FINAL REPORT FOR THE
FY2000 ITS INTEGRATION COMPONENT
Of the
ITS DEPLOYMENT PROGRAM

Submitted to
U.S. Department of Transportation
Federal Highway Administration
Federal Transit Authority

Incident Response Computer Aided Dispatch System
Boise, Idaho

Submitted by
Idaho State Police

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30 January 2006

The Computer Aided Dispatch (CAD) computer system went into live operation January 2002. System design involved creating a distributed network, which involved setting up a central main server at the Idaho State Police (ISP) headquarters located in Meridian, Idaho and a thin server located in each of the three regional dispatch centers, which would communicate with the main server. The design concept provided a system whereby each center could operate independent from the main server during periods of lost connection between the regional dispatch centers and the main server. Additionally, during instances of thin server failures the system was designed to allow one of the center workstations to become the thin server to sustain operations until such time the primary regional thin server could be brought back into operation.

Challenges to System Implementation

1. The primary challenge to implementing the CAD system was to create a statewide GEO location file. The primary system design for the CAD system is built around having accurate locations residing in the GEO location file and each call are entered based upon a location. ISP worked in cooperation with the CAD vendor and the Idaho Transportation Department (ITD) to develop the GEO location file for the CAD system according to vendor requirements. It was determined that instead of using actual addresses, the state would use mileposts in tenth mile increments to act as addresses along the state roadway segments in the GEO location file.
   Although the ITD centerline data that was developed is extremely accurate and ISP met the deadline imposed by the CAD vendor to have the file completed, it took until August of 2005 and a CAD version upgrade for the CAD vendor to make the GEO location file totally operational. Until the GEO location file was totally functioning the dispatchers were required to add a dash sign to each location entry, which told the system that the location was an exception to the GEO location file. Without the dash line being added, the system would not verify the address location and the dispatcher would be unable to continue entering data until the location was verified in the system.

2. Another challenge that had to be overcome was to create a connection to the Ada County Highway District (ACHD) traffic management center for sharing of the CAD event entry system and access to ACHD's traffic management system. Although there were a number of available options open to us for connection, it was decided to interface with ACHD's fiber optic network. Doing so would allow us to not only share the event entry directly into the ISP CAD system, but would also provide high speed connectivity to the ACHD camera systems located throughout the Treasure Valley and Boise area. ISP purchased the required fiber optic cable and the equipment to transport the video feeds, which ACHD installed.

3. Something that we had asked the CAD vendor to provide with the CAD system was to program a wrecker rotation module that we could track the wrecker company vehicle tows that we dispatched. The vendor provided the module with the initial CAD system, but it was found to be not functioning as we had hoped. In 2004 we delivered to the vendor a "use case document" with which they would be able to develop the wrecker tow rotation program for us. Numerous delays have been encountered along with promises for delivery of the module. The rotation module is very important and will eventually save time and result in a total paperless environment. The CAD system is now at version 2.2 and we have been told that the rotation program is being developed for version 2.3, but will be retrofitted for our current 2.2 version upon completion.

4. The Records Management System (RMS) was a challenge because the existing RMS system was built around a different format than that of the CAD system. Although solutions took somewhat longer than anticipated, the interface between CAD and the RMS system works well. The primary issue with RMS is once again, the GEO location file. CAD sends information to RMS for storage and for data retrieval purposes. Unfortunately, to date, the vendor still does not have an accurate GEO location file to work with. However, the vendor is getting closer to getting the GEO location file system operational and interpreting the location information coming from the CAD system correctly.

5. The last challenge has been to successfully complete a Memorandum of Agreement (MOU) between the Idaho Transportation Department (ITD), ACHD, and the Idaho State Police. The Bureau of Emergency Medical Services (EMS) opted out of the agreement because the primary purpose of the traffic management system being provided by ACHD would be in support of dispatch services to ITD personnel and not needed for EMS purposes. The MOU, when signed, will allow for the sharing of ACHD's traffic management computer program and the CAD event entry system. Unfortunately, other elements were added to the MOU, such as the mutual use of the fiber optic network from ACHD and the video feeds provided by ACHD from cameras throughout the highway system in the Treasure Valley. Everything is ready to proceed with the sharing of the systems once the MOU has been agreed to and signed by all parties.

