U.S. Department of Housing and Urban Development

Electronic Permitting Systems
and How to Implement Them

PATH Partnership for Advancing Technology in Housing

U.S. Department of Housing and Urban Development

PD&R Office of Policy Development and Research

ELECTRONIC PERMITTING SYSTEMS
AND HOW TO IMPLEMENT THEM

PREPARED FOR THE
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FOREWORD

Electronic construction permitting is changing the way communities across the nation do business, speeding the building permit process for the people most involved—builders, inspectors, and plan reviewers—and providing better and more timely information to decision makers, managers, and staff throughout city hall.

Initiated by a few pioneering jurisdictions in the early 1980s, electronic permitting is becoming mainstream. Private vendors offer a variety of excellent permitting software and systems that can be tailored to a jurisdiction's needs. Many can be integrated into larger, government-wide electronic management systems. Regardless of the software or system used, progressive local governments everywhere are adopting electronic permitting.

This publication is designed to help America's communities understand the process of selecting and implementing an electronic permitting system. Benefiting from the experiences of others, communities can implement electronic permitting systems with better results and at lower cost.

Through its Partnership for Advancing Technology in Housing (PATH) program, HUD is pleased to provide this publication on electronic permitting systems.

Lawrence L. Thompson
General Deputy Assistant Secretary for Policy Development and Research

ACKNOWLEDGMENTS

This publication is based on a survey of electronic permitting systems currently used in building departments nationwide. Over 100 jurisdictions known to be leaders in electronic permitting were contacted; 51 completed detailed surveys and were interviewed in depth. The jurisdictions included counties, cities, and towns in rural, urban, and suburban areas with populations ranging from 11 thousand to 9.8 million. The building departments, or their counterparts, of all 50 states were also contacted and 32 were interviewed in depth. A sincere thanks is extended to those who gave their time and shared their wealth of knowledge and experience.

Steven Spector conducted the surveys and interviews and prepared the findings herein. Building Technology Inc. provided technical support. Migs Grove was the publication editor and Marcia Axtmann Smith the publication designer. William Brenner directed the project for the National Institute of Building Sciences. Dana Bres served as the Department of Housing and Urban Development's program manager.

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Many building departments across America are confronted with overextended staffs, increased demand for permitting services, and pressure to improve customer service. Computer and information technologies play a key role in helping to address the personnel and budget constraints these departments typically face.

What Is Electronic Permitting?

Electronic permitting is a set of computer-based tools and services that automate and streamline the building permit process. The intent of electronic permitting is to reduce permitting time, improve customer service and staff efficiency, enhance quality, and make operating funds more productive. An electronic permitting system typically replaces traditional paper- and file-card systems. It can be as simple as a single software tool for tracking permits and inspections or it may contain a broad array of task-specific tools for

- plan review
- permitting
- inspections
- inspection scheduling
- project tracking
- fee calculation and collection
- workflow management
- customer communications through web-based customer services
- telephone-based voice response services
- inter- and intra-departmental communication and management.

What Is the State-of-the-Art?

A state-of-the-art permitting system is

- a sophisticated combination of hardware and software components integrated into a system that seamlessly serves staff and customers, or
- a system that serves a specific building department better than any other choice, even if it consists of only one or two of the tools mentioned above.

The most sophisticated state-of-the-art system is called an ***enterprise system*** and serves many departments within a local government, coordinating and linking a broad range of activities such as building safety, planning, development, geographic information system (GIS) services, finance, public utilities, fire safety, and public health.

What Is the Future of Electronic Permitting?

Electronic permitting has evolved since the early 1980s, when innovative building departments had to create their own software on mainframe computers. Today, software vendors provide building departments of all sizes and needs with off-the-shelf components that can be customized.

The future of electronic permitting varies from place to place. For a jurisdiction emerging from paper records, the future means obtaining whatever electronic tools will help serve its customers better. For a jurisdiction with an electronic permitting system in place, the future may equip inspectors with portable computing devices for recording and uploading reports to a database or a project tracker that automatically updates information and contacts utilities to schedule hookups. For a rapidly expanding jurisdiction without a technology infrastructure, the future can mean contracting a vendor to provide and operate an electronic permitting system through an Internet portal from a secure offsite network.

WHY OTHERS HAVE ADOPTED ELECTRONIC PERMITTING

Building departments come in many sizes and situations. Likewise, electronic permitting tools come in many sizes and budgets to fit the circumstances of any jurisdiction. Most building departments have implemented electronic permitting systems either as part of a streamlining initiative or to fix a specific problem. Some experienced rapid growth in the1980s and 1990s that overwhelmed their staffs and budgets. Some could not coordinate their workflows in a logical way and suffered large backlogs and delays.

Some had computer systems that were obsolete and had to be replaced.

Regardless of the catalyst for change, electronic permitting can provide a broad range of benefits, including

- standardized building site information,
- improved record keeping and reliable archiving of permitting activities,
- enhanced communication between customer and staff that produces higher quality plan submissions and reviews, permit applications, and customer service,
- defined workflow and project tracking that reviews plans and approves permits more quickly,
- higher quality inspections with better scheduling and improved reporting,
- more efficient use of staff time and less duplication of effort,
- better internal management tools for gauging department efficiency and spotting problems,
- improved financial tracking of permitting, plan review, and inspection fees, and
- flexible reporting capabilities that document the volume of work completed and the revenue generated by the department.

TYPES OF ELECTRONIC PERMITTING SYSTEMS

Each building department faces unique challenges and must find a solution to best suit its needs. Solutions generally fall into three categories—homegrown systems, component systems, and integrated systems.

Homegrown Systems

Building departments with homegrown systems often use an older mainframe system and in-house software programs. These systems typically serve the information tracking aspects of permitting, plan review, and inspection activities and may include a "web storefront" for online interaction with customers. Most building departments with homegrown systems upgrade to an integrated system. (See Table 1, "Seventeen Home-Grown Electronic Permitting Systems Leaders," page 3.)

Component Systems

Building departments with component systems usually buy or lease from vendors a variety of task-specific software components for plan reviews, inspections, workflow management, project tracking, and internal and external communications. The software components reside on either a mainframe or client-server network. For the most part, component systems emerged in the mid-1990s, although a few pioneering software packages were developed earlier. Vendors often offer upgrades to enhance system capabilities. As component systems advance, they take on the qualities of integrated systems. (See Table 2, "Twenty-four Electronic Permitting Component System Leaders," page 4.)

Integrated Systems

Building departments with integrated systems have comprehensive "tool sets"—a building department's version of a suite of related software applications. These are obtained from vendors that have combined the diverse task-specific tools of component systems into fully integrated packages. Integrated systems may be implemented on an in-house network, an Intranet, or a web-portal managed by a vendor, and may include a selection of online services.

Integrated systems coordinate all building department activities and can provide an interface with other departments. The most advanced integrated systems allow information from electronic permitting tools to be shared by multiple agencies, often as part of a larger, government-wide, enterprise system. (See Table 3, "Seventeen Electronic Permitting Integrated System Leaders," page 5.)

SYSTEM COMPONENTS AND CAPABILITIES

The various electronic permitting system components provide a growing list of capabilities that mirror and enhance the traditional functions and tasks of a building department. (See Table 4, "Permitting Functions and Software," page 7.)

Permitting Software

Permitting software stores permit information in a database that can be used and updated by multiple building department personnel. The permitting system may be accessible by telephone or online; when a customer is ready for an inspection, an

Table 1:
Seventeen Home-Grown Electronic Permitting Systems Leaders

County / Municipality	State	Population	Staff	Vendor
San Francisco	**California**	716,000	177	In-house; Oracle Developer 2000; Novell Netware; MS Exchange
Denver	**Colorado**	555,000	39	In-house—10 year old mainframe with CityView GIS. Note: Upgrading.
Savannah	**Georgia**	143,000	24	In-house—Lotus Notes
Boone County	**Kentucky**	70,000	12	In-house—using Filemaker Pro and Microsoft Office; Arc View GIS; Banner purchasing program
Davies County City of Owensboro	**Kentucky**	91,545	6.5	In-house—Oracle 6 custom system by defunct developer; In-house—tools and forms using Microsoft Office. Note: Reviewing systems by Accela, CityView-Municipal Software; may require Oracle upgrade.
Baltimore	**Maryland**	736,014	66	In-house—CICS Program on IBM mainframe
St. Louis	**Missouri**	348,189	200	In-house
Omaha	**Nebraska**	670,000	45	In-house—20+ year old program on mainframe using FileMaker Pro for tracking and accounts. Note: Upgrading to Govern Software.
Las Vegas	**Nevada**	1,998,257	120	In-house. Note: Upgrading to Hansen.
Oklahoma City	**Oklahoma**	506,132	78	Obsolete system. Note: Upgrading to enterprise system.
Charleston	**S. Carolina**	100,122	25	In-house
Dallas	**Texas**	1,188,580	150	In-house
Houston	**Texas**	1,953,631	301	In-house
Burlington	**Vermont**	40,000	10	In-house and vendors—Dataflex 3.01b (old DOS system) for permits; FilemakerPro for code enforcement; MS Access for zoning. Note: Upgrading to enterprise system.
Fairfax County	**Virginia**	965,000	168	In-house. Note: Upgrading to enterprise system.
Green Bay	**Wisconsin**	102,726	21	In-house
Racine	**Wisconsin**	188,831	10	Custom

appointment is made and the inspector accesses the permit file and retrieves whatever information is needed.

Applications for permits may be submitted

- **on paper** in person or by fax and manually keyed into the system.
- **online** via the Internet, eliminating the use of paper forms. Filing a permitting application online typically occurs where online payments can also be made. Online submission and payment features are becoming standard options in vendor applications.

It is important to choose a system appropriate to the needs and practices of the building department. Close coordination between the vendor and staff is vital to ensure synchronization with building

Table 2: Twenty-four Electronic Permitting Component System Leaders

County / Municipality	State	Population	Staff	Vendor
Birmingham	**Alabama**	242,820	48	Tidemark
Fort Smith	**Arkansas**	80,000	11	SBCCI Building Permit Program
City of Los Angeles	**California**	3,700,000	578	Accela/OpenData Plan Check and Inspection Service (PCIS); Oracle database; Solaris; Prolifics "Panther" for business logic and presentation; Edify Corp. for IVR; Hansen Code Enforcement Information System (CEIS); ESRI GIS; Allaire Cold Fusion for eBusiness integration
Los Angeles County	**California**	9,800,000	3,500	Defunct vendor—Permitting and tracking system. Note: Upgrading to KIVA enterprise system.
Boise	**Idaho**	185,787	51	Tidemark Permit Plan
South Bend	**Indiana**	241,617	21	Sierra
Des Moines	**Iowa**	198,000	34	Tidemark with automatic upgrades
Overland Park	**Kansas**	155,000	38	Tidemark
Sedgwick County Wichita	**Kansas**	300,000	56	Tidemark Permitting; HELLO NT IVR
City of Fort Thomas	**Kentucky**	16,000	1.5	Black Bear PT Windows
Sterling Heights	**Michigan**	125,000	18	Accela Land Management Software; Selectron IVR; Oracle data base. Note: Upgrading to Velocity Hall.
Corning	**New York**	11,000	2 CO; 26 Fire Insp.	Business Automated Services, Inc (BAS-NY) TIPS Program; NYCODE—Building Code Software
Mecklenburg County	**North Carolina**	695,454	148	In-house—permitting system; Vodavi IVR; MobileHwy wireless inspections; SMI-Lason imaging; ESRI GIS. Note: Plan review system being developed in-house; RFP to upgrade to enterprise permits and inspection system.
Hamilton County	**Ohio**	330,000	28	Accela PermitsPlus; ESRI ArcView with "Gen7" user interface; AutoVue redlining software. Note: Part of city-county enterprise system.
Akron	**Ohio**	217,074	30	HTE—Click2Gov
Toledo	**Ohio**	313,000	6	Accela for permit, inspection, tracking & Web services; Selectron IVR
Pittsburgh	**PA**	340,000	57	Accela PermitsPlus; In-house—Microsoft Access for fees, occupancy permits, tracking, placards, and court cases; BOCA Electronic Library for code review
Carrollton	**Texas**	115,000	24	HTE Land Management System, Permits, Code Enforcement, Contractor Registration and VRU inspection Requests
Richardson	**Texas**	92,000	12	HTE Building Permits; in-house—Lotus Notes and HTML for Web services
Chesterfield County	**Virginia**	264,000	70	Computronix Posse 5.7
Spokane	**Washington**	190,000	27	Sierra Permits on HP Platform; Selectron IVR. Note: Developing RFP for 2003 implementation.
Spokane County	**Washington**	230,000	47	In-house with County IS Department
Snohomish County	**Washington**	606,024	215	CSDC Amanda; custom IVR
La Crosse	**Wisconsin**	52,000	10	Black Bear

Table 3:
Seventeen Electronic Permitting Integrated System Leaders

County / Municipality	State	Population	Staff	Vendor
City of Phoenix	**Arizona**	1,200,000	260	KIVA 6.2 with upgrades; ESRI ARC-GIS
San Bernardino	**California**	180,131	10	Accela-Velocity Hall
San Jose	**California**	**918,000**	**168**	CSDC Amanda with upgrades; GeoMedia; FileNet; SpaciaX; Intergraph for system integration.
Sunnyvale	**California**	130,000	10	In-house—Sunnyvale Permitting System. Note: Sunnyvale has licensed its program to GovPartner for product development.
Orlando	**Florida**	186,000	74	Tidemark/Accela Advantage 2.61; Selectron InspecTrack; Oracle 8.16; Selectron for IVR
County of Honolulu, City of Honolulu	**Hawaii**	880,000	250	Computronix POSSE; Akanda; ESRI ARC-GIS; Oracle database
Chicago	**Illinois**	2,896,016	501	Hansen
Hamilton County - City of Fishers	**Indiana**	44,818	9	Sungard Pentamation; Tele-Works IVR
Montgomery County	**Maryland**	873,341	186	Hansen
St. Paul	**Minnesota**	269,636	177	CSDC Amanda
Kansas City	**Missouri**	443,000	75	KIVA (enterprise system)
Clark County	**Nevada**	1,428,690	250	HTE
Bernalillo County	**New Mexico**	556,678		KIVA
Los Alamos County	**New Mexico**	18,000	5.5	KIVA Permitting; Oracle DB; Crystal Reports. Note: May upgrade to KIVANet and ESRI ARC IMS.
Buffalo	**New York**	934,000	94	Hansen
Portland	**Oregon**	650,000	300	CSDC Amanda; Systems integration by Synertech Systems, Inc.; IVR—Selectron
Austin	**Texas**	656,562	78	In-house system

department procedures and forms during the implementation period. Some vendor systems are easy to customize or adapt, others are inflexible and require standardized procedures that may or may not be compatible with current departmental practices. If these practices are in need of overhaul, however, the new system may provide an appropriate framework for doing so.

Plan Review Software

Plan review software has a variety of available options. At the most basic level, design documents submitted on paper are assigned a project number that is entered into the system, along with the property address, owner, and other required data. Tracking software places the project into a workflow program that channels information to reviewers, helps coordinate the work, and links the project to the history of the property held in the database.

Once paper plans are reviewed by hand, annotations and comments are added to the tracking software, shared among the review team, and forwarded

Indiana Electronic Plan Reviews

The Indiana Department of Fire and Building Services has developed an electronic plan review system using a collection of common applications (see Indiana case study, page 21). A staff of 17 annually processes about 8,000 applications for Class 1 Public Building "Construction Design Releases," Indiana's version of building permit applications (15 percent of the state's total). About 1,600 are electronic submittals. This system has helped the department reduce its turnaround time from about 45 days to 10. As more customers learn how to submit plans electronically, the department expects electronic submissions to grow to about 50 percent of total submissions. (For more information, see the Indiana case study, page 20.)

to the applicant. If the plan review component is linked to permitting and inspection, the approved plan automatically goes to permitting for the issuance of the necessary permits. Once inspections are scheduled, relevant information is compiled into a pre-inspection report for the inspector.

