Management Audit of San Francisco's Information Technology Practices

Prepared for the

Board of Supervisors
of the City and County of San Francisco

by the

San Francisco Budget Analyst

October 3, 2007

CITY AND COUNTY OF SAN FRANCISCO

BOARD OF SUPERVISORS

BUDGET ANALYST

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October 3, 2007

Honorable Tom Ammiano,
and Members of the Board of Supervisors
City and County of San Francisco
Room 244, City Hall
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102-4689

Dear Supervisor Ammiano and Members of the Board of Supervisors:

The Budget Analyst is pleased to submit this *Management Audit of San Francisco's Information Technology Practices.* This management audit of the City's information technology practices was conducted by the Budget Analyst, pursuant to the Board of Supervisors' powers of inquiry as defined in Charter Section 16.114. The purpose of the management audit has been to: (i) evaluate the economy, efficiency and effectiveness of City departments' information technology practices; and (ii) assess the appropriateness of established goals and objectives, strategies and plans to accomplish such goals and objectives, the degree to which such goals and objectives are actually being accomplished, and the appropriateness of controls established to provide reasonable assurance that such goals and objectives will be accomplished.

The management audit was conducted in accordance with *Governmental Auditing Standards, 2003 Revision*, issued by the Comptroller General of the United States, U.S. Government Accountability Office. The management audit staff presented applicable draft report findings and recommendations to each of the respective City departments included in the audit on August 18, 2007. Subsequent to careful consideration of the additional information provided by each of the departments after submission of our draft report findings and recommendations, the management audit staff prepared the final report. The Department of Telecommunications and Information Services has provided a written response to the Budget Analyst's *Management Audit of San Francisco's Information Technology Practices,* which is appended to the management audit report, beginning on page 61.

City Department's Information Technology Processes

In FY 2006-2007, the City and County of San Francisco expended more than an estimated $173 million on its information technology systems, including personnel, hardware and software, and contracts with third-party vendors. Yet despite such significant expenditures, the City has very limited central oversight over these information technology expenditures. Instead, City departments are left to develop and implement information technology systems with inconsistent guidance on such things as total cost of new systems; type, quantity, and quality of operating systems and hardware; project management; maintaining inventories; and information security.

Rather than the City taking a forward-thinking approach and implementing systems that coordinate efficiently across departments and that are responsive to the ever-changing industry of information technology, the City continues to let individual departments attempt to maintain basic functionality on their own, barely managing to keep up with a dynamic and exponentially growing industry and the demands of a citizenry that expects more and more with each new technological development.

City departments, and by extension the City overall, place a higher priority on immediate service delivery over long-term information technology systems functionality. As a result, most technological upgrades happen only when required to do so by law or because the existing systems have failed. Departments have little incentive, financial or otherwise, to willingly develop or deploy information technology systems that exceed a bare minimum threshold and few departments have a mature enough approach to their information technology to have the necessary planning processes which would allow them to plan with a long-term approach.

As a result, citywide information technology planning, processes, and projects occur quite differently from department to department, resulting in redundant systems and lost opportunities for best practices improvements as discussed in the following Sections 1 through 6 of this report.

The Committee on Information Technology is the only City body tasked with a leadership role in coordinating departmental efforts in the use of new information technology systems. The Committee on Information Technology is comprised of 10 City employees, including (a) six department heads, one from each of six service areas; (b) the Mayor's Finance Director; (c) the Controller; (d) the Director of the Department of Telecommunications and Information Services; and, (e) one member of the Board of Supervisors. For the past year, the Committee has been chaired by the Director of the Department of Telecommunications and Information Services. The Committee's lack of a specifically planned citywide coordination role pertaining to information technology systems from 2003 through 2006 until its recent reorganization in 2007 has resulted in departments operating with virtually no guidance or direction in the development of their information technology systems.

This report contains six findings and 32 recommendations, of which 29 are directed to the Chair of the Committee on Information Technology or the Director of the Department of Telecommunications and Information Services. Two of the 32 recommendations are directed to

the Office of Contract Administration and the Controller respectively. One recommendation is directed to the Board of Supervisors, recommending adoption of an Administrative Code provision establishing a citywide information technology capital planning process under the direction of the Committee on Information Technology, as discussed in Section 4 of this report.

According to the written response provided Director of the Department of Telecommunications and Information Services and beginning on page 61 of this report, the Department agrees with (a) the 29 recommendations directed to the Department of Telecommunications and Information Services and the Committee on Information Technology, and (b) the two recommendations directed to and on behalf of the Office of Contract Administration, and the Controller respectively. In addition, the Director of the Department of Telecommunications and Information Services writes in response to Recommendation 4.1, which recommends that the Board of Supervisors should adopt an Administrative Code provision, establishing a citywide information technology capital planning process under the direction of the Committee on Information Technology, that "The COIT Planning and Budgeting Subcommittee has approved a revised COIT budget technology planning process and budget process which includes the citywide capital technology needs. The Chair of COIT has drafted a set of proposed changes to the administrative code regarding the citywide technology capital planning and budget process. It is anticipated that the proposed administrative code changes will be presented to the Board of Supervisors prior to December 2007."

The Budget Analyst recommends that the Director of the Department of Telecommunications and Information Services, who also serves as the Chair of the Committee on Information Technology, report back to the Government Audit and Oversight Committee in March, 2008 on the status of these recommendations, to ensure that implementation is in fact occurring in a timely manner and in accordance with the findings and recommendations of this report.

Of the $173 million in FY 2006-2007 information technology expenditures, an estimated $90 million is funded by General Fund. Improving the City's information technology practices and performance by just five percent, a realistic and achievable objective, would yield a value of approximately $4.5 million, including direct cost savings and improved effectiveness.

The following sections summarize our findings and recommendations.

1. Information Technology Planning and Purchasing

The City's process for planning and purchasing information technology systems is totally inadequate. Each City department plans for and purchases information technology in a manner specific to each department and independent of other departments. The City’s 1996 Strategic Plan for Information Technology recommended that the City assess its information technology systems, including an inventory of all citywide systems, current projects and available technical skills.

However, eleven years later, in 2007, a citywide assessment process still does not exist and, in fact, most City departments have neither (a) policies and procedures for inventorying existing information technology systems; nor, (b) a strategic plan that is either specific to their information technology systems or includes specific information technology objectives.

While most departments report some baseline information technology funding available for maintenance of existing systems, they also report inconsistent funding availability for information technology improvements and upgrades from year to year. This process of erratic and inconsistent funding from year to year has hampered departments' ability to develop information technology systems strategic plans, and project plan timelines; or quantifiable information technology objectives.

For example, the Recreation and Park Department has a Strategic Plan for Information Technology that is approximately three years old which is specific in its analysis and recommendations, but the Recreation and Park Department has not utilized the specific information contained in the Strategic Plan to provide explicit direction for information technology planning and purchasing processes.

Two examples of planning being driven by funding availability are the Department of Human Resources and the Office of the Assessor-Recorder. Although industry standards call for the replacement of computers every three years, the Department of Human Resources replaced no computers in FY 2006-2007 and FY 2007-2008. In FY 2005-2006, the Department of Human Resources, which currently has approximately 150 computers in use, purchased approximately 110 new computers to replace existing computers by leveraging the unexpended balance on its existing work-order with the Department of Telecommunications and Information Services. Were it not for the available balance on the work-order with the Department of Telecommunications and Information Services, the Department of Human Resources claims that it would not have had the funding available for such computer replacement. The Office of the Assessor-Recorder, with approximately 120 computers, has replaced approximately 20, or 16.7 percent, of these computers in the past two years, which is equivalent to an unacceptably high 12-year replacement cycle. The Assessor-Recorder has been authorized 31 new computers in its FY 2007-2008 budget.

In contrast to disparate planning processes across City departments, citywide procurement processes now tend to be more consistent, as a result of a centralized Office of Contract Administration which oversees all information technology purchases and professional services agreements, primarily through the City's Computer Store.

While City departments often utilize the same software applications, departments have their own software licenses, potentially resulting in higher than necessary licensing costs citywide. An effort by the Department of Telecommunications and Information Services to consolidate Oracle software licenses in 1998 resulted in increased centralized costs because many more licenses were purchased from Oracle than were required. Documentation provided by the Department of Telecommunications and Information Services to the Budget Analyst shows that, while the

Department of Telecommunications and Information Services projected a first-year need of no more than 728 licensed users, the agreement entered into with Oracle had a minimum requirement of 1,000 licensed users in the first year. In fact, the Department of Telecommunications and Information Services represents that the City had only 500 total users in the first year of the agreement, or 50 percent less than the 1,000 licenses purchased from Oracle. Additionally, according to the Department of Telecommunications and Information Services Database Administrator's written notes regarding discussions with City department information technology managers about the Oracle licenses, the Committee on Information Technology "had pressure from Oracle to get things done".

The Department is again discussing with Oracle a citywide license agreement, but has begun discussions without directly engaging the other applicable City departments in the process. This method of negotiating with the vendor without directly engaging all applicable City departments creates an inherent disconnect between departments' needs and what the Department of Telecommunications and Information Services can offer.

The Airport had a contract with Alcatel, a private firm, to provide after-hours and weekend Help Desk information technology, which was awarded through a competitive bidding process in early 2006. In March of 2006, the Airport received Proposition J certification of such contract by the Controller that demonstrated that the contract costs would be less than Civil Service costs but the Airport withdrew this Proposition J certification. Thereafter, the Airport transferred the Alcatel contract into the Airport's existing contract with the San Francisco Terminal Equipment Company, LLC, or SFOTEC. Because SFOTEC is a not-for-profit entity and not a City agency, the Airport avoided the requirement that the Board of Supervisors approve the Controller's Proposition J certification of the Alcatel contract, although services provided to the Airport under the Alcatel contract did not change. Prior to transferring the Alcatel contract into the existing SFOTEC agreement, the Airport was invoiced by and made payments directly to Alcatel. Under the new arrangement, Alcatel invoices SFOTEC, which passes the invoice along to the Airport. The Airport subsequently submits payment for the invoiced amount to SFOTEC, which passes along the Airport's payment to Alcatel.

Such a practice amounts to a direct circumvention of the requirement that, prior to finalizing such a contract, the Board of Supervisors must approve the Controller's Proposition J certification, which stipulates that the costs of contractual services are less costly than the costs would be if such services were provided in-house by Civil Service employees.

2. Information Technology Project Management

The City lacks a consistent method to plan for and implement information technology projects, whether within City departments or among several City departments. The City does not currently have a working strategic plan for information technology. Until now, the Committee on Information Technology, which is intended to provide leadership and coordination to City departments, has not provided an effective process to plan and prioritize information system projects. A draft framework for a new system for prioritizing projects, which was released at the

Committee on Information Technology's March 23, 2007 meeting while this management audit was in progress does not include any citywide technology goals and criteria for selecting projects.

Nor do City departments have a process for planning, financing and implementing information technology projects between departments, resulting in inefficient information technology processes and delays in implementing needed systems. For example, although the Assessor-Recorder and Treasurer-Tax Collector rely on similar data, these departments do not currently have an integrated system. Rather, they exchange data every few weeks, which needs to be corrected of errors or incorrect data, re-structured, and analyzed by each department, resulting in inefficient use of staff time.

Also, implementation of the Permit Tracking System has been delayed for at least two years primarily due to staff turnover, and lack of coordinated planning between the Department of Building Inspection and the Planning Department. In 2005 the Planning Department conducted a business process review but had to place the project on hold due to staff turnover in the Department of Building Inspection. In 2006 the Department of Building Inspection updated the Department's portion of the Permit Tracking System without consulting the City Planning Department. The Department of Building Inspection does not have an estimated date for implementation of the Permit Tracking System.

Consequently, the Planning Department will continue to lack automatic access to building permit data required for Planning Department functions.

Over the past six years, although several reports on the City's information technology infrastructure have recommended that the City create and adopt project management standards and tools to guide project implementation in departments, the Committee on Information Technology has not developed such standards. As a result, City departments lack guidelines to ensure efficient and effective information technology project management.

The Committee on Information Technology needs to take the lead in planning for the City's information technology systems, and coordinating projects and funding citywide and between departments. The Committee on Information Technology should also serve as a forum for City departments to exchange information and develop information technology project management policies and procedures.

3. The Justice Information Tracking System (JUSTIS)

The Justice Information Tracking System, or JUSTIS, is a project that was initiated in 1997, or 10 years ago. The purpose of the original JUSTIS project prior to 2003 was to (a) replace the City's existing, and outdated, Court Management System, which allows the City's criminal justice departments to share and track criminal justice information, such as arrests and convictions, (b) implement an integrated data warehouse, and (c) implement case management

systems for individual criminal justice departments. However, the Sheriff's Department and the Police Department's case management systems were not part of the original JUSTIS project.

The original JUSTIS project was expected to take three years to complete at an estimated cost ranging from $14 million to $15 million. From 1997 to 2007, the JUSTIS project scope has increased to include the Sheriff's Jail Management System and the Police Record Management System and development of a centralized hub, connecting the Sheriff, Police, District Attorney, Public Defender, Adult Probation, and Juvenile Probation case management systems to allow sharing of criminal justice information. Yet, ten years later, the JUSTIS project is still not completed and by the end of FY 2007-2008, the JUSTIS project is expected to have cost more than $25.5 million, which is approximately $10.5 million or 70 percent more than the original estimated cost of $15 million.