Lessons Learned

Monetary limitations contribute heavily toward acquiring a system that meets the department's needs without the necessity of having to change the way of doing business based upon the limitations of a software program. ISP opted to purchase an off the shelf system rather than having a system developed specifically for ISP based on the availability of future support of the system in the event that the vendor, at some point, went out of business. Cost also weighed heavily towards this decision. The cost of an "off the shelf" program was three times less than having a specifically developed program. Overall, it has been amply proven that the "off the shelf" program is very much worth purchasing, if the department is willing to change the basic methods of how they operate. Unfortunately, some processes within the department cannot be changed, due to laws or mission restrictions and requires enhancements to an existing "off the shelf" program.

As with any software program there are specific requirements that need to be met, both by the vendor and the agency purchasing the system.

Very early on, the vendor for our CAD system stated that the success of the CAD system would mean the difference in having a good GEO location file and not having one. ISP was requested to provide the base data for the GEO location file as one of the requirements to implementing the CAD system. What the vendor didn't tell us is that they had no experience building a GEO location file on a statewide level. As a State Police Department most of what we do is on state and federal highways. The Idaho Transportation Department assisted us by providing the centerline data necessary to building the GEO location for the CAD system. What ISP learned from this exercise is the vendor needs to dedicate the necessary resources to insuring that the desired results are achieved from the start project pertaining to critical, must have applications.

Another part of the application that was very important to ISP was the wrecker rotation module, which the vendor told us would be built and ready at the same time as the installation of the CAD system. Unfortunately, the module was not finished as anticipated and lingered on for some time after the initial go live date of the CAD system. ISP was told that the module would be delivered faster if we signed off on the CAD system and pushed it into the warranty phase. The lesson learned here was that although the vendor may have had good intentions, the result was a bad program that did not meet the needs and signing off on the system was not the right thing to do. ISP developed a use case document for use by the vendor to assist them in developing the program and ISP has had promises from the vendor but up to now no module. ISP is still working with the vendor to obtain the wrecker rotation module and expects it to be delivered mid-year 2006.

Unfortunately, trusting the vendor to achieve the final portion of a project because of more available resources has only proven to create delays with no recourse to apply sanctions toward the vendor for not meeting a requirement.

Evaluation Summary

The vendors who are providing CAD systems in today's market are numerous and as such require a great deal of research to determine which vendor can provide the best system for a particular agency. ISP desired a system that was "off the shelf" and one that did not require a significant amount of rework to provide the functionality that ISP desired. Fortunately, a CAD vendor that ISP was familiar with, due to already having their Records Management System (RMS) in place for a number of years, seemed to be able to provide the desired system.

Going from a paper environment to a CAD system requires, to some extent, a change in how business is conducted. Although, in ISP's case, the change was not as significant as some other agencies may encounter. Definitely, the benefits outweigh any change that may be necessary to evolve into a CAD environment. The most difficult process in moving to CAD was the fact that the vendor had no experience working in a statewide environment. Most CAD systems are developed for cities and counties where the area is much smaller. ISP's most significant hurdle to get over was the GEO file for the system. Typically, cities operate in address ranges that are relatively easy to develop. In ISP's case, highways and mileposts take the place of street names and addresses.

Eventually, the problems encountered were overcome, but not without the CAD vendor rethinking how the GEO file was to be developed. Keeping the vendor focused on achieving a working GEO file was the most difficult part of the process, but well worth the effort. ISP's capabilities performing statistical analysis of the work that our troopers perform has been increased dramatically. Additionally, the ability to integrate with other government entities, such as the Ada County Highway District (ACHD) Traffic Management Center are now possible. The system is now ready for implementing Automated Vehicle Location (AVL) as soon as funds become available to purchase a mapping system and GPS modems for our vehicles.

Since going live with the system in 2002, there have been 679,522 calls for service processed from our three dispatch locations through CAD. Our ability to determine this before CAD would have involved numerous man-hours that more than likely would not have been allowed due to other more important issues. One of the most important elements of CAD is to assist the dispatch personnel in keeping track of trooper's status for officer safety.