EVALUATING A FIRE INSPECTION/PERMIT SOFTWARE PROGRAM
FOR THE ARLINGTON FIRE DEPARTMENT

EXECUTIVE DEVELOPMENT

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ABSTRACT

In 1999, the City of Arlington performed a major citywide technology needs assessment. This study recommended phasing out the old mainframe computer technology. The problem was that the Arlington Fire Department's inspection/permit system operates on this obsolete computer which necessitates finding a new software system that will operate from newer technology.

The purpose of this research project was to determine alternative fire inspection/permit systems and select three systems for final evaluation by the Arlington Fire Department and the City of Arlington's Information Technology Department. The evaluative research method was utilized to answer the following questions:

1. What are the Arlington Fire Department's requirements for the inspection/permit software system?

2. What inspection/permit software systems are commercially available?

3. What systems are other cities utilizing for inspections and permits?

The procedures used to complete this applied research project consisted of a literature review, meetings with inspection system users, Internet search, a survey of fire departments, and review of demonstration software.

The results of this research included the development of a list of requirements for the system, an evaluation of 49 systems, the elimination of 44 of those systems and the determination of 5 systems that met our criteria.

The recommendations of this project included further in-depth evaluation of the five software packages, contacting customers of each vendor, on-site visits to view operating software, and making a final determination of which software best meets our needs.

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INTRODUCTION

In 1988, after trying for years to keep track of inspections on cards, the Arlington Fire Department implemented a computerized system of tracking occupancies, inspections, and code violations. This was accomplished through a batch system operating on a mainframe computer. An additional module to track plans, permits, and construction activities was added approximately six years later. As computer technology evolved, the City of Arlington had a major citywide technology needs assessment performed in 1999. The conclusion of this study included the recommendation to phase out the old mainframe technology within five years. The problem is that the Arlington Fire Department's inspection/permit system operates on this obsolete computer which necessitates finding a new software system that will operate from newer technology.

The purpose of this research project is to determine alternative fire inspection/permit systems and select three systems for final evaluation by the Arlington Fire Department and the City of Arlington's Information Technology Department. The evaluative research method will be utilized to answer the following questions:

1. What are the Arlington Fire Department's requirements for the inspection/permit software system?

2. What inspection/permit software systems are commercially available?

3. What systems are other cities utilizing for inspections and permits?

BACKGROUND AND SIGNIFICANCE

Prior to 1988, the Arlington Fire Department kept inspections on 5" x 8" file cards, with a card for each business. The inspectors were assigned a part of town and the cards for inspections in that district were kept in a file box on the inspector's desk. It was up to the inspector's discretion as to when the inspections were performed, with the stated goal of inspecting each business once a year. Normally, the inspectors would pull the cards for inspections for that day, or that week, or that month, and place them in their cars until the inspection or group of inspections was completed. The date of the inspection and major violations were hand-written on the cards and a small (4" x 6") hand-written notice of violations was left with the occupant of the business.

There was no way that the supervisors could track which businesses were being inspected and which were not, unless they shuffled through the file cards on each inspector's desk. File cards were lost and/or misplaced with the result that some businesses would not get an inspection for very long periods of time, if ever. It was up to the inspector to take the responsibility of ensuring that the violations were corrected. Liability for the city greatly increased and public safety decreased whenever hazards were identified and there was no follow-up. Statistics were either not available at all or gathered manually in a very time-consuming manner, with unreliable results. Eventually, the inspectors were required to keep daily logs of activities and would manually count those activities for a monthly report. These logs and reports also identified how many hazards were found and how many were corrected.

During the early to mid-1980's, Arlington was going through a period of enormous growth, with construction proceeding at a phenomenal pace. The Fire Department was issuing many permits for fire sprinkler and fire alarm systems with only manual means of tracking

whether or not inspections were conducted on these systems. There was also no method of tracking plans or construction projects.

In 1988, the Arlington Fire Department Prevention Division finally implemented a computer-generated inspection system. Basic information on all commercial buildings within the City of Arlington was entered into the system, with a date for an annual inspection. The inspections were divided into districts (areas) and evenly distributed during the months of the year. The annual inspections were printed prior to the first of each month on 8 ½ x 11 multi-part paper and distributed to the inspectors. Each printed inspection had the name of the business, address, phone number, emergency contact information, and basic building information such as type of construction, square footage, fire sprinklers, fire alarm, etc. There were spaces to enter the date, the type of inspection, the inspector's number, district number, and time to complete the inspection. The remainder of the sheet had lines to write a description of the violation, the number of times it occurred, and the code section number. At the bottom, there was a place for the inspector to sign and the business owner/occupant to sign. One copy of the form was given to the owner/occupant, one was turned in to be entered into the computer system by the clerical staff, and one was retained by the inspector as a reminder. After the inspection information was entered into the system, a reinspection notice was printed the next day and given to the inspector.

It was also decided that all inspector activities should be tracked for statistical purposes, so an additional form was created to account for other activities such as public education programs, investigating complaints, fire flow tests, training, fire investigations, etc. Finally, we had a way of providing meaningful statistics.

In 1994, a module was added to track when plans were received, when they were reviewed and by whom, when they were approved, and when the permit was issued. It was also

capable of tracking all inspections related to a permit and/or construction site. When the construction inspections were complete, the information regarding that business would automatically convert over to be inspected annually.

Upper management from several city departments decided in 1996 to buy and implement a Computer Aided Dispatch/Record Management System produced by Tiburon for the Fire and Police Departments. This system included modules for inspections, permits, training, and personnel management and was to be everything to everyone in Fire and Police. The decision was made by a committee headed by Communication Services (Dispatch) and included participation by members of the Fire and Police Departments. During the time this committee was considering systems and making a decision, no one spoke with anyone in the Fire Prevention Division about their needs. In August 1997, as implementation was approaching, the system was finally shown to Prevention representatives. Prevention members discovered that this system was a backwards step for Prevention, would not come close to what the existing system would do, and did not meet most of the needs of the division (see Appendix A). Fire Department management decided to keep the existing system for inspections and permits.

With the rapid changes in computer technology and increased demands for service by the citizens of Arlington, the City Manager and City Council decided, in 1999, to commission a study of technology needs for all city departments and to determine standards for hardware and software to ensure compatibility between users. This study determined that the old mainframe computer would be phased out within the next 5 years. This meant that the Fire Department would have to find a replacement for the inspection/permit system since it operated from the mainframe computer. In addition, the citizens of Arlington are a sophisticated, highly educated group of people that are demanding more information and services via the Internet.

Arlington is like most cities in the United States with increased requests for service and funding challenges. "Doing More with Less" has become an unofficial motto within the city. The City of Arlington takes great pride in having fewer city employees per capita than any other city around. It is in this atmosphere that the Arlington Fire Department operates, thus it has become necessary to find ways to operate more efficiently and to save time and money wherever it is possible. The Fire Prevention management team must work within this framework in determining a new inspection/permit system. The team is also very aware of another City motto that "Service is our Business" and we must constantly look for ways to provide better service for our customers. Doing without a computer system to manage inspections and to provide needed statistics would result in chaos and in a lower level of service and fire and life safety for our citizens and visitors.

This applied research project is designed to meet the requirements of the National Fire Academy's Executive Fire Officer Program. The research problem is directly related to Unit 10 of the *Executive Development* course, entitled "Service Quality/Marketing." In this unit, meeting and exceeding our customers' expectations now and in the future is emphasized. Our customers include members of the Fire Department, other city departments, our citizens, and visitors. It is also anticipated that this research can benefit other fire departments looking for ways to enhance technology and improve their service level.

LITERATURE REVIEW

The purpose of this literature review is to utilize knowledge already gained by other individuals and/or organizations to help the Arlington Fire Department better determine requirements for a new inspection/permit system. Other cities' experiences, both good and bad, can be very valuable in determining what system would work best for Arlington.

Requirements for the Inspection/Permit Software System

As the Prevention technology team began to look at what we wanted our new inspection/permit system to do, it became apparent that we wanted to avoid mistakes previously made by the Arlington Fire Department and other agencies. As Todd Ramsey, IBM's worldwide head of government services states, "About 85% of all public-sector IT projects are deemed to be failures. That does not mean they are total disasters, but that they usually take longer to implement, cost more and deliver less than was planned"("No Gain Without Pain," 2000). Since this was exactly what happened with the Record Management System (RMS) implemented a few years ago by the Arlington Fire Department; we wanted to ensure that this did not happen again.