Governance of the JUSTIS project was reorganized in 2003, more clearly defining the oversight role of the JUSTIS Governance Council, establishing a Technical Steering Committee, and assigning the Mayor's Office of Criminal Justice as the executive sponsor. The Governance Council retained a consultant, IT Project Methods, to facilitate the JUSTIS project. As a result, the goals of the project were more clearly defined, and a master project plan was developed,

However, a primary component of a successful information technology project - an executive sponsor - has still not been realized. Although the Mayor's Office of Criminal Justice was designated as the executive sponsor by the JUSTIS Governance Council, the Mayor's Office of Criminal Justice has never successfully implemented this role. The Mayor's Office of Criminal Justice has had four directors since 2003 and significant turnover in its finance and other staff. As a result, JUSTIS has lacked a single person or entity that is accountable for the JUSTIS project's successful completion.

Nor have any of the entities responsible for JUSTIS - the Department of Telecommunications and Information Services, the Mayor's Office of Criminal Justice, or the Governance Council identified and assigned a City project manager to oversee development of the JUSTIS project. Although an outside consultant, IT Project Methods, has assumed many project management functions, the consultant lacks the authority and accountability of an in-house City project manager.

Further, the JUSTIS project has lacked strong budget management from the beginning. At various times the Department of Telecommunications and Information Services and the Mayor's Office of Criminal Justice have been responsible for the JUSTIS budget. Originally, the JUSTIS budget was commingled with the Court Management System budget, overseen by the Court Management System Committee, and tracked by the Department of Telecommunications and Information Services. The Mayor's Office of Criminal Justice took over budget management of the JUSTIS project in FY 2004-2005 but lacked financial staff and never implemented a financial tracking system, resulting in transfer of budget management for the JUSTIS project to the Department of Telecommunications and Information Services. Throughout the JUSTIS project's ten-year history, problems have occurred in budget management, tracking grants and

paying invoices. Operating and development costs have been inappropriately combined in each year's budget, due to the expectation each year that the development phase was near completion with only operating costs remaining. Because components of the JUSTIS project were not completed in the expected timeframe, costs that were initially budgeted as "operating" were in fact "development" costs.

Although the JUSTIS hub connection and server consolidation are expected to be completed in FY 2007-2008, timelines to connect the departments' case management systems have not been met and full project implementation is not ensured in this fiscal year. Thus many of the goals of the project, including information sharing, criminal justice data mapping, improved reporting and analysis, and decommissioning of the Court Management System, have not been met. This is significant because actual project expenditures through FY 2006-2007 were nearly $16.8 million of the total $25.5 million appropriation.

In summary, the JUSTIS project and budget have been open-ended, with neither a firm completion date nor project budget, and as noted above, the project is still not complete, has been extended by an estimated seven years beyond the original three-year project timeline, and will cost at least an estimated $10.5 million or 70 percent more than the original project cost of $15 million.

4. Information Technology Resources

The City's current procedures to allocate information technology staff and other resources to individual departments are highly inefficient. Staffing and resource decisions are made on a department-by-department basis without consideration of the City's overall information technology needs.

In the absence of a Citywide plan for information technology staff or criteria to identify staffing needs, City departments hire information technology staff outside of the budget and civil service classification process. Consequently, departments frequently assign staff to work out of class or hire information technology staff into vacant non-information technology positions. For example, according the Information Technology Director in the Department of Public Health, the Department of Public Health is hindered by not being able to change classifications or reclassify vacancies to meet department needs; many staff are working out of class because their skills have developed over time without having been promoted, and there is a noticeable loss of staff to other departments.

Information technology position responsibilities change due to technology shifts, but departments do not redefine position responsibilities and train incumbents to meet these responsibilities. The Budget Analyst found in prior management audits of the Public Utilities Commission in August 2005 and the Department of Public Works in January 2007 that information technology staff skills were not aligned with the departments' information technology needs.

As noted above, the Committee on Information Technology failed to function effectively from 2003 through 2006 and has only been reconstituted in 2007. Consequently, the City has lacked information technology planning, coordination and guidance.

City departments plan for their information technology projects in the absence of a citywide plan or criteria for implementing technology, often implementing systems that are underutilized, inefficient, or incompatible. For example, the Department of Administrative Services and the Department of Public Works, which are both part of the General Services Agency, have incompatible payroll systems as previously discussed in the Budget Analyst's management audit of the Department of Public Works. Both the Port and the Public Utilities Commission implemented maintenance management systems that were poorly utilized, as noted in the Budget Analyst's previous management audit reports, of April 2004 and August 2005 respectively. Further, the Port implemented an Oracle financial system that is incompatible with the City's general ledger system, FAMIS. The management audit recommendations to improve the Port's information technology functions were estimated to result in $405,000 in annual savings.

The Committee on Information Technology needs to assume a more formal role in developing a citywide information technology plan and serving as a forum to exchange information.

5. Information Systems Security

No City department or entity is responsible for overseeing the City's information systems security, resulting in inconsistent and inadequate system security in City departments. Only 14 of 55 City departments, or 25.4 percent, have information system security plans, and of these 14 departments, the plans are often incomplete. Of these 14 departments' security plans, seven or 50 percent lacked at least one of the three elements of an effective security program, including (a) system architecture, (b) planning and (c) implementation, and five, or approximately 36 percent, lacked any of these three elements. As a result there is an unacceptably high level of risk that the City's information systems could be compromised through unauthorized access.

In a review of ten City departments[1], only four had assessed the vulnerability of their information systems to unauthorized access. These vulnerability assessments found that department employees entered confidential data into their personal data drives; vendors and contractors had broad access to department information systems; and the public had broad access to the internet on public access computers. According to one department's Information Technology Director, although the department maintains important public and financial records, the department lacks sufficient resources to ensure that the department's information is secure and protected from unauthorized access to financial records.

[1] These ten departments are: Treasurer/Tax Collector, Assessor/Recorder, Elections, Recreation and Park, General Services Agency, Human Services Agency, Building Inspection, Planning, Public Health, and Fire.

None of the ten City departments consistently implemented policies and practices to protect their systems' security. Although one department has a policy to install and update anti-virus software on each workstation and server, the department's review of its own practices found that not all workstations and servers had current security patches and anti-virus definitions, leaving the workstations vulnerable to unauthorized access or virus infection.

The City lacks a specific personnel classification that is responsible for departments' information system security functions or a set of core competencies required for information technology positions. Nine separate civil service classifications are responsible for security management, although information system security management is not included in the job description, skills or functions for most of these classifications.

Currently, the Department of Emergency Management, Fire Department, and Police Department participate jointly in the e911 system, but lack a formal decision-making process to determine how each department could link the City's administrative applications and the e911 system more efficiently without compromising system security.

This has resulted in (a) duplicate systems requiring manual extraction of data in the Fire Department, resulting in an estimated additional $70,000 annually in unnecessary costs and (b) segmented system applications and databases which fragment work flow and increase data entry and duplication errors, in the Police Department, resulting in unspecified additional unnecessary costs.

The Committee on Information Technology should develop decision-making guidelines for City departments that share information systems to allow more efficient management of these systems. This is especially important as the need for City departments to share systems increases in order to provide better public services.

6. Information Technology Systems Inventory Management

There are no citywide policies, procedures, or standards for safeguarding and accounting for computer equipment, or for replacing computer equipment. Although the Committee on Information Technology and the Department of Telecommunications and Information Services are responsible to provide information technology leadership, they have not provided guidelines to City departments for better management of their information technology inventory.

Consequently, City departments lack uniform standards for maintaining and reporting on computer equipment inventories, and therefore, a central agency, such as the Department of Telecommunications and Information Services or the Committee on Information Technology, cannot access inventory information on a citywide basis for better management of citywide information technology systems. Computer equipment inventory reports from 13 City

departments[2] varied significantly in the information that they provided, ranging from (a) those reports which only provided basic information, such as the equipment vendor, serial number, and model, to (b) those reports which provided additional information such as the name of the staff person assigned to each computer, the operating system version, and the date of equipment deployment.

Larger City departments, such as the Municipal Transportation Agency and Public Utilities Commission, have formal asset management tools to maintain and manage information technology systems and equipment. However, most City departments lack a formal method to manage their information technology assets, impairing their ability to forecast replacement cycles and future financing requirements.

Enterprise departments, such as the Airport and the Department of Building Inspection, with a consistent revenue stream, are able to replace or upgrade their information technology systems on a regular basis. However, General Fund-supported departments generally have much longer replacement cycles than enterprise departments. For example, the Fire Department has a 400 megahertz, Windows 95 desktop in its administrative office that takes several minutes just to load the computer's basic operating system. By contrast, every desktop computer within the Department of Building Inspection is less than one year old.

Because older equipment is only able to operate using older operating systems and older versions of applications, those departments with older computers generally support a greater number of operating system types and application types. For example, the Fire Department supports Microsoft Office versions 97, 2000, and 2003, and, therefore, Fire Department information technology staff must be able to support Microsoft Windows versions 95, 98, 2000, and XP, resulting in inefficient use of staff time.

[2] These 13 departments include: Fire, Juvenile Probation, Airport, Municipal Transportation, Building Inspection, Planning, Human Services, Public Health, Recreation and Park, Assessor-Recorder, Treasurer-Tax Collector, Elections, and Human Resources.

The Department of Telecommunication and Information Services' Written Response

The Department of Telecommunication and Information Services provided a written response to the Budget Analyst on October 2, 2007, which begins on page 61 of the management audit report.

- In its written response, the Department agrees with all 29 recommendations directed to the Director of the Department of Telecommunications and Information Services or the Chair of the Committee on Information Technology. On page 1 of the written response, the Director states that "The audit recommendations are supportive of work underway by COIT and DTIS…Our responses are focused on the actions underway to implement the recommendations at the end of each chapter." In the written response, the Department has stated that 21 of the 29 recommendations are underway.

  Nevertheless, as we have recommended above, the Director of the Department of Telecommunications and Information Services, who also serves as the Chair of the Committee on Information Technology, should report back to the Government Audit and Oversight Committee in March, 2008 on the status of these recommendations, in order to ensure that implementation is in fact occurring in a timely manner and in accordance with the findings and recommendations contained in this report.

- On page 1 of the written response, the Director states that, "This report does not recommend changing the current City policy of technology autonomy of the departments. Therefore the responsibility for the implementation of COIT policy and guidelines will remain the direct responsibility of the individual departments." On page 3 of the written response, the Director states that, "It is clear that implementation is not just the responsibility of the Chair of the Committee on Information Technology or the Director of the Department of Telecommunications and Information Services. Rather, it is the responsibility of all departments and staff to support and work toward a common goal". On page 5 of the written response, the Director states that, "While most of the recommendations make good business sense, the report puts the responsibility of implementation of these recommendations either with COIT and/or DTIS. However, it does not address the overarching fact that neither COIT nor DTIS, by administrative code, or practical application, have the authority over citywide technology staff, project, budgets, policy, or performance".

  As noted on page iii of this report's Introduction Section, the Committee on Information Technology is the only City body tasked with a leadership role in coordinating the City's departmental efforts in the use of information technology systems. Further, as noted on page iii of the Introduction Section, the Department of Telecommunications and Information Services has positioned itself as a service provider to departments for their information technology needs. Therefore, the Budget Analyst has directed this report's recommendations

to either the Chair of the Committee on Information Technology or the Director of the Department of Telecommunications and Information Services, depending on whether the recommendation is intended to provide policy and oversight or operational improvements, to ensure that a specific official is responsible for implementation.

However, on page iv of this report's Introduction Section, the Budget Analyst states that, "The City departments will need to be responsible for implementing three key recommendations - developing information technology strategic plans, conducting information systems security assessments, and implementing information technology inventory policies and procedures. Therefore, the Budget Analyst recommends that each City department report to the Board of Supervisors during the FY 2008-2009 budget review on the status of (a) preparing their information technology strategic plans, (b) conducting information systems security assessments and implementing security procedures, and (c) implementing information technology inventory policies and procedures." Further, as noted on page 1 of the Attachment to this transmittal letter, containing the management audit report's recommendations, the Budget Analyst has clearly identified that Priority 3 recommendations "are directed to City departments and are specific to intra-department and inter-department information technology projects or planning for projects and systems. Therefore, the respective City departments should demonstrate implementation of these recommendations when requesting funding for projects and implementation of information systems."

- In the written response, the Director of Telecommunications and Information Services has stated that implementation of three recommendations may require additional funding as follows:

  In response to Recommendation 1.1, recommending that the Chair of the Committee on Information Technology, "request each City department to develop an information technology-specific strategic plan which provides specific, quantifiable goals within a timeline that the department can check against actual outcomes," the Director of Telecommunications and Information Services states that, "This initiative may require additional funding in FY 08-09 to provide expert training to each department staff in the development of department technology plans."

  In response to Recommendation 1.6, recommending that the Director of Telecommunications and Information Services, "develop a process to continually solicit feedback from City departments in order to determine the most-appropriate technological offerings of any enterprise license agreement and then negotiate lower license costs by aggregating all City departments' total information technology needs", the Director of Telecommunications and Information Services states that, "DTIS will solicit input from departments on specific product and contract needs as part of the business case development process for each of the COIT approved enterprise agreements. This may require additional funding in FY 08-09 as the staff position requested by DTIS in the FY 07-08 budget process to focus on enterprise agreement contracts was not funded."

In response to Recommendation 6.4, recommending that the Chair of the Committee on Information Technology, "request all City departments' directors to maintain information technology inventories consistent with the Committee on Information Technology's standards", the Director of Telecommunications and Information Services states that, "The cost associated will the implementation of any tools to meet this requirement will be included as part of the COIT FY 08-09 budget process."