The model code organizations and some state code groups have developed plan analysis software that helps reviewers compare documents with code requirements, flag problems, and compile a report. For a given project, the plan reviewer enters various descriptors and the software calls up the applicable requirements that need to be considered as the reviewer studies the plans.

Some jurisdictions scan building plans and archive them electronically. This affords ready access and reduces the space needed for storing paper documents and the labor involved in retrieving them. A few building departments are submitting and reviewing construction documents electronically. Because the investment in the equipment—hardware, software, and personnel training—is substantial and many applicants are not equipped to submit materials electronically, most departments are reluctant to embrace electronic submittals and reviews at this time.

Inspection Software

Inspection software is used with laptops or personal digital assistants and allows inspectors to input inspection results on site then download them (usually remotely) into an electronic permitting system. It can also provide real-time schedule, cancellation, location, and contact information. Using a template that automatically provides a checklist for a specific site, inspectors can receive printouts or pre-inspection reports on special items to be inspected.

Transaction Software

Transaction software calculates fees for plan reviews, permits, and inspections. If a building department has the authority to collect revenue, it can use the software to process financial transactions and records, confirm payments, authorize services, and handle a variety of customer accounts. While most financial transactions continue to be made in person, transaction software is available for online or automated telephone use.

Reporting Software

With reporting software, building departments can convert routine permitting information into reports for analyzing and improving inspection efficiency, regulating workflows, and performing related management tasks.

Project Management and Tracking Software

Project management software directs the workflow procedures established by the building department and forwards projects and documents to staff for review. It can record personnel assignments and monitor turnaround time. Tracking software follows the project from the initial application to the certificate of occupancy and records when project documents entered the system, how long they took to be processed, and their current standing.

Communication Tools

Customers can contact building department staff and review important information using

- **voice activated response (VAR) and interactive voice response (IVR) systems,** the first generation of automated interactive tools for communicating with customers. Using their telephones, callers check the status of plan reviews and permits, schedule inspections, and obtain inspection results.
- **web-based services.** All states and most local governments have informational websites. Many building departments post useful information about plan and permit requirements, applicable

Table 4:
Permitting Functions and Software

FUNCTION	SOFTWARE TYPE: Permitting	Plan Review	Inspection	Transactions	Project Tracking	Communications Tools	Reporting	Other specialized
Permit Applications: submission for simple projects, review, information keyed into system, permit issuance	✔			✔	✔	✔	✔	
Plan Review: submission		✔		✔	✔	✔	✔	
Plan Review: distribution of documents, comments, approval		✔			✔	✔	✔	✔
Plan Review: approval and permit issuance	✔	✔		✔	✔	✔	✔	
Plan Review: archiving		✔			✔	✔		✔
Inspection: scheduling			✔		✔	✔		
Inspection: preparation of pre-inspection reports	✔	✔	✔		✔	✔	✔	
Inspection: results, post-inspection reports, remote capabilities			✔		✔	✔	✔	✔
Utility Hookups			✔		✔	✔	✔	✔
Certificate of Occupancy			✔		✔	✔	✔	✔
Contractor Licensing				✔				✔
Customer Registration				✔				✔
Fee calculation and payments	✔	✔	✔	✔	✔	✔	✔	✔
Management Reports							✔	
Workload Analysis							✔	
Statistics							✔	

codes and regulations, and contact information on these sites. Some provide downloadable applications, forms, and even architectural designs and specifications for simple projects such as decks or retaining walls. Customers usually submit questions and comments by e-mail. More advanced systems allow users to complete permit applications for simple projects online, make payments, schedule inspections, track projects and, in some cases, submit plans electronically.

Geographic Information Systems

Geographic information systems (GIS) locate objects by tracking geographic coordinates transmitted via satellite. They assemble, store, manipulate, and display geographic data and are useful for specifying building locations and scheduling inspections. GIS software is usually a separate application that must be integrated with other components of a comprehensive electronic permitting system.

SYSTEM SUPPORT AND MANAGEMENT

Just as software can be purchased, licensed, or leased, system support and management can be handled in various ways.

In-house Information Technology Staff

Personnel with information technology (IT) skills can help design, build, support, and manage some or all of the functions of an electronic permitting system.

Service Contracts

Service contracts are vendor agreements that may include technical support, automatic system upgrades, comprehensive product support, and back-up system support. Some contracts are fixed price, others are based on usage. Some online permitting systems, once installed, do not bill the building department but rely on a surcharge paid by the consumer. Consider the following when discussing any service contract.

- **Redundancy** is vital for building department computer systems. The electronic permitting system and its records must be protected and routinely backed up on a separate server. Related capabilities may include a power supply that cannot be interrupted and a back-up server.
- **Security** protects the system from hackers and viruses. Measures must also be in place to protect hardware and information from theft or tampering, particularly when there is web-based interaction with the public.
- **Training** is an ongoing activity that is particularly important during implementation and upgrading. Usually, members of the in-house task force that developed the system with the vendor become team leaders who train staff. Or, the vendor can do the training.

Application Service Providers

Application service providers (ASPs) are web-based, third-party vendors that operate electronic permitting review systems on a fee-for-service basis. This is an option for building departments that do not have extensive IT capability. The system's servers, databases, and applications are run from the vendor's site, which is secure and transparent to users.

Training Advice

"Train the trainer" .....from Los Angeles County

"Training, training, training . . . before, during and after!" .....from the City of San Jose

"Train the department experts and leaders . . . then they can train staff" .....from the City of Overland Park

"Timing is critical. . . . Too early in implementation and people forget how it works by the time the system is finally functional" .....from Los Alamos County

IMPLEMENTING ELECTRONIC PERMITTING IN YOUR JURISDICTION

Determine the Need

Does your department need to investigate electronic permitting options? The answer is yes if

- the level of service your customers expect is not being met.
- your plan review, permitting, and inspection activities are not working together in a logical and coordinated way.
- your staff cannot keep up with the workload.
- plan reviews and other aspects of permitting suffer frequent delays.
- workflow cannot be tracked easily.

Take a fresh look at what and where your problems are before seeking solutions. Be patient and thorough. Every building department that has successfully instituted an electronic permitting system has undergone a process of self-evaluation and streamlining. Once problems are identified, solutions can be developed. Use the following self-evaluation checklist.

- **Workflow.** Do plans and permit applications enter and proceed through the system efficiently? Do they seem to vanish and reappear? Are customers submitting high quality plans or are plans frequently rejected because they are incomplete? Are inadequate submissions returned early or late in the process? Are plan review schedules coordinated?
- **Workload.** Is the system slow because it is overloaded or inefficient? Are plans in place to respond to future growth or decline?
- **Personnel.** Does the staff have the skills and training to provide quality and timely service? Are they willing to learn new technology? Are staff specialists willing to extend their expertise to new areas? Do they feel accountable for their work and to their customers?
- **Organization.** Are all divisions within the building department willing to work as a team? Do the building department and other pertinent agencies collaborate? Is there a duplication of effort?
- **Operating budgets.** Is the building department self-financing or subject to a budget from the local government? Will it finance an electronic permitting system internally or from public funds?
- **Technical expertise.** Does the building department have an information technology team capable of developing a system (or creating a specification for one), collaborating with vendors during design and implementation, and managing the system once it is in place?
- **Existing technology.** Does the building department have access to a computer network? Can it be upgraded if necessary? Must a new computer system be purchased?
- **Communications and coordination.** With which outside departments or agencies must the building department collaborate? Zoning, planning, health, fire safety, municipal services, utilities, finance and revenue, community development? Do they effectively cooperate with one another? How can communications be enhanced?
- **Customers and citizens.** What services do they want? Do they understand what a building department does and why it requires plan reviews, permits, and inspections? Where do they see problems? What solutions can they suggest?

Overland Park, Kansas

As Overland Park, Kansas, experienced explosive growth in the 1980s and 1990s, its building department became overloaded. An interdisciplinary task force found a lack of coordination among divisions, cross-departmental functions that could be centralized, poor workflow management, and little accountability. The building department streamlined its organization, uniting three key divisions and reorganizing its procedures; spent a year developing electronic permitting system requirements to support its new procedures; and identified a vendor whose system could be adapted to them. It spent another year working with the vendor to customize and implement the system. (For more information, see the Overland Park, Kansas, case study, page 18.)

Change Agents

Change is sometimes initiated from the top. In Honolulu, Hawaii, it was led by the mayor, and in Carrollton, Texas, by the city manager. In other jurisdictions, citizens have been the catalyst for change. Kansas City, Missouri, and Overland Park, Kansas, conducted surveys to determine what customers identified as problems, the level of service they desired, and the changes they thought were necessary. Hamilton County, Ohio, jointly with the City of Cincinnati, performed a survey of more than a thousand government staff in a similar effort. Each jurisdiction also developed a task force to involve key personnel in defining objectives, developing requirements, evaluating proposals, agreeing on financial issues, and selecting the ultimate vendor and system. With this approach, the electronic permitting system is likely to enjoy strong and broad support. By involving customers, staff, and the public in the analysis of the problem, task forces establish credibility for the process of change and the solutions they recommend. (For more information, see the Overland Park, Kansas, and Hamilton County, Ohio, case studies, pages 18 and 19.)

A Cautionary Tale

A New England city spent five years trying to select a fully integrated information technology system. The process frequently stalled, hampered by an inadequate understanding of technology by some key players and unrealistic expectations by others. The result was an overly ambitious system. Bids came in much higher than the political leadership expected and the process stopped. But the need for technology did not stop and the more astute city departments implemented their own independent systems, even though the city still intends to move ahead with an integrated system.

On the other hand . . . A building department in a small jurisdiction may not require elaborate and lengthy reengineering to implement an electronic permitting system. When La Crosse, Wisconsin, computerized its building services, it customized a new vendor-supplied system with in-house personnel. In the process, the department re-engineered its business practices and energized its 10-person staff, which became adept at using the new system. Such an approach is possible if the building department can perform the work that otherwise would be done by a vendor implementation team or by consultants. (For more information, see the La Crosse, Wisconsin, case study, page 16.)

Create an Electronic Permitting Task Force

Create a task force on electronic permitting and include everyone with a stake in its development, selection, purchase, implementation, and operation. Include building department team leaders, information technology experts, representatives from other departments (as appropriate), customer and citizen representatives, and government leaders. Such a broad-based group provides the experience, credibility, leadership, and political clout necessary to bring about institutional and technological change.

The prime responsibility of the task force is to ascertain the type of electronic permitting system needed, the building department's expectations, and how participants will use the system. The task force may also need to chart information workflow—how documents are reviewed and approved, how review results are provided to customers, and how data is distributed—and define how the permitting system will support it. Then the task force must develop a full set of system, software, service, and training requirements and determine internal staffing and skills requirements and how to achieve them. These decisions will be the product of many meetings, first within each group or department, then with different task force members, and eventually with the appropriate decision makers.

Building and maintaining a task force through a long, possibly multiyear, initiative is not easy. Some jurisdictions strongly recommend using consultants and facilitators to help manage the task force and maintain focus from beginning to end. Consulting technical specialists and taking field trips to other jurisdictions may also be useful to help task force members understand issues outside their experience.

Check with Other Building Departments

There is a strong sense of community and support among building departments that have implemented electronic permitting, and they are happy to share their experiences. Sort peers by community size and ask them about vendors and systems. Those who have gone through the process are usually candid about streamlining procedures, building political and customer support, defining the capabilities they want, and assessing vendors. They also can provide advice about working with vendors to customize the vendors' systems to meet local requirements and working with staff to adapt their procedures to the vendors' systems.

Identify Possible Vendors

Some of the leading vendors of electronic permitting technology are profiled in Table 5, "Vendor Profiles," page 12. This information is based on promotional materials and the components and systems listed represent the wide variety of electronic permitting choices and capabilities available today (note that it is common for departments to acquire these capabilities in stages).

Justify the Cost

The ultimate issue for many building departments is justifying the cost of the electronic permitting solution. Building departments are responsible for a vital public service and generate revenue from the fees they charge. With statistics showing the number of plans reviewed, permits issued, inspections conducted, and certificates of occupancy granted, a department can pinpoint where and when problems occur; show how an electronic permitting system can bring about significant benefits in quality, provide better service, reduce staff time, and improve coordination with other city services; and document how much revenue it produces. Relating the experiences of other building departments also can be a powerful means of proving the cost effectiveness and affordability of a new electronic permitting system.

Select the Type of System: Departmental or Multiagency, a la Carte or Integrated?

Jurisdictions today can choose an electronic permitting system exclusively for the permitting functions and processes of their building department, or they can choose a system that is a coordinated part of a larger, multiple agency enterprise system. A system designed only for building department functions may be the most immediate and least costly solution for the short run, but an enterprise system may be best from the standpoint of the management, quality control, and delivery of comprehensive governmental services. A la carte, component-based hardware and software provide the most flexibility for the performance of individual tasks and functions and the ability to add other components as needed. Prepackaged, integrated systems provide more seamless compatibility among tools and functions and, usually, have more sophisticated capabilities.

Regardless of the scope of a system (intradepartmental or multiagency) or its configuration (a la carte components or integrated systems), the keys to successful implementation are proper management of the system design and selection process, clear communication among participants, realistic expectations, adequate funding, and knowledgeable, documented decision making.

Prepare a Request for Proposals

The request for proposals (RFP) defines the type of system needed, its components and technical requirements, how the system is to be used and by whom, and the expected level of vendor service.

Excerpts from five RFPs for state-of-the art electronic permitting systems are provided in Appendices A through F. They represent a range of scope and configuration choices and contain the following information:

- **Statement of purpose.** It is important to describe the purpose of the electronic permitting system in a few short sentences. This statement will clarify for vendors and users the desired system development process. A concise statement of purpose is included in the Los Angeles RFP (Appendix A).
- **Glossary of terms** (optional). Language is the underpinning of successful communication, and information technology is rife with jargon and acronyms and with common words given unconventional meanings. Including a glossary of terms in the RFP reduces the chance for misunderstandings. A concise list of definitions is included in the RFP from Burlington, Vermont (Appendix B).
- **Description of expected results.** Inviting a vendor to bid on a new system or to implement a packaged solution can be successful only if the jurisdiction's current practices and expected results are well understood on both sides of the table. The County of Mecklenburg, North Carolina, which serves the Research Triangle area, developed in-depth descriptions of its current system and the one expected to replace it. These descriptions (presented side-by-side in Appendix C) illustrate the amount of detail needed to fully express before-and-after expectations for system performance.
- **Technical and functional requirements.** Descriptions of technical and functional requirements, whether brief or extensive, must be clearly stated and comprehensive. Although Burlington, Vermont, was satisfied with defining a one-page list of technical requirements for a prepackaged suite of software tools, the city followed it up by

Table 5: Vendor Profiles
(see Appendix G for vendor contact information)