One of the areas that has contributed to failure has been over-customization. Managers do not want to risk asking workers to change their work habits, particularly with a workforce that is highly unionized ("No Gain Without Pain," 2000). Again, this was a problem with Arlington's RMS system. It was so highly customized that it could not be updated with newer versions and the changes in one area caused problems in other areas of the program. The Prevention management team decided that we would look at the commercial inspection/permit systems available, determine which system would best meet our needs, and make as few changes to the software as possible.

Whatever inspection/permit system is identified, it must meet the technical standards adopted by the City of Arlington (Appendix B). According to Janet Caldow, Director of IBM's Institute for Electronic Government, "Governments must initially develop an enterprise-wide technical architecture and standards…" (Towns, 2000). All proposed software is required to be approved by the City of Arlington's Technology Standards Committee prior to being purchased and/or implemented.

Another consideration in choosing a computer system is to involve all stakeholders in the project. As mentioned in the Background and Significance section, the Arlington Fire Department had difficulties with the record management system because the personnel that would actually be using the system were not brought in until the very end. Stephen B. Gordon and Harold A. Stewart (1989) stated that everyone involved with the system, whether entering information, operating the system, or using the output should be involved in the project. As a result, this project has involved the entire Prevention team as well as any other affected divisions and departments.

Reducing the utilization of paper and other resources as well as reducing the amount of time spent on the paperwork is another desirable goal identified by Hans J. Siepmann (1999) of NASA. The fire inspectors at NASA now enter their inspection information on handheld computers. The information is then transferred electronically to the responsible site managers. The system also generates a follow-up inspection for overdue corrective action. Many government agencies are now utilizing handheld devices to collect information in the field and download to databases (Governing by Hand, 2000). Currently, the Arlington Fire Department inspectors write the violations on the inspection notice by hand, go to the office at the end of the day and code each violation, and turn the inspection notice into the clerical staff. The clerical staff then types the information into the computer. Having handheld devices would reduce the amount of time and paper spent by both the inspectors and the clerical staff.

A Fire Prevention manager also has a need for data on how much time is being spent on what activities by each inspector. As John Felde (1989) reports, "This information would be useful for performance evaluations, estimating work loads, planning staffing requirements and projecting revenues." Managers have little or no information with which to "plan budgets,

programs, workloads, productivity levels, revenue projections or even know what the present status of occupancy compliance is in many instances" (Felde, 1989). In determining the requirements for a system, our managers must first decide what kinds of measurements are needed and what decisions are to be made from the information.

Another consideration for fire departments today, is customer service. Present day customers have much greater expectations. As most successful businesses will state, you must start with who is the customer and what does he want (Smith, 1997). Today's citizens are better educated and have more computer knowledge. They expect access to service 24 hours a day, 7 days a week, and 365 days a year. Nineteen metro areas have more than 50% of their population online and in many areas, the percentage is much higher. The advantages to government services online are that it makes services more convenient to citizens, it is more cost effective, gives greater public access to information, and makes government more accountable to the citizens (Sullivan, 2000).

According to Mayor Glenda Hood of Orlando, Florida, the technology initiatives that she feels will make the most difference in her city, "are the reengineering of our permitting process and our public safety technology" (Kavanaugh-Brown, 1999). Mayor Hood feels that technology is improving customer service, making the city's service more effective, and is allowing the citizens to interact with the city at any time. Arlington is already feeling the pressure for more services to be available on-line. As our team looks at software, we are looking for more ways we can do business via the Internet.

<u>Inspection/permit Software Systems Available Commercially</u>

"The sheer volume and complexity of fire service software can daunt the uninitiated" (Elliot, 1999). According to Elliot, fire records management systems are basically 3 types:

1. General consumer off-the-shelf software, such as FileMaker Pro.

2. Fire service-specific systems that can be utilized out of the box or customized, such as Firehouse and Sunpro.

3. Combinations of the above.

With so many software vendors and with technology companies failing at a rapid rate, "the safest vendors are those that have been in business 10 years or more and have several hundred departments using their products" (Price, 1994).

FIREHOUSE Software offers an occupancy module that includes inspection and violation records, preplans, available hydrants. permit records, active and inactive storage tanks, hazardous materials inventory that interacts with Computer-Aided Management of Emergency Operations (CAMEO) data, fire flow calculations, emergency contact information and relates emergency responses to specific occupancies (Occupancy, 2001). Cities utilizing this software and expressing their satisfaction include Greensboro, NC; Huntington Beach, CA; Phoenix, AZ; as well as many others. Huntington Beach stated that they were able to convert over fifteen years of electronic data into FH which helped them to produce more comprehensive reports (FIREHOUSE Software Customer Testimonials, 2001). The Prevention management team has been very concerned about the ability to convert the existing records to be readily available with the new records. FH has been in business since 1989 (FIREHOUSE Software Notes, 2001).

"Sunpro, based in Zillah, Washington, has been in the fire service records management business since 1984" (Elliot, 1999). Customers include Tualatin Valley Fire-Rescue, OR; Fire

Department New York; and the Los Angeles County Fire Department. The Enterprise Edition has modules on personnel, training, activity tracking and scheduling, occupancies, hydrants, equipment, and fire prevention and inspection management (The Windows Based Records System for the Future, 2001).

Although there is limited literature regarding available inspection/permit software, the Federal Emergency Management Agency (FEMA) has a list of "Active Vendors" available. Active vendors are those vendors whose software has been tested to be compatible with the National Fire Incident Reporting System (NFIRS) 5.0 database (Active Vendor List, 2001). Many software programs written for fire departments include modules for inspections. Currently, there are 44 vendors on FEMA's Active Vendor List (Active Vendor List, 2001). FEMA also publishes a "Registered Vendor List." This list consists of those vendors that have registered their intent to develop software that is compatible with NFIRS 5.0, which adds another 105 vendors who may have software suitable to be considered in this project (Registered Vendor List, 2001). There are many additional resources on the Internet that identifies fire department software. Currently, the Arlington Fire Department's RMS is not capable of reporting to NFIRS. It would be preferable, although not essential, that the new software for inspections had an incident-reporting module in case the department wanted to add it at a later date.

With such a large number of software vendors and with the large number of failures of high-tech companies, the project team agrees with the above resources that the vendor should have a minimum of 10 years in the business. The vendor must also have a large number of fire department customers that can provide references upon request. The team also wants at least one site visit to a customer's site to verify the abilities of the system.

Systems Other Cities are Utilizing for Inspections and Permits

FIREHOUSE Software apparently holds the strongest position in fire department software. According to FIREHOUSE, "More Fire and EMS agencies depend on FIREHOUSE for their records management needs than any other software" (FIREHOUSE, 2001). There are more than 8,000 fire departments currently using FIREHOUSE Version 5. These departments include large, medium, and small agencies (FIREHOUSE, 2001). "According to Tempe (Arizona) fire inspector Fred Guelich, the department looked at Visionary Systems' FIREHOUSE software and hasn't looked back" (Elliot, 1999).

Sunpro also has an impressive list of customers. Fire Department of New York selected Sunpro's system in 1999. During the same time period, Los Angeles County Fire Department also implemented Sunpro (Fire Department of New York City Selects, 1999). It is designed to work with large, networked systems, which is a plus for the project team. Tualatin Valley Fire-Rescue, Tualatin Valley, Oregon which serves 10 cities in three counties, has also chosen Sunpro after extensive research (Elliott, 1999).

With a whole different approach, Aberdeen Proving Ground in Maryland built their own system using off-the-shelf components. Using Macintosh equipment, Microsoft Works and FileMaker Pro, Assistant Chief Kevin Farrell has created an inexpensive system that works well for them (Elliot, 1999).

Without going to individual software vendors' Web sites and/or literature, it is difficult to find published material on software utilized by other cities. After searching several university library on-line catalogues and on the Internet, there seems to be a great lack of information regarding choosing and/or implementing fire department inspection software.