If the Department of Telecommunications and Information Services requests additional resources in the FY 2008-2009 budget to implement these recommendations, the Department will need to provide additional justification for such requests, including identifying process improvements, efficiency gains, or cost savings resulting from such requests.

We would like to thank the staff of the Department of Telecommunications and Information Services, and various representatives from other City departments for their cooperation and assistance throughout this management audit.

Respectfully submitted,

Harvey M. Rose
Budget Analyst

cc: President Peskin
Supervisor Alioto-Pier
Supervisor Chu
Supervisor Daly
Supervisor Dufty
Supervisor Elsbernd
Supervisor Maxwell
Supervisor McGoldrick
Supervisor Mirkarimi
Supervisor Sandoval
Clerk of the Board
Controller
Nani Coloretti
Cheryl Adams
Director, Department of Telecommunications and Information Services

Recommendation Priority Ranking

Based on the management audit findings, the Budget Analyst has made 32 recommendations detailed in this Attachment to the transmittal letter. The Budget Analyst has ranked these recommendations based on priority for implementation. The definitions of priority are as follows:

Priority 1: Priority 1 recommendations are directed to the Chair of the Committee on Information Technology or the Director of Telecommunications and Information Services and should be completed within six months or March 2008. These recommendations meet one the following criteria: (a) have budget impact, (b) address significant information technology process issues, or (c) can be implemented easily. The Chair of the Committee on Information Technology or Director of Telecommunications and Information Services should submit information on recommendation implementation to the Chair of the Government Audit and Oversight Committee prior to March 31, 2007. The Budget Analyst will review the status of the implementation of these recommendations, as directed by the Government Audit and Oversight Committee.

Priority 2: Priority 2 recommendations are directed to the Controller, the Office of Contract Administration or to each of the City departments and should (a) be completed, (b) have achieved significant progress, or (c) have a schedule for completion prior to June 30, 2008. Each City department should submit information on recommendation implementation to the Chair of the Government Audit and Oversight Committee and the Budget and Finance Committee during the FY 2008-2009 budget review.

Priority 3: Priority 3 recommendations are directed to City departments and are specific to intra-department and inter-department information technology projects or planning for projects and systems. Therefore, the respective City departments should demonstrate implementation of these recommendations when requesting funding for projects and implementation of information systems.

Recommendation — Priority

1. Information Technology Planning and Purchasing

The Chair of the Committee on Information Technology should:

1.1 Request each City department to develop an information technology-specific strategic plan which provides specific, quantifiable goals within a timeline that the department can check against actual outcomes.

Chair of the Committee on Information Technology	1
City departments	2

1.2 Develop incentives that guide each department to re-visit its strategic plan as a means of ensuring achievement of strategic plan goals. 1

1.3 Create communications tools for information technology managers to communicate more effectively with each other. 1

1.4 Develop and recommend to the Board of Supervisors a protocol that requires Board of Supervisors review and approval of all City information technology contracts funded with City monies prior to transfer to a separate authority. 1

The Director of the Department of Telecommunications and Information Services should:

1.5 Work with the Purchaser and Controller to develop procedures to track City department purchasing requests against their long-term information technology goals in order to ensure that purchasing requests are not only needs-appropriate but also goals-appropriate. 1

1.6 Develop a process to continually solicit feedback from City departments in order to determine the most-appropriate technological offerings of any enterprise license agreement and then negotiate lower license costs by aggregating all City departments' total information technology needs. 1

The Office of Contract Administration should:

1.7 Review the Office of Contract Administration's procurement policies in order to ensure that departments have the appropriate information to make information technology procurement decisions and that processes are applied consistently across all departments. 2

Recommendation	**Priority**

2. Information Technology Project Management

The Chair of the Committee on Information Technology should:

2.1 Establish criteria for information technology project management, including definitions of (a) project leadership, (b) business objectives, (c) budgets.

Chair of the Committee on Information Technology	1
City departments	3

2.2 Establish project management guidelines for inter-departmental projects based on the information and technological needs of each of the participating departments.

Chair of the Committee on Information Technology	1
City departments	3

2.3 Establish simple, flexible, citywide project management tools and guidelines for City department information technology.

Chair of the Committee on Information Technology	1
City departments	3

2.4 Assist City departments in reviewing the key service delivery functions within each department to identify relationships and inter-dependencies between core information technology systems.

Chair of the Committee on Information Technology	1
City departments	3

The Director of the Department of Telecommunications and Information Services should:

2.5 Establish information sharing channels for information technology and other department staff so that project ideas, success stories, and challenges are shared within and across departments. 1

2.6 Improve access to project management training for information technology and administrative staff. 1

Recommendation	Priority
The Controller should:	
2.7 Work with City departments to develop accounting and budgeting systems that track information technology project costs, including staff time and overhead.	2
3. The Justice Information Tracking System (JUSTIS)	
The Director of Telecommunications and Information Technology should:	
3.1 Present a report to the Board of Supervisors prior to December 31, 2007, on the status of JUSTIS implementation, including project timelines and costs.	1
The Chair of the Committee on Information Technology should:	
3.2 Develop policies and procedures governing interdepartmental projects, including responsibility for project and budget management.	1
3.3 Develop a policy to assign a dedicated project manager on large-scale projects that exceed some threshold amount, to be defined by the Committee on Information Technology.	
Chair of the Committee on Information Technology	1
City departments	3
4. Information Technology Resources	
The Board of Supervisors should:	
4.1 Adopt an Administrative Code provision establishing a citywide information technology capital planning process under the direction of the Committee on Information Technology.	2
The Chair of the Committee on Information Technology should:	
4.2 Prepare an annual information technology capital expenditure plan based on the citywide information technology capital plan and submit a report for the Board of Supervisors containing details of the annual capital expenditure plan.	2
4.3 Request the Mayor to include the capital expenditure plan in the annual proposed budget to be submitted to the Board of Supervisors.	2

Recommendation		**Priority**
4.4	Establish formal information technology managers' meetings.	1
The Department of Telecommunications and Information Services should:		
4.5	Maintain a list and serve as a clearinghouse of information technology expertise in City departments.	1
4.6	Implement a Citywide information technology mentoring program.	1
5.	**Information Systems Security**	
The Chair of the Committee on Information Technology should:		
5.1	Establish policies and standards for each City department to develop a risk assessment plan that (a) identifies the City departments with the greatest security risks, and (b) resources necessary to reduce security risks.	
	Chair of the Committee on Information Technology	1
	City departments	2
5.2	Recommend annual funding for City departments' information system security programs based upon the risk assessment.	2
5.3	Establish criteria for City departments' information system security policies and procedures.	
	Chair of the Committee on Information Technology	1
	City departments	2
5.4	Define job skills and functions necessary to manage departments' information system security programs.	1
5.5	Develop formal decision-making guidelines for City departments that share information systems.	
	Chair of the Committee on Information Technology	1
	City departments	3

Recommendation	**Priority**

6. Information Technology Systems Inventory Management

The Chair of the Committee on Information Technology should:

6.1 Develop citywide information technology inventory management policies, procedures and standards.

Chair of the Committee on Information Technology	1
City departments	2

6.2 Develop a citywide plan for replacing and upgrading General Fund department information technology. 1

6.3 Develop a citywide policy and controls for issuing and monitoring laptop computers.

Chair of the Committee on Information Technology	1
City departments	2

6.4 Request all City department directors to maintain information technology inventories consistent with the Committee on Information Technology's standards.

Chair of the Committee on Information Technology	1
City departments	2

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Introduction

In FY 2006-2007, the City and County of San Francisco spent more than an estimated $173 million on its information technology systems, including personnel, hardware and software, and contracts with third-party vendors. This amount of $173 million was approximately 3.0 percent of the City's total FY 2006-2007 budget of $5.7 billion and was more than the budgets of 45 of the City's 53 departments.

The City's expenditures for information technology are increasing at a faster rate than expenditures overall. From FY 2004-2005 to FY 2006-2007, the City's total information technology expenditures increased by $41 million, or 31.0 percent, from $132 million in FY 2004-2005 to $173 million in FY 2006-2007. At the same time that information technology expenditures increased by 31.0 percent, the City's total budget increased by 14 percent, from approximately $5.0 billion in FY 2004-2005 to approximately $5.7 billion in FY 2006-2007.

The City's information technology expenditures have a total annual cost just slightly more than the annual budgets of the City's Sheriff's or Recreation and Park Departments, and yet these information technology expenditures have little central oversight. Departments are left to develop and implement information technology systems with inconsistent guidance on such things as total cost of new systems; type, quantity, and quality of operating systems and hardware; project management; maintaining inventories; and information security. Rather than the City taking a forward-thinking approach and implementing systems that coordinate efficiently across departments and that are responsive to the dynamic industry of information technology, the City continues to leave its departments to attempt to maintain basic functionality on their own, barely managing to keep up with a dynamic and exponentially growing industry and the demands of a citizenry that expects more and more with each new technological development.

City departments, and by extension the City overall, place a higher priority on immediate service delivery over long-term information technology systems functionality. As a result, most technological upgrades happen only when required to do so by law or because the existing systems have failed. Departments have little incentive, financial or otherwise, to willingly develop or deploy information technology systems that exceed a bare minimum threshold and few departments have a mature enough approach to their information technology to have the necessary planning processes which would allow them to plan with a long-term approach. As a result, citywide information technology planning, processes, and projects occur quite differently from department to department, resulting in redundant systems and lost opportunities for best practices improvements.

The Committee on Information Technology

In June of 1997, the Board of Supervisors created the Committee on Information Technology, or COIT, (Ordinance 223-97) and gave it the following responsibilities:

(1) Take a leadership role in encouraging and coordinating departmental efforts in the use of new technology;

(2) Promote interdepartmental cooperation and City information technology standards; and,

(3) Review major interdepartmental and citywide information technology projects and make recommendations on those projects.

The Committee on Information Technology is comprised of 10 people, including (a) six department heads, one from each of six service areas; (b) the Mayor's Finance Director; (c) the Controller; (d) the Director of the Department of Telecommunications and Information Services; and, (e) one member of the Board of Supervisors. For the past year, the Committee has been chaired by the Director of the Department of Telecommunications and Information Services.

Reorganization of the Committee on Information Technology

Since its creation, the Committee on Information Technology has been the body responsible for promoting information technology standards and taking a leadership role in the use of new technology. The original Committee included two subcommittees: (1) a Strategic Management Planning Group, which kept track of progress in the development of information technology systems across the City; and, (2) an information technology managers group, although the information technology managers group dissolved six years ago. The new Chair has created four subcommittees, as follows: (1) Planning and Budgeting, (2) Performance and Project Management; (3) Resources, which includes efficiency in procurement and staffing efficacy; and, (4) Architecture, which includes policies, procedures, and security protocols. These four subcommittees, while organized around basic concepts, were provided no clear direction from the Chair at their inception and have spent their first few months primarily developing work plans and organizing principles.

In 2006, the Committee on Information Technology met twice, and the Committee has no minutes for any meetings from 2003 through 2005. However, in 2007, the Committee has already met seven times in the first seven months. This appears to be a direct result of the reorganization of the Committee under the new Chair and the hiring of new full-time staff in the Department of Telecommunications and Information Services to support the Committee, including a new Director. However, the four new subcommittees have been experiencing logistical challenges holding meetings on a regular basis.

The Committee on Information Technology's Important Role for Oversight of Information Technology Systems

The Committee on Information Technology is the only City body tasked with a leadership role in coordinating departmental efforts in the use of new information technology systems. The Committee's virtual absence from this role for several years until its recent reorganization has resulted in departments operating with no guidance or direction in the development of their information technology systems during that time. The intent of the Committee's reorganization is that it will now provide the guidance that has been lacking for City departments as they make their information technology budget and project decisions.

The Department of Telecommunications and Information Services

The Department of Telecommunications and Information Services was created in 1997 through a merger of functions that were previously subsumed within other City departments, including Information Services, under the Controller, and Electricity and Telecommunications, under the Office of the City Administrator. Telecommunications and Information Services provides departments with access to basic communications tools, such as telephones and high-speed internet. The department further offers project management as a service to departments, although the utilization of such service is not required of departments. Indeed, while departments work with Telecommunications and Information Services during the annual budget process to determine their total project management needs for the upcoming budget year, once the budget has been approved, any projects that come up mid-year are likely to involve project management by some entity other than Telecommunications and Information Services, whose annual staffing levels are predicated on that year's budget negotiations between Telecommunications and Information Services and all City departments.

While Telecommunications and Information Services has positioned itself as a service provider to departments for their information technology needs, many departments reported project delays or other issues in which they relied upon Telecommunications and Information Services for project management, development, and implementation. As a result, many City departments prefer to pursue information technology projects either with their own internal staff or through third-party vendors.

The City's Chief Information Officer

For about the past year, the Director of the Department of Telecommunications and Information Services has been serving in the role of the City's Chief Information Officer, or CIO. The purpose and function of the Chief Information Officer has not been established or defined by the Board of Supervisors or the Administrative Code. The need for and function of a Chief Information Officer, whether the Chief Information Officer is

a technical or policy position, and who should fulfill that function are all issues that need to be discussed by the Committee on Information Technology.

Most of this report's recommendations are directed to the Chair of the Committee on Information Technology, who is also the Director of the Department of Telecommunications and Information Services and the Chief Information Officer. These recommendations are directed to either the Chair of the Committee on Information Technology or the Director of the Department of Telecommunications and Information Services, depending on whether the recommendation is intended to provide policy and oversight or operational improvements, to ensure that a specific official is responsible for implementation.