Vendor	*Software/System*	*Component Tools*	*Integrated Suites*
Accela	Note: Accela was created from the merger of Sierra and OpenData. Since then, it has bought Tidemark, and KIVA. According to respondents, Tidemark is aimed at smaller systems, Accela at mid-sized systems, and KIVA at larger integrated and enterprise systems, but there seems to be a lot of cross-over.		
• **Accela**	Accela provides a variety of permit automation solutions, including Web-based services: Accela Automation and the Web-enabled Velocity Hall; client-server systems: Accela Enterprise and PERMITS Plus; and, Accela Wireless and Accela GIS.	✔	✔
• **Accela-KIVA**	KIVA has a full range of "Development Management Products" that cover land management, permit and inspections, license management, requests for service, work order management, reporting tools, and remote inspection capability. These can be used on client-server systems or as a Web-based KIVANet system.	✔	✔
• **Accela-Sierra**	Sierra originally provided the PermitsPlus family of software.	✔	✔
• **Accela-Tidemark**	Tidemark provides solutions that include templates for workflow, forms, task lists, and reports. It is described as flexible, meaning clients are able to adapt the templates to their own processes. It also integrates with other tools such as IVR, image processing, and wireless inspection systems.	✔	✔
Akanda	Akanda's PERMITS is a Web-enabled system for managing building permits and inspections. It includes fee and payment tools and dynamic mapping, and it can integrate with other government systems. Akanda also provides system integration and implementation services.	✔	✔
Ben Weese Associates (Systems for BOCA & ICBO)	A plan review application that checks individual projects against code requirements and produces a compliance report. IBC, IRC and UBC versions are marketed through ICBO; IBC, IRC, and NBC versions are marketed through BOCA.	✔	
Black Bear Systems	Black Bear Systems provides PT Windows, an application that can track and report on a variety of planning, building, zoning, licensing, permitting, and code enforcement tasks. Part of the system is a set of customizable templates for permit types, part is information management: data storage, and workflow analysis. It appears to be a strong alternative to larger, expensive integrated systems and is popular with smaller jurisdictions.	✔	✔
Business Automated Solutions	Business Automated Solutions is a small firm in New York that provides document management services for city and county clerks. They created a product called TIPS for building permit services that is used by towns in New York, Pennsylvania, and Connecticut.	✔	
CSDC AMANDA	CSDC AMANDA evolved from the permitting system built for Snohomish County. It has provided steadily increasing levels of service for building permits, fire permits, inspection services, project tracking, land use and planning, code enforcement, property history plan checking, and remote inspections. Recent improvements include online services, GIS, and fee transactions. CSDC also provides upgrade services.	✔	✔

Vendor	Software/System	Component Tools	Integrated Suites
Computronix POSSE	POSSE is a scaleable work management system with government-wide enterprise capabilities. It supports permitting, licensing, land management, planning and development activities, remote inspections, complaints tracking, code enforcement, infrastructure and asset management, zoning, addressing, notifications, action queries and tracking, GIS integration, document management and Web-enabled services.	✔	✔
Hansen	Hansen provides automated building and planning permit software that connects diverse city departments into a centralized system covering land development, zoning, plan review, permit processing, inspections, contractor licensing, project tracking, and transactions. It also offers GIS integration, online services, and mobile inspection capabilities. Big systems, however, require a high level of cooperation among all departments and divisions for success, followed by a close interaction between the local government's representatives and the system implementation team to ensure system procedures match the government's.	✔	✔
Govern Software	Govern's Land and Permits Management System is designed to provide permitting, licensing, and inspection services and complete tracking of all activities for building, health, planning and zoning departments.	✔	✔
GovPartner	GovPartner licenses, implements and supports PermitPartner and CommunityDevelopmentPartner, systems developed by the Building Safety Division of Sunnyvale, California. PermitPartner focuses on permits; CommunityDevelopmentPartner is an integrated management suite for building department.	✔	✔
HTE Click2Gov	HTE Click2Gov is a Web-enabled building permits application that allows citizens and contractors to complete simple permit applications online, schedule inspections, and track results.	✔	✔
Intergraph	Intergraph provides system integration.		
Intermedia Design Systems	IDS produces searchable electronic code documents called "Autobooks" for NYCODE, SBCCI, and ICBO.	✔	
Mel Cooper Consulting	Mel Cooper Consulting produces Cabinet NG (Next Generation), a document and file management system designed to integrate people, technology, paper, and electronic files.	✔	
NetClerk	NetClerk is an online permitting tool.	✔	
Permits.com	Permits.com is a tool that helps customers submit permit applications in jurisdictions that agree to use the service. It is not a component used directly by building departments.		
SBCCI StandardSoft	SBCCI StandardSoft is a line of flexible, customizable solutions for building departments that includes: Permit Module, Inspection Module, Code Enforcement Module, and Plan Review Module. Certain online services can be provided for these through Footers, a Web-based interface produced by BUILDERadius.	✔	
Selectron	Selectron provides Interactive Voice Response systems, IVR, that merge telephone technology with permitting systems.	✔	
SUNGARD Pentamation	SUNGARD Pentamation products are based on leading technologies, utilizing a fully relational database, advanced programming languages and Web technologies, and providing portability across many hardware and operating environments. Multiple deployment options include the Internet, an Intranet or a traditional network.	✔	✔
Synertech Systems Corp.	Synertech provides system integration.		

requesting prices on a lengthy list of more detailed requirements (Appendix D). By contrast, San Jose, California, lists 21 technical requirements for the performance of individual components under General System Requirements and 71 requirements in 17 functional areas under Global Requirements (Appendix E).

- **Detailed requirements.** In addition to a comprehensive list of technical and functional requirements, detailed specifications for specific process requirements are sometimes included. San Jose developed 470 additional requirements categorized into 10 broad permitting functions (Appendix F).

Disseminate the RFP

Verify specific procurement procedures that need to be followed. Announce the availability of the RFP to all interested bidders in appropriate trade media and send the RFP to all vendors suggested by the task force. Some government websites list current RFPs. Do not limit the search to local vendors; vendors from across the country will respond.

Form an RFP committee to serve as the point of contact. Establish a procedure for receiving and responding to questions related to the RFP and consider holding a pre-bid conference. Allow vendors sufficient time to prepare proposals. Haste will not be beneficial in the long run.

Evaluate Bidders and Select Vendors

Bids must be thoroughly evaluated by representatives of the task force. The rigorous process of developing comprehensive electronic permitting requirements will have brought together a group of people with a keen understanding of their organizations and the electronic tools required by each. They will have talked with other building departments and developed a good sense of what's available and possible.

Bid documents may be complex, but only those that convey a clear understanding of the requirements of the RFP should be considered. Do not accept "vaporware" claims (capabilities just over the horizon)! Vendors should give an oral presentation and respond directly to questions from the task force. Check with other building departments that use the proposed systems. Verify that they really work, and ask about the quality of service and emergency response.

Several finalists will emerge from this process. If logistics permit, each should demonstrate its system in a jurisdiction where it is already in place. Evaluators should ask colleagues in the jurisdictions about issues regarding system development, customization, implementation, training, management, and operations. The strengths and weaknesses of each proposal should be clear to all involved. Evaluators must assure themselves that the system they select will live up to its vendor's promises.

There may be a certain amount of give and take in the final selection. One vendor's product may look better, but customer service may be lacking. Another's system may require more start-up time but have an implementation team possessing an excellent track record with a neighboring building department. Be wary. The low bid may not be the best bid if it cloaks a need for significant additional services or change orders, and a higher bid may provide an implementation path that saves time and money in other ways.

Sometimes the vendor is ideal but everything specified in the RFP cannot be achieved for technical or financial reasons. Some services may need to be phased in over months or years, or a different implementation path may be required. Even when the product and vendor are ideal, the budget may be too small to contract out all of the implementation, in which case staff may need to undertake activities such as database migration, designing forms, and training.

Establish an Implementation Team

Establish an implementation team that works directly with the vendor to customize the selected system. This team will be different from the task force described previously, although many of the same people may be involved. Include information technology specialists and representatives from each division within the building department as well as from other participating agencies. The operation of this team is critical to the success of the implementation effort and must be allocated the time necessary to work with the vendor. The vendor's engineers may install the system, but the department's implementation team must ensure the system meets all agreed-upon requirements. Clear lines of authority must be established, and the team should be ready to respond immediately when decisions or actions are needed.

Put the System in Place and "Go Live"

Here are the main tasks for putting the electronic permitting system in place and maintaining it as an integral part of your department.

- **Customization.** A period to synchronize new system processes with those of the building department and vice versa is inevitable. Designing new forms and documents, redefining relationships among staff, divisions, and departments, integrating existing codes and regulations, and changing workflow and project tracking are typical activities that occur during the customization period.
- **Implementation.** Six overlapping and interdependent steps comprise the system implementation process.
  1) Installing and connecting hardware such as servers, network equipment, workstations, portable computing devices, and scanners is usually the first task.
  2) Installing software occurs once all the necessary hardware is hooked up. Software may be enabled across the entire network or loaded onto individual workstations, depending on the system and the terms of the contract.
  3) System integration is needed when numerous independent software programs are combined and must work efficiently with one another in a single system. In an enterprise system, system integration means making the computer systems of many participating departments work together.
  4) Database migration, a procedure that moves data from an existing database to one that replaces it, may be the biggest and most difficult implementation task. Many building departments have multiple databases and may tap into databases from other departments as well. When the implementation of a new system forces all these groups to share a common set of databases, a rigorous process of checking, correcting, synchronizing, and transferring existing data must occur. This is an arduous task that is easily underestimated and often rushed. It requires a substantial investment of time to define, standardize, and translate property records and critical items among databases.
  5) Testing the system assures that hardware and software are working properly together. Flaws must be fixed before the system goes into full operation. Personnel in plan review, permitting, and inspections should simulate a number of sample projects to test their knowledge of the system and verify that it works under a variety of "real-life" conditions. Going live should occur only when the system is completely tested and fully operational.
  6) Training is among the most important and easily mismanaged aspects of implementation. Team leaders need a high level of training throughout implementation to ensure a comprehensive understanding of the system. Other staff will need training specific to their tasks. Customers also may need specially designed training. The timing and frequency of training should be arranged with the vendor in advance.
- **Maintenance.** The service contract defines who is responsible for the maintenance of the system. Often it is a mix of vendor and client responsibilities. Routine maintenance includes backing up the data daily or weekly, fixing bugs, and related tasks to make sure the network, software, and workstations are operating correctly. Security procedures include protecting the system against viruses, hacking, and theft.
- **Upgrades.** Some service contracts provide automatic upgrades; as the vendor develops new capabilities, they are installed in the system. Training should be part of an upgrade agreement. Many building departments minimize their initial costs by opting out of upgrades, services, or components they do not currently require, then adding them as the need arises.

Support Your Home Team

The San Jose Department of Planning, Building, and Code Enforcement recommends investing heavily in the implementation team: "Staff the project with people who understand how your department actually runs, keep the IT staff involved, and make this their main task, not something added to their normal workload."

ELECTRONIC PERMITTING CASE STUDIES

As more building departments move to electronic permitting, they add to a valuable pool of experience, advice, best practices, and lessons learned. The following case studies examine different aspects of implementing electronic permitting in diverse kinds of jurisdictions.

- **Three small jurisdictions—**La Crosse, Wisconsin, Los Alamos County, New Mexico, and Corning, New York—demonstrate very different solutions to advancing the building permitting process from paper and file cards to computers and networks.
- **Three medium size jurisdictions—**Carrollton, Texas, Overland Park, Kansas, and Hamilton County, Ohio—show the need for close coordination among all participants in the building permitting process to implement an effective integrated system.
- **Large jurisdictions** contend with implementation issues on a greater scale, and solutions must be developed through regional cooperation and collaboration. The state of Indiana and Kansas City, Missouri, used multidisciplined and creative information technology teams to solve complex problems while developing their electronic permitting systems.
- **The last three case studies look at the Silicon Valley Network** and two of its prominent members, Sunnyvale and San Jose, to demonstrate the range of electronic permitting capabilities needed to satisfy various sizes and types of building departments.

CASE STUDY #1: SMALL JURISDICTIONS

La Crosse, Wisconsin

In 1999, the Department of Buildings and Inspections in La Crosse, Wisconsin, had an allocation of $15,000 to computerize its operations. It also had a leadership vacuum, low morale, a paper-based system for permits, and no system for logging inspections and results.

A new director arrived in 2000 and determined that computerization was the key to productivity across many of his department's responsibilities. Fortunately, he found a marketing CD in an old stack of materials that promoted a software program for permitting, plan review, inspection activities, complaints, contractor lists and licenses, fee calculation, and reports. The software program was said to be used by an estimated 800 building departments, many with similar characteristics to La Crosse. It claimed to be flexible, intuitive, and capable of evolving with changes in procedures, workflow, and new services. The base price for the software was $3,000.

The director checked with other building departments using the software and received a rave report from Savage, Minnesota. Unfortunately, he had no budget for an implementation managed by the vendor. Although the city's Information Systems Department could help load and initialize the software, building department staff would have to teach itself the system, reform the department's workflow, design new data tables and permitting forms, and rework plan review and inspection procedures. The director developed a two-step training program for his staff of ten, first introducing everyone to the system and identifying team leaders. Then he had the team leaders help make the staff comfortable with the system and obtain their buy-in. The vendor populated the system's database with the property

City of La Crosse, Wisconsin

http://www.cityoflacrosse.org/Inspection/

Population: 52,000

Building department staff: 3, plus 7 Inspectors

Building Department Activity for 2000

Permits: 3049

Plan reviews: 570

Inspections: 2000+

System platform: Network

Reasons for implementing system
- Solved problems
- Vendor presentation

information that was available and provided routine technical support.

The La Crosse system ended up costing about $10,000. Although it took 15 months from concept to launch, things moved quickly once the plan was formalized. It took two months to shepherd the plan through city hall, three months to learn the system and design the tables, and two training sessions for the staff to feel competent with the system. The first member to switch over was a new electrical inspector who went "live" with the system four months before the official start date of January 2002. Other staff followed his lead, and the system was tested and routinely used well before the launch date.

Los Alamos, New Mexico

The Los Alamos experience is a story of an ambitious plan disrupted by a natural disaster. In 1998, this small New Mexico county with a highly educated and technically sophisticated population had an opportunity to piggyback with neighboring Bernalillo County in the purchase of an integrated system for land management, permits, plan review workflow, inspections, and interdepartmental coordination.

The system required a well-defined business process to work properly, which meant that the various Los Alamos County departments involved in planning, development, fire safety, health, and building safety had to agree on how they would cooperate and streamline their procedures. But the infamous Cerro Grande forest fire of 2000 wreaked havoc with that plan. The abstract work of streamlining was replaced with the vital work of rebuilding hundreds of homes and structures.

Implementation did proceed, however, but without effective collaboration between the vendor and all the city departments. Meanwhile, Los Alamos' working relationship with Bernalillo County changed and the expected levels of implementation support decreased. The emergency nature of reconstruction continued to take precedence and, perhaps, the expense of the system assured some of the participants that it could work without their reengineering efforts.

The result was that the system could not be implemented as intended. Aspects of the system that worked for Bernalillo County were not adequate for Los Alamos. Adding other components and change orders was considered too expensive. The system used a sophisticated database that required higher skill levels than planned, and the training program was insufficient and poorly timed.

Los Alamos resolved these problems by upgrading to a web-based version of the system that replaces many complicated procedures with user-friendly "point & click" forms and provides a variety of in-house, online services. Field inspections also have been computer enhanced. Los Alamos expects to provide citizen access to online services in 2003.

Corning, New York

Corning, New York, is a simple story by comparison. In 1995, it was a small building department

Los Alamos County, New Mexico

http://www.lac.losalamos.nm.us/LACDepts.asp

Population: 18,000

Building department staff: 4 full time, 3 part time

Building Department Activity for 2000

Permits: 2,179

Plan reviews: 887

Inspections: Not Available

System platform: Network

Reasons for implementing a system
- Streamlining
- Vendor presentation

City of Corning, New York

http://www.corningny.com/Content/Business.asp

Population: 11,000

Building department staff: 3 code enforcement staff, 26 fire inspectors

Building Department Activity for 2000

Permits: 361

Plan reviews: 570

Inspections: 2000+

System platform: Network

Reasons for implementing system
- Streamlining
- Solved problems
- Vendor presentation

dependent on paper and file cards. Its permits were little more than a cover sheet with some cursory information. A new building official, however, immediately saw the need to computerize the permitting process.

A small software developer that traditionally served towns in New York, Pennsylvania, and Connecticut had developed a permitting system and was marketing it to local governments. The system was based on the developer's own experience in government. It was flexible, allowed for customizing forms, tracked projects, and supported inspection services. An annual fee included product support and upgrades. For a few thousand dollars and the cost of several computers, Corning acquired a functional electronic permitting system that met its needs.