PROCEDURES

This research project utilized the evaluative research method. Information was gathered through the literature review, meetings of the Prevention management team, a fire department survey, and extensive Internet searches. The data was then analyzed and evaluated to ascertain which three inspection systems would best meet the needs of the Arlington Fire Department.

Literature Review

The literature review began at the Learning Resource Center on the campus of the National Fire Academy. Although a search was done through the on-line catalogues of the University of Texas at Arlington and the Arlington City Library System, no information was located. An extensive search on the Internet was performed with limited results. It appears a very limited number of articles and/or books have been written regarding fire department inspection software. The information found through this literature review was utilized to answer all three questions.

Arlington Fire Department Prevention Meetings and Inspection Requirement List

The Assistant Fire Marshal/Development Services prepared a preliminary list of inspection system requirements and met with the Assistant Fire Marshal/Inspections & Investigations and the Prevention Office Manager to review the list. The requirements were then distributed to all Prevention personnel as well as affected Fire Administration members with a request for any additional requirements. Other City of Arlington departments were contacted to ascertain if they had any additional informational needs from the Fire Department. A final list of inspection system requirements was prepared after receiving feedback from all of the above sources (Appendix C). This procedure was used to help answer question number one.

Internet

An extensive Internet search was conducted for both the literature review and to

determine available inspection software. Several search engines were utilized with the following

keywords: fire inspection software, fire inspections, fire department software, government

software, fire department technology, government technology, inspections software, and pen-

based inspections. A list of software vendors was obtained on the FEMA Web site. Information

was obtained from this search to help answer all three questions.

Survey

A survey with a cover letter (Appendix D and E) was sent out to fire departments serving

populations of 100,000 or more and also to fire departments, regardless of size, in the Arlington-

Dallas-Fort Worth metroplex. The list of fire departments and addresses was obtained from *The*

National Directory of Fire Chiefs and EMS Administrators (2001). The survey included

questions regarding the use of inspection/permitting software, what software, any modifications,

use of hand-held computers, services provided on the Internet, and what they did or did not like

about the software. The survey was utilized to answer questions two and three.

Vendors

As software vendors were identified through the Internet, surveys, and information

booths at conventions, additional information was obtained. Many vendors provided

demonstration disks or downloads for their systems to be evaluated. Some vendors were

eliminated after viewing their Web site and determining that the software did not meet our

requirements. Questions number two and three were at least partially answered with this

information. In addition, each vendor's software could be evaluated for compliance with the

Arlington Fire Department requirements thus fulfilling the purpose of the project.

Assumptions and Limitations

This research project operated under several assumptions and limitations. The literature

review was limited by the lack of available literature on fire department software systems. More

literature on other departments' experiences would have been very helpful. A large number of

the fire departments surveyed requested a copy of the results of the survey and any additional

information obtained since they were also looking for a system. The researcher was also limited

in technical knowledge of computer systems software and hardware. The Information

Technology Department expertise will be brought in as the software is narrowed down.

The number of surveys completed and returned limited the survey results. Out of 396

surveys sent out, only 140, or approximately 35%, were returned. It was assumed that the person

with the requisite knowledge of inspection systems filled out the form. This appears to not

always have been the case because of some conflicting answers. It was also difficult to evaluate

the validity of some of the answers because it was very apparent that some of the respondents did

not possess a high level of computer literacy. The surveys were addressed to the Fire Marshal

because it was assumed this would be the ranking position within Prevention and would

therefore have access to accurate information.

Time was an additional limitation. Since there are so many different systems available

and there are thousands of fire departments utilizing these systems, it was impossible to gather

all pertinent data within a 6 month time period while still completing other assigned Arlington

Fire Department responsibilities.

RESULTS

1. What are the Arlington Fire Department's requirements for the inspection/permit software system?

Several aspects had to be examined in determining the Arlington Fire Department's requirements for the inspection/permit software system. First, what are the City of Arlington's requirements? Secondly, do any other City departments need to access the information? What information do they need to access? Do other City systems need to interface with our inspection/permit system? Next, what are the needs of the public? And, finally, what are the information needs of the Fire Department?

The City of Arlington's technical requirements are established in the "Standards Adopted by the Architecture Planning Committee (Appendix B)." This committee must approve all software utilized by City departments prior to purchase or implementation. This approval is a safeguard that ensures all software complies with the standards. The Information Technology Department will also work with the Fire Department in determining compliance with the standards and examining specific software to evaluate if it can meet our functional requirements.

The Building Inspections Department currently accesses our present inspection system to obtain basic building information such as construction type, square footage, sprinkler system, etc. All of the Building Inspections records are presently kept on microfilm which is time consuming and cumbersome to access; therefore, it is much easier to access the Fire Department records via the City network. The current fire system also interfaces with Building Inspections to release the Fire Department portion of the Certificate of Occupancy. Building Department needs were determined by experience, capacity and use of the present inspection system, and conversations with George Patterson, City of Arlington Building Official.

The Water Department is using hydrant flow test information to enhance the accuracy of the modeling of the flow in the City water system. Prevention personnel conduct the flow test and enter the information on the flow test program located on a shared server. The flow test program was provided by the Water Department, the Fire Department supplies the information and both departments can access the information. If we want to utilize the flow test module in the inspection software, the information needs to be available to the Water Department. Water Department needs were determined by personal experience, use of the present system and conversations with Water Department Information Services Manager Julie Hunt and Water Modeling Engineer Melvin Machayo.

The Communication Services Department, which dispatches for the Fire Department, needs access to emergency contact information on businesses. In most emergencies, the owner must be contacted to secure the building when the Fire Department leaves. The inspectors collect the contact information at time of inspection. Both the Police Department and the Fire Department access this information when needed.

The Prevention Division is also trying to accommodate the increasing demands of a growing city without increasing the budget. There are several ways of adding efficiency to Prevention operations. The more information that can be made available on the Internet site, the less time Prevention personnel will have to spend answering questions and copying code sections. The public is looking for information at all times of the day and night. Having the information on the Internet will provide better service to our customers by having it available whenever needed. It is also important that contractors have the ability to check on the status of their plans and permits via the Internet. This will save time for plan review personnel as well as the clerical staff by omitting the need for many phone calls.

The inspectors presently hand-write the inspection notices, return to the office at the end of the day, code all the violations with the Fire Code section number, and turn in a copy to be entered into the computer by the clerical staff. With handheld, pen-based computers that contain the Fire Code as part of the software, the information can be entered directly from the field with the touch of a pen, printed on a printer located in the inspector's car, given to the business owner/occupant, and uploaded into the server. This will save time, paper, postage, and file space.

Currently, if the inspectors need information about a previous inspection, they have to return to the office and access some information on the computer, some in paper files, and some on microfilm. Historical information on the property should be consolidated on the inspection system, downloaded with the inspection, and be available for the inspector when needed.

Downloading and uploading information between the server and hand-held field units at different locations is another requirement. In addition to Prevention personnel, suppression personnel at 16 fire stations also perform inspections. They will need to download their inspections and upload the inspection results at the fire stations. Each fire station currently has a personal computer that is networked with the City of Arlington system. This connection should make it easy to accomplish the transfer of information.

The business inspections done by suppression personnel are small, simple, low hazard inspections that are scheduled on two-year intervals. Prevention personnel do the remainder of the inspections on an annual basis. In addition, construction inspections are done periodically and complaints are investigated the same day received. Therefore, the inspection system must be capable of scheduling different types of inspections at different intervals for a particular address.

Many of the requirements for the inspection/permit system stem from a need for information. Estimating workloads, staffing, and budget requirements are based on information provided by the inspection/permit system. Productivity levels and performance evaluations are also determined from information gathered from the inspection system. Management can determine how much time is spent on which activities by whom and utilize that information for planning purposes and for documentation of budgetary needs. The Prevention Division also frequently receives requests for information regarding inspections and violations found where the data may need to be sorted according to occupancy, or sprinkler systems, or violation type, or inspector, or area of town. Therefore, the software must be capable of producing reports based on various criteria. It is also important that data be accessed in several different ways, such as business name, address, inspector, and contractor name. Some buildings frequently change ownership or businesses; therefore, it is important that the most recent information be accessed first in order to save time.