Budget Analyst's Recommendations

This report contains six findings and 32 recommendations, of which 29 are directed to the Chair of the Committee on Information Technology or the Director of the Department of Telecommunications and Information Services. According to the Director of the Department of Telecommunications and Information Services, the Department agrees with the 29 recommendations, of which many are in the process of being implemented through the reconstituted Committee on Information Technology or by the Department.

The Budget Analyst recommends that the Director of the Department of Telecommunications and Information Services, who also serves as the Chair of the Committee on Information Technology, report back to the Government Audit and Oversight Committee in March 2008 on the status of these recommendations, to ensure that implementation is in fact occurring in a timely manner and in accordance with the findings and recommendations of this report.

Although the Budget Analyst has not addressed specific recommendations to the City's departments, the departments will need to implement procedures and policies on their own initiative. The Administrative Code assigns a leadership role to the Committee on Information Technology, but neither the Committee on Information Technology nor the Department of Telecommunications and Information Services has the authority to oversee departments' information technology processes. The City departments will need to be responsible for implementing three key recommendations - developing information technology strategic plans, conducting information systems security assessments, and implementing information technology inventory policies and procedures. Therefore, the Budget Analyst recommends that each City department report to the Board of Supervisors during the FY 2008-2009 budget review on the status of (a) preparing their information technology strategic plans, (b) conducting information systems security assessments and implementing security procedures, and (c) implementing information technology inventory policies and procedures.

Methodology

In order to provide a comprehensive overview of citywide information technology, the Budget Analyst conducted this management audit as follows:

- A survey was administered to all 53 City departments, to which 45 departments responded, representing approximately 96.5 percent of the City's entire FY 2006-2007 budget;

- 14 departments were selected for further scrutiny by information technology topical area, based on service area, as follows:

  Public Protection: Fire and Juvenile Probation;

  Public Works: Airport, Building Inspection, and Municipal Transportation;

  Human Welfare & Neighborhood Development: Human Services;

  Community Health: Public Health;

  Culture and Recreation: Recreation and Park; and,

  General Administration and Finance: Assessor-Recorder, City Planning, Elections, General Services, Human Resources, and Treasurer-Tax Collector;

- The 14 departments selected for additional scrutiny were administered additional questionnaires and interviewed around the following topical areas: Planning and Procurement, Project Management, Resource Allocation, Security, and Asset Management; and,

- A separate case study was conducted for a closer examination of the process surrounding implementation of the City's Justice Information Tracking System, or JUSTIS, which involved interviews of all criminal justice departments.

In addition to these surveys, questionnaires, and interviews of numerous City departments, the Budget Analyst interviewed several City officials with responsibility over citywide functions, such as the Controller and the Director of the Department of Telecommunications and Information Services, and reviewed relevant documents and data.

1. Information Technology Planning and Purchasing

- **The City lacks an effective process for planning and purchasing information technology systems. Each City department plans for and purchases information technology in a manner specific to each department and independent of other departments. The City's 1996 Strategic Plan for Information Technology recommended that the City assess its information technology systems, including an inventory of all citywide systems, current projects and available technical skills. However, eleven years later, in 2007, no such citywide assessment exists and, in fact, most City departments have neither (a) policies and procedures for inventorying existing information technology systems; nor, (b) a strategic plan that is either specific to their information technology systems or includes specific information technology objectives.**
- **While most departments report some baseline information technology funding available for maintenance of existing systems, they also report inconsistent funding availability for information technology improvements and upgrades from year to year. This process of erratic and inconsistent funding from year to year has hampered departments' ability to develop information technology systems strategic plans, and project plan timelines; or quantifiable information technology objectives.**
- **In contrast to disparate planning processes across City departments, citywide procurement processes tend to be more consistent, as a result of a centralized Office of Contract Administration which oversees all information technology purchases and professional services agreements, primarily through the City's Computer Store.**
- **While City departments often utilize the same software applications, departments have their own software licenses, potentially resulting in higher than necessary licensing costs citywide. An effort by the Department of Telecommunications and Information Services to consolidate Oracle software licenses in 1998 resulted in <u>increased</u> costs because few City departments participated. The Department is again discussing with Oracle a citywide license agreement, but has begun discussions without directly engaging City departments in the process. This method of negotiating with the vendor without directly engaging City departments creates an inherent disconnect between departments' needs and what the Department of Telecommunications and Information Services can offer.**

- **The Airport had a contract with Alcatel, a private firm, to provide after-hours and weekend Help Desk information technology, which was awarded through a competitive bidding process in early 2006. In March of 2006, the Airport received Proposition J certification of such contract by the Controller but withdrew the Proposition J certification request. Thereafter, the Airport moved the Alcatel contract into the Airport's existing agreement with the San Francisco Terminal Equipment Company, LLC, or SFOTEC. Because SFOTEC is a not-for-profit entity and not a City agency, the Airport avoided Board of Supervisors' approval of the Proposition J certification of the Alcatel sole source contract once the Alcatel contract.**

Planning and purchasing for information technology systems - processes which are linked through City department budget-development and priority-setting - are performed by each department in a manner specific to each department and independent of other departments, except in those cases when a specific information technology project is inter-departmental or use of a system is required for several or all City departments.

The City's 1996 Strategic Plan for Information Technology recommended that the City develop a current systems assessment which would include (a) an inventory of all citywide systems and (b) an inventory of all current projects and technical skills available citywide. However, eleven years later, in 2007, no such citywide assessment exists and, in fact, most City departments have neither (a) policies and procedures for inventorying existing information technology systems; nor, (b) a strategic plan that is either specific to their information technology systems or includes specific information technology objectives.

The only constant across departments is that each individual department has its own method to plan for information technology needs and does not work within a larger City framework unless technologically or legally required to do so. The Department of Telecommunications and Information Services provides professional and technical support to City departments only to the extent to which departments find these services useful. Responses received from departments for this report ranged from most departments stating that they rarely work with the Department of Telecommunications and Information Services unless they are required to do so, to at least one department stating a desire for greater assistance from the Department of Telecommunications and Information Services, if this particular department only had the funding available to pay for such assistance.

The City's Decentralized Approach to Information Technology Systems

Information technology systems have developed within departments on an individualized basis. This is largely the result of funding for information technology systems having been allocated on a department-by-department basis, which discourages collaboration among departments when systems or technology needs overlap. The consequences of such individualized systems development have been (a) inconsistent planning processes, (b) inconsistent project funding, which restricts departments' abilities to develop multi-year plans, and (c) cross-City redundancy in those information technology systems and processes which are not department-specific.

In addition to inconsistent development of information technology systems, the City lacks any centralized, coordinated communications mechanisms for (a) relaying information directly to information technology staff across City departments or (b) sharing information across departments regarding information technology-specific issues.

Inconsistent Information Technology Systems Strategic Planning Processes

Most City departments finance their information technology systems on a year-by-year, as-needed and as-funding-is-available basis. A planning process including an information technology-specific strategic plan would help departments identify overall departmental needs, prioritize those needs within a timeline framework, and establish baseline information technology expenditure needs on an annual basis.

Existing Strategic Plans

Approximately half of all City departments surveyed for this report state that they have a strategic plan, and a few more, including the Municipal Transportation Agency and the Planning Department, are in the process of developing their own strategic plans. These strategic plans, however, typically address only department-level goals, or client service-specific goals, while lacking specific, quantifiable information technology goals. The challenge for many departments, then, is taking department-level goals and using those to develop specific, quantifiable information technology goals, either through the inclusion of specific goals in a department-wide strategic plan or in through a separate information technology-specific strategic plan.

The Airport's FY 2007-2008 Efficiency Plan reviews service-specific functions by bureau and provides business strategies along with supporting five-year goals. Serving primarily as a business plan for the Airport, the Efficiency Plan does make specific mention of information technology in several areas, but it does not explicitly address the

underlying information technology systems that are necessary in order to implement many of the recommended business strategies. Instead of using this Efficiency Plan for implementing appropriate information systems goals, the Airport sets and tracks information technology goals through a monthly checklist. These goals are set annually by Airport executive staff, in a process similar to that at Public Health as discussed below. Additionally, the Airport has an information technology-specific strategic plan which it is currently updating and expects to have completed by Spring 2008.

The Recreation and Park Department has a Strategic Plan for Information Technology that is approximately three years old. The Recreation and Park plan includes a detailed analysis of existing information technology systems and personnel, comparisons to other cities, a vision for future information technology investments, and an action plan, which includes specific task recommendations with timelines, estimated costs, and an identification of the departmental deficiencies which would be addressed by each recommendation. While this Strategic Plan for Information Technology is specific in its analysis and recommendations, Recreation and Park has not utilized the specific information contained in the plan to provide explicit direction for information technology planning and purchasing processes. Further, the Information Systems Manager for the Recreation and Park Department describes the planning process for information technology as "informal," and the Strategic Plan for Information Technology has been used mostly as a document for background information, rather than for the Action Plan directives it contains.

It is not enough for a department to have an information technology-specific strategic plan. Such plan should provide specific, quantifiable goals within a timeline framework that a department can check against actual outcomes. In addition, the City should develop incentives and/or requirements that direct each department to re-visit its strategic plan as a means of ensuring achievement of strategic plan goals.

Resources for Development and Implementation of Strategic Plans

An additional, critical challenge to successful implementation of a strategic plan is having the resources to implement that plan. Departments have expressed difficulty identifying funding for strategic plan (re-)development, which indicates that departments would have even greater difficulty identifying funding to implement any strategic plan recommendations. Therefore, it is incumbent that the development of strategic plans for individual departments account for funding limitations, existing funding and staffing resources, and the ability of departments to obtain additional funding or staffing.

Inconsistent Information Technology Project Funding

Many departments reported an inability to predict total available information technology-specific funding from year to year. While most departments report some baseline information technology funding available for maintenance of existing systems, they also

report an inconsistent funding availability for information technology improvements and upgrades from year to year, with a department-level preference generally given to service delivery over information technology improvements and upgrades. A few departments, however, report some funding consistency for their information technology improvements and upgrades.

The Department of Public Health, with 166 information technology personnel and a total information technology budget in FY 2006-2007 that exceeded $32,000,000, has a formalized information technology systems planning process. Public Health's planning process includes the following steps:

(1) Senior information technology managers interview division managers to identify needs, including implementation timelines and costs;

(2) Budget requests are prioritized by an Information Technology Steering Committee; and,

(3) A department-wide information technology-specific recommendation is developed by the Information Technology Steering Committee, including implementation timelines and costs, and submitted to a department-level budget review.

According to Public Health, funding is typically available only for those items determined to be "essential," which is the highest of four priority levels, from (1) essential to (2) high to (3) medium to (4) low; however, information technology-specific recommendations which go unfunded in the current budget year are carried forward for review and possible implementation in future years. As a result, items which get a lower prioritization in the current year, and thus go unfunded, may be given a higher prioritization in future budget years. This system enables Public Health to take a multi-year view of information technology improvements and upgrades and have some baseline budget funding expectations from year to year.

The Department of Public Health is an exception to the general rule. Most City departments' information technology divisions reported that they generally only pursue those information technology improvements and upgrades for which funds can be appropriated in any given year. This process of erratic and inconsistent funding from year to year has hampered departments' ability to develop (a) information technology systems strategic plans; (b) information technology project plan timelines; or, (c) quantifiable information technology objectives. While some departments have information technology systems goals, these goals do not necessarily correlate to specific, quantifiable objectives and projects with clearly-defined funding sources and amounts. As a result, departments' information technology goals are often under-funded and de-prioritized relative to departmental core service delivery objectives, unless such goals (a) can be quantifiably

shown to improve core service delivery objectives or (b) are tied to a specific directive from the department's senior management and/or the Mayor's Office.

Two examples of planning being driven by funding availability are from Human Resources and the Assessor-Recorder. In FY 2005-2006, Human Resources, which currently has approximately 150 computers in use, purchased approximately 110 new computers. Human Resources leveraged the balance on its existing work-order with the Department of Telecommunications and Information Services to fund this replacement of 73.3 percent of the department's existing computers. Were it not for the available balance on the work-order with Telecommunications and Information Services, Human Resources claims that it would not have had the funding available for computer replacement. In FY 2006-2007, Human Resources has not replaced any computers, and funds for replacement were not included in the FY 2007-2008 budget.

The Office of the Assessor-Recorder, with approximately 120 computers, has replaced approximately 20 of these computers in the past two years, which is equivalent to a 12-year replacement cycle. The Assessor-Recorder received 31 new computers in the FY 2007-2008 budget.

Information Technology Purchasing Processes

As stated previously, City departments' planning processes are as varied as the funding sources, funding availability and core service delivery objectives of each department. In contrast to such widely disparate planning processes, citywide purchasing processes tend to be more consistent. This relatively better consistency for purchasing processes, as compared to planning processes, is a result of a centralized Office of Contract Administration which oversees all information technology purchases and professional services agreements, primarily through the City's Computer Store, which is managed by the Office of Contract Administration.

The City, through its Committee on Information Technology, established the Computer Store approximately 10 years ago, in order to fast-track the information technology purchasing process. The Committee on Information Technology managed the Computer Store until August of 2006, at which time management of the Computer Store was transferred from the Committee on Information Technology to the Office of Contract Administration.

All departments report using the Computer Store for the majority of their information technology purchasing requests. The Computer Store includes eight separate information technology vendor contracts that were approved in January of 2004 and are set to expire in December of 2007. Because the contracts have already been approved, departments do not need to proceed through the standard Request for Bids process, as they do for any purchasing requests that occur outside of the Computer Store. For departments, then, the

advantage of using the Computer Store is that the contracts are already approved, which expedites the City's standard purchasing process.