CASE STUDY #2: MEDIUM-SIZED JURISDICTIONS

Carrollton, Texas

By the mid-1980s, Carrollton, Texas,' procedures for building plan approvals and inspections had become unworkable. Plans entered a trackless, unpredictable path through various city departments with no defined workflow or sense of accountability. The building department was blamed for delays in a process that seemed outside its control.

In 1989, Carrollton installed a plan tracking system, the first phase of a decade-long campaign to streamline, modernize, and provide efficient, quality service. The effort involved a process of consensus-building among those department leaders and staff who supported streamlining, and the attrition and retirement of those who did not. The new tracking system allowed staff to follow the progress of projects as they went through the system. It spotlighted delays and problems and forced departments to be responsive and accountable. This knowledge supported an eight-year process of reengineering Carrollton's business practices and creating a one-stop shop for building permits.

Carrollton's system started simply and has been expanded and upgraded over time, growing to include development services, tax management, permitting, code enforcement, contractor registration, land management, and a website that provides comprehensive, useful, and downloadable information for its citizens.

Overland Park, Kansas

Between 1978 and 2001, Overland Park, Kansas, grew from a population of 82,000 to 155,000 and added an average of 1,000 new homes a year along with associated school and commercial growth. Its building department had been an early adopter of new technology, using a mainframe-based system to support permitting, plan reviews, and inspections. But the system only provided basic records—it included no useful information about projects and workflow and had no mechanism to manage plan review coordination with other departments. The slow-moving approval process had become a serious liability to the city, allowing neighboring jurisdictions with quicker turnaround times to attract desirable development.

Overland Park initiated a series of focus groups and surveys to define problems and identify solutions, resulting in a plan promoted by its city managers to

- consolidate the city's building services by merging Building Safety and Code Enforcement with the Planning Department and Engineering Services;
- streamline business processes, including improving the quality and speed of plan reviews by adding a prescreening process to assure that plans entering the review process were complete;
- allow the Building Safety Division to coordinate the workflow and establish accountability among all the departments and divisions involved;

Carrollton, Texas

http://www.cityofcarrollton.com/

Population: 115,000

Building department staff: 37

Building Department Activity for 2000

Permits: 4976

Plan reviews: 3485

Inspections: 14,381

System platform: AS400

Reasons for implementing system
* Streamlining
* Solved problems
* Technology was available
* Vendor presentation

- establish high professional standards, multidisciplinary expertise, and substantial training for technical staff; and
- implement an efficient enterprise system that would unify information, integrate it with GIS, and provide effective computerized tools for the city's building safety services and other departments.

A task force was created to develop an RFP. It reviewed available vendor systems and learned what programs similar communities were using, identifying Scottsdale and Phoenix, Arizona, as models. After a vendor was selected, an implementation team was formed to work with the vendor for a year to adapt its system to the city's requirements, merge and standardize records, integrate GIS information, and train team leaders. The leaders trained the rest of the staff.

Overland Park's electronic permitting system began operations in 1999 after two years of preparation. It includes a website that provides a broad range of information, forms, and requirements. Upgrade plans include remote inspection capabilities and expanded online services.

Hamilton County, Ohio

The Hamilton County, Ohio, Department of Building Inspections is supported by an enterprise system implemented in 1998, the product of a collaborative effort between the county and the City of Cincinnati that involved more than a thousand participants. The city and county councils promoted change from the highest levels, forming a task force to study workflow reengineering and redundancy, solve identified problems, and provide better service. A central computer system, called CAGIS, runs the regional network.

The Department of Building Inspections, which had computerized in 1991, began with a DOS-based permitting system and added an interactive telephone system in 1994. It was a simple and effective system for entering data and determining the status of approvals. Other departments, including those in the county's townships and smaller jurisdictions, could easily exchange information. Project management features were not included in the system, however, and management problems inside the building department increased until a scandal emerged that resulted in a change of leadership, early retirements, and firings. The department was reformed and charged with streamlining its operations, establishing project tracking, and delivering improved levels of quality and service.

The building department's permitting system was integrated into the county-wide enterprise system, which now supports collaboration among the Department of Building Inspection, Metro Sewer, the Cincinnati Waterworks, the County Engineer, the Board of Health, and the Board of Commissioners. The countywide system also includes a website with comprehensive city and county information and a set of online services.

Overland Park, Kansas

http://www.opkansas.org/html/pds/index.html

Population:155,000

Building department staff: 38

Building Department Activity for 1999

Permits: 4,882

Plan reviews: 3,524

Inspections: 29,485

System platform: Network

Reasons for implementing system
- Streamlining
- Solved problems
- Vendor presentation

Hamilton County, Ohio

http://www.hamilton-co.org

Population: 333,000

Building department stafF: 28

Building Department Activity for 2000

Permits: 4,496

Plan reviews: 3,241

Inspections: 18,816

System platform: Client/server network

Reasons for implementing system
- Regional initiative
- Vendor presentation

CASE STUDY #3: LARGE JURISDICTIONS

State of Indiana

States usually do not get directly involved in building safety at the local level, but Indiana reviews plans for all of its Class One public building projects. When the plans are approved, the state issues construction design releases that allow local building departments to issue the appropriate building permits.

By the late 1990s, Indiana's Department of Fire and Building Services was buried by a plan review backlog. Customers were outraged and the state legislature was about to take severe measures. Morale within the department was low. A departmental task force and information systems team began working with representatives from the building and design sectors, analyzing the department's problems and developing creative new solutions and procedures. To simplify plan submissions from across the country, improve turn around time, and track the review process, an imaginative e-filing system was developed with off-the-shelf components, including VoloView, Acrobat Reader, Autoview Professional, Kodak Imaging Preview, and Winzip compression. Training programs for customers were organized and links to service bureaus were provided for builders that did not have the resources to digitize their plans or send them electronically.

Put in place in May 2000, the new system solved the backlog problems and saved the department. About 20 percent of plans are now submitted electronically and departmental personnel scan in non-electronic submissions. When submissions are received, submitters are notified and given a project number and the reviewer's name. Plan review time has been reduced from 45 days to 10, and the 17-person division annually processes 8,000 plan reviews for 92 counties and generates $3,500,000 in fees. The state's Department of Fire and Building Services is considered a partner by local governments and the construction trades.

A program for automating the transfer of electronic submissions is being studied. Ongoing training programs are targeted toward special building sectors and corporate customers with the goal of a minimum of 50 percent electronic submissions.

Kansas City, Missouri

In the early 1990s, the director of the Kansas City, Missouri, Department of Codes Administration established a focus on improving customer service and streamlining procedures. In 1992, the department implemented an electronic system for permits and inspections that eventually included a plans management system, improved quality control procedures, fax permitting, the creation of a development assistance team, and a comprehensive website.

State of Indiana

http://www.in.gov/sema/dfbs.html

Population: 6,080,485

Building department staff: 40

Building Department Activity for 2000

Permits

Plan reviews: 8,000

Inspections

System platform: Network

Reasons for implementing system
- Y2K
- Streamlining
- Solved problems
- Technology available
- In-house solution

Kansas City, Missouri

http://www.kcmo.org/codes

Population: 443,400

Building department staff: 102

Building Department Activity for 2001

Permits: 19,728

Plan review submittals: 7,406

Inspections: 49,826

System platform: Network

Reasons for implementing system:
- Y2K opportunity
- Streamlining
- Solved problems
- Technology available and proven
- Vendor presentation

In 1999, the Department of Codes Administration and other city departments implemented a larger, citywide enterprise system for land management, permitting, plan review, inspections, and complaint tracking. The process began in 1996, when Kansas City's Chamber of Commerce created a task force to reform the city's land development process. As a result of the task force's recommendations and the need to upgrade for Y2K, the city's Information Technology Department led an implementation team of representatives from 12 city departments through the process of developing an RFP, selecting a vendor, and implementing the new system. The team visited several cities and inspected their electronic systems. After the RFP was issued and the vendor was selected, the implementation team worked directly with the vendor's engineers to integrate the city's existing computer systems and procedures into the new system. Tasks included

- migrating existing databases into the new system,
- documenting practices and procedures,
- identifying and training departmental technology leaders,
- customizing forms,
- revising business practices,
- scheduling the implementation of department and system programs,
- training staff prior to implementing the system, and
- training citizens and customers on accessing the system via the Internet.

The new, citywide system supports land records management for over 170,000 parcels, permitting and application processing, plan review, and inspection activities for eight city departments. It also provides complaint tracking and code enforcement for all 22 city departments. In creating the system, the city streamlined the services of the 22 departments (including the Department of Codes Administration), consolidated 30 databases, and replaced an older, non-Y2K compliant network. Now the Kansas City Department of Codes Administration is a tour stop for practically every large jurisdiction in the United States considering an electronic permitting system.

CASE STUDY #4: SILICON VALLEY NETWORK AND MEMBERS

Silicon Valley Network, California

Silicon Valley Network's "Smart Permits Initiative" began in 1995 and includes the cities of Fremont, Milpitas, Mountain View, Palo Alto, San Carlos, San Jose, Santa Clara, and Sunnyvale. The network is a public-private partnership formed to

- help develop standards for web-enabled permit software and services,
- support a regional approach to simplify building permit procedures, and
- enhance governmental streamlining efforts.

Silicon Valley's location at the heart of the technology revolution helped the network off to a quick start. The Smart Permits Initiative nurtured the project development efforts of software vendors and in-house staffs of member jurisdictions, helped evaluate new ideas, and served as a clearinghouse for information about the various information technology solutions being created.

To simplify permitting, Silicone Valley Network communities adopted identical building codes so builders and designers would not have to contend with a different code in each jurisdiction. They also agreed to streamline their permitting procedures if they hadn't already done so. The communities differ in many respects, however, including how they have implemented electronic permitting. Two communities, Sunnyvale and San Jose, are featured in the following case studies.

Sunnyvale, California

Sunnyvale, California's, Building Safety Division responded to the call for streamlining in the mid-1980s by bringing together the division's permit team and representatives from the planning, fire prevention, hazardous materials, public works and water pollution control departments and forming a One-Stop Permit Center. The Building Safety Division serves as the customer's prime contact for building projects and manages the permitting workflow for all the other departments.

An integral part of the One-Stop Permit Center is an electronic permit tracking system. Originally, a mainframe-based system that tracked permits, plan checks, inspections, and fees was developed in-house

by Sunnyvale's IT staff. All city departments could access the system, monitor the status of current projects, and add comments. By the mid-1990s, concern over Y2K compliance caused the IT staff and the Building Safety Division to look into replacement systems. After studying what was commercially available and finding it unsuitable to their needs, the IT staff developed a new in-house system based on a client/server network, added new services, and called it the Sunnyvale Permit System (SPS).

Sunnyvale's smaller neighbor, Mountain View, was also looking at permit tracking systems and approached Sunnyvale about purchasing SPS, along with technical support. Sunnyvale was happy to share its system but determined that it was better to partner with a software development company, which is now marketing, implementing, and supporting the system in other jurisdictions.

San Jose, California

San Jose, the largest city in the Silicon Valley and the third largest in California, needed a large, enterprise system for handling its huge volume of building projects. The electronic system had to take over the work of the three separate systems the city was currently using for GIS, document management, and permitting as well as incorporate the permit-tracking databases of five separate departments. The task was enormous and required a complete organizational reengineering effort.

The city's Building Division, Planning Division, and Public Works Development Services worked together to prepare a detailed set of requirements for the new enterprise system, named the Integrated Development Tracking System (IDTS). After a long and involved selection process, one vendor was hired to build the system and another to manage the system integration effort. The IDTS includes

- online services,
- comprehensive permitting services with digital records of current project permits and inspection notices,
- fee calculation,
- an archive of project documents and histories,
- document retrieval,
- cradle-to-grave project tracking using an archive of project documents,
- the capability for digital plan processing, and
- GIS access.

The IDTS is complex and is being implemented in phases over three years. The online permit component went live in May 2000 and the main IDTS system in July 2001. An interactive telephone service is expected to be complete in late 2002. Other components are still under development and will be added periodically.

City of Sunnyvale, California

http://www.ci.sunnyvale.ca.us/

Population: 130,000

Building department staff: 10

Building Department Activity for 2000

Permits: 4,500

Plan reviews: 1,719

Inspections: 43,661

System platform: Network

Reasons for implementing system
* Y2K
* Solved problems

City of San Jose, California

http://www.ci.san-jose.ca.us/building/

Population: 918,800

Building department staff: 168

Building Department Activity for 2000

Permits: 41,000

Plan reviews: 7,900

Inspections: 228,000

System platform: Network

Reasons for implementing a system
- System replacement
- Solved problems
- Vendor presentation

APPENDIX A: LOS ANGELES COUNTY, CALIFORNIA ELECTRONIC PERMITTING STATEMENT OF GOALS

Source: Los Angeles County Department of Public Works

LA DPW EXECUTIVE SUMMARY

Entering the new millennium, Los Angeles County is faced with major challenges and opportunities. These challenges and opportunities are caused by the heightened expectations of the County's constituents, citizens, the business and development community and employees, to use technology to accomplish their daily tasks. This expectation occurs within an environment of rapid change and finite resources. To be successful, the County will need to operate effectively and efficiently to ensure better services, less cost, and more convenience.

To ensure that the Department of Public Works (Public Works) can meet this challenge, continued emphasis must be put on projects that integrate our technical infrastructure, allow Public Work's employees to communicate easily internally and with the community, and allow easy access to Public Works data and services.

Public Works is currently seeking a complete, configurable, web enabled off-the-shelf solution to automate the functions and activities conducted by its Building and Safety, Land Development, Construction and Environmental Programs Divisions. Primarily, this involves the permitting process, which includes land use, plan review, permits and inspections. Currently, this functionality is performed with a combination of non-integrated, manual, and automated systems. Public Works will not consider any proposals for thick-client or mainframe-based applications.

The proposed system will provide the following:

1. Ensure the Efficient and Accurate Capture of Data

The proposed system will incorporate a single database of development and permit data. This allows the information to be easily accessed, reused, and associated to relevant new activities. Capturing data once also avoids cost, duplication of effort, and potential for error.

2. Provide Convenient Access to Information and Services

The proposed system will use the Internet to allow customers to submit applications and drawings, and access information about the plans, projects, permits, and licenses, 24 hours a day, 7 days a week and at a time and location convenient to the customer. Also, the proposed system will notify applicants by e-mail at each milestone of the permit process.

3. Deliver Timely and Effective Responses to Customer Requirements

The proposed system will use the concept of electronic government to allow transactions such as the issuance of certain types of permits to occur without customers having to visit a Public Works office or having direct contact with employees.

4. Integration of Public Works' Technological Infrastructure

The proposed system will integrate Public Works' Geographical Information System into the business processes of each of the four involved Divisions. This will also link all parcels with other critical County databases such as the Assessor, Department of Regional Planning and the new Countywide Abatement Tracking System, and allow users Countywide to access a complete understanding of all regulatory aspects relating to the parcel.

APPENDIX B: BURLINGTON, VERMONT ELECTRONIC PERMITTING VOCABULARY

Source: City of Burlington Code Enforcement Office

"System" includes the Hardware, System Software, Application Software and supportive programming aids, training and training materials, user manuals, operations documentation, Networking and Data Communications, source code and related materials as specified in this Agreement.

"Certification" means completion of delivery and installation of each component of the System due to be delivered and installed on a date specified in this Agreement by VENDOR and VENDOR's written acknowledgment of same, using on each such occasion the Certification Form included as Attachment H of this Agreement. Certification shall occur upon the CITY's receipt and acknowledgment of the original copy of VENDOR's executed copy of the Certification Form for each such Certification.

"Acceptance" means Certification and satisfactory completion of testing of each component of the System in accordance with the terms of Section V.

"Application Software" means the Application Software systems described in Attachment C.

"Phase I" includes the Application Software systems described as Phase I in Attachment C.

"Phase II" includes the Application Software systems described as Phase II in Attachment C.

"Data Base Building" means entry by the CITY into the System of various data which is not otherwise included in Conversion.