Documentation is also important. The ability to store photographs, fire lane plans, and other special information can be very valuable when questions arise through fire investigations and/or future inspections.

Liability is another issue for the City of Arlington. Inspections must be tracked and scheduled on a regular recurring basis, reinspections must take place promptly to verify correction of hazards, and complaints must be investigated quickly to ensure fire and life safety and to reduce the City's liability. Management must have a way of checking for overdue inspections.

All of the above information was condensed into a list of Inspection System Requirements by the Assistant Fire Marshal/Development Services. A meeting was held with

the Assistant Fire Marshal/Inspections & Investigations and the Prevention Office Manager to review the list that was then circulated to all Prevention personnel as well as affected Fire Administration members and other City departments. A final list was prepared as demonstrated in Appendix C.

2. What inspection/permit software systems are commercially available?

Several techniques were utilized in identifying inspection/permit software systems that are commercially available. Convention displays, magazine ads, mailings from the software vendors, word-of-mouth from other departments, and Internet research all provided information on software systems. Additional systems were identified through a survey (Appendix E) sent out to fire departments that served a population of 100,000 or more and to all fire departments in this area of Texas. Twenty-three vendors were identified through the survey.

The FEMA Internet site indicated 44 vendors on the Active Vendor List for NFIRS 5.0 (Active Vendor List, 2001) that might have inspection modules to the software. Twelve of the vendors on the Active Vendor List were already identified from other sources such as the survey. Four cities were on the list that had been deemed compatible to the NFIRS 5.0 standards. Six vendors did not have a Web Site.

Forty-nine software vendors were investigated and evaluated. The software was evaluated from information available on the Internet, including on-line demonstrations and also through demonstration computer disks provided by the vendor. Appendix G identifies the software and includes a description of the results of the investigation. Nineteen of the software packages did not have a fire inspection module. Six vendors could not be located and four vendors did not supply enough information to evaluate the system. Technical requirements eliminated 10 software packages.

Ten inspection systems were left to evaluate on functional merits. Alpine Software, FDM Software, FIREHOUSE, Firepoint, and Sunpro appeared to meet all of the technical requirements identified in Appendix B and either all or most of the functional requirements listed in Appendix C. Emergency Software Products was limited to 50 violation codes and does not contain the Fire Code within the system. It also will not track all of the inspectors' time. Fire Programs Software does not track inspectors' time and is not designed to operate on handheld units. The software from Fire Tech does not track inspectors' time, had many screens and was difficult to navigate. The focus of HTE is toward financial/budgeting systems. They have a fire inspection system that is not designed to use on handheld devices, and appears cumbersome and difficult to use. It was also difficult getting information from the vendor and there was limited information available on the Internet. Tiburon software was not considered because of extreme difficulty in dealing with the vendor on other software utilized by the Arlington Fire Department.

3. What systems are other cities utilizing for inspections and permits?

Utilizing *The National Directory of Fire Chiefs and EMS Administrators* (2001) for names and addresses, a survey (Appendix E) was sent out with a cover letter (Appendix D) to all fire departments listed that served a population of 100,000 or more. The survey was also sent out to all the fire departments in the Arlington-Dallas-Fort Worth metroplex. A total of 396 surveys were sent out and 140 were returned. Results are fully tabulated in Appendix F.

The first question in the survey was "Are you currently utilizing fire inspection and/or permitting software?" Ninety-one departments responded with a yes, and 49 departments responded with a no, resulting in 65% of the respondents utilizing some kind of software. When asked by question number two to identify the software, 22 different software systems were

named. In addition, thirty-three responses indicated that their systems were developed in-house by either the city's information technology department or by someone in the fire department. Thirty-four departments indicated that they were currently evaluating software. Question number three, "Do you use this software for the following?" showed that 85 departments used the software for inspections; 44 tracked plans; 57 issued permits; and three checked other uses which included investigations, new construction, and research.

Since research had indicated a problem with systems that had many modifications, question number four asked the respondents if they had made modifications, and if they had, were the modifications major or minor. Out of the 90 department utilizing inspection and/or permitting software, 56 reported that modifications had been made. Thirty-two had made minor modifications, 14 indicated major modifications, and 10 had in-house programs that had to be adjusted as it was developed and used.

Question number five dealt with the issue of entering inspection information in the field on a hand-held computer. Only ten departments indicated the use of field units for entering information. Another 25 departments stated that they were interested in obtaining hand-held units. The ten departments utilized six different types of hand-held computers. These included Compac, Fujitsu Stylistic 3400, Gateway notebook, 'laptop," Palm Pilot, and Panasonic Toughbook.

The next question dealt with Internet services available. The most common service provided on the Internet was information with 35 departments providing local Fire Code amendments, 3 with handbooks/guidelines, and 3 with general fire department information. Twenty-four departments provided permit applications, 3 allowed electronic plan submittal, 7 provided access to inspection records, 12 to permit/plan status, 2 to fire lanes, 5 to incident

reports, and 1 department provided scheduling for construction inspections. The respondents were also asked if they stored their records electronically. Sixty-five of the departments that utilized inspection software reported their records were stored electronically, 21 did not, and 4 did not answer the question. None of the departments without inspection software indicated electronic record storage.

The last two questions asked what the respondents like and do not like about their software and equipment. There were more comments regarding Firehouse software since the largest number of departments responding used Firehouse. Some of the comments were conflicting as far as ease of use and how it worked. Apparently some of the respondents were using an older version of the software since some of the features identified as lacking are contained within the latest version. The surveys did not indicate which version of the software was being used. A variation in hardware could also affect speed of operation which was an issue identified by some departments.

Some of the Sunpro users reported that service had been lacking. One department was very emphatic that they were very dissatisfied with Sunpro and would never recommend it. Other users appeared to really like it. HTE users reported both ease of use and difficulty in use and one respondent indicated that it was not capable of being used for annual inspection tracking. Two out of the three Visions users were very dissatisfied with the system. The remainder of the identified software had only one or two users among the respondents. More research will be needed to identify pros and cons of all the systems.

DISCUSSION

In looking at the requirements for the inspection system, we were determined to avoid the problems that the Arlington Fire Department experienced and continues to experience with the Records Management System. The Prevention management team agreed with Todd Ramsey ("No Gain Without Pain," 2000) that over-customization can contribute towards failure of a project. The survey sent out asked about major and minor modifications in order to help identify which systems might lead to over-customization. Out of the five inspection systems that appeared to meet our technical and functional requirements, only one respondent reported major modifications. This was to Sunpro. The technology team did not think that one report should rule out a system and felt that further investigation was warranted.

Not only does the City of Arlington upper management agree with Janet Caldow (Towns, 2000) that governments must develop basic citywide standards for hardware and software, they require that the Technology Standards Committee approve all hardware and software prior to acquisition. Ten software systems were eliminated because they could not meet the City of Arlington technical requirements. Our Prevention team found that having these standards in place was very helpful in our research and provided a benchmark for evaluating the systems. We plan to work closely with our Information Technology Department to ensure that our new software will actually do what it claims and will mesh with the City network.

The Prevention management team felt very strongly about including all stakeholders in the project. We had already experienced some of the problems that can occur when everyone does not have input. This coincided with Gordon and Stewart's (1989) opinion that everyone involved with the system should be included in the project. The Building and Water

Departments, as well as other divisions within the Fire Department will continue to be involved in the project as it progresses.

The utilization of handheld devices with information entered in the field as identified by Siepmann (1999) appears as a great time saver for the inspectors and the clerical staff. As previously discussed, as the City of Arlington has grown, our resources have not kept up with the growth. We are therefore looking for ways to be more efficient with the resources we have. This confirms a trend of government agencies to utilize handheld devices to collect information in the field (Governing by Hand, 2000). We also need information on how much time is spent by the inspectors getting various aspects of their jobs done in order to evaluate workloads, productivity levels and staffing requirements as identified by John Felde (1989). In order to get more funding for additional staffing, we have to have the information to prove that the staffing is needed.

As Smith (1997) suggests, we have tried to identify all of our customers. These include Prevention members, other members of the Fire Department, other City departments, the development community, and the general public. We have discovered that our customers want access to information 24 hours a day, every day. As we make more information and services available via the Internet, it frees up our personnel to perform additional services in other areas. Mayor Glenda Hood (Kavanaugh-Brown, 1999) verifies that technology improves customer service and makes the service more effective.

