PROBLEMS IMPLEMENTING THE SAN JOSE POLICE COMPUTER AIDED DISPATCH SYSTEM

Summary

The 2004-2005 Santa Clara County Civil Grand Jury (Grand Jury) received multiple complaints alleging that the City of San Jose (City) procured, installed and implemented a new Computer Aided Dispatch (CAD) system that had deficiencies which jeopardized both the public's safety and that of police officers. The system was purchased from Intergraph Public Safety, Inc. (IPS) of Huntsville, Alabama. It was alleged that the CAD system deficiencies significantly limited the abilities of Public Safety Dispatchers (PSDs) to provide acceptable levels of support to police officers and the public. The Grand Jury inquiry resulted in six findings and seven recommendations. In summary, the Grand Jury recommends that:

- City of San Jose management should dedicate qualified Information Technology Department (IT) staff or consultants, who are subject matter experts, to collaborate in planning, procuring, and implementing "mission-critical" technologies;

- City of San Jose management should assign a sufficient number of qualified civilian personnel to specialized IT positions within the San Jose Police Department (SJPD), freeing police officers to provide law enforcement service to the community;

- The top management of the SJPD should assume a more proactive and visible role in program planning, development, and practice to assure participation, cooperation and two-way communication throughout the department;

- City of San Jose and SJPD management should establish procedures so that IT deficiencies can be quickly detected and adequately addressed;

- In future IT project development, City of San Jose management should mandate that representatives from all levels affected by the IT project be included in every stage of specification, development and deployment;

- Mapping data and related IT programs should be checked regularly for errors through a quality control program administered by qualified, trained personnel;

- City of San Jose management should obtain system design and implementation documentation from IPS that would give IT staff the ability to maintain and ensure the functionality of the IPS CAD system; and

- SJPD should immediately reinstate the production of printed "beat maps" and provide them to police officers for their use in the field.

Background

Prior to October 1990, City police and fire communications and dispatching functions were contracted from Santa Clara County. In October 1990, the City activated the Communications Center (Center) located at 855 N. San Pedro Street in San Jose as part of the Communications Division of SJPD's Bureau of Technical Services. At the Center, PSDs answer 9-1-1 calls and non-emergency calls to provide coverage 24 hours a day, 365 days a year.

The CAD system is a mission-critical tool used by PSDs. "Mission-critical" is defined as any system whose failure would compromise effective disaster response or function of services, including command and control, triage, resource coordination, law enforcement, fire control, medical care, public health, social services, water, food, shelter, financial resource management, corrections, and justice system. The CAD system is a highly specialized application that is designed to facilitate coordinated communication, assignment and tracking of Police and Fire Department resources in response to calls-for-service.

Litton PRC Public Sector (PRC) built the CAD system which was installed at the inception of the Center. This system was installed on redundant Digital Equipment Corporation mini-computers, so that the CAD system ran on one computer while the second computer was held in reserve in the event the first became inoperable.

In 1995, a consultant hired by the City did an evaluation and recommended that the PRC system be replaced. The study found that the PRC CAD system was becoming obsolete and would become more difficult to maintain in light of changing technology standards. One of the major criteria for the City in purchasing a new CAD system was that it be a commercial off-the-shelf (COTS) system, so that hardware and software would be standardized and vendor supported. The benefits of a COTS system should include a reduction in maintenance costs, ease of updating the system and lower initial cost than a customized system.

In 1998, the Deputy Chief responsible for the Bureau of Technical Services was tasked with identifying options to fund a new CAD system. Some of these funding options were in the form of grant proposals through the United States Department of Justice COPSMORE (Community Oriented Policing Services Making Officer Redeployment Effective) program. COPSMORE was created specifically to allow police agencies to purchase technology and other equipment, or to hire additional civilian support staff so that police officers currently assigned to desk work could be reassigned to patrol units. The SJPD was able to secure a grant, similar to COPSMORE, from the California State Supplemental Law Enforcement Services Fund (SLESF) in excess of $4 million to purchase a new CAD system. On May 28, 2002, the San Jose City Council (Council) authorized the CAD system project to be funded from the SLESF grant money through City Ordinance No. 26647.

In late 1999, the SJPD Chief, through the Bureau of Technical Services, established the Executive CAD Committee. This committee consisted of representatives from the SJPD, San Jose Fire Department (SJFD), Office of the City Manager and City's IT Department. A contract administrator from the Office of the City Attorney monitored the

Committee's work. In order to assist the Executive CAD Committee, Public Safety Consultants, Inc. (PSCI), based in Alabama, was hired as a consultant to help write the Request for Proposal (RFP) and provide input on what would be available to meet the needs of SJPD and SJFD. The corporate mission of PSCI is "to provide operational and technical consulting services that will enable public safety agencies in implementing advanced technology in a way that supports strategic objectives while measurably improving operational processes." PSCI interpreted data and proposals and provided advice to SJPD until Council approval of the contract with IPS.

In 2000, the City began a project to acquire new CAD and Automatic Vehicle Location (AVL) systems. The project was divided into three sub-projects: CAD, AVL and Mobile Mapping. In conjunction with PSCI, City staff developed the specifications and requirements for a new turnkey COTS CAD system.

In March 2002, the CAD RFP was sent to 88 potential vendors. A mandatory pre-proposal conference was held in late March 2002, attended by 22 vendors. Five proposals were received by the mid-May 2002 deadline. Proposals were evaluated by criteria set forth in the RFP. These criteria included: (1) quality of the proposal; (2) cost to the City; (3) capability and expertise of the vendor; and (4) adherence to applicable Council policies.