The differences between these two processes are shown in the following table:

Standard Purchasing Process	Computer Store Purchasing Process
1. Department submits requisition to the Office of Contract Administration. 2. The Office of Contract Administration reviews department's requisition. 3. The requisition is submitted to the Department of Telecommunications and Information Services for approval. 4. Upon determining appropriateness of department's requisition, the Office of Contract Administration puts out a Request for Bids. 5. Bids are received within 3-6 weeks. 6. The Office of Contract Administration selects the winning bidder. 7. The winning bid is then submitted to the Department of Telecommunications and Information Services for final sign-off.	1. Department contacts pre-selected vendors to get bids. 2. Department gets quotes, either formally or informally. 3. Department submits quotes as requisition to the Office of Contract Administration. 4. The Office of Contract Administration reviews the requisition in order to: (a) ensure its completeness; (b) submit any professional services requests to Local 21 for review that such request is best performed by outside private contractors rather than City personnel; and, (c) submit orders greater than $10,000 to the Department of Telecommunications and Information Services for final approval.

The primary difference in these two processes shown above is that the standard purchasing process is driven mostly by the Office of Contract Administration, while individual departments maintain greater control in the Computer Store process, as all questions about contractual obligations have been answered in advance of the purchasing request. As a result, the Computer Store purchasing process can take half the length of time as the standard purchasing process.

The Budget Analyst received copies of procurement manuals from several City departments and, based on a review of these manuals, notes these manuals are outdated and include information on information technology vendors that are no longer under contract with the Computer Store. The Budget Analyst recommends that the Office of Contract Administration review its procurement policies in order to ensure that departments have the appropriate information to make information technology procurement decisions and that processes are applied consistently across all departments.

Tracking Information Technology Purchasing Requests at the City Level

As part of the purchasing process, the Chief Technology Officer at the Department of Telecommunications and Information Services reviews all departmental purchasing requests made through the City's Computer Store in order (a) to ensure that such requests are needs-appropriate and compatible with existing City systems; and, (b) for those purchasing requests that involve professional services agreements, to address whether specific tasks are best performed by City personnel versus outside private contractors.

Given current systems, the City is unable to track departmental purchasing requests (a) over time or (b) against long-term departmental information technology goals. However, the Department of Telecommunications and Information Technology is developing a web-based, intranet system for automated tracking of Computer Store purchasing. Telecommunications and Information Services anticipates development of an additional component to this new system which will allow the tracking of specific metrics for the categories and types of acquisitions and the quantities of commodities.

What neither the existing system nor the pending automated process include are an ability to track purchasing requests against long-term strategic plans or specific department information technology goals. Therefore, it seems appropriate that this tracking system includes an additional component that would allow the Department of Telecommunications and Information Technology to track purchasing requests against individual long-term department information technology goals in order to ensure that purchasing requests are not only needs-appropriate but also goals-appropriate

Leasing vs. Purchasing Hardware

Most City departments purchase their information technology hardware outright and attempt to replace such hardware on a 3-year replacement cycle. The Department of Building Inspection, however, recently undertook what it has termed a "refresh" of all of its existing hardware by entering into a 3-year lease agreement for such hardware with manufacturer Hewlett-Packard. For approximately 335 desktop computers and 30 servers, Building Inspection is paying $325,000 annually. At the termination of the 3-year lease agreement, the department will have the option to either (a) replace all of the leased hardware with new equipment that the department can either lease or purchase, or (b) buy-out all of the hardware for $65,000. Given that the department intends to replace all printers and servers on a 5-year cycle, the department does intend to buy-out those specific pieces of equipment. For the desktop computers, however, the department intends to replace them on a 3-year cycle, which may be extended depending on financial constraints at the end of the current 3-year lease term.

While Building Inspection's "refresh" is not equivalent to an information technology-specific strategic plan, the 3-year term of the lease allows the department to have a baseline annual expenditure amount which accounts for the department's hardware replacement costs. Despite Building Inspection's recent investment in new technology, however, the department still finds itself unable to comply with a two years-old Civil Grand Jury request for the department's systems and documentation to be more open to the public, although the department states that it will be in compliance with the Civil Grand Jury request with the implementation of a new system that has an expected roll-out in June of 2008. In the absence of a strategic plan, therefore, Building Inspection has been able to implement a "refresh" project for hardware which accomplishes some of what would be expected from a strategic plan for the department's hardware, but the department has not had similar success for in its specific efforts in providing better public access to Building Inspection documentation.

Cross-City Redundancy of Information Technology Systems

While many departments utilize software technology from the same vendors, such as Microsoft, Novell, and Symantec, most departments individually pay for licenses with each of these vendors. For example, while nearly every City department utilizes Microsoft Windows or Symantec Anti-Virus software, nearly all departments have their own individual licenses for usage of this software. This redundancy in software licenses provides the City with an opportunity to negotiate lower license costs by aggregating its total information technology needs across departments. For example, rather than each department separately negotiating with Microsoft for Microsoft Windows licenses, the Committee on Information Technology could negotiate a single citywide license agreement which is then offered by the Computer Store to all City departments separately. Taking advantage of aggregated City information technology needs in this way is expected to result in net savings to departments because the City - as a single entity - could leverage its aggregate information technology needs better than individual departments, as some departments are only in need of a few licenses while others are in need of a few thousand.

The Oracle Enterprise License Agreement

From 1998 to 2003, the Department of Telecommunications and Information Services had a citywide enterprise license agreement with Oracle for several types of Oracle software. The Controller requested Telecommunications and Information Services to manage the process for a new enterprise license agreement with Oracle. Beginning in November 1997, Telecommunications and Information Services solicited feedback from City departments through phone calls and letters to departments' Information Technology managers. Despite this outreach effort, documentation provided by Telecommunications and Information Services to the Budget Analyst shows that, while Telecommunications and Information Services projected first-year need of no more than 728 licensed users, the agreement entered into with Oracle had a minimum requirement of 1,000 licensed

users in the first year. Telecommunications and Information Services represents that the City had only 500 total users in the first year of the agreement. Additionally, documentation provided by Telecommunications and Information Services shows that the City was under pressure from Oracle to execute an agreement.

Therefore, while the stated basis for entering into a citywide enterprise license with Oracle was that Telecommunications and Information Services had determined that, over its five-year term, such agreement would result in a net savings in citywide licensing costs, the agreement resulted in a net increase in citywide licensing costs, as more licenses were purchased at the start of the agreement then were needed by City departments.

Telecommunications and Information Services maintains that departments either (a) insisted on negotiating their own licenses with Oracle or (b) bundled Oracle software into information technology-related requests for proposals, against the specific instruction in the Department of Telecommunications and Information Services memorandum that "Any application system being procured should not bundle Oracle software with the bid." Departments' responses have been that the Oracle enterprise license agreement (a) was entered into without adequate consideration of City departments' needs, (b) offered technology that was different than what departments needed in 1998.

Current Enterprise License Agreement Considerations

The citywide enterprise license model has recently been revisited at the monthly meetings of information technology personnel that take place in City Hall, and such model is also being reconsidered by the Department of Telecommunications and Information Services.

The Department of Telecommunications and Information Services is having talks with Oracle again about an enterprise license agreement with the software vendor. According to interviews with the information technology managers of two major City departments, the package of offerings being considered for inclusion in this pending agreement would be less-than-desirable. As a result, departments may prefer to negotiate directly with Oracle to address their needs, rather than utilize an enterprise license agreement, negotiated by Telecommunications and Information Services, that is less than ideal. Rather than directly engaging with departments to guide the agreement negotiations process, Telecommunications and Information Services is instead negotiating on its own with Oracle.

This method of negotiating with the vendor without directly engaging City departments creates an inherent disconnect between departments' needs and what Telecommunications and Information Services offers. In order to adequately address departments' needs with any new enterprise license agreement, Telecommunications and Information Services should have a process to continually solicit feedback from City

departments while negotiating any enterprise license agreement, in order to determine and receive the most-appropriate technological offerings.

Sole Source Contracting

Departments reported utilizing sole source contracts when (a) specialized software was provided by only one vendor, (b) maintenance on particular software was best provided by the vendor of that particular software, or (c) a contract was renewed beyond the full term under the original contract, including extensions of such contract.

Each City department submits any proposed sole source contract to the Office of Contract Administration. Contract Administration has approval authority over each proposed sole source contract that (a) has a term of fewer than ten years, or (b) costs the City a total of less than $10 million; but any proposed sole source contract exceeding either or both of these threshold amounts is referred to the Board of Supervisors for approval. A key distinction between sole source contract review between these two bodies is that, while the Board of Supervisors considers policy appropriateness of proposed sole source contracts prior to approval, the Office of Contract Administration reviews proposed sole source contracts exclusively for their appropriateness as a sole source contract.

According to information provided by the Office of Contract Administration, the City expended more than $13 million on 90 separate information technology sole source contracts in FY 2006-2007, none of which surpassed the above-stated threshold which would have required Board of Supervisors approval. This estimate of $13 million represents 20 percent of the approximately $65 million on 405 total sole source contracts citywide in FY 2006-2007.

The Airport's Alcatel Contract

Since April 2005, the Airport has had a contract with Alcatel, a private firm, for after-hours and weekend Help Desk information technology support for Alcatel's Synchronous Optical Network, or SONET, hardware. This contract was awarded through a competitive bidding process in early 2006. In March of 2006, the Airport received Proposition J certification of such contract from the Controller but withdrew the Proposition J certification request before the Board of Supervisors when the certification request was not calendared by the Board of Supervisors. Thereafter, the Airport moved the Alcatel contract into the Airport's existing agreement with the San Francisco Terminal Equipment Company, LLC, or SFOTEC.[1] The purpose of the SFOTEC agreement between the Airport and the SFOTEC consortium is to (a) maintain, repair, operate and schedule the use of the City-owned equipment and operating systems at the International Terminal; (b) maintain, operate, and schedule the use of the International Terminal's joint use ticket counters and gates; and (c) allocate the associated costs related to the City-

[1] SFOTEC is a consortium of 21 airlines with regularly scheduled International operations at the International Terminal.

owned equipment and operating systems among the SFOTEC members and non-member users of the equipment. Because SFOTEC is a not-for-profit entity and not a City agency, the Airport no longer needed Proposition J certification of the Alcatel contract once the Alcatel contract had been subsumed into the existing SFOTEC agreement.

Prior to moving the Alcatel contract into the existing SFOTEC agreement, the Airport was invoiced by and made payments directly to Alcatel. Under the new arrangement, Alcatel invoices SFOTEC, which passes the invoice along to the Airport; the Airport subsequently submits payment for the invoiced amount to SFOTEC, which passes along the Airport's payment to Alcatel. Essentially, all that has changed from the prior arrangement is that management of the agreement with Alcatel has shifted from the Airport to SFOTEC; however the Airport continues to make payments to SFOTEC for the same services rendered by Alcatel as when the Airport managed the Alcatel agreement directly.

The Budget Analyst recommends that any future proposed transference of a City contract to a separate authority, so long as the contract remains paid through City funding sources, should be reviewed by the Board of Supervisors prior to final transference of such contract.

Lack of Centralized, Coordinated Communications Mechanisms for Information Technology-Specific Issues

On March 11, 2007, as a result of Federal legislation that was approved in 2005, Daylight Savings Time began three weeks earlier than it has historically. This change resulted in the need for upgrades and patches to be delivered to existing information technology systems that were programmed for the standard commencement date three weeks later. It was a change that took some effort and several City systems did not adjust appropriately and a number of calendars were off by one or two hours.

On Friday, March 9, at 5:20 p.m., the Director of Telecommunications and Information Services, sent a memorandum to the heads of all City departments, advising them that there might be time inconsistencies with their calendars the week of March 4 through March 10, and offering that departments could contact the Department of Telecommunications and Information Services Help Desk with any problems or requests for clarification. At a March 14 meeting of information technology personnel at City Hall, the Department of Telecommunications and Information Services memorandum was discussed during the agenda item on the March 11 change in Daylight Savings Time. What was clear from the discussion at the March 14 meeting was that not all the appropriate information technology personnel had received the memorandum or the information that it conveyed.

Several departments concurred with the idea that a message posting board and/or email group for information technology managers across City departments would be a useful

and helpful resource, for (a) one-time issues that arise, such as the March 11 Daylight Savings Time switch; (b) ongoing City-wide information technology systems trouble-shooting; and, (c) best practices sharing across City departments.

A recommendation from the chair of the monthly meeting of information technology personnel at City Hall is the creation of two email groups of information technology managers and relevant staff at the Department of Telecommunications and Information Services: (a) one email group for Enterprise Fund-supported departments and (b) the other email group for General Fund-supported departments, as the issues encountered by the two types of Departments vary depending on the availability and consistency of financing for their information technology systems. These email groups could serve the following purposes: (a) forums for sharing information technology management and purchasing experiences and best practices suggestions; (b) resources for new information technology managers seeking basic advice from their peers; and, (c) resources for trouble-shooting.

Conclusion

There is no such thing as "Citywide Information Technology Processes" for the City of San Francisco. While there are information technology systems which span the City, such as the Financial Accounting Management Information System (FAMIS), nearly all information technology planning and purchasing processes are driven by either (a) the funding availability for each department, and/or (b) the necessity for different departments to utilize the same information technology systems. The City could benefit from greater centralization by requiring departments to develop strategic plans that are either information technology-specific or provide specific information technology goals in a larger departmental strategic plan. These strategic plans could stabilize the information technology functionality and purchasing processes of departments at the same time they provide the City with the ability to anticipate future information technology expenses and ensure that departments are maintaining and developing the information technology systems in accordance with their strategic plans.

