist in the [Traffic Ops Center] was that it allowed our dispatchers views from hundreds of closed-circuit roadway cameras,” says DPS Bureau Director Carol Groustra. “Our partnership with UDOT has provided great benefits, and this [field test] is an extension of that arrangement.”

Groustra notes that public safety and transportation management personnel from around the world tour the Salt Lake City Traffic Ops Center and are amazed at the agencies’ ability to collaborate.

“I think some state agencies have a diffi-
cult time cooperating because they see other state agencies as competitors seeking funding from the same sources," Groustra says. "We've been able to work through those issues and realize that sharing resources and working together actually make our job easier."

The project partners agree that part of the reason that federal officials awarded Utah the funding for the CAD integration field test was the history of cooperation among the state's agencies.

The biggest challenge
"Completing the technical components of this project was relatively simple when compared with the challenges we faced in getting the agencies to agree about what information to share," says Kyle Hortin, senior software engineer with TransCore, the system integrator for the UDOT CAD system. "We had to come to a consensus on what data was needed, how to share the information and how to guarantee security of that information."

Adding to the complexity involved in getting multiple agencies to agree on data-sharing standards, each agency has its own vendor responsible for integrating the interface into that agency's CAD system. These vendors make the necessary data translations to preserve the proprietary integrity of their software.

The first step toward integration: A system tour
DPS dispatchers usually receive the first call alerting officials to an emergency situation. In the past, when DPS dispatchers received a 9-1-1 call, they recorded the data as "free-flowing" text in the agency's CAD system. When they wanted to share data with other agencies to ensure an optimal emergency response, they had to phone or fax each agency to report and coordinate.

"There was always the chance of losing something 'in translation' as dispatchers made multiple phone calls," Rueckert says. "We also were dealing with personal interpretation and multiple information transfers."

Now, using the new CAD integration software, when a call comes in, the dispatcher enters the data into assigned computer program fields and includes such information as the number of roadway lanes impacted—data more useful to UDOT than to DPS. The dispatcher then selects which agencies should receive the information and marks a code to indicate the DPS planned response.

After receiving the data, each selected recipient sends confirmation that the agency has received the information. Those agencies then have the option to electronically add incident details to the report and send them back to the DPS dispatcher.

As the information flows among agencies, the system automatically integrates the data into appropriate fields in each agency's separate CAD software. Data that an agency deems "sensitive" is filtered and protected from distribution. "Instead of just hearing an explanation of the incident, now dispatchers and traffic operators see it," Hortin says. "There's a whole new visual component that didn't exist before."

"For DPS dispatchers, the process is only slightly different, with the same basic interface and just a few extra steps," says Rueckert. "There was a learning curve in the beginning, but over the long term and with some practice, it should be a seamless change."

"There are always some roadblocks," says Groustra. "People get used to doing things a specific way and are reluctant to change. But emerging technology requires change, and in the end, we're all better off."

The system integrators also aim to automate the software to notify specific agencies of an incident according to the fields entered, eliminating the need for a dispatcher to select message recipients.

The benefits
Groustra explains how integrated CAD systems will better prepare all the agencies involved and make for better and faster emergency responses.

"Initial dispatchers can disseminate the data more quickly and efficiently," she says. "Just reducing a little delay in the transfer of information can mean the fire department gets there 40 seconds faster. And 40 seconds is a lot of time when it comes to emergency response. It can mean the difference between tragedy and survival."

The integration technology also allows responders to clear incident scenes quicker, reducing the number of "secondary crashes," or those caused by confusion or slowdowns related to the first crash. It also helps drivers avoid congestion caused by a crash.

"Data that is sent to the UDOT CAD program automatically populates UDOT's travel information Web site (commuteline.utah.gov), its free 5-1-1 Travel Information Line and its e-mail- and pager-alert system," Hortin says. "The public gets information about traffic incidents and related road closures in real-time."

The proprietary CAD systems now have interfaces that can communicate with other CAD systems using a common standard, because the integration software was written to conform to the Institute of Electrical and Electronics Engineers (IEEE) 1512 standards, the national guidelines used for sharing incident information. "Writing the integration software to comply with IEEE 1512 standards makes it more usable over the long term," Hortin says.

Next steps
The field operations test project team has successfully integrated UDOT, DPS and the Utah Transit Authority, and it is now working to integrate the Valley Emergency Communications Center and Salt Lake City CAD systems, which are scheduled for integration in February 2005. The field ops test will be implemented during the first half of 2005, and the project team expects results in the fall of 2005.

The project team will evaluate the success of the project using such measurements as whether incident clearance times and the number of secondary incidents decreased. The Federal Highway Administration will document the results of the field ops test later this year.

Those interested in integrating their CAD systems should begin by establishing close relationships with their sister agencies. CAD vendors are receptive to developing these interfaces when standard protocols are available and they don't have to share proprietary trade secrets. Utah's experience has shown the implementation is not technically difficult. If you are interested in discussing this project, please contact the author.

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