As stated in a Council Memorandum dated September 11, 2002, "The evaluation committee conducted a two-part evaluation of each of the [five] proposals. First, a review of the technical solution and services offered by each proposal; and second, financial cost to the City. In addition, the proposals with the highest ranking evaluation were selected to participate in a formal presentation and functional benchmark component to validate functionality and give the vendors an opportunity to formally present their products and company."

The benchmark test was conducted at the McEnery Convention Center. Each vendor was instructed to install a specified amount of data to simulate operation and test the functionality of the systems. The purpose of the benchmark test was to allow members of the Executive CAD Committee and a few selected PSDs to test the systems then under consideration; namely those from IPS, TRW and Northrop Grumman/PRC. Two of the three vendors had technical difficulties during the benchmark test. IPS was the only system that did not experience technical difficulties. Executive CAD Committee members stated that they were unaware of any verification that the vendors had installed the specified amount of data in their systems. They also stated that none of the City personnel in attendance had technical backgrounds to sufficiently question or verify statements made by the vendors.

Based on the evaluation of the proposals and the performance observed during the benchmark test, IPS was rated as the top vendor. During the benchmark test, the president of PSCI was present and provided technical assistance to the City. The total proposed cost for the IPS CAD system was $4,731,437, including tax, installation, integration and first year maintenance and support services. An additional $50,000 was added in order to execute change orders to the Agreement to cover any unanticipated requirements during the implementation process for this project. Even though PSCI proposed consulting services during the implementation phase, it was decided not to renew the contract with PSCI.

In October 2002, selection of the IPS CAD system was recommended by the City's Director of General Services (GSA) and the SJPD Chief. Based on this recommendation, the San Jose City Council approved Resolution 71236, which authorized acquisition of the IPS CAD system.

The new IPS CAD system also provides in-car data to police officers (and eventually will provide data for use by SJFD firefighters in fire vehicles) for their use in the field. These data are available to officers through a technology known as Mobile Data Computing (MDC). The City also identified the need to add mapping and AVL to the CAD system.

In early 2004, prior to activation of the IPS CAD system, training was provided to police officers and PSDs by "in-house" trainers using simulated MDC terminals located in a training room inside the Center. The terminals used for training were considerably different in size and function from the actual MDC terminals that had been installed in patrol cars. During these training sessions, PSDs and police officers first realized that the formats and screens they had been using would change dramatically with the new IPS system. For example, the police officers were trained on laptop computers that did not have the touch screen functions available on the MDC terminals. Short training sessions were given from time to time, sometimes months before the IPS CAD system was scheduled to "go live." Dispatchers were given one 10-hour class per month for four months. Call takers were given three training sessions of 10 hours each. Both the dispatchers and call takers were given an additional 14-18 hours of refresher training during April and May 2004. In June 2004, SJPD switched over from the PRC system to the new IPS CAD system. At the very start, many problems were discovered that not only affected the way PSDs were trained to do their jobs, but also the way police officers used data on the MDC terminals. These problems included the inability of PSDs to perform multiple tasks simultaneously, accurately, and with the same efficiency and speed as they could with the previous PRC system. The PSDs also soon realized that the IPS CAD system did not perform as was demonstrated during training. These changes and loss of functionality with the IPS CAD system created significantly increased stress that impacted both PSDs and police officers. Use of the new in-car MDC terminals by SJPD police officers was so complex and difficult that police officers claimed that the unreliability and complex multitask functions jeopardized the safety of police officers and hindered their ability to provide immediate and efficient service to the public.

Immediately following activation of the IPS CAD system on June 15, 2004, the Grand Jury received multiple complaints about the "unreliability and functionality of the system." At this time, the Grand Jury began its inquiry. Among its initial interviews, the Grand Jury spoke with a Councilmember about the IPS CAD system. Soon after that interview, officer and public safety concerns were addressed in a Council meeting. During the meeting, Councilmembers requested and heard testimony from SJPD command staff, SJPD civilian management, IPS representatives, police officers and PSD representatives. As a result, the Council demanded periodic updates from the SJPD Chief.

In August 2004, the San Jose Police Officer's Association (SJPOA) contracted with consultants to make evaluations of the MDC software. SJPOA was concerned not only with officer safety during the use of this new complex system, but also with ergonomic

issues. In November 2004, Council ordered an independent audit of the IPS CAD system by the Public Technology Institute (PTI), which became available in early 2005.

During its inquiry, the Grand Jury reviewed consultant reports, procurement documents and vendor proposals. In addition, the Grand Jury has interviewed more than a dozen individuals intimately familiar with the selection, implementation and daily use of the IPS CAD system. It was apparent from interviews with PSDs and police officers that morale in the Center and SJPD had been adversely affected by inadequate user training, implementation problems and functionality shortcomings of the IPS CAD system.

Discussion

The Grand Jury conducted the inquiry of the CAD system procurement, installation and implementation in several stages, including:

- Studying the procurement process of this IT project at the City level and within SJPD;

- Studying the assignment of civilian management and SJPD command staff, and the development of training procedures and implementation plans by the SJPD for the IPS CAD system; and

- Evaluating the response by City and SJPD management to independent audits, and evaluations regarding the IPS CAD system, MDC terminals, mapping and AVL systems.

SYSTEM PROCUREMENT AND MANAGEMENT

The City's GSA Purchasing Division (Purchasing), which provides procurement services to City departments, coordinates the procedural aspects of a large technology purchase such as the CAD system. Purchasing assisted in developing the RFP, the bidding process and selection of consultants to support SJPD in the CAD system selection, but was not responsible for research or design of the CAD system or post-procurement implementation.