The number of software vendors can be very daunting as identified by Elliott (1999). When the technology team started this project, we had no idea how many software packages there were. The NFIRS lists published by FEMA (Active Vendor List, 2001; Registered Vendor List, 2001) produced 149 possible software vendors. Because of the number

of vendors, we worked strictly from those on the Active Vendor List and the ones identified through the survey and Internet searches. The cities on the list were not contacted because it was thought that there would be no support even if we were able to buy the system. An additional seven vendors on the Active Vendor List were eliminated because they did not have a Web sites. The committee decided that if the company was not sophisticated enough or solvent enough to have a Web site, they were probably not capable of meeting our needs.

As soon as the City of Arlington Technology Committee announced in 1999 that the main frame computer would be phased out, we started looking for alternative systems. Within those two years, we discovered that many companies have gone out of business and other companies have merged. Price (1994) identified this problem which has intensified in recent years. We agree with Price that we need to look for companies that have been in business at least 10 years and have several hundred departments utilizing their software. Unfortunately, this requirement will eliminate one of the promising inspection systems. End2End, Inc. who produces Firepoint has only been in business since 1999. We may do more research on how many customers use their software, who these customers are, and how they like the product and the service before completely eliminating Firepoint.

FIREHOUSE software (FIREHOUSE Software Customer Testimonials; FIREHOUSE Software Notes; Occupancy, 2001) has provided a lot of information via the Internet. They also provided a demo CD and came to our office on short notice for a demonstration and to answer questions. According to FIREHOUSE (FIREHOUSE, 2001), they serve more fire agencies than any other software company. Our research survey reflected that 23 out of the 63 departments using commercial software used FIREHOUSE. The second most used software according to our research survey was Sunpro with 8 departments. I am planning a visit to the Fire Prevention

Bureau in Greensboro, North Carolina when I am there for a conference in late October.

Greensboro was one of the cities identified as a satisfied customer (FIREHOUSE Software

Customer Testimonials, 2001).

Sunpro has an advantage in serving some very large agencies like Los Angeles County

Fire Department and Fire Department of New York City (Elliott, 1999; Fire Department of New

York City Selects FireRMS.com for Enterprise-Wide Records Management System, 1999). The

technology team likes knowing that the software can handle large systems. We have had

difficulty in the past with the capacity of our system and having to transfer records more than

two years old to tape. This is very difficult to access when needed. Arlington has a population

of approximately 360,000 and a large business base. For that reason, we are not considering

making our own system with off-the-shelf software as some departments do (Elliott, 1999).

It was difficult to assess the validity of responses to the survey questions regarding what

did they like and not like about the software. The sophistication of the respondents regarding

computers appeared to greatly influence their replies. Furthermore, it was unclear which

versions of the software were being used by the respondent. Great improvements have been

made in the more recent versions of the software packages so some comments may not be

applicable to the newer versions. As we narrow down our search, we plan to contact many of the

users for details on dissatisfaction as well as satisfaction with the product and service.

At the end of our research, we had five inspection systems that appeared to meet all of the

technical requirements and most or all of the functional requirements. Our original purpose was

to find three software packages to evaluate; however, since our research narrowed down our

possible systems to five, our team believes we should evaluate all five. In addition, our budget

request to purchase a system in the 2001/2002 budget year was eliminated, therefore, we have

additional time to complete a more comprehensive evaluation of the systems.

RECOMMENDATIONS

Research indicated five software packages that appear to meet the technical and

functional requirements of the Arlington Fire Department. Although the original purpose of this

research project was to select three systems for final evaluation, it is recommended that all five

inspection systems be evaluated. Since after extensive research, all but five systems were

eliminated from consideration, and since we will probably have another year before we will be

able to obtain a system, we have additional opportunities to examine these systems. It is

recommended that the following steps be taken to further evaluate the software:

1. Set up a full demonstration from each vendor with all concerned departments and
    personnel in attendance. Information Technology is to be included.

2. Obtain a customer list from each vendor and contact a representative sample of
    customers by telephone to ascertain satisfaction with the system and the support.

3. Arrange site visits by the Prevention technology team to fire departments utilizing
    each of the software systems.

4. Obtain demonstration software for each system, and enter trial data and produce
    reports. Each system should be thoroughly evaluated on how well it meets each
    of the stated requirements in Appendix B and C. All members of the Prevention
    Division should have the opportunity to try the system and report on findings.
    Other Fire Department members and other City departments should have the
    opportunity to access the information and provide input on how it works for them.

5.　　　Obtain a price for each system.

6.　　　The Prevention Management Team should evaluate all the data gathered and come to a final decision on which inspection software will work best for the Arlington Fire Department.

In addition, it is recommended that we prepare documentation of the anticipated increase in customer service and efficiency savings of the system for budgetary purposes. We should also seek alternative funding for the system in case traditional funding is not available.

Any fire department interested in obtaining inspection or record management system software should allow sufficient time to investigate all of the possibilities. Finding information regarding the multitude of systems is very time-consuming. Costly mistakes can be made if a thorough investigation is not performed. Care should also be taken to include all stakeholders to ensure that the system will meet everyone's needs.

REFERENCES

Active Vendor List (2001, September). *NFIRS 5.0* [On-line]. Available:

http://www.nfirs.fema.gov/ActiveVendors.htm.

Elliott, T. (1999, December 1). Digital Solutions Tame Sea of Paper. *Fire Chief* [On-

line]. Available: http://industryclick.com//magazinearticle.asp?magazinearticleid=73525.

Felde, J. F. (1989, August). *Development of a Management Information System.*

Emmitsburg, MD: National Fire Academy, Executive Fire Officer Program.

Fire Department of New York City Selects FireRMS.com for Enterprise-Wide Records

Management System (1999, October 12). *Java Industry Connection* [On-line]. Available:

http://industry.java.sun.com/javanews/stories/story2/0,1072,19479,00.html.

FIREHOUSE [On-line] (2001, August). Available: http://www.fhsoftware.com.

FIREHOUSE Software Customer Testimonials [On-line] (2001, August). Available:

http://firehousesoftwarelcom/default.htm.

FIREHOUSE Software in 2001 (2001, 2nd Quarter). *FireVISION* [On-line].

Available: http://www.fhsoftware.com.

FIREHOUSE Software Notes (2001, 2nd Quarter). *FireVISION* [On-line]. Available:

http://www.fhsoftware.com.

Gordon, S. B., & Stewart, H. A. (1989, July). Procuring Computers and Communications

Systems. *MIS Report,* 21 (7), 1-12.

Governing by Hand (2001, April 3). *civic.com* [On-line]. Available:

http://www.civic.com/civic/articles/2000/april/civ-handhelds-04-00.asp.

Kavanaugh-Brown, J. (1999, July). Orlando Revved up Under Hood. *Government Technology* [On-line]. Available:

http://www.govtech.net/magazine/local.us/july99/interview/Orlando_Revved_Up.phtml

The National Directory of Fire Chiefs and EMS Administrators (2001 ed.). (2001). Stevens Point, Wisconsin: National Public Safety Information Bureau.

No Gain Without Pain (2000, June 24). *The Economist,* 9-10, 13-14.

Occupancy (2001, March 14). *FIREHOUSE SOFTWARE* [On-line]. Available: http:/www.firehousesoftware.com/tour/occupancy.htm.

Price, R. (1994, December). Mightier Than the Keyboard. *Fire Chief* [Reprinted On-line]. Available: http://www.ci.san-carlos.ca.us/fire/scfapen2.html.

Registered Vendor List (2001, September). *NFIRS 5.0* [On-line]. Available:http://www.nfirs.fema.gov/VendorReg.htm.

Siepmann, H. J. (1999, June). Automated Scheduling and Reporting of Fire Inspections. *Briefs* [On-line]. Available: http://www.nasatech.com/Briefs/June99/KSC12050j.html.

Smith, J. S. (1997, August). Customer Service: Two Views. Implementing a Customer Service Program. *Fire Engineering* [On-line). Available: http://fe.pennnet.com/Articles/Article_Display.cfm?=Archives&Subsection

Sullivan, D. (2000, December). *Why eGovernment?* Presentation at National League of Cities 2000 Congress of Cities, Boston, MA.