"Conversion" means the entry of data into the System by the VENDOR, at the CITY's instruction and with the CITY's prior, written approval , which data is now stored in an electronic medium in the systems currently used by the CITY.

"Application Software Specifications" (Attachment M) means the detailed specifications for the Application Software systems specified at Attachment C to include subsystems (modules), forming a part of the System. The Application Software Specifications shall include as a minimum:

- The file and record format (dictionary), to include field size and content for each Application Software system and subsystem.
- The report format for all reports required by the U.S. Government, State of Vermont or other public agencies which each Application Software system and subsystem must produce.
- Report formats for the CITY's internal use, e.g., sales ratio or comparable sales reports.
- The tables and parameters required to support all computations.
- Screen formats to support data entry, Application Software programs and system operations.

"Software Modification" means insuring that the computer program code, at the time of Certification by VENDOR to the CITY, performs as outlined in Attachment M, Application Software Specifications.

"Software Maintenance" means insuring that the Application Software and System Software, following Acceptance by the CITY, continue to perform as outlined in Attachment M, Application Software Specifications.

"Software Enhancement" means changing the Application Software code to support new or additional requirements.

"Special Application Software" means the special and detailed computer programs and program codes, completely detached and apart from VENDOR's Application Software, that are licensed, developed or programmed by the CITY to meet the needs of the CITY, not affecting VENDOR's Application Software in any way.

"Hardware" means the computer and related peripheral equipment, as specified in Attachment A, Hardware Configuration and Cost.

"Hardware Manufacturer" means the manufacturer(s) and supplier(s) of the Hardware.

"Hardware Maintenance" means insuring that the Hardware, following its Acceptance by the CITY, continues to perform as outlined in Attachment M, Application Software Specifications.

"System Software" means those computer programs/codes, as specified at Attachment B, that are furnished by the Hardware Manufacturer(s) or that control the basic operation of the computer system. This includes the operating systems/firmware and their associated compilers, editors, utilities and database management programs.

"Day" means the CITY's normal workday from 8:00 A.M. to 4:30 P.M., Monday through Friday, excluding legal holidays in the State of Vermont, unless otherwise defined.

"System Purchase Price" shall mean the total price to be paid by the CITY upon Acceptance for all Hardware as listed at Attachment A, all System Software as listed at Attachment B, the One-Time License Fee for all Phase I Application Software as listed at Attachment C, all Training as listed at Attachment N and all Networking and Data Communications as listed at Attachment T.

"Initial Application Software" includes the following applications: Computer Assisted Mass Appraisal ("CAMA"), Report Generator and Street Dictionary/ Geobase.

"Subsequent Application Software" includes all items of Phase I or Phase II Application Software except for those also defined in this Agreement as "Initial Application Software."

"Performance Period" means the thirty (30) working days following Certification of any one or more components of the System, during which the Acceptance tests for such components are completed and the successful completion of which results in Acceptance.

"Major Hardware" means the central processing units, disk drives or other storage units, tape drives or other backup units, or system printers.

"Networking and Data Communications" means those technologies which enable the access to, sharing or transfer of data and information among users of and components included in the System.

"Proposer", "Offerer", or "**Vendor"** means that firm acting as prime contractor in offering the goods and services requested by this RFP.

"Contract" or "**Agreement"** means the General Agreement for Procurement of A Turnkey Computer-Assisted Mass Appraisal (CAMA) and Land Records System for the City of Burlington, Vermont, the draft of which is distributed to all firms receiving a copy of this RFP.

"Author" or "**Licensor"** means the owner of the copyright of the application as of August 31, 2001.

"General Available release" means that version of each Application Software package generally provided to all of the licensor's customers on or before August 31, 2001. This does not include versions in beta testing or at prior pre-release stages as of August 31, 2001.

"Open Systems", "open systems environment" or "**open-systems platform"** means that all of the Application Software proposed will function identically with full portability on the hardware platforms of three or more different Hardware Manufacturers.

"Correspondence" means any information exchanged in writing between the CITY and VENDOR or their respective employees, agents, consultant, attorneys, subcontractors or any other authorized party. This shall include all such information, whether in hard copy, facsimile, or electronic format.

APPENDIX C: MECKLENBURG, NORTH CAROLINA BUILDING TRADE PERMIT PROCESS—CURRENT AND FUTURE

Source: Mecklenburg County Land Use and Environmental Services Agency

BUILDING TRADE PERMITTING PROCESS

Addressing—Current

Any data captured for our current P&I system requires a valid address. Mecklenburg County is largely "addressed out", meaning that all land has an assigned address and tax parcel number. We currently have over 265,000 tax parcels. As seen in the IMS data structure in Exhibit 1, all P&I data belongs to a given address. If a street name changes or lot numbers are re-numbered, all historical and in-process P&I data is moved to the new address. All address additions, changes and deletions are tightly controlled by security. Currently, the City and County jointly maintain a master street-name file and the County maintains a master address file as mainframe DB2 tables. Several City and County applications already access these master files.

The City of Charlotte is responsible for street names within its city limits and ETJ. The Charlotte-Mecklenburg Planning Commission approves new street names and City staff performs required maintenance to the DB2 master street-name file. Mecklenburg County staff makes recommendations for new street names for the other County municipalities and their ETJs. Based on respective municipality board approval, County staff makes required maintenance to the master street-name file. The actual street addresses are then assigned and entered into the master address file by County staff.

Addressing—Future

As mentioned, we are building all current and future systems to access the master address table. We will not accept a P&I replacement that requires duplicate entry or maintenance of address data. If duplicate address information is required by the replacement P&I system, you must provide systematic processes to keep such data "in sync". In such a scenario, data maintenance (add, change, delete) should be performed on the DB2 master address table, with any required duplication flowing down to the replacement P&I system. Although our "true" master address table resides on DB2, a copy of the master address file will exist in a SQL Server database for the new Plan Review subproject. This copy will not be updated; it will be totally refreshed at a frequency to be later determined. The intent of the SQL Server copy is to be read-only. See Exhibit 2 for a layout of the Master Address file.

Plan Review—Current

We currently have in place a process to require a review of plans of all commercial and large residential building projects. For those projects, we track certain information throughout the review process. This information is entered into the Plan Review sub-system, a.k.a. Project sub-system. Plans and their respective permit applications are first received by a Gatekeeper. The Gatekeeper does a cursory review to ensure all plans are included before being accepted. Any plans that are incomplete are rejected up-front. Once plans are deemed as complete, the Gatekeeper begins data capture in the Plan Review sub-system. A unique tracking number is system-generated and assigned to each reviewed project. Once the plan review is complete, the project is ready for permitting. The plan review tracking number may be manually entered on the job segment (first step of permitting). The permit facilitators take the permit application(s) and enter the data into the P&I system. No information is automatically transferred from the Plan Review sub-system to Permitting. Once the permit has been validated, the customer is notified by phone that the plans and associated permits are ready to pick-up.

Plan Review—Future

We now have underway a large-scale in-house effort to rewrite the Plan Review sub-system. The project scope is quite large and involves a total workflow redesign to track all projects from initial submission through plan review(s). Unlike the current Plan Review sub-system that requires entry for only commercial and large residential building projects, in the new Plan Review sub-system, all projects will begin (or at some point exist) in Plan Review. This will include small building projects as well as Zoning, Fire Marshal, Environmental Health, County Land Development and CMUD permits. An additional feature of Plan Review is the ability to notify project contacts through E-mail, fax or paper delivery of plan review completion. The application is using true 3-tier architecture and will require a desktop operating system of Windows 98 or later. The user interface is written using VB 6.0, the application server is Windows 2000 and the backend database is SQL Server 7.0.

The replacement P&I system must integrate with Plan Review recognizing that permits are initiated via two separate originating points. Since the data structures and process names used in your application are at this time unknown to us, we can only generally describe how we envision such integration.

Projects Initiated in Plan Review—The starting point for all permits entered by County employees will be Plan Review. This will include permit applications submitted with plans, hand-written applications, etc. Once all reviews have been noted and satisfactorily completed in Plan Review, the project status will be set to "approved". If one or more of the departmental reviews needs an additional inspection at some point after permitting (and prior to CO), the project status is set to "conditionally approved". Any project failing plan review would procedurally not proceed to permitting until failing points were rectified. Once Plan Review status is "approved" or "conditionally approved", the County employee would enter the replacement P&I system to begin the permitting process. The replacement P&I system should be able to extract already-entered Plan Review data or link-to such data to prevent duplicate data entry. The replacement P&I system should treat those projects with a status of "conditionally approved" as having a project hold immediately in place. (Some conditional approvals should effect/generate address holds instead of project holds.)

Projects Initiated via the Internet—We want to use your Internet permit application process. Your Internet permit application process should allow for all permit types not requiring plan review. However, just prior to permit "validation" (or some process phase equivalent to our "validation"), the P&I replacement system should "pause", populate required Plan Review tables and "wait" or not proceed with that particular permit application until a County employee "steps through" the Plan Review screens to ensure adequate departmental review. In Plan Review, the County employee would decide whether this permit application would be a new project, part of an existing project or a "child" of an existing project.

We envision an on-line tickler list of "paused" permit applications that would periodically be reviewed by appropriate County personnel. Once the Plan Review status was set to "approved" or "conditionally approved", the permitting process could continue. ("Conditional approval" should be treated as noted above.)

Jobs—Current

The first step of actual data capture for P&I is the creation of a job segment. Each time a new unit of work of any nature needs to be tracked, a "job" is created. The address must exist in order to create the job. The job number is system-generated. Multiple jobs can exist for an address. For residential and small commercial projects, if multiple jobs are present, this usually indicates that units of work have been started and completed over time (job history for an address). However, for large construction projects, multiple jobs can be created for relatively concurrent work tasks. A large office building may have a separate job for each of the following—shell, footing, foundation and structural steel. Each floor may have a job for the common area/shared systems. Each office suite on a floor may be a separate job.

Generally, a job is created only when permits are being requested, and is created immediately prior to entry of the permit application into the legacy P&I system. As a rule, a job should have one or multiple permits. The job remains open until all related permits are final-inspected, all job holds have been released, Certificates of Occupancy are issued (if required) and utility connects (if required) are reported to specified utility companies.

Based on the permit application, the permit facilitator creates the job and indicates the total number of permits that will be required; which trades (electrical, plumbing, etc.); and utility type indicator (electric, gas, combination—required for electrical and mechanical permits). If the job was created under an incorrect address or if the address changes due to street name change, address split, etc., authorized users can "move" the job and all related data (permits, inspection requests, inspection results, etc.) to the desired address. After the initial permits are entered and validated, and construction work begins, additional permits can be entered after pertinent information on the job segment has been respectively adjusted.

Two types of "holds" can be placed on either the address or the job level. Holds placed on the address affect any current activity at an address. Holds placed on the job affect any current activity for a job. A permit hold means that no permits may be issued for a specific address or job until the agency that placed the hold has released it (removes the hold indicator). An occupancy hold means that no permanent certificate of occupancy may be issued in likewise manner. The agency/departments that can place holds are:

- County Permitting & Inspections
- County Environmental Health (food and restaurants, septic and water, wells, pools)
- County Zoning
- County Environmental Protection
- County Land Development
- County Fire Marshal
- County Storm Water Services
- County Addressing
- City Department of Transportation
- City Fire Department
- City Engineering
- Charlotte-Mecklenburg Planning Commission
- Charlotte-Mecklenburg Utility Department

Jobs—Future

In the replacement P&I system, we expect the concept of a "job" to disappear. This is due to a couple of reasons. As seen on our IMS data structure, all jobs belonging to an address are "peers" or "siblings". Our current P&I system doesn't adequately associate the data tied to one job with the data tied to other jobs. This inadequacy forces too much manual verification when it comes time to release holds, issue the CO and other final documents.

In the new Plan Review sub-system, our terminology has changed from "jobs" to "projects". Projects may belong to other projects, creating a parent-child relationship among projects with an infinite number of levels (both an infinite number of "children" and "grandchildren"). Of course, the majority of projects (such as single family houses) will continue to have no sub-projects. We envision that the use of project/sub-project will primarily be for large commercial and industrial usage.

Our use of address and project holds will be changing also. In the new Plan Review sub-system, the use of holds will be greatly diminished by the inclusion of more agency/departments in the review of project plans. Likewise, we hope to reduce the use of holds in the replacement P&I system by creating new permit types. The new permit types will allow some departments to automate inspection processes that are currently manual (see Land Development, CMUD, Environmental Health sections below). By having new permits that will require final inspections, this will reduce the number of holds that have been traditionally placed to stop COs from being issued.

Permits—Current

After the job information has been collected and the job segment created, the permitting process can be started. There are 7 primary permit application forms—Building, Mechanical, Electrical, Plumbing, Hazardous Materials, Zoning, Signs - that can be used to apply for the different types of permits. A plot plan form is required for certain permit types—one/two family, modular/mobile homes, and many types of zoning applications. All forms are available on the Internet in PDF format and can be printed and completed; or, a citizen/contractor can obtain a pre-printed permit application form from LUESA to complete. Contractors with a Mecklenburg-designated sign-on and password can submit permit applications via the Internet (only those applications requiring no plan review and only four permit types—building, mechanical, electrical and plumbing can be submitted via this "secured" Internet site). Currently 80% of all building trade permits originate via the Internet.

When entering the permit application into our legacy system, the permit facilitator chooses one of twelve screens. Each screen was designed to gather the information required to issue one of the respective permit types:

- One-Two Family (includes one and two family homes—new construction, additions, upfits, demolitions, structure moves)
- Commercial (includes multi-family, commercial, industrial, institutional—new construction, additions, upfits, demolitions, structure moves)
- Mechanical
- Electrical
- Plumbing
- Hazardous Materials (for sites which will be used to store hazardous materials)
- Change of Use (e.g. changing a commercial site to a retail shop or restaurant)
- Mobile Home
- Mobile Home Park
- Sign (all signs, whether free-standing ground signs or signs on buildings)
- Request for Services (used to open a system record for complaints, permanent zoning variance requests, etc.)
- Zoning (used for temporary zoning requests such as Christmas tree lots, contractor trailers, etc., as well as sheds smaller than 10' x 10' to check lot set-backs, etc.)

If a customer is applying for a construction permit (new, addition, renovation), it is possible to use a "single permit" application. This allows the general contractor and all sub-contractors to be specified on one application. When this method is used and the permits issued, a "master permit" is created. A master permit is actually the "building" permit and belongs to the general contractor. The trade permits also specified on the job are easily related to this permit because the permit numbers are sequential. (For example, the building/master permit might be B1079232; the electrical would be E1079233; the mechanical would be M1079234; the plumbing would be P1079235.) If the master permit method is not used, separate trade permit applications must be submitted.

Our naming convention for permits is an alpha designation for the permit type followed by seven digits. The digits are sequential, system-assigned and are not dependent on the permit type. The system (via programming edits) and permit facilitator (via visual checks, map lookups, zoning ordinance verification, etc.) validate the permit application. A sample of system and manual checks includes checking for the contractor's license, checking various contractor/bond data items (status, available credit, free-form remarks, etc.). If the application is submitted via the Internet, the facilitator visually verifies the data (the Cold Fusion Internet application has extensive edits), clicks on the "submit" button and the data is transferred to the normal CICS entry screen.

Once the facilitator enters initials in the "validated-by" field, the permit is approved and becomes a "validated" permit. At that instant, any associated fees are written to a holding file to be sent to our Navision Accounts Receivable system. Fees are composed of the system-generated portion along with any debit or credit adjustments that the facilitator enters. For various reasons, a permit may be generated with zero fees. In those instances, a record is still sent to Navision so that the permit transaction prints on the month-end statement. As the financial transaction is being created, the "validated" permit prints in one of two places. The permit facilitator will have marked the permit as a "cash" or "charge" permit. If the permit was charged to a bond-holding contractor account, the permit will print in the facilitator's area to be given, mailed or faxed to the contractor. If the permit was marked as "cash", the permit will print in Revenue Collection. The contractor should be on-site and ready to pay with cash, check or credit card to use this option. If the contractor is not on-site and doesn't want to charge the fee, the permit is not "validated" and is held in an unfinished, pending status.