The Grand Jury attempted to review documents, proposals and CAD Executive Committee minutes related to this RFP process at the Purchasing offices on Senter Road in San Jose. Due to the lapse of time between RFP deadlines and the Grand Jury inquiry, some documents (which were not considered public records) related to the RFP and award of contract to IPS had been destroyed. Some other records, including the original RFP, the IPS proposal, Council memos and miscellaneous financial documents were retained and reviewed. Unsuccessful bidders' documents had been discarded since a two-year period had elapsed and City policy had allowed the disposal of these documents. The Grand Jury was unable to retrieve personal notes that may have been kept by CAD Executive Committee members.

A Project Manager was selected from within the SJPD Bureau of Technical Services. The Project Manager selected by SJPD command staff was inexperienced in the procurement and implementation of such a large, complex technology system. The Grand

Jury found that criticism of the selection and appointment of the Project Manager for the IPS CAD system project was a common theme among police officers and PSDs. The Grand Jury heard criticism of civilian management and command staff at SJPD who were responsible for supervision of this individual. The command staff was faulted for not being held accountable for supervision and oversight. The audit prepared by PTI reported that:

> "Many of those interviewed… mentioned that because the City cut so many IT positions, they were left to their own devices and did the best they could under the circumstances. …the project was perceived by some to be nothing more than a SJPD hardware swap out. The message wasn't getting out or getting across that this new CAD was going to be a significant culture shift… Command and management staff turnover and organizational changes were contributing factors in the breakdown of communication."

The Grand Jury also found this to be true. Historically, members of the SJPD command staff assigned to the Center were either nearing retirement or were temporarily assigned due to manpower needs and shortages. The command staff lacked commitment to perform the functions essential for the effective installation and rollout of a new CAD system in the Communications Center.

The CAD Committee (in contrast to the Executive CAD Committee) was a volunteer committee comprised of two members from the Executive CAD Committee, two dispatchers, two call takers, two senior dispatchers and two other supervisors. None of the CAD Committee members had technical knowledge of complex CAD system software. Field-based end-users (police officers and firefighters) were not part of the CAD system selection group. Before the RFP was written, several members of the CAD Committee traveled to five cities with populations similar to San Jose's and with police and fire agencies similar in size to San Jose's. The CAD Committee was seeking information on modern technology used by 9-1-1 agencies and was evaluating how the systems viewed might apply to meet SJPD's needs. The CAD Committee traveled to Toronto, Chicago, Orange County (Florida), Las Vegas and Gaston County (South Carolina). Each of the agencies visited had a different vendor for its CAD software and hardware. Ultimately, all five of the vendors whose systems were visited were final bidders for the SJPD system.

There were problems associated with the visits to the agencies listed. At some agencies, only a few hours were available to observe the operation of the systems. Some CAD Committee members had no better understanding of the pros and cons of a given system after their visit due to the short length of the visit. Some other cities were first-time CAD system users and had not made the transition from an existing CAD system to a new system. Thus, they had no experience with which to assist the committee in identifying potential pitfalls of the transition. The dispatch agency in Toronto uses the IPS CAD system, with Microsoft Windows-based computers which are totally different from what San Jose PSDs were accustomed to using over the prior fourteen years. The CAD Committee was not able to completely evaluate each system before having to move on to another agency visit. Although several similar-sized agencies within California had CAD systems installed and operating from vendors who bid for the City CAD contract, none was visited. Also, due to the extended period of time necessary to complete the procurement,

the systems observed during the visits by the CAD Committee were different from the systems available for purchase by SJPD a year or two later.

The 1999-2000 Kern County (California) Grand Jury investigated a similar situation within its jurisdiction. It found that a "basic management principle emphasizes that the success of any new program will be greatly enhanced if representatives from all affected entities are represented and participate in the planning process. In developing the CAD system this principle was not mandated."

SJPD police officers and SJFD firefighters are the principal end-users of the system but the Grand Jury found no representatives from these groups on the CAD Committee. During interviews with SJPD Communications Center personnel, it was mentioned that requests for input were made to patrol officers at SJPD to participate in the selection of the new CAD system. Subsequent interviews with SJPD officers, however, disputed that any offer of participation was officially extended to them. Conversations with SJFD firefighters revealed the same omissions. Interviews conducted with professionals in the computer industry stated their surprise at the lack of IPS insistence that field end-users (officers and firefighters) be involved in the CAD selection process, noting that "the success of any new technology depends on the buy-in of the end-users."

Training on use of the new system was offered to PSDs and police officers. Training instructors were PSDs and police officers previously trained by IPS in a "train-the-trainer" fashion. IPS staff was not present at most training sessions held at the Center. The Grand Jury heard criticisms that many questions posed by end-users could not be adequately and competently answered by the SJPD trainers. In addition to mandatory overtime often required of PSDs, who sometimes work 12 hours a day, they were also required to attend supplemental training. Problems with the operation of the system became apparent during some of the training sessions. For example, during the training phase, some electronic maps displayed to PSDs and on the simulated MDC terminals were incomplete and had serious errors. Also, the computers and displays used for training did not accurately simulate the equipment and interface that would actually be used by PSDs at workstations and police officers using MDC terminals in patrol cars.