The City could further benefit from thoughtful centralization of enterprise license agreements. Additionally, the City could realize some efficiencies from new mechanisms for inter-departmental communications.

Recommendations

The Chair of the Committee on Information Technology should:

1.1 Request each City department to develop an information technology-specific strategic plan which provides specific, quantifiable goals within a timeline that the department can check against actual outcomes.

1.2 Develop incentives that guide each department to re-visit its strategic plan as a means of ensuring achievement of strategic plan goals.

1.3 Create communications tools for information technology managers to communicate more effectively with each other.

1.4 Develop and recommend to the Board of Supervisors a protocol that requires Board of Supervisors review and approval of all City information technology contracts funded with City monies prior to transfer to a separate authority.

The Director of the Department of Telecommunications and Information Services should:

1.5 Work with the Purchaser and Controller to develop procedures to track City department purchasing requests against their long-term information technology goals in order to ensure that purchasing requests are not only needs-appropriate but also goals-appropriate.

1.6 Develop a process to continually solicit feedback from City departments in order to determine the most-appropriate technological offerings of any enterprise license agreement and then negotiate lower license costs by aggregating all City departments' total information technology needs.

The Office of Contract Administration should:

1.7 Review the Office of Contract Administration's procurement policies in order to ensure that departments have the appropriate information to make information technology procurement decisions and that processes are applied consistently across all departments.

Costs and Benefits

Implementation of these recommendations would increase City departments' efficiency in planning for and purchasing information technology equipment and applications. Potential cost savings could be achieved through more effective purchasing procedures including citywide software licenses.

2. Information Technology Project Management

- **The City lacks a consistent method to plan for and implement information technology projects, whether within City departments or among several City departments. The City does not currently have a working strategic plan for information technology. Until now, the Committee on Information Technology, which is intended to provide leadership and coordination to City departments, has not provided an effective process to plan and prioritize information system projects. A draft framework for a new system for prioritizing projects, which was released at the Committee's March 23, 2007 meeting, does not include any citywide technology goals and criteria for selecting projects.**

- **Nor do City departments have a process for planning, financing and implementing information technology projects between departments, resulting in inefficient information technology processes and delays in implementing needed systems. For example, although the Assessor-Recorder and Treasurer-Tax Collector rely on similar data, these departments do not currently have an integrated system. Rather, they exchange data every few weeks, which needs to be cleaned, re-structured, and analyzed by each department.**

- **Also, implementation of the Permit Tracking System has been delayed for at least two years primarily due to staff turnover, and lack of coordinated planning between the Department of Building Inspection and the Planning Department. The Planning Department conducted a business process review but had to place the project on hold due to staff turnover in the Department of Building Inspection. Subsequently the Department of Building Inspection updated the Department's portion of the Permit Tracking System without consulting the City Planning Department.**

- **Over the past six years, although several reports on the City's information technology infrastructure have recommended that the City create and adopt project management standards and tools to guide project implementation in departments, the Committee on Information Technology has not developed such standards.**

- **The Committee on Information Technology needs to take the lead in planning for the City's information technology systems, and coordinating projects and funding citywide and between departments. The Committee on Information Technology should also serve as a forum for City departments to exchange information and develop information technology project management policies and procedures.**

Information Technology Projects Overview

Information technology projects are discrete efforts that deliver unique products and services that cannot be addressed within a department's day to day operations. Information technology projects can originate at all levels of departments and organizations. Projects vary in scope, budget, technical complexity, dependencies, and stakeholders. Some projects affect only one department, and others involve multiple departments.

San Francisco City departments engage in information technology projects that improve critical service delivery to citizens, make government functions more efficient and keep departments compliant with Federal, State and local regulations. The fourteen departments interviewed for this analysis reported undertaking both large and small projects that included developing on-line reservations systems for park and recreational services, implementing accessible voting technology, streamlining building permit tracking, coordinating emergency management services, enhancing airfield inspection systems, and better coordinating service delivery to the city's homeless population. In addition, key City functions, like collecting taxes, case management for probation systems, issuing and managing building permits, and delivering healthcare at city hospitals rely on data systems that are designed, built, and upgraded through information technology projects.

To effectively manage information technology projects, City departments must first have the systems in place to prioritize project ideas and allocate necessary resources. Additionally, departments need to systematically approach and review project-specific information, such as business practice impacts, technological components, timelines for deliverables, and training and maintenance needs.

In order to achieve project goals, most projects should have (a) an executive who sponsors and owns the project; (b) a thorough business analysis review; and (c) integration of business process changes and appropriate technology solutions. Once these elements are agreed to, technical systems need to be designed and/or purchased, tested, deployed, tested further, and adjusted for issues that may arise during the project's implementation process. Next, end users must be trained on the new system, and a maintenance and operations process established.

Several City departments use various project management methodologies to manage their information technology projects. Each of the methodologies has its own strengths and weaknesses, and its own terminology and conventions. The particular methodology employed is less important than that the department has a methodology in the first place and adheres to it.

Prioritizing Information Technology Projects

Methods for prioritizing projects need to be established at three levels: citywide; inter-departmental; and intra-departmental. Because the City lacks an effective process to plan and prioritize information system projects, City departments implement projects independently, resulting in inconsistent practices and uneven distribution of resources.

Prioritization of Projects Citywide

The City does not currently have a working strategic vision or plan for information technology. Over the past ten years, a series of plans have emerged recommending that the City develop a citywide information technology governance framework, including guidelines for project management. The Committee on Information Technology has established a folio review system, which has changed several times over the past six years. A draft framework for a new system for prioritizing projects, which was released at the Committee's March 23, 2007 meeting, does not include any citywide technology goals and criteria for selecting projects that advance these goals.

Previous central review systems have focused on projects that exceed some financial threshold. For instance, in 1996, the Committee on Information Technology's Strategic Management and Planning Group began reviewing proposed information technology projects estimated to cost more than $3 million and less than $5 million. And a February 3, 2006 Department of Information and Technology Services memo to department financial and administrative managers outlined a new process for information technology project budget requests, requiring further information for those projects estimated to cost $500,000 or more. Reviewing only those projects which exceed a certain threshold amount (a) ignores the needs and opportunities associated with smaller projects, which may be necessary components for future, larger projects; and, (b) fails to capture large projects that are performed mostly with staff time, as staff time is not reported as a budget expense for an information technology project.

By contrast, the City should set out to prioritize projects and align technology with business practices needs across the City, regardless of estimated project costs. Prioritization should be based on a project's potential to meet citywide information technology goals, such as bringing services to citizens online; updating aging and at-risk software or hardware systems; and reducing redundancy in data stored between City departments.

Prioritization of Inter-Departmental Projects

Several departments within the City share information and systems for their primary business functions. Even within the small sample of departments studied for this report, information sharing was critical between several departments, including between City

Planning, Building Inspection, and Fire; between the Treasurer-Tax Collector and the Assessor-Recorder; and between Fire, Public Health, Police and Emergency Management.

New information technology systems that streamline information flows between departments can reduce redundancy, data errors, and expenditures. However, embarking on projects to implement these systems takes a coordinated effort from all departments involved and a system for making decisions that may impact multiple agencies. Without committed project sponsors within each impacted department, it is difficult to reach agreement on how to proceed with complex project changes. When one department has an aging system that needs to be replaced, and is committed to moving forward with an information technology project, another department that depends on the same information technology system may not be prepared to engage in the planned project. In these situations, a facilitator with a citywide perspective can help get different departments engaged in appropriate planning for a project.

Inter-departmental Project Delays

Generally, funding for information technology projects shared by two or more City departments is appropriated in each department's budget, with inadequate processes to coordinate funding and project implementation between departments. Consequently, these projects can face significant inefficiencies and delays.

Implementation of the Permit Tracking System

For example, the Planning, Building Inspection and Fire Departments are all participating in the implementation of the Permit Tracking System. Implementation of the Permit Tracking System has been delayed for at least two years primarily as a result of (a) staff turnover in the Department of Building Inspection, the Planning Department, and the Department of Information and Telecommunication Services, which provided project management services, and (b) lack of coordinated planning. In 2005 the Planning Department conducted a business process review with an outside consultant to outline the project specifications but had to place the project on hold due to staff turnover in the Department of Building Inspection. In 2006 the Department of Building Inspection updated the department's portion of the Permit Tracking System without consulting the City Planning Department.

The Department of Building Inspection is the lead agency in developing the Permit Tracking System, which is based on the Department's business processes. The Department of Building Inspection and the Planning Department do not have a formal agreement on implementing the system, but staff from both departments are now meeting regularly with the Department of Telecommunications and Information Services, serving as an "automation" team responsible for identifying the best approach to meet the Department of Building Inspections business process requirements. The Department of

Building Inspection will fund approximately two-thirds of the project costs, estimated to be as high as $10 million based on preliminary estimates, and the Planning Department will fund approximately one-third.

Lack of Information System Integration between the Offices of the Assessor-Recorder and the Treasurer-Tax Collector

Although the Treasurer-Tax Collector and the Assessor-Recorder rely on similar data, these departments do not currently have an integrated system. Rather, they exchange data every few weeks, which needs to be cleaned, re-structured, and analyzed by each department. The departments both note that they began to discuss an integrated system six years ago, but neither has committed to moving forward with such a project. Although the Office of the Assessor-Recorder received $500,000 in FY 2007-2008 for an inventory and analysis of its information technology systems and needs, the department does not anticipate integration with the Office of the Treasurer-Tax Collector in the short term.

Role of the Committee on Information Technology

The City does not have an effective mechanism to plan and coordinate information technology systems between departments even though City departments provided related public services and share business processes. This lack of coordinated systems is not only inefficient but impacts public services. The Committee on Information Technology should assist City departments in reviewing the key service delivery functions within each department to identify relationships and inter-dependencies between core information technology systems. Streamlining these processes could lead to a more efficient allocation of resources, although security concerns must be addressed, and departments must maintain discretion over the systems that affect their daily operations.

Prioritizing Projects Within Departments

Internally, departments often fail to prioritize information technology projects due to insufficient management support or inadequate budget resources. Frequently, updates to aging software and systems are delayed until products are at risk and no longer supported by vendors or warrantees. Further, departments' investments in information technology sometimes involve tradeoffs between core business functions – like service delivery – and administrative expenses.

Some departments have model systems for determining what projects would get done in a given year. As mentioned previously, Public Health has an organized information technology steering committee, comprised of senior executives throughout the department that meets to review technology project ideas, prioritize them for a given year, and authorize their implementation. With other departments, information technology and financial staff meet, generally during the budget-development process, to

determine annual projects and needs. Information technology staff at most departments reported working with their respective departments' management personnel to discuss possible projects and improvements to their information technology systems.

Information Technology Project Management

Over the past six years, several reports have recommended that the City create and adopt project management standards and tools to guide project implementation in departments. The Committee on Information Technology, which is the City's primary entity for coordinating information technology processes citywide, has not yet developed these standards or communicated them to City departments. Instead, departments have developed their own project management tools with varying degrees of sophistication.

Citywide Project Management Standards and Tools

In 2000, the Legislative Analyst's Report "Information Technology Within San Francisco" recommended that the City develop information technology standards and policies and encourage departments to share their technological advancements. In 2001, a Public Technology, Inc. report entitled "SWAT, Enterprise IT Report" recommended that the City establish project management standards and modify procedures for enterprise information technology project evaluation. In 2002, a plan created by the Department of Telecommunications and Information Services to establish a Project Management Office explicitly placed responsibility for project management guidelines and resources for the City as the responsibility of the Committee on Information Technology. In 2007, the draft Technology Governance Plan created by the Committee on Information Technology assigned the task of developing project management standards and guidelines to its Quality Assurance Subcommittee. These project management standards and guidelines have not yet been developed.

Separately, the Department of Telecommunications and Information Services has developed and published guidelines and planning templates for use by its own project managers, but these tools have not been shared with City departments. Only one of the fourteen departments interviewed for this report had seen Telecommunications and Information Services' guidelines.

Project management training can help those tasked with completing a project identify issues early on, communicate project requirements to senior executives and avoid complications that can lead to increased project costs and slipping deadlines. When asked about training for project managers, departments report that the City offers a training class in Microsoft Project, a software tool designed to help managers identify a critical path for project tasks and identify and measure progress in project completion. Although this tool can help identify time-saving techniques in project implementation, City departments do not require the training for their project managers.

The larger issues of project management – identifying the scope of a project, aligning business needs to technical needs, building consensus and developing a workable plan – are not elements covered by Microsoft Project training. A few departments noted that funding for project management training is available from Local 21, and that project managers in their departments had taken advantage of this resource. For more consistent application of project management practices citywide, the City departments, in working with the Committee on Information Technology and the Department of Technology and Information Services, should extend project management training to non-information technology staff, such as administrative and financial managers, who are often accountable for the timeliness and financing of department information technology projects.

Project Management for Inter-Departmental Projects

Project management can be particularly difficult for projects that impact multiple City departments. These projects require communication, compromise and business process adjustments both within and between different departments, and agreement across departments can be difficult to reach. Further, different departments contribute different levels of funding, depending on the department's role in the project and the funding source, which is not always proportional to department needs. For example, the Permit Tracking System is funded largely by Department of Building Inspection revenues although both the Planning Department and the Fire Department have significant system needs.

It is important to have both (a) a single person within each department who is responsible for that department's interest in the project, and (b) a separate, single project manager who oversees the full project and the interest of all departments involved. For example, as discussed in Section 3 of this report, the lack of a designated project manager has contributed to significant delays and inefficiencies in implementing the JUSTIS project.