Some types of permits (e.g. water heater change-out) don't require that a bond-holding account be established with Mecklenburg County. For these types of permits, the contractor is listed as "100000", known as the "cash account". In order to—validate" a permit listed with the account number "100000", that customer should be on-site and ready to pay assessed fees at the Revenue Collection counter. Many other types of miscellaneous charges use account "100000". We have hundreds of miscellaneous fee transaction codes (e.g. 0711—Well Water Analysis, 0716—Document Copies, 0001—Aerial Map Charge). Most miscellaneous fees are entered directly into Navision, completely bypassing P&I.

Occasionally, there are business reasons requiring that the permit be voided. For those occasions, the permit record is appropriately marked and a reversing transaction is automatically generated for Navision. If the permit facilitators wish to adjust any permit fees already created via a validated permit, such debit or credit adjustments may be entered into the "Trans-action Add" screen in P&I, with the sole intent of creating charges to pass-through to Navision. (See Exhibit 22 for a data layout of the financial data sent from P&I to Navision.) The "Transaction Add" screen is also used to assess other account fees such as express plan review fees. Such transactions entered on the "Transaction Add" screen are ordinarily using a bonded-contractor account number.

When the permit is validated and the hardcopy of the permit is printed, a handwritten placard for jobsite display is created by the permit facilitator. (Placards are only for building trade permits.) Some contractors are authorized to receive their permits by manual fax and fill out their own placards. Currently, the system does not auto-fax, E-mail or create any form of notification that a permit has been "validated" (exception being that each night in the batch cycle, printed notices to be mailed are created for sub-contractors named on new permits using the "master" permit application method).

Each night a file is created of any newly validated permits for the purpose of imaging. That text file is FTP'd (File Transfer Protocol) to Carolinas Imaging. (Carolinas Imaging is our outsourced imaging vendor.) The file contains only the data that prints on the actual hardcopy of the validated permit. Carolinas Imaging maintains an "overlay" containing field constants. (Example, the overlay holds the field constant Address. The data file contains the value 618 N. College St.) FTP'd images are available for viewing on the Internet by 10:00 a.m. the following business day.

Permits—Future

Today, we are capturing and storing specific data relating to each permit type that is necessary to make business decisions required for each permit. All data items currently captured must reside in the replacement P&I system (or link to such data items captured in our Plan Review sub-system). All exceptions must be clearly documented with convincing explanations as to why your system does not need currently captured data. We realize that your system may require some additional data entry to complete your permit creation cycle.

Inspection Requests—Current

Once work has been performed as authorized by a permit, the contractor or responsible person may request an inspection of that work. During the 2000 calendar year, 377,094 inspection requests were made (average of 31,424/month). During the month of August 2001, inspection requests were made using the following data collection methods:

IVR	67%
Internet	18%
Wireless Phones	5%
Other	10%

Our IVR vendor is Vodavi Communication Systems. The Internet data collection is done using full browser-mode screens to capture inspection requests. Wireless Phones use abbreviated-sized screens designed for phones having Internet capability. Entry of inspection requests via wireless phones began in May 2001. We expect this category to grow. The Other category would encompass phone-ins, in-person requests, fax, mail, etc.

Regardless of the method of capture, the inspection request is stored in a mainframe IMS database segment. All permits are created with the intent of having at least one inspection after a specified amount of permitted work has been completed. A permit may have one or multiple inspection requests. See Exhibit 20 for a layout of the inspection request segment.

Each inspection request is system-assigned to an Inspector based on the tax parcel number of the permit address. Each inspector has pre-assigned tax parcel number ranges. Assignments by parcel number allow for geographic assignments of inspectors. (Some inspectors are certified to perform inspections for a single trade, while some inspectors are certified for multiple trades. The permit facilitator indicates whether a permit is eligible to be inspected by a multi-trade inspector or not.) The inspection confirmation number is a sequential system-generated number. Inspector name is pulled from a SPITAB table (see Section III, letter V). Three tasks are allowed per inspection request. Those task codes are dependent upon the permit type (building, electrical, etc.) and are also housed in SPITAB. Examples of building inspection requests are SL-Slab, FR-Framing, and IN-Insulation. Although there is a logical order in scheduling tasks (Slab, then Framing, then Insulation, etc.), we don't force completion of one task before scheduling subsequent tasks. Any task inspection may be requested multiple times.

Some bonded contractors want to limit the number of people that can request inspections for their work. Contractors do this by requesting that Revenue Collection place a 4-digit authorization code on their account. The authorization code is essentially a shared password. The contractor gives the authorization code to chosen crew chiefs, etc. Any time an inspection request is made for a permit issued to such a contractor, system logic validates the supplied inspection request authorization code to that on Navision. The inspection request is not accepted unless the correct authorization code is entered.

Inspection Requests—Future

The replacement P&I system must allow for IVR, Internet and wireless phone entry of inspection requests. All methods of inspection request entry must update the central data repository in a real-time fashion. At least three tasks must be allowed for each inspection request. Inspection request cancellation must be allowed via any of the inspection request entry methods. Edits should be in place to ensure that same-day inspection requests and same-day inspection cancellations are entered prior to 7:00 a.m. Any inspection request or inspection cancellation entered after 7:00 a.m. should default to the next business day. (System should maintain a user-updated calendar that tracks business days, weekends and County holidays.) Authorized County staff may cancel or change any inspection request and can override the same-day 7:00 a.m. limitation.

We also want to enhance the way we use the Navision authorization code as we implement the P&I replacement system. Our contractors want to assign each crew foreman a 4-digit PIN number that would be used as authorization to schedule an inspection and also to be stored with the inspection request. This way, reports/queries could be provided to contractors showing failure rates for each foreman that could be used to target educational opportunities for their staff.

County staff will create a new table in Navision of valid PIN numbers for each contractor wanting to track such information. The layout will simply be contractor number followed by a 4-digit PIN. There will be an unlimited number of PIN records for each contractor. When any inspection request is made via IVR, Internet, web-enabled phone, etc., PIN number should be requested. If none is supplied and there is no PIN on-file, processing should continue as normal. If a PIN is supplied, it should be validated to ensure it is a valid number. Then the validated PIN should be stored with the other data on the inspection request record. For the purpose of your RFP response, assume all reports/queries will be done on an ad-hoc basis, which will require no effort on your part. Other than any reports/queries for this PIN number enhancement, we expect such functionality as part of your RFP response. If customization is required to implement such functionality, the customization costs should be itemized on Appendix C—proposal cost.

Inspection Results—Current

Currently, Mecklenburg County* has 183 inspectors with the following breakdown:

Building	40
Electrical	33
Mechanical/Plumbing	31
Residential	16
Land Development	14
Zoning	21
Fire Marshal	9
Environmental Health	15
*CMUD—Backflow Prevention	4
Total	183

Most trade inspectors work out of their home/car, only coming into the office a couple of times each week. Inspectors receive no paper notification of scheduled inspections. All trade inspectors have laptops (IBM Thinkpads or Dells) in their cars. The laptops communicate with the mainframe using a CDPD wireless protocol. The laptops have Internet capability, MS Office, and mainframe CICS access to the legacy P&I sys-

*Charlotte-Mecklenburg Utility Department (CMUD) is 100% funded by the City of Charlotte. CMUD houses 2 plan reviewers and 4 inspectors in the County Hal Marshal complex. These CMUD employees are considered to be in a "dotted-line" relationship to LUESA. Their inspector counts have been included since CMUD inspectors will use field inspection equipment in the same manner as County inspectors.

tem. They also run an in-house developed system called MDT2001. MDT2001 is written in Visual Basic and uses CICS programs to inquire on and update the legacy tables. Prior to the laptops, we used Motorola MDTs (Mobile Data Terminals) for field inspections.

Each morning using MDT2001, an inspector requests his list of scheduled inspections. The inspector can save the request-list to the hard drive in case the communication link is dropped. The inspector works the list in the order he chooses (inspection type, location, etc.). He can "drill down" to look at the detail inspection request. He can "drill up" to look at details regarding the permit. He can look at prior inspection results and comments for that address, even if another inspector entered those inspection results and comments.

Once an inspection is performed, the inspector hand-writes inspection results and any comments on a 3-inch x 2-inch "Post-It" type note and attaches the note to the permit placard or building structure. The inspector then enters the results using the MDT2001 screens. Three inspection tasks can be entered per inspection request. Up to six inspection result codes can be entered for each inspection task. Procedurally, the first inspection result code reflects the pass or fail status. If an inspection fails, the remaining five inspection result codes are used to indicate the failure reason. The IMS database is updated real-time making those results available to everyone with access to the P&I system, including IVR, Internet and Wireless Phone users. When an inspection result is entered via MDT2001, if requested, an E-mail or Net Alert (wireless notification) is sent to the inspection requestor.

Inspection Results—Future

The functionality of our MDT2001 software should be replaced entirely by your field-entry software. Inspectors should still be able to view their lists of scheduled inspections, view details of those inspection requests, view details of prior inspection requests and results, view details of any permits, enter inspection results that update centralized databases in real-time mode, etc. Once inspection results have updated centralized databases, E-mails or Net-Alerts must be sent to requesting contractors notifying them of the inspection results.

It is our long-term intent to move from the use of wireless laptop computing to wireless hand-held computing for the entry of all inspection results. If your system solution is not written to run on hand-held field devices we will retain the use of our existing laptops, running your field-entry software. Also, assuming your field-entry software will run on our existing laptops, we may choose to delay the purchase and use of any hand-held field devices described/offered in your RFP response. Your proposal should include details regarding the recommended hardware make, model and features of the field-entry equipment. If your system runs on hand-held field devices, hardware and any associated software costs (operating system, etc.) should be included in your total proposal costs. Assume one device per inspector, 183 units. Include details and expense estimates of any field-printing capability, although you should not include any such printing hardware/software costs in your total proposal costs.

Utility Connects—Current

Once an electrical or mechanical permit receives a final inspection, as part of the inspection result data capture, the inspector enters one of ten utility company codes (2-digit) representing the utility company that provides service in that particular geographic area. Also entered is a service code to describe the type of service requested. Once the inspection result segment is written, the system automatically writes a record to a separate mainframe file. This file lists all utility connect requests. Our two largest area utility companies, Duke Energy (electric) and Piedmont Natural Gas, have access to our mainframe screen that lists the connect requests. They monitor the requests and mark each record (with initials) to indicate that the request was received. For the other utility company requests, Mecklenburg County Document Control staff members place phone calls periodically throughout the day to report the connection request and mark each record with initials once the call has been placed.

Oftentimes as construction nears completion, temporary utilities may be needed to keep pipes from freezing, help in paint drying, etc. To facilitate these needs, temporary utility connects may be authorized for a set period of time, determined by the inspector. Procedurally, temporary gas connects are only offered during the months of October through April, although temporary electrical connects are offered year-round. Approximately 80 temporary utility connect notices are issued each week. Document Control is required to manually track temporary utility connect notice expirations and create a letter and envelope for each expiration using MS Word.

Utility Connects—Future

In the replacement system, we require that the utility connect requests be delivered and updated over the Internet in a secured manner. We want the P&I replacement system to accept and track all temporary utility connects. This would include utility company notification of temporary utility connects over the Internet. Tracking temporary utility connects must include highlighting to staff those connects that have expired and the automatic "cancellation" of the temporary connection status once the permanent utility connection has been created/recorded by the P&I system. Also included in the tracking must be the automatic generation of letters/envelopes to customers whose temporary connection has expired.

Certificates of Occupancy—Current

Once a job has had all inspections "finaled", and the job type (determined by USDC code entered at permit creation time) requires a Certificate of Occupancy (CO) before residents or a business can "move in", a record is written to a holding table. These records are shown on the Pending CO Screen. Also noted on each record is whether any address or project holds exist. Periodically throughout the day, Document Control releases all potential COs (those with no holds). Using a small Visual Basic application, staff selectively prints COs. The VB program prints the Mecklenburg County seal and digital signature of the Code Enforcement Director on the CO, and also creates a digital image of the CO. The digital image is FTP'd to Carolinas Imaging. Digital images of the CO are available on the Internet approximately 3 hours after the CO is printed. Once a CO is issued, if requested, a fax of the CO is sent by the system to the building contractor(s) assigned to the permit. The CO is a legal document and certifies that the County has performed necessary inspections to ensure that the permitted work is in compliance with State building codes and local zoning ordinances.

For various business reasons, when all holds have not been released, Document Control can issue a Temporary Certificate of Occupancy (TCO) that is valid for a selected number of days. Approximately 80 TCOs are issued each week. Document Control is required to manually track TCO expirations and create a letter and envelope for each expiration using MS Word.

A function that is initiated by the CO process but is not necessarily related to the actual CO is the generation of defect/incentive charges. Since the CO is the final step for building permits, a systematic check is done to evaluate the number of failed inspections. Depending on the failed/passed ratio, either an incentive transaction (credit) or defect charge (debit) is generated and passed to Navision. These defect/incentive charges are sent to Navision along with other permit charges as described earlier. An additional function created with the defect/incentive charges is a permit fee "recap sheet". This sheet contains details of the calculations used for the defect/incentive charges and is passed along as an electronic image to Carolinas Imaging (along with the CO image).

Certificates of Occupancy—Future

All described functionality in the current CO process must be maintained (imaging, auto faxing, etc.). The reason we currently selectively issue/print COs is that our current legacy system does not properly identify and release holds. Due to IMS data structures, job segment relationships force manual verification to determine that the CO is truly ready to release. We want to eliminate manual checking and allow the replacement system to correctly issue/print/image COs.

Similar to temporary utility connects, business reasons exist that require issuance of a temporary certificate of occupancy. TCOs are formal documents that spell out the conditions of issuance. The P&I replacement system should print and track the expiration of all TCOs. Tracking TCOs must include highlighting to staff those TCOs that have expired and the automatic "cancellation" of the TCO once the permanent CO has been created/recorded by the P&I system. Also included in the tracking must be the automatic generation of letters and envelopes to customers whose TCO has expired. Each expiration letter must list outstanding holds that must be satisfied in order to issue the permanent CO.

APPENDIX D: BURLINGTON, VERMONT ELECTRONIC PERMITTING FUNCTIONAL AND TECHNICAL REQUIREMENTS

Source: City of Burlington Code Enforcement Office

SYSTEM CHARACTERISTICS

The System as proposed should have the characteristics which follow.

a. Personnel Considerations.

(1) Software Support.

Burlington does not intend to use its staff for the support of Application Software or System Software. It is mandatory that the vendor provide all software support required to maintain the System in a fully operational status.

(2) End-User Operations.

The proposed System must be capable of being operated by existing personnel, who have varying levels of experience with computer technology from novice to advanced. End-user training proposed by the vendor will be reviewed and evaluated carefully.

b. Data Input and Inquiry. It is expected that the System will be operated on a continuous basis. Constant inquiries on a multi-user basis into all Application Software systems/files through PC's and printers can be expected. It is required that all users be able to access their respective data and records without interference, delay or contention. Response time should never exceed three (3) seconds for any single-record data-file transaction. See Section 4.5, Basis of Proposal.

c. Security. The System must provide security which responds both to (1) the sensitive and critical nature of the information it maintains and (2) its continuous use by multiple users from multiple City departments and divisions as well as public users from multiple local and remote locations in a real-time, interactive mode using video devices and printers as described in this RFP. Security and integrity of data are critical. The System as proposed must provide for both hard and soft security. Soft security should be provided down to the field level.

d. Data Protection and Back-up. The vendor's proposal shall provide for daily backup of the entire System without bringing the System down. The System must provide suitable media and procedures for backup. Daily incremental backups are intended to include only those files and documents which have had any add, update or delete activity since the last daily incremental or System backup.

e. Adequacy. The System as proposed must be of sufficient capacity, size and speed to support all functional requirements as specified for implementation in this RFP.

f. Modularity. The System as proposed must be able to be expanded. Additional Hardware, System Software and Application Software should be able to be added on a fully integrated basis with the Hardware, System Software and Application Software proposed herein.

g. Multi-user Applications. All applications shall provide full, secure, concurrent access to multiple users in various local and remote locations. Proposals not providing this level of functionality will not be accepted.

h. Transaction-Driven Processing. All applications must be transaction-driven. Data entry should take place at the level of the source transaction. An entered transaction must update not only the record and file against which the transaction is made but also all other related records and files under appropriate security. No data should need to be rekeyed for any purpose between or among any Application Software systems or subsystems.

i. Record Locking. All applications must incorporate record locking throughout their implementation.

j. Transaction logging. All applications should, at a minimum, maintain the following information for every change in a record:

(1) The "before" image.