Trainers included officers assigned from the Bureau of Field Operations, Bureau of Technical Services, and Crime Analysis Unit as well as civilian IT personnel. SJPD personnel worked in excess of 3,600 overtime hours. The overtime hours for 29 trainers varied from a low of 16 hours to a high of 595 hours accumulated by a police sergeant. In a 10-month period, February 2, 2004 to October 23, 2004, the cost to taxpayers for the training compon.ent of the IPS CAD and MDC project totaled more than $230,000 in overtime salaries, assuming a conservative $65 per hour overtime wage rate (staff ranged from field level personnel to police sergeants to City management). During the same period, almost $1.8 million was spent in regular staff time on the project.

During interviews with members of the command staff, it was mentioned there was "resistance" by end-users to the change from the old system to the new IPS system. PTI reported that they discovered that "it was not emphasized enough to Dispatchers and Police Officers on how dramatically the 'way they did business' would change going from a highly customized, command line, text-based system to a windows-based, CAD system and mobile system."

Due to the fact that funding for the IPS CAD was in the form of a government grant, and the procurement had taken longer than expected, money for the IPS CAD system was thought to be in danger of being recalled. This situation potentially could have encumbered the City with a $4.7 million, non-funded debt. Therefore, installation and activation of the IPS CAD system was rushed to meet the grant deadline. It was determined later, after installation and activation of the CAD system, that the concern for meeting a deadline could have been resolved by formally requesting a time extension to make use of the government grant funds.

The SJPD Chief indicated that, just before June 2004, as the IPS CAD was about to be activated, 44% of IT personnel assigned to SJPD were diverted to another project in the City, leaving the SJPD project with insufficient IT professionals to monitor and coordinate the implementation and activation of the IPS CAD system. SJPD strongly objected to the removal of IT personnel from the CAD project. SJPD had concerns regarding the rollout of the new IPS CAD system and felt the reduction of the IT personnel would have a significant negative impact. The loss of IT personnel resulted in relying on IPS staff, the only other technological expertise readily available on-site.

SYSTEM IMPLEMENTATION

On June 15, 2004, the IPS CAD system was put into operation. With the implementation of such a complex, multi-user system, it was to be expected that problems with software and commands would occur. The system immediately had major operational challenges. A total breakdown of the system occurred on several occasions during the first few days. Police officers and PSDs found that dispatch workstation computers and MDC terminals would "crash," causing them to have to operate manually (paper and pencil).

During interviews conducted by the Grand Jury, frustrated police personnel said they were stunned that such a complex system was implemented without a pilot program. End-users also expressed disbelief that a 9-1-1 agency refused to "turn on" a functioning system (the previous PRC system) when the IPS system was malfunctioning. Grand Jury members asked civilian management if it would have been possible to run both systems simultaneously, and received conflicting responses.

Multiple problems were identified by PSDs during the first month of use. Identified problems were so mission-critical that they were thought by some to endanger the safety of the public and police officers. The IPS CAD system was described as having taken away the ability to accurately monitor police units and to do what was needed to be done in a timely manner during emergency situations. Electronic maps being used were incorrect, and multiple steps were required to obtain driver's license and vehicle registration information that had been done in a much simpler manner on the previous system.

PSDs and police officers described the IPS CAD system as not being "user-friendly," creating an extremely distressing situation. Confidence in the system was reduced, tempers rose, accusations abounded and communications between PSDs, police officers, civilian management and SJPD command staff deteriorated. End-users felt command staff ignored the serious "bugs" present in the new system. Command staff attributed the difficulty in operating the system to a "learning curve." PSDs worked in an open room without windows, without privacy, 10 hours a day, and were also expected to work

mandatory overtime. They were required to operate a malfunctioning system, with inadequate training, in emergency situations. It appeared to a majority of PSDs and police officers that their complaints were not seriously considered. Morale within the SJPD plummeted and complaints regarding the IPS CAD system became public. Additionally, Workers' Compensation claims from PSDs related to the CAD system increased 143% from the same period a year earlier (see Table 1).

Time Period	CAD Related	Non-CAD Related	TOTAL
03/01/03 to 10/01/03	7	2	9
03/01/04 to 10/01/04	17	6	23

Table 1: Worker's Compensation Claims for City of San Jose Dispatchers (PSDs)

Additionally, counseling for PSDs was provided by the SJPD Crisis Management Unit (CMU). City employees are also provided employee-counseling services through the Managed Health Network (MHN) program. In response to inquiries from the Grand Jury regarding counseling services provided to PSDs between July 1, 2004 and September 30, 2004 (roughly the first three months after activation of the IPS CAD system), SJPD responded by stating,

> "After the CAD system was implemented, there was a request by Communications personnel for CMU to conduct crisis/stress debriefings. This initially started with a small group of dispatchers and was then offered to all Communications personnel. We conducted over 38 debriefings and made numerous referrals to MHN. We supplied stress management information, MHN brochures and conducted numerous follow up contacts. This was the first incident in which CMU has conducted a large-scale crisis management incident and it appears to have been well received by the employees."

Due to the lack of cooperation and lack of documentation from IPS, the SJPD Bureau of Technical Services was unable to rectify the high-level safety issues within a reasonable period of time. IPS was unwilling to modify the CAD system to accommodate the needs of the SJPD PSDs and police officers. IPS staff was assigned to repair, correct and change some of the identified problems with limited success. The City was told by IPS on-site staff and representatives that since this was a COTS system, as opposed to a customized system built exclusively for SJPD, it "worked as designed" (WAD). This response by IPS frustrated PSDs and police officers even more. There was no functional process in place that would allow for problems and solutions to be reported, tracked and repaired. PTI later found that "the end-users of the CAD and Mobile software did not have the chance for productive input as to needs, design and implementation of the systems." A procedure was eventually put in place by SJPD whereby PSDs were given the opportunity to make suggestions for improvements and corrections to the IPS CAD system. A change request filed with IPS would need to be voted on by an IPS user's consortium, which is a nationwide group representing multiple agencies that use IPS software. If approved by a majority vote of the users in the consortium, the change would be part of a future version of the IPS software. Such a change could take up to one year to reach the field.