Towns, S. (2000, May). Portals in the House. *Government Technology,* 20, 22, 32, 33, 90.

The Windows Based Records System for the Future (2001) *Sunpro Products* [On-line]. Available: http://www.sunpro1.com/conversion_folder/products/products.html.

Appendix A

MEMORANDUM

TO: Andrew A. Jones, Jr., Assistant Chief/Operations Support

THROUGH: James Patterson, Supervisor/Plans Review

FROM: Claire Terry, Fire Prevention Specialist/Plans Review

SUBJECT: Record Management System Specification Review

DATE: August 25, 1997

On Thursday, August 21 and Friday, August 22, I attended the specification review for the Fire Inspection System as Fire Prevention's representative. This review generated many questions and concerns about the system. The major issues are as follows:

1.   This system will not print inspection forms. Single sheets will printout with existing information, which will then have to be manually transferred to the inspection form. Someone will have to input a query to get a list of due inspections for a particular shift/station or inspector. It will then print a list of the due inspections and someone will have to ask for the one sheet printout on each business individually. It is unclear whether or not the system will print a reinspection form. The literature provided mentions the Inspection "Turnaround" document which is a multi-copy report which sound very much like a reinspection form yet I was told in the meeting that the system would not print a reinspection form.

2.   Currently, the system will not allow you to make a business inactive. There are closed and open businesses. If you call up a certain address, it will bring up the oldest business first and you will have to page through until you get to the current business except you will not know that it is the most current until you get past it. It was acknowledged that this was a problem and would be investigated.

3.   Presently, the system will not allow more than one type of inspection (annual, night, etc.) to be scheduled for one address. Tiburon said they would look into this.

4.   The system will not account for time spent on other activities other than inspections or investigation. There are 37 possible activities allowed for in the system. We currently have 89 activity codes. Do we want to give up this flexibility?

5.   There is no way of entering which inspector cleared a violation. It will automatically enter the ID of the person signed on to the computer as the person that cleared the violation. Who will be entering the information?

6. The date of the Certificate of Occupancy (listed as Year Started) may only be entered as a year, no month or day is allowed. We have many locations that may have several businesses within any given year.

7. There is a 10-character limitation on violation codes. Some of our violation codes have up to 14 characters.

8. The Fire Inspection Permit Form does not meet our needs at all. It is for ongoing permits for a particular business, which we do not utilize at the present time. There is no way to track plans or one-time permits. Are we going to be able to keep our present plan/permit/new construction system? Have budget allowances been made for maintenance of this existing system?

9. Other City departments will not be able to access the new system without special equipment. They currently utilize the information on our present system on a regular basis.

10. Currently, Fire Prevention does not have copies of the Code Tables utilized for the choices in various fields. Tiburon was requested to provide these for us to review.

In addition to the major concerns discussed above, there are several procedural/policy questions that arise.

1. Who will request the due inspections for annuals and reinspections and print them out? Since each inspection has to be requested individually after the pending inspection list is obtained, this would take an extended period of time if there were large numbers of inspections. In addition, the information provided by Tiburon mentions that printing the Inspection Turnaround Reports is very time consuming and ties up the printer for a long period of time which can interfere with dispatch information.

2. Who is going to input the new information after an inspection is made and clear the violations when a reinspection is done? Notification type and time period to correct has to be entered for each violation rather than for the inspection as a whole, which greatly increases the time needed to enter the information. There is no place to enter who cleared a violation unless it is the same person that is entering the information.

There appears to be many questions and concerns that need to be answered prior to implementation of this system. I would be happy to assist in any way I can to help find solutions to the problems. If you have any questions, please do not hesitate to call upon me.

c: Robin Paulsgrove, Fire Chief
       John G. Murphy, Assistant Chief/Operations
       Stephen Lea, Fire Prevention Supervisor
       Janice W. Williams, Administrative Services Manager

Appendix B

STANDARDS ADOPTED BY THE
ARCHITECTURE PLANNING COMMITTEE
ON MARCH 1,2000

Application Development

CURRENT	TWO YEARS	FIVE YEARS	CONTAINMENT
COBOL	Visual Basic	Visual Basic	DemoShield / Macro Media Director
Visual Basic	HTML/XML	Java	COBOL
C	Java	HTML/XML	C
HTML	ESRI Production Suite		
Java			
ESRI AML and Avenue			
MS Visual Studio			
DemoShield Director			

Approval Effective 3-1-00

Common Services

CURRENT	TWO YEARS	FIVE YEARS	CONTAINMENT
MS Office	MS Office Pro	MS Office Pro	Eudora Pro
Desktop Faxing	Crystal Reports	A single Browser	Extra for Windows
Crystal Reports	Internet Explorer v. 5.5 and above*****	Crystal Reports	Filemaker Pro
GroupWise	Net Manage	Outlook	Fox Pro
Verity	Outlook	Adobe Reader	Paradox
SMTP, POP3	Adobe Reader		
Eudora Pro	ReportView		
Fox Pro			
Paradox			
Filemaker Pro			

Approval Effective 3-1-00
*Revised 8-23-00

Desktop Operating Systems

CURRENT	TWO YEARS	FIVE YEARS
Windows 3.1	Windows 2000	Windows 2000
Windows 95		Thin Client
Windows NT		
Macintosh		

Approval Effective 3-1-00

ENTERPRISE DATABASE MANAGEMENT SYSTEMS

CURRENT	TWO YEARS	FIVE YEARS
DB2	Oracle 8.x	Oracle
Oracle	SQL Server	SQL Server
VSAM	ESRI ArcStorm	ESRI ArcSDE
MS SQL Server		
ESRI ArcStorm		

Approval Effective 3-1-00

Middleware

CURRENT	TWO YEARS	FIVE YEARS
CICS	Application Server	Object Request Brokers
SQL Connect/DS	Viaserv	
Oracle DRDA	ODBC	
Viaserv	Active Server Pages	
Cold Fusion		
ODBC		
Active Server Pages		

Approval Effective 3-1-00

Network Protocols and Topology

CURRENT	TWO YEARS	FIVE YEARS	CONTAINMENT
TCP/IP	TCP/IP	TCP/IP	IPX/SPX
IPX/SPX	Ethernet	Ethernet	Token Ring
Ethernet	ATM	ATM	Async
Token Ring	Wireless	Wireless	
10Broad36 (cable TV)	SMT/POP3	Mail Protocol	
ISDN	T1	High Speed Telco Service	
Async			
Wireless			
SMT/POP3			
T1			

Approval Effective 3-1-00

Server Operating systems and Network Services

CURRENT	TWO YEARS	FIVE YEARS	CONTAINMENT
AIX	AIX	AIX	OS/2
NetWare	NetWare	Solaris	VM/VSE
Solaris	Solaris	Windows 2000	
VM/VSE	Windows 2000	Future Directory Services	
Windows NT	ArcIMS	Future Mail Server	
Apache	GroupWise	Internet Mapping Server	
NDS	NDS	Fax Services	
Netscape Enterprise Server	Fax Services		
MS IIS	Isolate MS IIS, Netscape Server and Apache in the two-year phasing but leave tabled until further research can be done.		
Map Object IMS			
GroupWise			

Approval Effective 3-1-00

Security

CURRENT	TWO YEARS	FIVE YEARS
CA Top Secret	Tivoli Framework	Tivoli Framework
Checkpoint Firewall	Checkpoint Firewall	Firewall
Border Manager	ESM-based single sign-on	
Secure ID		
Inoculan		

Approval Effective 3-1-00

Systems Management

CURRENT	TWO YEARS	FIVE YEARS
ManageWise	Tivoli Framework	Tivoli Framework
Optivity	Legato	Veritas
ZENWorks	Veritas	
Legato		
Backup Executive		
Library Backup		
Veritas		

Approval Effective 3-1-00

Development Tools

CURRENT	TWO YEARS	FIVE YEARS
Perl	Perl	The committee made no recommendation for the Five-Year standards.
ESRI Active X	ESRI Active X	
Java Script	Java Script	
Adobe Acrobat	Adobe Acrobat	
Front Page	Front Page	
Open Cube	Open Cube	
Interdev	Interdev	
Visual Basic Script	Visual Basic Script	
Homesite	Homesite	

Approval Effective 3-1-00

PC Standards

Standard User

- P3 with the lowest end processor
- 128M of RAM*****
- Minimum sized hard drive
- 17 inch monitor
- AGP 8M 24 bit video card
- Keyboard
- Mouse
- Floppy drive
- NIC

Power User

- P3 with processor two steps above the lowest P3
- 128M RAM
- 17 inch monitor
- Minimize size hard drive
- AGP 8M 24 bit video card
- Keyboard
- Mouse
- NIC
- Floppy drive

* APC increased the minimum standard for RAM on new PCs from 64M to 128M on 9/27/00.