During the planning and business analysis phases of a project, all departments need to resolve which changes each will make, determine how much they will budget for the project and what the potential security challenges may be, and identify user needs specific to each department. Having a neutral project manager, who is not employed directly by either department and who can provide strategic direction to a specific project's steering committee, can help keep a project moving through difficult decisions.

Project Management within Departments

With the lack of central leadership on information technology and project management, departments have proceeded with designing and implementing their own projects according to different methodologies. Larger departments tend to employ more formal project management policies, while smaller departments tend to employ less formal policies. Both departments with and without policies report successfully completing some

projects, while experiencing time delays, resource shortfalls and unsuccessful deployment on other projects.

Five of the fourteen agencies interviewed have provided written project management guidelines that they use to guide project management and implementation. These guidelines range in sophistication from a descriptive overview (Elections) to documented best practices from previous department projects that now serve as templates and models (Human Services) to department-specific methodologies that outline the decision-making process for projects and steps for all levels of project management (Airport, Public Health and Municipal Transportation).

Nine departments failed to produce formally documented project management methodologies. In describing their processes, several of these departments seem to employ methods of project management that are similar to standards established by other departments and project management literature. The remaining departments seem to lack a clear understanding of effective project management practices.

Departments with established systems for both prioritizing information technology projects and managing the work associated with them were able to describe successful and unsuccessful aspects of efforts to deploy information technology projects. While some departments without written procedures reported successfully completed projects, these practices were difficult to evaluate, mainly because they lacked documentation of project planning and work steps. In some departments, projects were not properly documented until large issues emerged, halting implementation, and because project timelines, budgets, and decision-making channels were not clearly developed at the projects' implementation, these projects experienced significant delays, sometimes at a cost to the City. Proper and timely documentation can help build consensus for moving forward with projects and ensure that City resources are spent effectively.

Staff Built vs. Purchased Applications

Several departments have been involved in projects that entail bringing formerly-outsourced systems into the daily operations of information technology staff. As information technology staff grows, particularly in data management skill sets, bringing some of these systems in-house makes financial sense. Other departments have built their own applications because they lack the financial resources to purchase off-the-shelf systems. The costs and benefits of each type of system need to be more thoroughly assessed, rather than decisions being made on an ad hoc basis. This more thorough assessment is crucial to ensuring that departments are making the appropriate considerations in determining whether to implement projects in-house versus off-the-shelf.

Improving Project Management Throughout the Process

Project Management Criteria

Because City departments lack consistent information technology project management resources and procedures, the Committee on Information Technology needs to develop criteria for effective project management, including defining (a) project leadership roles, (b) business objectives, and (c) project budgets and cost components.

Define Project Leadership Roles

Projects are managed either by internal department staff (including information technology staff and other managers), outside consultants or vendors, or Department of Telecommunications and Information Services project managers. Departments engage different sources of project managers depending on the particular needs and costs of a project. Most departments use internal staff to manage projects, even though vendors, consultants, and Department of Telecommunications and Information Services staff may be involved. Vendors tend to lead projects that are fully-contracted software development projects. Department of Telecommunications and Information Services staff members are typically engaged to lead inter-departmental projects.

Most projects involve meetings and coordination between management and information technology staff. Some departments name an executive sponsor, who is responsible for the departments' information technology projects. In order to ensure project success citywide, any City project management guidelines and processes should specify that an internal executive sponsor within each department will be accountable for the overall progress of each project. City guidelines should also articulate processes through which conflicts and problems will be resolved as they arise.

Define Business Objectives for Each Project

Most, but not all, departments maintain documents stating business purposes of each project they undertake. The City should be able to track how every information technology project meets some set of specified goals for the department, or departments, undertaking a given information technology project. At the outset, each project should include a statement of purpose that links the project to the business of the department and articulates the project's potential for improving services, reducing risks, streamlining processes or other ways in which the project meets City or department goals. Departments, and the City, need to have a clear understanding of the changes that any proposed new information technology systems will have on their day-to-day functions and staffing needs.

Define Budgets that Capture Costs

Projects are not currently sorted into separate budget items for agencies and can appear in professional services, equipment, personnel, and other budget line-items.

Project budgets need to include planning time, equipment and software purchases, and staff time in order for the city to fully understand expenditures specific to each information technology project.

Forum to Share Project Information and Technology

The Committee on Information Technology Information should develop a forum for departments to share technology and information, assisting with the development of guidelines and standards as well as prevent departments from making similar project management mistakes. Advice about vendors and products purchased by one department should be easily accessible to other departments considering similar systems. At the same time, specific project management information can help departments think through new ways of improving their own processes and systems. For example, the Department of Public Health has developed an online contract management system, and is working to help other departments use this system. However, at some point, this information sharing effort is outside the scope of Public Health's general work and mission and should be facilitated by the Committee on Information Technology.

Sharing of information across departments can help departments improve their project management practices. The Airport, Public Health and Human Services all have specific methodologies for project management that clearly outline processes for prioritizing project tasks within the department, forming project teams, and working through the chain of project management tasks. These and other department guidelines should be made available to all City departments to serve as examples of project management guidelines.

The Department of Telecommunications and Information Services publishes internal project management guidelines and templates that could be simplified and made available to department information technology directors as well. More than half of the departments interviewed for this report stated that the Telecommunications and Information Services project management guidelines would be useful to them if made available.

Developing Flexible Project Management Guidelines

Since projects involve working within departments' cultures, standards and guidelines need to be flexible and adapt to agency structures. Different systems may work better for different departments, and one set of standards is unlikely to work for all city agencies.

For example, the Municipal Transportation Agency uses detailed federally-mandated project management systems for transportation projects. The Department of Public Health implements a Steering Committee system that prioritizes projects across its functional areas and maintains ongoing lists of project ideas. Each of these processes might be too demanding for full deployment in smaller departments, and might not adequately capture practices for departments that share systems and information with other departments.

The goal of establishing project management standards is to help departments that most need process clarifications, and to ensure citywide standards and accountability. At a minimum, these project management standards should outline the process for initiating a project within a department, explain how project sponsors and teams will be selected, set requirements for written documentation of budgets, timelines and expected outcomes, and articulate how issues that arise will be resolved. Most critical to project success is the designation of a senior-level executive sponsor within the department who is accountable for the success of the project.

Conclusions

The City lacks a strategic process to plan for the City's information technology needs. The Committee on Information Technology, which is the City's primary entity for coordinating information technology processes citywide, has not developed an effective system to plan for and implement information technology projects. This has resulted in uneven and inefficient implementation of information technology projects among City departments. Generally, City departments implement projects based on available funding rather than criteria that defines needs and establishes priorities.

Because City departments are decentralized, City departments do not coordinate resources or effectively share information and technology. Consequently, although some City departments have effective methods of managing information technology projects, project management information is not available to other departments. The Department of Telecommunications and Information Services publishes internal project management guidelines and templates that could be simplified and made available to department information technology directors as well.

Recommendations

The Chair of the Committee on Information Technology should:

2.1 Establish criteria for information technology project management, including definitions of (a) project leadership, (b) business objectives, (c) budgets.

2.2 Establish project management guidelines for inter-departmental projects based on the information and technological needs of each of the participating departments.

2.3 Establish simple, flexible, citywide project management tools and guidelines for City department information technology.

2.4 Assist City departments in reviewing the key service delivery functions within each department to identify relationships and inter-dependencies between core information technology systems.

The Director of the Department of Telecommunications and Information Services should:

2.5 Establish information sharing channels for information technology and other department staff so that project ideas, success stories, and challenges are shared within and across departments.

2.6 Improve access to project management training for information technology and administrative staff.

The Controller should:

2.7 Work with City departments to develop accounting and budgeting systems that track information technology project costs, including staff time and overhead.

Costs and Benefits

Implementation of these recommendations is intended to improve the cost-effectiveness of information technology projects.

3. The Justice Information Tracking System (JUSTIS)

- **The Justice Information Tracking System, or JUSTIS, is a project that was initiated more than 10 years ago, with the intention of replacing the City's existing, and outdated, Court Management System, and is still not completed. By the end of FY 2007-2008, the JUSTIS project is expected to have cost more than $25.5 million.**

- **Governance of the JUSTIS project was reorganized in 2003, more clearly defining the oversight role of the JUSTIS Governance Council, establishing a Technical Steering Committee, and assigning the Mayor's Office of Criminal Justice as the executive sponsor. The Governance Council hired a consultant, IT Project Methods, to facilitate the JUSTIS project. As a result, the goals of the project were more clearly defined, and a master project plan was developed.**

- **However, a primary component of a successful information technology project - an executive sponsor - has not been realized. The Mayor's Office of Criminal Justice has never successfully implemented this role, with four directors since 2003 and significant turnover in finance and other staff.**

- **The JUSTIS project has lacked strong budget management from the beginning. At various times the Department of Telecommunications and Information Services and the Mayor's Office of Criminal Justice have been responsible for the JUSTIS budget. Originally, the JUSTIS budget was commingled with the Court Management System budget, overseen by the Court Management System Committee. The Mayor's Office of Criminal Justice took over budget management in FY 2004-2005 but lacked financial staff and never implemented a financial tracking system, resulting in transfer of budget management to the Department of Telecommunications and Information Services.**

- **None of the entities responsible for JUSTIS - the Department of Telecommunications and Information Services, the Mayor's Office of Criminal Justice, or the Governance Council have identified and assigned a City project manager to oversee development of the JUSTIS project. Although an outside consultant, IT Project Methods, has assumed many project management functions, the consultant lacks the authority and accountability of a City project manager.**

- **With the development of a master project plan and subproject plans in 2003, the participating criminal justice departments, except for the Police Department, have moved forward in completing their case management systems. However, the connection of these individual department systems to the JUSTIS hub has continued to be delayed and thus many of the goals of the project, including information sharing, criminal justice data mapping, improved reporting and analysis, and decommissioning of the Court Management System, have not been met. This is significant because project expenditures through FY 2006-2007 were nearly $16.8 million.**

Overview of JUSTIS

The project created to replace the City's existing Court Management System is known as the Justice Tracking Information System, or JUSTIS. Begun in 1997 and conceptualized as a three-year project, ten years later JUSTIS is still in development, and will have cost more than $25.5 million in development and maintenance costs by the end of FY 2007-2008 in General Fund and grant monies.

Participating departments that will connect to JUSTIS include: Adult Probation, District Attorney, Police, Public Defender, Sheriff, Juvenile Probation, and Status of Women. JUSTIS will allow departments to share information with each other automatically, expediting individual department processes and resulting in a more efficient and effective criminal justice information system. The intent of the JUSTIS project is to connect the different case management systems at each of the criminal justice departments to a centralized hub, which will allow for the sharing of criminal justice information across departments. Additionally, the participating departments intend to consolidate their servers through a U.S. Department of Justice grant acquired for the JUSTIS project.

JUSTIS Background

In 1996 the Sheriff, Juvenile Probation, Superior Court, and Police Departments were all developing or implementing new case management systems. In a letter to Mayor Willie Brown, dated April 7, 1997, the Sheriff, Police, District Attorney, Public Defender, Superior Court, Adult Probation, and Juvenile Probation departments all requested an upgrade of the existing Court Management System.

In response to the departments' request, the City provided the Department of Telecommunications and Information Services with $925,000 for the "intense, rapid development"[1] of a Court Management System replacement plan. The initial JUSTIS team, made up of Department of Telecommunication and Information Services staff,

[1] Replacement Plan for the San Francisco CABLE/Court Management System System. Final Report Draft 1.0. June 30, 1998.

private consultants and Owens Information Systems staff (the group that supports the Court Management System), was formed in April 1997. The original Court Management System Replacement Committee had members from the departments that initiated the request to the Mayor, the Court Management System Policy Committee, the Committee on Information Technology, Department of Telecommunications and Information Services, and the Mayor's Criminal Justice Council, and the Superior Court. The City funded the JUSTIS project for the first time in 1998.

Reasons for JUSTIS

In 1998, the City's criminal justice departments began a process to upgrade their existing information sharing system, the Court Management System, as a result of twenty years of technological advancement that was overwhelming the system, making it inefficient and frustrating for Court Management System users. The Court Management System is an information sharing application on the Computer Assisted Bay Area Law Enforcement, or CABLE, system, which was developed in 1975.

By the end of the 1990's, most technological systems had moved to server-based technology while the Court Management System remained on mainframe-based technology. Additionally, the Court Management System programs used coding that was inflexible, limiting the Court Management System to few or no upgrades. And all of this is still true today: the Court Management System could not, and still cannot, communicate with other currently available technologies.

Only limited information can be drawn from the Court Management System in specific ways, as follows:

- A Court Management System user cannot look up an individual without the context of a case, which means that searching for a John Doe's history must be done on case-by-case basis;

- All information relating to a case - such as whether a protective order is in place or whether a given warrant-less search has expired - is not available on all screens, and the Court Management System user must remember to go back to various screens at the end of a session to check these items;

- Users often need information that the original program was not configured to provide as a simple query. When users need this information, they are required to request it directly from the Department of Telecommunications and Information Services;

- Only a few individuals at the Department of Telecommunications and Information Services are able to work with the Court Management System to retrieve any requested information, and that information is often only retrieved weeks after the initial request is submitted by a department;

- The data stored within each department is much more robust than the information the Court Management System is able to store, often including notes on each case;

- Data that the Court Management System does provide does not automatically populate departments' individual case management systems, and Court Management System users need to manually input such data in their departments' individual case management system.