The City, the Council, SJPD command staff, PSD staff and the SJPOA became involved and started discussions to resolve procedural, operational and safety issues. In August 2004, SJPOA commissioned consultants to provide independent evaluation of ergonomic questions and software usability. In November 2004, Council hired a consultant to review the IPS CAD system and to provide findings and recommendations.

As a result of complaints by City and SJPD staff, IPS replaced their lead on-site manager with a new manager, dedicated additional staff and provided a support team for a period longer than originally agreed upon in the CAD system contract.

Over the next several months the mapping program, which was not sufficiently tested prior to implementation, continued to have problems. In February 2005, the Grand Jury learned that over 1,800 changes had been made to the CAD system map since it was put in operation just eight months earlier. These errors challenged PSDs and hindered police officers in responding to calls for service. For example, the Grand Jury found that in November 2004 officers were sent to an incorrect address to respond to a burglary in progress because of a combined CAD database and PSD input error. This occurred five months after going live with the new system. Other documented incidents include SJFD vehicles being sent to wrong addresses. Prior to the implementation of IPS, beat maps were printed for officer use. SJPD officers have relied on these maps for decades. Once the IPS CAD system went live, the decision was made to discontinue printing these maps. A high percentage of the officers interviewed do not rely on the electronic mapping system. Due to the unreliability of the mapping system, *Thomas Guide* road maps were purchased for PSDs to use. Several officers interviewed have purchased their own copies of the *Thomas Guide*. In light of the unreliability of the current mapping system and the possibility that a natural disaster or a terrorist attack could disable the electronic mapping system, the Grand Jury is concerned that the printing of beat maps has been discontinued.

MOBILE DATA COMPUTING

Many updates were also made to the MDC software in each of SJPD's fleet of 436 patrol cars. These updates, which were designated by affixing a sticker to the MDC terminal or the patrol car's rearview mirror, were called, for example, "red dot" or "white dot" updates. Police officers were required to receive additional training for some of the updates. In order to download the updates, SJPD personnel had to physically connect a computer and cable to each individual MDC terminal. Police officers were assigned to complete these tasks at considerable cost to the City because IT personnel had been reassigned to other projects outside of SJPD. Due to the fact that not all of the SJPD patrol cars could be updated simultaneously, or within a short time period, some police officers were forced to use an older version of MDC software while others had a newer version installed. This led to confusion and frustration of end-users. SJPD officers interviewed indicated that they "just turned it (MDC) off" as it was too difficult to operate. Other SJPD officers stated they had to pull off the road more frequently. One officer interviewed admitted he stays parked for longer periods of time or prefers to use a cell phone to communicate with PSDs.

AUTOMATIC VEHICLE LOCATION SYSTEM

Automatic Vehicle Location is a system in which PSDs, police officers, firefighters and emergency personnel can track and locate emergency vehicles by use of a Global Positioning System linked to the CAD system. A new tracking system required installation of AVL transmitters which were installed on SJPD vehicles. Due to a design flaw by the manufacturer, the transmitters failed, adding to the frustration and lack of confidence in the IPS CAD system. The sending units located on the exterior surface of police vehicles filled with water, rusted and stopped working. Although the AVL units were replaced under warranty, the City had to pay for the labor to remove the old units and install the new ones. PSDs reported that the interface between the IPS CAD system and the AVL is at times a safety issue when PSDs are not able to accurately track and locate police vehicles. Although the AVL unit enhances the PSDs' ability to track a police vehicle. PSDs and police officers have reported that the locations of patrol cars indicated on the mapping system are not always accurate.

SAN JOSE FIRE DEPARTMENT PARTICIPATION

The SJFD also communicates and dispatches emergency personnel with the IPS CAD system. SJFD was involved in the selection of the IPS CAD system by providing representation on the Executive CAD Committee and dedicating a co-project manager. SJFD experienced the same problems as did SJPD, although inter-related functions of SJPD are more complex due to reliance on various law enforcement databases that interface with the IPS CAD system.

SJFD is installing 80 MDC terminals in fire vehicles and is scheduled to complete the process in June 2005. SJFD has scheduled meetings with SJPD and IT to assist the SJFD implementation project "based on the Police Department experience. SJFD field user input will be actively sought as implementation and user training progresses over several months."

COMPUTER AIDED DISPATCH MANAGEMENT

SJPD command staff is required by the Council to present periodic updates on the progress of the corrections and operations of the IPS CAD system. In the latest available update to the Council, dated February 25, 2005, staff reported that "significant progress has been made to the functionality of the Intergraph CAD System since June 15, 2004." The PTI investigation concluded that "the City was over the majority of the hurdles associated with the implementation of the IPS CAD. Most of the complications have either been resolved or are in the process of being addressed as documented in earlier reports to Council." Yet, as stated during the Council meeting, some of the updates will not be installed until late 2005.

Concerns were also expressed by some IT personnel that technical documentation on the operation and design of the IPS CAD system was not provided by IPS to the City. Due to the lack of documentation, IT was delayed in troubleshooting and rectifying problems raised by PSDs and police officers. Thus, IT is dependent on IPS to respond in a timely manner to suggest procedures to repair and correct system problems in a timely manner. IPS response time was described as "unacceptable."