(2) The "after" image.

(3) The exact change made.

(4) Who made the change.

(5) From what workstation the change was made.

(6) The date and time of the change.

k. Open System Characteristics. The proposed System must comply fully with the definition stated at Section 1.4, item 29 of this RFP.

APPENDIX E: SAN JOSE, CALIFORNIA
ELECTRONIC PERMITTING FUNCTIONAL AND TECHNICAL REQUIREMENTS

Source: City of San José Building Division

GENERAL SYSTEM REQUIRMENTS

Technical Requirement	*General System Requirements*
Permits Linkage	The City of San Jose issues multiple types of permits. In order to track the completeness of projects and the history of a location, it is necessary to have the ability to link all types of permits. These linkages will be either one-to-many or many-to-one, depending on circumstances.
Automated Permit Forms	All forms will be created for the system so that screen entry and printout of documents are identical to documents given to customers. It is anticipated that a number of the City's existing printed forms may need to be redesigned to accomplish this
Electronic Plan and Application Submittal	The system will allow for electronic submittal of permit applications and plans via the Internet.
Automated Work Flow	Work is automatically routed via the network to the electronic in-box of each person who needs to review a project. The system can be used to identify areas in which inefficiencies in the existing system exist.
Systems Integration	Information will be entered once and only once. As the number of times one piece of information is entered into a system increases, staff time and the chance for errors to occur increases. In addition, information should be available to all with a need to know and sufficient security clearance. Intergraph Corporation is required to integrate the permit issuance software with the City's Geographic Information Systems, FileNET document Imaging System, word-processing (Microsoft Word) and E-mail systems (Microsoft Exchange and Outlook). The technical requirements of the permitting software necessary for this integration are contained in the Technical Requirements section of the RFP. At this point, the method of integration between GIS and FileNET has been established, so the integration of the permitting software will be designed to fit that model.
Record Retention	In order to access imaged records on-line, the IDTS will be integrated into the City's Filenet document imaging system so that the user will be able to view associated imaged documents.
Smart Valley Standards	Developers, external agencies and City departments will be accessing and providing information. In order to facilitate the information exchange, it will be important for the IDTS to comply with area standards.
Secure Internet Transactions	The IDTS must provide the secured ability to access and provide information over the Internet. This is a fundamental requirement of the Smart Permit Initiative

Technical Requirement	*General System Requirements*
Location History	All present and future records need to be available for any location within the City. In some cases this may include an index for finding paper files from 30 years ago, imaged records from 5 years ago, and current records on-line for one specific location.
Text Integration	Text integration can be defined as the ability to tie data records to free-form text. Notes and comments, word processing documents and boiler-plate-coded text need to be linked to data records. In addition, the system needs the ability to generate ad hoc or batch form letters from data records, and the ability to comment on standard condition and use in word processing documents.
User Friendly Data Inquiry	Applications will facilitate the ease of use and allow users to quickly obtain inquiry information. Access to information will be facilitated by providing multiple methods of looking up information including the ability to sort by any field. For instance, to look at a permit record the user can use APN, address or permit number.
Standardized Navigation Tools	It is important that once the user learns how to use one of the modules or screens that the other screens adhere to the same navigational standards. For instance, an icon for filing data is not labeled "File" on one screen and "Save" on another, to yield the same results. User interfaces strongly should resemble the standards adopted by Microsoft Office applications.
Robust Software Architecture	The development tracking system is expected to be in use for at least the next 10 years. The AMANDA system can be easily and affordably upgraded to accommodate any increases in transaction volume and will be portable to the next generation of operating systems and user interfaces.
Role Definition for Security	In order to ensure the proper controls, role-definition security is necessary. The security allows for limited access to any process that allows updating of information. Users will be granted a specific level of access as their position dictates. Data that are to be made non-readable may be encrypted.
Remote Access Capabilities	The system will provide sufficient security and communications capability to allow access from the field for inspector inquiry and access. The City requires remote database access licenses for up to 80 inspectors. The City is attempting to automate the inspection request, dispatch, routing and result posting portions of its inspection process. The software will accommodate both manual and digital inspection recording, with the ability to upload inspection data on line. The technological ability for remote access via direct dial, leased line and the Internet for telecommuting purposes, and customer inquiry and request submission purposes, will be available.
On-Line Help	Over the years, software manuals tend to get lost. Also, printed manuals take up limited space and can be cumbersome to use. The system includes a context-sensitive on-line help feature so users can easily find answers to their questions.
Access to GIS	The ability to access, view, query and enter certain GIS attribute data will be integrated into the IDTS. Users will be able to use point-and-click inquiry for accessing information. For instance, by clicking on a parcel on a map, the user will be able to select all addresses within a 300 foot radius or the complete history of stored documents (e.g. permits, plan, maps) of the location. An additional requirement is the ability to query the IDTS database using multiple selection criteria, and then to display the results both graphically on

Technical Requirement	*General System Requirements*
Access to GIS, cont.	map and in a tabular format. For example,"Select all parcels within a designated map area, with commercial zoning, and with greater than 100,000 square feet of permitted space." The system will display the list of parcels meeting these criteria, with salient information (various permits, dates of construction and/or completion, etc.) in a table format and a graphical map indicating by color code the specific parcels selected. In order to achieve this level of integration, the permit software will meet specified technical requirements. These requirements are found in the Technical Requirements section of this RFP.
Flexible Reporting	Flexible reporting is defined as the ability to generate reports that suit the unique needs of each user rather than only providing standardized reports. The system will provide ad hoc reporting which allows reports to be generated with user defined sorts, selections and date parameters. All data in the system will be able to be reported in a user-defined fashion without programming. This reporting tool is simple enough to allow non-technical personnel the ability to create simple ad hoc reports without extensive training. Standard industry tools such as Crystal Reports or Developer 2000 are considered to be too complex for this purpose. However, these tools should also be able to access the database if more complex reports are required. The contractor will verify that all standard reports delivered with AMANDA are functional at completion of the contract.
Data Conversion	In order to facilitate access to past records, data from existing systems will be accessible to users of the new system. The current Building permit records are on DEC VAX written in ADMINS and the Fire department utilizes FileMaker Pro. The Contractor will specify which data fields are mandatory for permitting purposes and specify the record layout. The City will provide the proponent with ASCII files of current information in the current record structure. The proponent will be responsible for importing the data from the legacy databases to the new system. The City will validate the accuracy of the data converted. Although the current information may not include all the detail necessary for the new systems, skeleton records will be created such that no information currently existing in a database will need to be re-entered.
Real-Time/On-Line	All modules of the system will provide on-line real time information. At any point in time a user will be able to access up-to-date information from the system in order to make well-informed decisions.
Year-2000 Compliance	Proponent certifies that the software and hardware recommended for the IDTS system is designed to operate without error prior to, during and after the calendar year 2000.

GLOBAL FUNCTIONAL REQUIREMENTS

Activity	*Global Functional Requirements*
On-Line Access	Provide an API that will allow the customer to access the system directly via counter terminal, modem, or Internet connection for the following activities: • Application submittals • Plan, map or diagram submittals • Status Inquiries • General Inquiries (e.g. by neighborhood) • Inspection Requests • Correspondence (either via e-mail), linking directly to the on-line project file.

Activity	*Global Functional Requirements*
On-Line Access, cont.	Provide capability of alternative forms of payment: • Credit and debit cards for on-line and counter payments. • On-account deposits • Cash, check, electronic or Internet payments Comply with standards set by Smart Valley for Internet Access and submission of forms as published at the time of the initial submission. Provide manual data entry from paper forms
Location Related Information	Edit check for valid address (Except certain Planning permits where an address has not yet been assigned) Edit check/correction for street names, number ranges, prefixes (e.g. North or East) Tie all permits and permit applications to a valid address (Building) Edit check for valid Assessor's Parcel Number (Planning) Verify address/location is within City Provide a complete history of a location, including sub-division and historical parcel numbers and addresses System should have the capability of rapid-permit processing for tract developments where the same model is being built on multiple lots. This feature should be capable of duplicating a record and then modifying the fields that are specific to the next lot—at a minimum these fields will include Address (street name and number), Lot Number, Selected flex options listing square footage of added amenities and selected elevation. The system should have the capability of rapidly entering new addresses. To facilitate tract development, a rapid-addressing feature must be provided that is capable of duplicating a record and then modifying the fields that are specific to the next lot. The City IT GIS group is currently working on an addressing feature that will allow addresses to be entered into the GIS Oracle database. The IDTS permitting software should be able to replicate this feature or link to it.
Reporting	Retrieve information stored by a FileNET and GeoMedia GIS core database and other information stored on an Oracle database. Ad hoc reporting which is easy to use and flexible enough to be able to select required data elements from all data maintained by the system. The reporting tool should allow non-technical staff to create ad hoc reports. User-friendly reporting tools for creating or modifying standard report templates to meet the City's changing requirements. Provide data export capabilities so that permit data can be easily transferred to an Excel spreadsheet for calculations and analysis
History	Track all historical records—permits of all types, conditions, exemptions, exceptions, and cumulative construction. This would allow users to browse the entire history or hierarchy of approvals for a project and should show the connections and relationships between the various permits. Allow development of parcel number history to allow tracking of permits issued even after new parcel numbers are created, boundaries of parcels change, or parcel numbers are retired

Activity	*Global Functional Requirements*
History, cont.	Allow development of address history, where new addresses are created by Building after Planning Permits have been issued, and addresses can change over time Track changes in street names, Assessor's Parcel Numbers, addresses, and cross-reference all new activity to the new street name—This may be accomplished via an interface with the Intergraph GeoMedia GIS system. (Please see the Technical Requirements Section of this RFP for an explanation of the technology required to achieve this interface). On-line history of all property information Tracking and validation of conditions associated with prior permits at a location Validation of necessary prerequisite permits at a site (e.g. Conditional Use or Zoning Change required for certain Building Permits; Public Works Clearances; Fire and Environmental Permits) Allow entry of historical and current code violations that may prohibit or place additional conditions on permit activity
Inquiry	On-line status/historical inquiry by multiple data elements: • Inquiry Project Name • Project Number • Permit Number(s)—multiple permits may be associated with a project • Developer Name • Contractor Name(s)—primary and sub-contractors associated with a project • Property Owner • Address • Assessor's Parcel Number • Location on a map created from the GIS system
Approvals	On-line permit routing and tracking through multiple stages of approval between various departments based on permit type Approval processing defined by department, user group (e.g. supervisors) or individual user On-line status inquiry into approval process Tickler reports and notifications to appropriate users or supervisors as user-defined deadlines for approvals or other processing actions approach User-defined form letters generated by various conditions in the approval process (e.g. approved, missing information, next required step, etc.)
Routing	Automatic or manual notification of applications, complaints or permits requiring action to various departments for review Each required department to add permit comments, conditions and recommendations and approve or disapprove the application or permit with appropriate security
Screens and menus	Data elements available will be customizable by screen as presented to the City during formal demonstrations, allowing the City to: • Remove unnecessary fields from screens that are not required for proper functioning of the software. • Add fields, as necessary, to screens • Re-label fields on property screens to match City of San Jose terminology

Activity	*Global Functional Requirements*
Screens and menus, cont.	The ability to create screens containing data elements specific to the needs of a department. Simple, easy to use screens Simple method of navigating between screens customizable to the needs of the City's work flows On-line editing and verification prior to updating database. Include reasonability checks for dates, spelling verification for street names, address range verification, parcel number validation, etc Buttons containing icons should be able to display a textual title as well as, or instead of, the pictorial icon Menus should have the ability to be tailored by operator class (i.e., a menu for Building Counter staff and another for the Building Department supervisor)
GIS Interface	The permit software must interface with Intergraph's GeoMedia GIS software and provide on-line screens to access the system. The Technical Requirements Section of this RFP details what will be required of the permit software to integrate with the GIS. The technological ability of the permit software to integrate with the GIS is mandatory and must be detailed in the vendor's response to the Technical Requirements Section.
Security	Security from unauthorized access and update Security levels user-controllable by department, user classification and individual user
Inspection Interface	Software must include data exchange interface for hand-held devices or portable computers for inspections Data to be exchanged between the hand-held devices or portable computers in the field and the system
Submittal Forms	Software must permit the shortest sequence of entry screens which eliminates any duplicate information being entered system wide
Cost Accounting and Administration	Allow tracking of time and expense associated with a permit project or task
Sewage Capacity Estimates	The system has the ability to export the parameters required to calculate sewage capacity estimates for new development into an Excel spreadsheet.
Fee Payment	Automate fee calculations and maintain a database of permit costs for project valuation purposes Maintain a trail of the fees collected by project Allow access by various departments (collection of fees at any cashiering location in the system) The system must be flexible enough to allow for reconfiguration of responsibilities within departments and between departments Generate an itemized receipt upon fee collection Timely reconciliation capabilities between receipts issued and cash collected Inquire and obtain listing of previously made payments by a particular customer

Activity	*Global Functional Requirements*
Fee Payment, cont.	Flag bad-check customers and certified-check only customers
	Provide an electronic file (electronic file) which lists all new residential (or other projects) with the date of the final inspection or occupancy clearance. The report would include mailing address, owner, etc. Finance would then bill based on this report.
Refund Processing	Refunds must start with an update to the history of the permit process generating the refund and change of permit status
	Option to generate refund request for payment or to pay directly from petty cash (user-defined cut-off amount for petty cash payments)
	Ability to reconcile refunds made from petty cash
	Ability to refund from individual or all revenue accounts associated with a permit
	Maintain full audit trail of refund requests and dispositions, including user entering the request, date and time of the request.
General Ledger Interface	Interface capabilities with the FMS (Finance) system maintained by the City's finance department (revenue collected by type and/or fund distribution requirements; taxes versus fees) – generate ASCII file for download
	User definition of revenue account number for each fee, tax, penalty or assessment type.
	Capability to differentiate between City revenue and outside agencies' fees/taxes collected on their behalf at the City
	Ability to accept revenue into multiple funds with a single receipting transaction
	Generate financial and statistical information for use as a management/ planning tool
	Generate periodic revenue reports by type and source—e.g. building permits, fire permits, planning permits within a specified time, totaling revenues by fund and revenue object
	Simplified reconciliation process between cash accepted, revenue distribution, and actual bank transmittals This will be achieved by assigning General Ledger codes (Visible Codes) to all financial transactions, and file will be generated that will permit reconciliation with records from the finance department's General Ledger entries.
	Refunds tracked separately, with appropriate interface to FMS (ASCII file) to assure reconciliation of revenues realized. This will be achieved by assigning General Ledger codes (Visible Codes) to all financial transactions, and file will be generated that will permit reconciliation with records from the finance departments General Ledger entries.