Graphics User

- P3 with processor two steps above the lowest P3
- 256M RAM
- 21 inch monitor
- Minimum size hard drive
- Video card as specified by the vendor
- Keyboard
- Mouse
- NIC
- Floppy drive

Appendix C

ARLINGTON FIRE DEPARTMENT
PREVENTION DIVISION
INSPECTION SYSTEM REQUIREMENTS

1. Meet City of Arlington technical standards.
2. Information available to other City of Arlington departments via Intranet.
3. Interface with Building Inspections to release Certificates of Occupancy.
4. Information available to public via the Internet.
5. Data entry in the field via pen-based, hand-held computers.
6. Download due inspections from the server to the field unit.
7. Upload inspection information from the field unit to the server.
8. Schedule inspections utilizing different time intervals.
9. Allow more than one type of inspection be scheduled for specific address.
10. Schedule reinspections.
11. Track time and type of activity for all activities of inspection staff.
12. Capable of downloading and uploading information at different sites.
13. Contain Fire Code for violations.
14. Retain basic building information such as type of construction, sprinkler, alarms, etc.
15. Retain emergency contact information (not to be available to the public).
16. Retain date of Certificate of Occupancy.
17. Violations with code section available on the field unit.
18. Retain violations found with date found and date corrected and the inspector involved for each violation.
19. Print inspection report in the field to give to building owner/occupant.
20. Convert existing building data into new system. Minimum of basic building information but prefer existing inspection data also be converted.
21. Produce overdue inspection list.
22. Search and produce reports based on different criteria such as type of inspection, type of occupancy, type of activity, violations, etc.
23. Store photographs and simple plans such as fire lanes in file for a particular occupancy.
24. Store additional information such as hazardous materials or special hazards for a specific address/building.
25. Most recent information will show up first when queried.
26. Track plans and permits and have information available via Internet. (Date plans received, date reviewed, date permit released, who reviewed plan, date inspected, date completed, etc.)
27. Produce reports on plans received and reviewed within specified time.
28. Software company in business minimum of ten years.
29. Inspection software utilized by other fire departments with information available for contacting.
30. Track complaints and resolutions.
31. Capacity to pull up permits by address, contractor or business name.

Appendix D

June 7, 2001

Greetings:

The Arlington Fire Department is currently in the process of choosing a new fire inspection system. I am also writing up this project as my applied research project for the Executive Fire Officer Program through the National Fire Academy.

Your help with filling out the attached survey would be greatly appreciated. Hopefully, with the input of other fire departments, we can avoid some pitfalls in choosing a new system.

Please fill out the survey and either fax, mail or E-mail your response as soon as possible. Thank you for your assistance.

Sincerely,

Claire Terry
Assistant Fire Marshal
Arlington Fire Department
405 W. Main St.
Arlington, TX 76010

Phone: 817-459-5549
Fax: 817-459-5521
E-mail: terryc@ci.arlington.tx.us

Appendix E

ARLINGTON FIRE DEPARTMENT
INSPECTION SYSTEM SURVEY

CONTACT PERSON:_____

TITLE:_____DEPARTMENT:_____

ADDRESS:_____

PHONE:_____FAX:_____E-MAIL:_____

POPULATION_____   NO. OF PREVENTION INSPECTORS_____

 NUMBER OF PREVENTION INSPECTIONS_____

1.   Are you currently utilizing fire inspection and/or permitting software?_____Yes_____No

2.   If yes, what software do you use? _____

3.   Do you use this software for the following? (Check all that apply.)

        _____inspections _____tracking plans _____permits _____other_____

4.   Have you had to make modifications to the software? _____Yes   _____No

        _____no modifications   _____minor modifications   _____major modifications

        Describe the modifications._____

        _____

        _____

        _____

5. Do you use hand-held computers to enter inspection information in the field?
    _____Yes_____No

6. If yes, what hand-held equipment do you use?_____

7. Do you have any of the following available to your customers on the Internet? (Check all that apply.)

     _____permit application   _____permit/plan status

     _____electronic plan submittal   _____fire lanes (site plans with fire lane marked)

     _____inspection records   _____incident reports

     _____local fire code amendments   ____other (please describe)
     _____

8. Do you store your records electronically? _____Yes   _____No

9. Describe what you like about your software and equipment._____

    _____

    _____

    _____

10. Describe what you do **not** like about your software and equipment._____

    _____

    _____

    _____

    _____

Comments:_____

_____

Please return by mail, fax or e-mail to:

       Claire Terry   Phone: 817-459-5549
       Assistant Fire Marshal   Fax: 817-459-5521
       Arlington Fire Department   E-mail: terryc@ci.arlington.tx.us
       405 W. Main St.
       Arlington, TX 76010

Appendix F

SURVEY RESULTS

Number of surveys sent out: 396
Number of surveys returned: 140
Number of surveys returned undeliverable: 7

1.   Are you currently utilizing fire inspection and/or permitting software?
        Yes   90
        No   50

        Note: 34 departments reported that they were currently evaluating software.

2.   If yes, what software to you use?
        In-House   33
        Firehouse   23
        Sunpro   8
        HTE   5
        Permits Plus   4
        EAI   2
        KIVA   2
        Tiburon   2
        Visions   2
        ADSI   1
        AMANDA   1
        ARI   1
        CD Plus   1
        Data Systems Fire Tech   1
        Emergency Software Products   1
        Filemaker Pro   1
        Fire Management Information System   1
        Fire Manager Pro   1
        Fire Programs   1
        GEAC Public Safety   1
        Permit Software AS400, Inspector   1
        Perconti   1
        Sierra Permits   1
        Tidemark   1

        Note: Some departments use separate software for permits.

3.   Do you use this software for the following? (Check all that apply.)
        Inspections   85
        Tracking plans   44
        Permits   57

46

Investigations   1
New construction   1
Research   1

4.   Have you had to make modifications to the software?
      Yes   56
         Minor modifications   32
         Major modification   14
         Tweak-as-you-go In-house programs 10

      No   30

      No answer   4

      Comments pertaining to specific commercial software:
            Firehouse: Minor modifications to violation codes and specialized reports
                          with no major modifications reported.
            Sunpro: Major modification (1 report) "The software has a structure that
                          you have to adjust to. You have to set up a code system, figure out
                          how the data flow through the system and what the end result will
                          be."
            AMANDA: Software originally designed to manage construction permits. Had
                          to modify for fire department inspections.
            CD Plus: Upgrade to include fire inspection coding and to include
                          development review
            ESP: Custom entry of local and state fire code.
            FMIS: Customized forms.
            GEAC: "It has been approximately 4 years since we have installed the
                          software and we have yet to get it operating properly."
            Perconti: Setting up checklist of items to be reviewed for plans review
                          process.
                          Setting up occupational classifications.

5.   Do you use handheld computers to enter inspection information in the field?
      Yes   10
      No   130

      Note: 25 departments indicated that they were interested in obtaining handheld units.

6.   If yes, what hand-held equipment do you use?
      Compac   1
      Fujitsu Stylistic 3400   1
      Gateway notebook   2
      Laptop   2
      Palm Pilot   3
      Panasonic Toughbook   1

7.   Do you have any of the following available to your customers on the Internet? (Check all that apply.)

Permit application   24
Electronic plan submittal   3
Inspection records   7
Fire Code amendments   35
Permit/plan status   12
Fire lanes   2
Incident reports   5
New construction inspections   1
Handbook/guidelines   3
General fire department information   3

8.   Do you store your records electronically?

Yes   65
No   21
No Answer   54

9.   Describe what you like about your software and equipment.
10.   Describe what you do not like about your software and equipment.