San Jose City management also has recognized that the City is deficient in its ability to effectively procure and manage IT projects citywide. In a January 2005 Council action, a memorandum from the Mayor, the Vice Mayor, and another Councilmember to the City Council was quoted:

> "…the City has experienced significant difficulties in several recent high profile technology projects; including… the police computer assisted dispatch system. These difficulties point to the need for checks and balances, standard procedures and guidelines, and effective management and policy oversight that will ensure that appropriate due diligence has occurred before Council considers a major purchase of technology."

IT staff interviewed in February 2005 confirmed that complaints regarding the IPS CAD system had diminished as repairs, upgrades and fixes were installed at PSD workstations and on MDC terminals in patrol cars. This same staff commented that SJPD employees felt that complaints were not always being considered. The lack of complaints was thought to be the result of the fact that the staff felt "beaten down and it (CAD) wasn't going to get any better."

The Grand Jury stopped interviewing Center personnel in early 2005 because an internal SJPD memo had been issued requiring that any employee contacted by the Grand Jury,

> "…must make notification throughout the entire chain of command. An email must be sent by the employee or their supervisor/manager Captain… Deputy Chief… Acting Chief… COP [Chief of Police]… and … City Manager's Office. This email should explain date employee was contacted, contacted by whom, nature of request, and dates for production of materials or personal appearance."

Due to the possible negative consequences for employees complying with this memo, the Grand Jury felt this directive effectively hindered any free and candid flow of information from the PSDs to the Grand Jury.

SILICON VALLEY REGIONAL INTEROPERABILITY PROJECT (SVRIP)

The mission of SVRIP is to:

- Establish radio (voice) and data interoperability between first responder agencies throughout Santa Clara County (Silicon Valley) and regionally (Greater Bay Area);

- Create a regional solution to address the lack of real-time information exchange; improve the sharing of response information in order to assist our first responders as they fulfill their mission; and

- Provide a regional/multi-regional data exchange capability that will assist law enforcement in the battle against terrorism.

The Grand Jury was impressed by the vision and actions being undertaken by SVRIP. The SVRIP panel of city management, communications, law enforcement and fire department professionals is a valuable resource for information on CAD and communications projects. For example, one of the issues with the IPS CAD system was

determined to be an "inadequate" information flow. It was also discovered that in early stages of the CAD project, the SJPD and SJFD administrations may have not taken seriously invitations to provide input. The Grand Jury can only believe that active participation in the SVRIP would enhance positive communications and CAD project outcomes.

In the "National Action Plan for Safety and Security in America's Cities" the Conference of Mayors adopted a key recommendation: "There must be communication system interoperability to ensure clear communications among city departments and federal, regional, state and other local entities responding to disasters."

As part of the Grand Jury inquiry, a survey was sent in August 2004 to all law enforcement agencies in Santa Clara County regarding their use of MDC terminals (see Appendix A). Of the 12 agencies, one agency did not use terminals. Of the 11 remaining, two used systems provided by Tiburon, Inc.; the other nine agencies use nine different systems. Since agencies in Santa Clara County use different providers for MDC terminals and software, countywide interoperability is not currently feasible. See Reference 25 for more information on SVRIP.

FINANCIAL CONSIDERATIONS

The Grand Jury attempted to ascertain the total costs of the IPS CAD system, MDC terminals, AVL, mapping, training, overtime, personnel back-fill positions and numerous other expenditures that contributed to the total cost of the project to date.

Costs for segments of the project in which costs were retrievable by City staff are approximately $7,447,891 (see Figure 1). These costs do not include overtime costs for the various upgrades to the SJPD patrol car MDC software, SJFD vehicle MDC hardware and software installation, support by IT personnel, and additional costs incurred by the City since October 23, 2004. Regular hourly wages paid to SJPD and IT employees supporting the IPS CAD project were not included as they were unavailable from the City, however, these could also be expected to be well over $250,000.
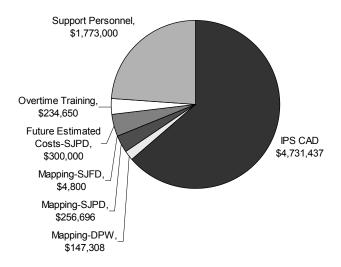

Figure 1: Costs, through 10/23/04, associated with procurement, installation and training of the SJPD Intergraph CAD and MDC systems. DPW= Department of Public Works

CURRENT STATUS

Significant problems with the IPS CAD system still exist, but lines of communication are beginning to be opened to improve the quality of the CAD system, make the system more user-friendly and, most importantly, guarantee the safety of the public and emergency response personnel. There has been a very public and proactive response by Council and the departments involved in the implementation of the IPS CAD system.

The Grand Jury learned that IPS has spent more than $1 million in personnel and development costs to upgrade the CAD system and to make necessary repairs and improvements without additional cost to the City. While these actions by IPS are considered to be proactive and good business practice, their contractual obligation to provide a system that works as specified in the contract is paramount. Upgrades or modifications outside the contract would have to be paid for by the City. It is very important to ensure that the City follows its January 2005 policy of having competent technology professionals, either on-staff or hired as consultants, for system administration, maintenance and project management.

Various issues with the IPS CAD system usability and reliability have been addressed, but errors and frustrations with the system, while diminishing, have not been totally resolved to the satisfaction of many PSDs and police officers. For example, 11 months following the initial inquiry into the IPS CAD system, the mapping program is still unreliable and the system is cumbersome to operate for many officers and PSDs.