APPENDIX F: SAN JOSE, CALIFORNIA ELECTRONIC PERMITTING FUNCTIONAL AND TECHNICAL REQUIREMENTS

Source: City of San José Building Division

SPECIFIC PROCESS REQUIREMENTS: PLAN CHECK PROCESS

Functional Requirement	*Specific Process Requirements: Plan Check Process*
Request for Review	Enter plan check request information and generate plan check number
	Verify visually against location history for potential duplicates
	Enter requests for cancellations of plan checks by type or specialty
	Assign dates for plan check meeting based on requests input. Allow user override of evaluation scheduling
	Automatically update plan check meeting scheduling with changes in requests or additional requests
	Ability to stop plan check submittal if necessary conditions are not met (Create pending file)
Issuance of Plan Check Number	Generate new plan check numbers which will serve as reference number for plans
Plan Check Meeting	Generate report of relevant information for plan check meeting
	Enter notes of meeting results and agreements
Contact Person Selection	Maintain outside contact person information
Receipt of Plan Information	Update system with plan check information regarding building type and square footage
	Verify on-line that information aligns with Planning permit information
Fee Determination	Calculate the appropriate fees based on information input and fee schedule provided in appendix
	Historical tracking of fees quoted for this project
	Multiple user-defined fee tables for calculating fees with date-sensitive change
Plan Submittal	Post receipt of plans from developer
	Ability to electronically register plans in FileNET and make available to appropriate external agencies for clearances—interface with FileNET and SE systems.
Project Log	Track completed clearances/approvals related to each project file by all departments and agencies
Plan Distribution	Plans electronically distributed to internal departments and functions—interface with FileNET and SE systems
Distribution of Data Input	Track date and time at which plans are distributed and track to which departments
	Departmental assignment to individuals

Functional Requirement	*Specific Process Requirements: Plan Check Process*
Plan Check	On-line entry of comments by external agencies and internal departments
	Use of standard comments and word processing
	Generate summary of comments by individual departments for internal and external contact person
	Electronic notification to departments and functions that re-submitted plans are on-line awaiting agency or departmental review
Submittal of Clearances	Secured on-line submission of clearance by other agencies
	On-line entry of clearances of internal departments
	Track all clearances received and outstanding
Ensure Clearances	Ensure all clearances are obtained prior to permit issuance
Placement of Plans in Bin	Electronically notify specified functions that plans are approved
	On-line access to all plan information, maps and drawings (external—later)
Verification of Paid Fees	Flag for unpaid fees at time of request
	On-line review of fees paid and unpaid
Verification of Plan Approval	On-line review of plan review approval history
	Notification of outstanding clearances by form letter or e-mail
	Duplicates of form letters for incomplete application or list of missing clearances

APPENDIX G: VENDOR LIST

Source: Building Technology Incorporated

Vendor	*Telephone*	*Internet Address*
Accela	650-635-0218	www.accela.com
Accela / Sierra	559-627-1959	www.permitsnet.com
Accela / Tidemark	206-287-1713	www.tidemark.com
Accela / KIVA	650-635-0218	www.kiva.com
Akanda	1-877-487-5005	www.akanda.com
Ben Weese & Associates	719-599-5622	www.plananalyst.com
Black Bear Systems	360-379-9750	www.blackbearsystems.com
BOCA	1-800-214-4321, ext. 371	www.bocai.org
Business Automated Solutions	518-371-6869	george@basny.com
CSDC AMANDA	1-800-665-2135	www.csdcsystems.com
Computronix POSSE	720-962-6300	www.computronix.com
ESRI GIS	1-800-447-9778	www.esri.com
FileNET	714-327-3400	www.filenet.com
Govern Software	1-800-561-8168	www.governsoftware.com
GovPartner	1-888-256-5777	www.govpartner.com
Hansen	1-800-821-9316; 916-921-0883	www.hansen.com
HTE Click2Gov	1-800-727-8088	www.hteinc.com
ICBO	1-800-423-6587	www.icbo.org
Intergraph (system integration)	1-800-345-4856	www.intergraph.com
Intermedia Design Systems NYCODE	518-383-3276; 1-800-320-4043	www.autobook-ids.com
Mel Cooper Consulting	1-800-733-7637	www.melcooper.com
NetClerk	1-888-882-5375	www.netclerk.com
Permits.com	1-877-9Permit	www.permits.com
SBCCI StandardSoft	205-591-1853	www.sbcci.org
Selectron	1-800-547-9988; 503-639-9988	www.selectron.com
SUNGARD Pentamation	610-691-3616	www.pentamation.com
Synertech (system integration)	1-888-270-7228; 604-270-7228	www.synertech.com

APPENDIX H: STATE AND LOCAL CONTACTS

State	County & Municipality	Pop.	Staff	Contact	Contact Info.	System Origin
Alabama	(State)	4,447,100	20	Bob Hall Alabama Building Commission	334-242-4082	Cabinet NextGeneration V.4
Alabama	Birmingham	242,820	48	Mr. Cory Smith Dept. of Planning, Engineering & Permits	205-254-2744	Tidemark
Arizona	City of Phoenix	1,200,000	260	Ms. Kelly O'Neal City of Phoenix, Development Services Department I	602-262-1616	KIVA 6.2 with upgrades; ESRI ARC-GIS
Arkansas	Fort Smith	80,000	11	Tom Monaco Building Department	501-784-2213	SBCCI Building Permit Program
California	(State)	33,145,121		Richard Conrad California Dept. of General Services	916-324-7180	In-house—Tracker DSA Form; FileNet, Green Pasture, AutoView for Plan Review
California	City of Los Angeles	3,700,000	578	David Schnitger LA Department of Building & Safety, Management Assistance Division	213-977-5933	Accela/OpenData Plan Check and Inspection Service (PCIS); Oracle database; Solaris; Prolifics "Panther" for business logic and presentation; Edify Corp. for IVR; Hansen Code Enforcement Information System (CEIS); ESRI GIS; Allaire Cold Fusion for eBusiness integration
California	Los Angeles County	9,800,000	3,500	Mr. Ariel Palomares, LA County Department of Public Works	626-458-3152	Defunct vendor—permitting and tracking system. Note: Upgrading to KIVA enterprise system.
California	San Francisco	716,000	177	Steven Young Dept. of Building Inspection	415-558-6600	In-house; Oracle Developer 2000; Novell Netware; MS Exchange
California	San Jose	918,000	168	Mark Crain Permit Center, Building Division	408-277-4541 ext 5	CSDC Amanda with upgrades; GeoMedia; FileNet; SpaciaX Intergraph for system integration
California	Sunnyvale	130,000	10	Diana Perkins Community Development Department, Building Safety Division	408-730-7455	In-house—Sunnyvale Permitting System. Note: Sunnyvale has licensed its program to GovPartner for product development.
Colorado	Denver	555,000	39	Peter Bemelen Development Services/Building Department, Dept. of Building and Construction Services	720-865-2700	In-house—10 year old mainframe-set of tools; CityView; GIS. Note: Upgrading.
Florida	Orlando	186,000	74	Frank Usina, AICP Office of Permitting Services	407-246-2114	Tidemark/Accela Advantage 2.61; Selectron InspecTrack; Oracle 8.16; Selectron for IVR
Georgia	Savannah	143,000	24	Thomas McDonald Metropolitan Planning Commission, Development Services Office	912-651-1455	In-house—Lotus Notes
Hawaii	City of Honolulu, County of Honolulu	880,000	250	Ken Schmidt Dept. of Planning and Permitting	808-523-4432	Computronix POSSE; Akanda; ESRI ARC-GIS; Oracle database

State	County & Municipality	Pop.	Staff	Contact	Contact Info.	System Origin
Illinois	Chicago	2,896,016	501	Debbie Rosenfield Department of Buildings, Commissioner of Buildings	312-744-3400	Hansen
Indiana	(State)	6,080,485	40	Bill Franklin Indiana Department of Fire and Building Services, Plan Review Division	317-232-1405	In-house—Plan Review using VoloView, Acrobat Reader, Autoview Professional, Kodak Imaging Preview, Winzip; In-house—E-Filing; RF-ID/ SysGeneData Limited
Indiana	City of Fishers, Hamilton County	44,818	9	Tina Howard Town of Fishers Development Department	317-595-3120	Sungard Pentamation; Tele-Works IVR
Iowa	Des Moines	198,000	34	Jim Johnson Community Development Department, Permit and Development Center	515-283-4226	Tidemark with automatic upgrades
Kansas	Overland Park	155,000	38	Tim Ryan Planning and Development Services	913-895-6251	Tidemark
Kansas	Wichita, Sedgwick County	300,000	56	Gary Cortner Office of Central Inspection	316-268-4460	Tidemark Permitting; HELLO NT IVR
Kentucky	Boone County	70,000	12	LuAnn Moore Bauman Boone County Building Department	859-334-2218	In-house—using Filemaker Pro Pro and Microsoft Office; ArcView GIS; Banner purchasing program
Kentucky	City of Danville	17,269	2.5	Thomas Broach Code Enforcement Services	859-238-1200	None
Kentucky	City of Fort Thomas	16,000	1.5	Ronald Dill Building Services	859-441-1055	Black Bear PT Windows
Kentucky	Owensboro, Daviess County	91,545	6.5	Gary Adams, AICP Owensboro Metropolitan Planning Commission, Building & Electrical Division	270-687-8652	In-house—Oracle 6 - custom system; In-house— tools and forms using Microsoft Office. Note: Reviewing systems by: Accela, CityView-Municipal Software; and Oracle upgrade
Maryland	Baltimore	736,014	66	Dorreya Elmenshawy Dept. of Housing and Community Development, Permits and Code Enforcement Section	410-396-3540	In-house—CICS Program on IBM mainframe
Maryland	Montgomery County	873,341	186	Robert Hubbard Department of Permitting	240-777-6360	Hansen
Michigan	(State)	9,938,444	109	Dave Viges Dept. of Consumer and Industrial Services, Bureau of Construction Codes, Office of Management Services	517-241-9310	Accela Permits Plus; Selectron InspecTrack
Michigan	Sterling Heights	125,000	18	Michael Bartholomew Office of Building Services, City of Sterling Heights	810-977-6123	Accela Land Management Software; Selectron IVR; Oracle database. Note: upgrading to Velocity Hall.
Missouri	Kansas City	443,000	75	Richard Usher Permits Division, Department of Codes Administration	816-513-1468	KIVA (enterprise system) KivaNet for web-enabled services
Nebraska	Omaha	670,000	45	Susan Kelley Permits and Inspection Division	402-444-5378	20+ year-old program on mainframe using FileMaker Pro for tracking and accounts Note: Upgrading to Govern Software.

State	County & Municipality	Pop.	Staff	Contact	Contact Info.	System Origin
Nevada	Clark County	1,428,690	250	Dan Owens Information Systems, Building Dept.	702-455-3000	HTE
Nevada	Las Vegas	1,998,257	120	Paul Wilkins Building and Safety	702-229-6251	In-house
New Jersey	(State)	8,143,412		Dana Yedwab Dept. of Community Affairs, Division of Codes and Standards	609-292-7899	In-house permitting system for local building departments
New Mexico	Los Alamos County	18,000	5.5	Martha Perkins Los Alamos County Building Division, Los Alamos County Community Development Department	505-662-8123	KIVA Permitting; Oracle database; Crystal Reports. Note: Upgrading to KivaNet and ESRI ARC IMS.
New York	Buffalo	934,000	94	Peter Klemann Division of Permits & Inspector Licenses, City of Buffalo Inspection Department	716-851-4937	Hansen
New York	Corning	11,000	3; 26 Fire Insp.	Steve McDaniel Department of Code Enforcement	607-962-8133	Business Automated Services, Inc (BAS-NY) TIPS Program - NYCODE - Building Code Software
North Carolina	Mecklenburg County	695,454	148	Kari Lanning Land Use & Environmental Services Agency, Code Enforcement Department	704-432-1093	In-house—permitting system; Vodavi IVR; MobileHwy wireless inspections; SMI-Lason imaging; ESRI-GIS. Note: Plan review system being developed in-house; RFP to upgrade to enterprise permits and inspection system.
Ohio	(State)	11,500,000	95	Geoffrey Eaton Division of Industrial Compliance	614-728-0052	Focus—CMG; Click
Ohio	Cincinnati	331,285	115	Paul Myers Department of Buildings and Inspections	513-352-3262	Accela Permits Plus
Ohio	Hamilton County	330,000	28	Tonia Edwards, AIA Department of Building Inspections	513-946-4550	Accela PermitsPlus; ESRI ArcView with “Gen7” user interface; AutoVue redlining soft ware. Note: Part of city-county enterprise system.
Ohio	Toledo	313,000	20	Ruth Weiss Division of Building Inspection, Department of Development	419-245-1229	Accela; Selectron IVR
Oklahoma	Oklahoma City	506,132	78	Bob Hood Development Center/Inspection Services, Public Works Department	405-297-2979	Obsolete system. Note: Upgrading to enterprise system.
Oregon	Eugene	130,000	46	Marsha Miller Planning and Development Department	541-682-5224	In-house—APTWin (Automated Permit Tracking for Windows)
Oregon	Portland	650,000	300	Ann Kohler Planning and Development Office	503-823-7886	CSDC Amanda; Selectron IVR; Synertech Systems, Inc systems integration. Note: Will be adding adding PDA for field inspections and also complex permitting via Internet.
Pennsyl-vania	Philadelphia	1,500,000	115	Michael Fink Dept. of Licenses and Inspections, Construction Services Division	215-686-1439	None

State	County & Municipality	Pop.	Staff	Contact	Contact Info.	System Origin
Pennsyl-vania	Pittsburgh	340,000	57	Ronald Graziano Dept. of Public Safety, Bureau of Building Inspection	412-255-2179	Accela PermitsPlus; ; In-house—Microsoft Access for fees, occupancy permits, tracking, placards, and court cases; BOCA. Electronic Library for code review
South Carolina	Charleston	100,000	25	Douglas Smits Building Inspection Division, Dept. of Public Services	843-724-7431	In-house
Texas	Austin	656,562	78	Janet Gallagher Development Services and Watershed Protection Department, Building Regulations	512-974-2089	In-house
Texas	Carrollton	115,000	24	Lon Fairless Building Inspection Department	972-466-3178	HTE Land Management System, Permits, Code Enforcement, Contractor Registration and VRU inspection requests
Texas	Richardson	92,000	12	David Stanford Building Services	972-744-4180	HTE Building Permits; In-house—Web access using Lotus Notes and HTML
Utah	Salt Lake City	181,743	37	Roger Evans SLC Building and Housing Services	801-535-6681	In-house
Vermont	(State)	600,000	35	Robert Mackin Dept. of Labor and Industry, Fire Prevention Division	802-479-4435	In-house—Licensing, Tracking, Permitting
Vermont	Burlington	40,000	10	Ray O'Connor Code Enforcement Office, Inspection Services Division	802-865-5382	In-house and vendors—Dataflex 3.01b (old DOS system) for for permits; FilemakerPro for for code enforcement; MS Access for zoning. Note: RFP for enterprise system.
Virginia	Chesterfield County	264,000	70	Richard Witt Dept. of Building Inspection	804-748-1057	Computronix Posse 5.7
Virginia	Fairfax County	965,000	168	Zofia Zager Division of Inspection Services	703-324-1980	In-house. Note: RFP for upgrade to enterprise system.
Washington	Snohomish County	606,024	215	Ray Allshouse Building Division	425-388-3311	CSDC Amanda; custom IVR
Washington	Spokane	190,000	27	Dave Nakagawara Division of Public Works and Utilities, Department of Building and Code Enforcement	509-625-6300	Sierra Permits on HP Platform; Selectron IVR. Note: Developing RFP for 2003 implementation.
Washington	Spokane County	230,000	47	James Manson Public Works Department, Building and Code Enforcement Division	509-477-7119	In-house with County IS Department
Wisconsin	(State)	5,363,675	45	Henry Kosarzycki Department of Commerce and Insurance	608-267-9152	In-house with vendors
Wisconsin	La Crosse	52,000	10	Ken Dentice Department of Building and Inspections	608-789-7530	Black Bear
Wyoming	(State)	490,000		Clay Rouse Department of Fire Prevention and Electrical Safety	307-777-7288	In-house

U.S. Department of Housing and Urban Development
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April 2002