Firehouse:

"Easy to use. Integrates with other functions."

"The software is extremely 'User Definable.' Whatever is not tracked or recorded by the program out-of-box can be easily created, queried and reported. Additional parameters can be added and existing ones can usually be modified by a +1 system. The 'tabbed' screen layouts are very easy to follow and read. Customer support has been very satisfactory. I have rarely had to wait for more than 1 hour for a return call. The web site has FAQ section in case your issue has been experienced by a significant number of other users."

"Searching for information can be done either through 'canned' reports or reports designed for your specific needs by your own computer person."

"We have used Firehouse for 18 months and the program is evolving into a comprehensive database. We are very please with the response from Visionary Systems."

"Simplicity of operation. Windows Driven. Compatible with W-95 and NT. Only full service produce on the market that is reliable, has complete modules and offers 24/7 tech support."

"16 bit application. FoxPro database – weak engine. Database collapses easily. SQL version not available."

"There is not a place designed in the inspection record for Knox box or private hydrant information."

"The software has a built-in Report Writer that is a FoxPro hybrid. It is not the easiest to work with."

"Uses a drop down menu for too many categories."

"Takes a very long time for process. Forms available are not useful. Needs high speed cable system to work. For an existing database, this system does not adapt very well. Make sure any database you currently have will adapt."

"Does not have capabilities for floor plans."

"It has not reduced the paper work."

"It didn't work at first and took a considerable amount of labor, time and money to make it a workable solution for us."

"Unable to change form provided. Violations not listed in program. Must type in all violations to use program."

"Very difficult to modify or create new fields and/or reports."

Sunpro:

"Software is integrated with incident reports, training, activities database."

"Very organized, sometimes asks for too much information."

"Information retrieval and tracking capabilities. Adaptable and user friendly."

"The Sunpro 5.0 software we are using is not complete. Sunpro is still developing parts of the design package. The program is more than one year behind scheduled completion date. We are unable to schedule inspections because the portion of Sunpro dedicated to scheduling is not completed yet."

"Entering information is tedious and time-consuming."

"We are not pleased with the service of Sunpro. We have been misled and lied to from the start. We have been working with the company for over two years to upgrade our current Sunpro system to Sunpro RMS 5. Our CAD link is still not operational. Sunpro would never get my recommendation."

"We have experienced several syntax errors with our RMS inspection module. The only solution is ongoing and requires the inspection module to be reloaded on a city-wide server."

HTE:

"Easy to use. Reliable system."

"Has several user defined fields. This is beneficial as it allows you to collect information specific to your department."

"Operation not user friendly."

"Lacks vendor support at times."
"It is not easily changed. You must convince all users that the change you need will benefit all."

"It is not capable of being used for annual inspection tracking."

Vision:

"Designed by firefighters."

"Vision sucks. Never worked properly."

"Is not user friendly, will require inspectors to take more paper work with them in the field."

ADSI:

"It is not user friendly. We don't have the capability at this point to do batch reports. The service is not as good as expected."

Amanda:

"It's incredibly powerful and versatile. Fire Prevention staff trained in SQL can change and enhance the system as need be. Because this system is also used by our Building Department, construction and permit data are instantly available to Fire Department inspectors."

"Software is not as user-friendly as some other systems. The user has to be trained on what screens to go to, and when, rather than being led from screen-to-screen by the software. Because we wanted a keyboard, the field computers are somewhat larger than desirable for day-long, day-to-day use by field inspectors."

ARI and Permits Plus:

"The capacity of the software appears to be excellent. Vendor is what is lacking."

EAI:

"Our vendor is no longer in business and we don't have source code. Old technology."

The Fire Manager:

"Database for all building profiles. Tracks status and history of all inspection activities. Easy access to management reports, i.e. productivity."

Fire Tech:

"Not user friendly."

GEAC

"It has been approximately 4 years since we have installed the software and we have yet to get it operating properly. The GEAC software is UNIX based and extremely difficult to operate. The system constantly dumps information and deletes files. This is especially evident when upgrades or modifications are made to the software. The cost for upgrades is unreasonable and customer service is non-existant."

KIVA:

"It is easy to access property information such as what types of permits have been issued, what department has or has not reviewed plans. We are also able to pull up inspection history on property (County wide). Database is slow."

Perconti:

"The system has a wide range of ability and is easily changed."

Appendix G

Descriptions of Available Inspection Software

ACCELA – permitting only, not an inspection system.

ADSi – does not meet City of Arlington technical standards.

Advanced Technical and Education Consultants – no inspection software.

Alpine Software – appears to meet technical and functional requirements.

AMANDA – primarily for development.

ARI - unable to locate.

BS&A Software (Equalizer Permit system) – designed for Building Department and Code Enforcement.

Business Micro Resource Corp. – no inspection software.

CD Plus – unable to locate.

Compupro – no inspection software.

CRW Associates (Trak-It) – not designed for fire department use for recurring inspections; tracks time for projects, not for people; does not store Fire Code; tracks plans and permits; can store phtographs, plans, and maps; Internet capable; can enter from field; in business since 1991.

Custom Micro, Inc. – no inspection software.

D.M. Data Corporation – does not meet technical requirements.

EAI – unable to locate.

Emergency Management Solutions, Inc. – no inspection system.

Emergency Software Products (ESP) – in business since 1980; limited to 50 violation codes; does not track all of inspectors' time; cumbersome and hard to use.

Emergency Technologies, Inc. – does not meet technical requirements.

EMS Data Systems, Inc. – no inspection system.

FDM Software – appears to meet our requirements; in business since 1989; unclear whether it will track inspectors' time.

FIRE-EASE, Inc. – does not meet technical requirements.

FireFile – small system, does not meet technical or functional requirements.

FIREHOUSE – in business since 1989; has large number of fire departments using system; meets technical requirements as well as functional requirements.

Fire Manager – does not meet technical or functional requirements.

Fire Management Information System – unable to locate.

Firepoint – fire inspection system; integrates with AMANDA for other departments and permits; good construction tracking, including plans; tracks Knox box locations, haz-mat; integrates pictures and plans; unclear whether it will track inspectors' time; only in business since 1999.

Fire Programs Software – in business since 1981; does not track inspectors' time; not designed for handheld computers; does not meet several functional requirements.

Fire Tech – in business since 1983; system awkward – too many screens; does not track time.

FiSerWare – could not locate.

GEAC – does not meet technical or functional requirements.

HTE – focus of company is toward financial/budgeting systems. Has fire inspection system that appears cumbersome and difficult to use. Fire system is not designed to use on handheld devices. Difficult to get information from the vendor. Limited information available on the Internet.

Information Management Corp. – no inspection system.

Keystone Information Systems – limited system, does not meet technical requirements, operates in northeast United States only.

KIVA – merged with Accela and Tidemark; permitting and development package.

Litton/PRC Public Sector Inc. – unable to locate.

LOGICS, LLC – small system, does not meet our technical requirements.

Logistic Systems, Inc. – no inspection system.

New World Systems – could not obtain enough information to evaluate. Did not send requested information.

Orbacom Communications – no inspection system.

Orbit Software Solutions, Inc. – no inspection system.

Perconti – not designed for fire departments, made for Building Departments and Code Enforcement.

Public Safety Systems, Inc. – could not obtain enough information to evaluate. No one available to answer my questions. Did not have anyone call me back.

Queues Enforth Development – could not obtain enough information to evaluate. Information was requested twice and not received.

Sierra Computer Systems (Permits Plus) – not designed for recurring fire inspections.

Spillman Technologies, Inc. – no inspection system.

Sunpro – in business since 1984. Has now merged with Aether Systems. Inc. Appears to meet all technical and functional requirements.

Tiburon – currently utilize parts of the Tiburon system and members of the Arlington Fire Department are very dissatisfied.

Tidemark – merged with Accela; permitting and development software.

Vision – now Visionair; hard to use; does not track inspectors' time; does not meet technical or functional requirements.

Vernon Software Systems, Inc. – not enough information to evaluate. Did not return phone calls.