Prior to the publication of this report, the Grand Jury met with SJPD command staff and civilian management. SJPD command staff advised Grand Jury members on the progress made in addressing the PSDs' and police officers' concerns regarding the IPS CAD system. They assured the Grand Jury that caution is being taken with the rollout of new updates to the IPS CAD and MDC software. The next update and training are scheduled to take place by July 2005. Updates to the IPS CAD system are scheduled to continue for at least the next two years.

Conclusions

The Grand Jury agrees with the findings and recommendations contained within the reports from the SJPOA consultant and PTI. In these reports, more specific examples were discussed regarding the IPS CAD system problems which created safety concerns for the public and police officers and added physical and emotional stress to PSDs.

Despite the problems identified in this report with the procurement, implementation, rollout and management of the San Jose CAD system and related technologies, the Grand Jury believes the City made a correct decision in selecting a commercial-off-the-shelf product on which to base its CAD system upgrade. The underlying lessons in the seven Findings and eight Recommendations below are that, even with vendor support, such systems are complex and must have expert and dedicated local professional information-technology support for successful deployment.

The lack of expertise and citywide coordination in the procurement and implementation of the CAD system was costly. This resulted in public safety risk, officer safety issues, stressful working conditions, low morale, inefficiencies and a high price to the taxpayers of San Jose.

Finding 1

The Project Manager of the SJPD CAD project did not have the skills, training or experience to manage such a large scale, technical project. The Project Manager had ancillary duties in addition to managing this large project.

Recommendation 1

City of San Jose management should dedicate qualified Information Technology staff or consultants, who are subject matter experts, to collaborate in planning, procuring, and implementing mission-critical technologies. The job performance assessments of these individuals should reflect success or failure of assigned projects.

Finding 2

SJPD personnel, highly trained and highly paid to provide law enforcement services, are assigned to IT positions within the department. Such a use of law enforcement personnel is inefficient and ineffective.

Recommendation 2

City of San Jose management should assign a sufficient number of qualified, civilian personnel to specialized IT positions within the San Jose Police Department, freeing police officers to provide law enforcement service to the community. This practice ensures that highly technical IT tasks are being performed by qualified experts, and that law enforcement coverage is maximized.

Finding 3

SJPD command staff and civilian management did not take a proactive and visible role in preparing City Communications Center personnel and police officers for the changes that took place with the IPS CAD system.

Recommendation 3

Command staff and top civilian management of the SJPD should assume a more proactive and visible role in program planning, development, and practice to assure participation, cooperation and two-way communication throughout the department. City management should establish a process whereby City department managers are held accountable for projects occurring within their area of responsibility.

Finding 4

The City does not have a formalized process by which end-users, such as Public Safety Dispatchers, police officers and firefighters can provide suggestions and criticisms for improving CAD and MDC functions in an environment which values problem reports and improvement suggestions.

Recommendation 4A

City of San Jose and SJPD management should establish procedures by which end-users can be part of the solution process so that IT deficiencies can be quickly detected and adequately addressed.

Recommendation 4B

In future IT project development, City of San Jose management should mandate that representatives from all levels affected by the IT project be included in every stage of specification, development and deployment.

Finding 5

The mapping data and interface software were not verified for accuracy and operational status prior to being utilized for mission-critical functions within the SJPD.

Recommendation 5

Mapping data and related IT programs should be checked regularly for errors through a quality control program administered by qualified, trained personnel.

Finding 6

Technical documentation on the operation, function, and design of the IPS CAD system has apparently not been provided by IPS to the City on a timely basis. This has impeded IT personnel in troubleshooting and rectifying problems raised by PSDs and police officers, because of the long turnaround times in getting questions answered through IPS.

Recommendation 6

City of San Jose management should obtain CAD system design, implementation, and operations documentation from IPS sufficient to give IT staff the ability to support, maintain, and ensure the operational functionality of the IPS CAD system.

Finding 7

The electronic mobile mapping system is unreliable and printed copies of beat maps previously provided to SJPD police officers have been discontinued. Such maps are also needed in case of a serious system problem or failure.

Recommendation 7

SJPD should immediately reinstate the production of printed beat maps and provide them to police officers for their use in the field.

PASSED and ADOPTED by the Santa Clara County Civil Grand Jury on this 26th day of May, 2005.

_____
Michael A. Smith
Foreperson

References

Documents

1. Public Technology Institute, "San Jose SWAT Report", January, 2005

2. Aaron Marcus and Associates, Inc., "SJPD MDC Usability Analysis", 3 Oct. 2004

3. Aaron Marcus and Associates, Inc., "SJPD Usability Analysis: Initial Audit of Revisions", 10 Nov. 2004

4. City of San Jose, Request for Proposal, RFP# 01-02-06, Police and Fire Computer Aided Dispatch System, 1 March 2002

5. Intergraph Public Safety Proposal, "San Jose Police Fire CAD System" May, 2002

6. Agreement for Purchase and Installation of a Computer Aided Dispatch System between Intergraph Public Safety and the City of San Jose, 1 Oct. 2002

7. San Jose City Council Memo, Computer Aided Dispatch System, 11 Sept. 2002

8. City of San Jose Memo, Intergraph CAD Problems, 15 Sept. 2004

9. San Jose City Council Memo, Updated Status Report on the Replacement of the Computer Aided Dispatch System (CAD), 12 Nov. 2004

10. San Jose City Council Memo, Converged Network and RFP process, 21 Jan. 2005

11. San Jose City Council Memo, Response to the Public Technology Institute Review of the Intergraph Computer Aided Dispatch (CAD) System, 10 Feb. 2005

12. City of San Jose Council Memo, Supplemental Report-RE: Intergraph CAD System, 25 Feb. 2005

13. *San Jose Mercury News* "New S.J. Dispatch System Flawed" 22 Sept. 2004

14. *San Jose Mercury News* "S.J. Council Upset with Dispatch System" 6 Oct. 2004

15. *San Jose Mercury News* "System Puts Police in Danger, Report Says" 9 Oct. 2004

16. *San Jose Mercury News* "S.J. Orders 911 Dispatch System Audit" 20 Oct. 2004

17. *San Jose Mercury News* "S.J. Tossed Documents on Dispatch Bid Process" 1 Nov. 2004

18. *The New York Times* "Wanted by the Police: A Good Interface" 11 Nov. 2004

19. *Rose Garden Resident* "Bugs in New Police Dispatch System Creating More Hazards, Union Says" 14 Oct. 2004

20. 2004-2005 Santa Clara County Civil Grand Jury "Law Enforcement Mobile Data Computing Technology Survey" August, 2004

21. The United States Conference of Mayors, Homeland Security Monitoring Center, "Interoperability Survey," June, 2004

22. 1999-2000 Kern County Civil Grand Jury Report, "Kern County Sheriff's Department Computer-Assisted Dispatch System", 28 June 2000

23. Silicon Valley Regional Interoperability Project, "Santa Clara County Civil Grand Jury Briefing", 22 Feb. 2005

24. Response to 2004-2005 Santa Clara County Civil Grand Jury by SJPD Research and Development Unit, 8 Nov. 2004

25. 2004-2005 Santa Clara County Civil Grand Jury Report, "Calling 9-1-1 Managing Information Technology in the SCC Emergency Dispatch Center", May, 2005

Interviews

1. Captain and Deputy Chief, San Jose Police Department, 28 Sept. 2004
2. Councilmember, City of San Jose, 18 Oct. 2004
3. Procurement Manager, City of San Jose, 5 Nov. 2004
4. Communications Supervisor, San Jose Police Department, 12 Nov. 2004
5. CAD Project Manager, San Jose Police Department, 12 Nov. 2004
6. Communication Senior Dispatchers, San Jose Police Department, 15 Nov. 2004
7. Information Technology Program Manager, City of San Jose, 1 Dec. 2004
8. Police Officer, San Jose Police Department, 7 Dec. 2004
9. Sergeant, San Jose Police Department, 6 Jan. 2005
10. Dispatch Supervisor, San Jose Fire Department, 7 Jan. 2005
11. Public Safety Dispatcher, San Jose Police Department, 10 Feb. 2005
12. Information Technology Programmer, City of San Jose, 16 Feb. 2005
13. Dispatch Supervisors, City and County of San Francisco, 25 Feb. 2005
14. Chief, San Jose Police Department, 3 Mar. 2005

Site Visits

1. SJPD Communications Center, 30 Aug. 2004 and 7 Jan. 2005
2. Milpitas Police Department Ride-Along, 9 Sept. 2004
3. Campbell Police Department Ride-Along, 17 Sept. 2004
4. Sunnyvale Department of Public Safety Ride-Along, 24 Sept. 2004
5. San Jose Police Department Ride-Along, 1 Oct. 2004 and 31 Oct. 2004
6. Los Gatos-Monte Sereno Police Department Ride-Along, 8 Oct. 2004
7. Morgan Hill Police Department Ride-Along, 15 Oct. 2004
8. Palo Alto Police Department Ride-Along, 23 Oct. 2005
9. Gilroy Police Department Ride-Along, 29 Oct. 2004
10. Santa Clara Police Department Ride-Along, 30 Oct. 2004
11. Los Altos Police Department Ride-Along, 5 Nov. 2004
12. Mountain View Police Department Ride-Along, 20 Nov. 2004

Appendix A

Santa Clara County Law Enforcement Mobile Data Computing and Computer Aided Dispatch Technology Survey (August 2004)

	Campbell	Los Altos	Los Gatos/ Monte Sereno	Milpitas	Morgan Hill	Mountain View	Palo Alto	San Jose	Santa Clara	Sheriff	Sunnyvale	Gilroy*
MDC in Car?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Laptop #	9	0	17	0	0	20	0	0	1	0	0	n/a
MDC #	17	10	17	30	12	40	50	430	60	130	35	n/a
Hardware Manufacturer	Publisafe-Motorola	Vision Mobile	Panasonic CF-28	Data 911	Panasonic	Data 911	Panasonic	Data 911	Data 911	Motorola ML900	Panasonic	n/a
Software Manufacturer	N/A	Vision Mobile	Tiburon	Tri-Tech Mobile	EIS	Litton PRC	PSSI/ICIS	Intergraph	Printtrak	County (Internal)	Tiburon	n/a
Year Acquired	1999	1999	2003	2004	1985	2001	2004	2004	1998	2004	2000	n/a
CAD/MDC Acquisition Cost	$1,266,639	$250,000	$300,000	$1,500,000	$0 (Beta-test agency)	$960,000	$525,000	$4,731,437	$700,000	$999,482	$730,108	n/a
Maintenance (Vendor/City)	Both	Vendor	Both	Both	Vendor	Both	Both	Both	Vendor	Vendor	Vendor	n/a
Maintenance Contract Cost (per year)	$72,000	$35,000	$52,000	$110,000	$15,000	$102,000	$75,000	$300,000	$12,000	$0	$82,375	n/a
Touch Screens	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	n/a
Training (Vendor/City)	City	Vendor	Both	City	City	Both	Both	City	City	County	Both	n/a

* Gilroy was anticipating implementation in 2005

EIS = Executive Information Services
PSSI/ICIS = Public Safety Systems Incorporated/Incident-Crime Information System