Current Status

Currently, the JUSTIS project is primarily supporting implementation of individual case management systems at participating City departments. During its 1998 survey to determine the level of automation already present within participating City departments, the Court Management System Replacement Committee found that the City's criminal justice departments, with the exception of the District Attorney and Adult Probation, "were obtaining or already had relatively modern equipment". The departments involved with the JUSTIS project have attempted to develop their case management systems and the only completed JUSTIS projects have been individual departments' case management systems. Although individual departments have benefited from development of their case management systems, the existing Court Management System has not yet been replaced, as was originally envisioned for the JUSTIS project in 1997.

Currently, only the District Attorney, Public Defender, Adult Probation and Sheriff are ready to connect to the JUSTIS hub. The Sheriff's Department's Jail Management System was intended to be connected to the JUSTIS hub in February 2007 but that connection date has now been delayed until sometime during FY 2007-2008. The Superior Court is not yet ready to connect to the system and Juvenile Probation has requested to connect to the JUSTIS hub but has not taken formal action on the request. The Police Department will not be prepared to connect to the JUSTIS hub by the Fall of 2007, although the Department is in the process of upgrading its case management system. The Department on the Status of Women will not need to upgrade any of its technology in order to retrieve reports from the JUSTIS hub.

In addition to the hub, the scope of the JUSTIS project now includes server consolidation for participating City departments. The Mayor's Office of Criminal Justice obtained a grant in FY 2004-2005 for server consolidation but the servers were not purchased until FY 2007-2008, nearly three years later, and Memoranda of Understanding between the departments concerning the use and maintenance of these servers have not been written.

JUSTIS Governance Structure

Governance of the JUSTIS project was reorganized in 2003, assigning the Mayor's Office of Criminal Justice as the project's executive sponsor and establishing a Technical Steering Committee. The JUSTIS project is overseen by the Governance Council, which is made up of the directors of the participating departments, a JUSTIS Technical Steering Committee and the Mayor's Office of Criminal Justice, serving as the executive sponsor.

In addition to these groups, since 2003 IT Project Methods, a private consultant, has provided consulting services to both the JUSTIS project and to individual City departments implementing their respective case management systems.

The JUSTIS Governance Council

The JUSTIS Governance Council was originally authorized by the Board of Supervisors in December 2000 (Ordinance No. 309-00), with the following responsibilities:

- Setting priorities and approving direction for project development and enhancements;
- Reviewing, approving, and submitting annual and supplemental appropriations requests; and,
- Approving vendor contracts.

The 2003 reorganization clarified the responsibility of the JUSTIS Governance Council for budget, policy, priority and other managerial decisions impacting the JUSTIS project. The Governance Council meets approximately every two months and is comprised of representatives from the San Francisco Superior Court, Mayor's Office of Criminal Justice, District Attorney, Public Defender, Sheriff, Adult Probation, Police, Emergency Management, Juvenile Probation, Status of Women, and Telecommunications and Information Services Departments.

The Executive Sponsor

In 2003, the Governance Council approved the Mayor's Office of Criminal Justice to serve as the executive sponsor. According to the Governance Council, the JUSTIS executive sponsor serves as the program director, responsible for the decisions needed to manage all ongoing and potential projects of the JUSTIS program. Responsibilities and authority include:

- Creating and implementing JUSTIS organizational structure;
- Setting priorities and negotiating resources for projects associated with the JUSTIS program;
- Directing project planning and implementation including selection and hiring of a project management entity in consultation with the Council;
- Conducting ongoing project review including decisions on whether to fund projects; and
- Ensuring top-level stakeholders' participation, awareness and understanding of overall program and individual projects.

However, the Mayor's Office of Criminal Justice has had several directors and significant staff changes since 2003, resulting in no effective executive sponsor to provide project leadership.

The Technical Steering Committee

The Governance Council established a Technical Steering Committee in 2003, consisting of representatives from the Mayor's Office of Criminal Justice, Department of Telecommunications and Information Services, Committee on Information Technology, and the project consultant, IT Project Methods. The Technical Steering Committee makes technical and financial recommendations to the Governance Council, and to avoid conflicts in recommending project resources, voting members of the Governance Council are prohibited from participating in the Technical Steering Committee.

Problems in Implementing JUSTIS

Lack of Project Definition and Plan

JUSTIS Project Prior to 2003

The purpose of the JUSTIS project has not been clearly defined over the ten-year project span. According to the Government Council meeting minutes, the original JUSTIS project prior to 2003 was a dual system, including implementation of an integrated data warehouse and development of individual departments' case management systems. By 2002, only two departments, Adult Probation and the District Attorney's Office, were developing case management systems as part of JUSTIS. The JUSTIS project as a whole was in the process of mapping data in the legacy database, designing the new JUSTIS database, and planning the conversion to the new database. At the same time, JUSTIS project staff were in discussions with the Superior Court on the exchange of data between the Court's system and the new JUSTIS system. The Sheriff Department's Jail Management System and the Police Department's Records Management System were not formally part of JUSTIS.

As of 2002, the JUSTIS project lacked a strategic plan and criteria for determining the needs of the project as a whole and of the individual participating departments. According to November 2002 Governance Council meeting minutes, the original project scope was unrealistic, and that after expenditures of more than $6 million, even the short-range goals had not been attained. Further, the project lacked formal accounting of the JUSTIS project's budgeted and actual expenditures.

The JUSTIS Project Since 2003

After the 2003 reorganization, the JUSTIS project goals were clarified and ranked in order of importance. The goals included in rank order:

- Improving criminal justice system reporting and analysis capabilities;
- Integrating the criminal justice departments case management information;
- Improving access to information and the quality of information;
- Streamlining data entry and reuse;
- Improving workflow and communication; and

- Replacing the existing Court Management System.

The JUSTIS project retained the data warehouse structure but the Department of Telecommunications and Information Services redesigned the overall structure. As of 2003, the JUSTIS project consisted of:

- Implementing the Sheriff's Department's Jail Management System;
- Implementing and integrating the Police Department's Records Management System and other systems;
- Purchasing case management systems for the Public Defender's and District Attorney's Offices, and the Adult and Juvenile Probation Departments;
- Integrating the criminal justice departments' systems through a central hub;
- Maintaining a criminal justice database through a central warehouse; and
- Increasing various mapping, reporting and analytic capabilities.

The JUSTIS project became a master project with a series of subprojects. Each subproject was to include a project scope, budget, and timeline. Several of the subprojects, including the Sheriff's Jail Management System and the District Attorney's, Public Defender's and Adult Probation's case management systems, are largely completed although both the Adult Probation Department and District Attorney's Office have re-evaluated the use of their systems, as discussed below. Integration of the individual departments' case management systems into a central hub has continued to be delayed. The Department of Telecommunications and Information Services can not say definitively when the JUSTIS development project will be completed.

Inconsistent Leadership

Since its inception, the JUSTIS project has not had a single leader or project manager, whether with one of the participating criminal justice departments, IT Project Methods, the Mayor's Office of Criminal Justice, or the Department of Telecommunications and Information Services. At the JUSTIS project's inception, Court Management System Replacement Committee members were responsible for project design and definition. Although the JUSTIS Governance Council and the Committee on Information Technology subsequently replaced the Court Management System Replacement Committee in a leadership role on the JUSTIS project, these two governing bodies have provided inconsistent leadership, thus perpetuating a lack of foresight and oversight. Without one central leader or project manager to prepare for next steps, the project timeline has continued to extend indefinitely.

Mayor's Office of Criminal Justice

Although effective information technology projects require an executive sponsor who provides both leadership and accountability, as discussed in Section 2 of this report, the JUSTIS project, despite its size and cost, has lacked an effective sponsor. The Mayor's Office of Criminal Justice, which was appointed executive sponsor in 2003, has changed directors four times in four years, contributing to their changing their role and delays in implementing JUSTIS. The Mayor's Office of Criminal Justice has also experienced significant changes in finance staff resulting in inadequate management of the JUSTIS project budget.

Role of the Department of Telecommunications and Information Systems

The Department of Telecommunications and Information Systems currently manages the JUSTIS budget. Going forward, Department of Telecommunications and Information Systems staff will also be responsible for constructing the hub and creating connections between individual departments' case management systems and the hub. The Department of Telecommunications and Information Systems also plans to support departmental case management system upgrades and maintenance that are part of JUSTIS.

Role of IT Project Methods

The JUSTIS project has lacked a single City project manager to direct the overall JUSTIS project and subprojects. In February 2003, the JUSTIS Governance Council hired IT Project Methods, a private technology consulting firm, to work with individual departments and the JUSTIS Governance Council, providing project management and consultant services. IT Project Methods is responsible for managing the JUSTIS project through completion of the JUSTIS hub, integration and related case management systems projects. Responsibilities include (a) supporting projects through the Technical Steering Committee, (b) providing the Department of Telecommunications and Information Services with project level budget tracking, (c) assisting with the implementation of a central hub, (d) helping Department of Telecommunications and Information Services staff with project management methods, and (e) other tasks. Overall, IT Project Methods has served as a consultant and project facilitator to the Department of Telecommunications and Information Services and the criminal justice departments. However, the consultant lacks the authority, accountability and incentives to complete the project of a City project manager.

Departments' Case Management Systems

Departments participating in JUSTIS have developed or upgraded case management systems at different times but must wait on other departments to fully activate their systems. Any delays in development of case management systems affect when JUSTIS can be fully implemented, because each department's case management system needs to be fully operational in order to connect with the JUSTIS hub, and the JUSTIS hub will

not be fully operational until all of the criminal justice departments have connected their respective case management systems to the hub.

Changes in department directors, lack of internal leadership or expertise, and insufficient funding have prevented some of the participating departments from timely or complete development of their case management systems. The Adult Probation Department is renovating its case management system initially implemented in 2001, cTAG, because it was not properly implemented. After a successful development phase, however, cTAG suffers from underutilization because of inadequate implementation and training of Adult Probation staff. The Adult Probation Department is currently retraining its staff in use of cTAG and auditing data files to ensure accuracy and reliability.

Due to change in leadership, the District Attorney's Office had to re-evaluate their use of the case management system and engage in staff training to implement its use.

The Public Defender's Office has nearly completed its case management system and the Sheriff's Department has completed its case management system but until the hub is activated, these departments will not have active updated case management systems. Until the JUSTIS hub is fully operational, the Public Defender will continue to access Court Management System information through the existing method.

The participating criminal justice departments will have to wait until all departments are connected to the hub before the mainframe-based Court Management System can be deactivated. The Sheriff's Department's Jail Management System is completed, but it has not been used. The Department of Telecommunications and Information Services intends to use the Jail Management System as the first spoke to be connected to the JUSTIS hub.

The Police Department as a Central Agency

The Police Department has been active in the implementation of JUSTIS for four years, and in 2005 the U.S. Department of Justice awarded a grant to Police for the department's JUSTIS-related activities, including funds for hardware that would enable the department to be compatible with the JUSTIS hub. Presently, the Police Department does not have the technological capability to connect with the JUSTIS hub. Staff turnover has been a problem in the Police Department and is one factor in the department's ongoing inability to connect with the hub. Each of the current staff working on JUSTIS in Police has (a) been assigned to the implementation of JUSTIS for one year or less and (b) lacks the necessary technical expertise.

Police's continued failure to upgrade its existing case management system to a JUSTIS-compatible system will mean that, even once the JUSTIS hub is operational, the mainframe-based Court Management System will remain in active usage by all criminal justice departments.

Impact of Departmental Delays

Because technological advances are constantly occurring, future technological flexibility must be incorporated at all stages of a project on the scale of JUSTIS to avoid implementing information technology that will be outdated (and possibly obsolete) by the time of its completion. Although JUSTIS has yet to be fully implemented, departments' existing case management systems acquired over the past ten years need to be maintained and upgraded on an ongoing basis. As a result, departments have implemented case management systems, which were intended to be incorporated into the not-yet-deployed JUSTIS hub, and have a higher level of functionality and associated costs than they currently need, in order to be hub-read.

Delays in Integration to the JUSTIS Hub

With the development of a master project plan and subproject plans in 2003, the participating criminal justice departments, except for the Police Department, have moved forward in completing their case management systems. However, the connection of these individual department systems to the JUSTIS hub has continued to be delayed and thus many of the goals of the project, including information sharing, criminal justice data mapping, improved reporting and analysis, and decommissioning of the Court Management System, have not been met. This is significant because project expenditures through FY 2006-2007 were nearly $16.8 million.

After the hire of the project consultant, IT Project Methods, in February 2003, the JUSTIS Governance Council moved forward with a new project charter, defining project goals and priorities, and a master project plan, which was completed in September 2003. IT Project Methods and the Department of Telecommunications and Information Technology tested the feasibility of the integrated hub concept during the spring of 2004. According to the August 2004 Governance Council minutes, IT Project Methods expected the hub system to be implemented in FY 2004-2005.

Selecting a Vendor to Construct the Hub

However, because of the complexity of developing the hub, integrating case management systems of several departments, the Governance Council agreed in the fall of 2004 that an outside contractor would be hired The JUSTIS project staff began working with the City Attorney's Office to draft a Request for Proposal for a contractor in the spring of 2005, two years after the Governance Council reorganization. The vendor, PlanGraphics, Inc., was selected in June 2005. The actual contract with PlanGraphics was not completed and signed until April 2006, or ten months after selection of the contractor. Discussions between the Mayor's Office of Criminal Justice, the Department of Telecommunications and Information Services and the City Attorney's Office regarding contract language were prolonged due to questions raised by the City Attorney's Office. Once the contract was signed in April 2006, the Department of Telecommunications and Information Services expected the hub development to be completed within nine months, or

approximately December 2006. Since signing of the contract, PlanGraphics has worked on development of the hub engine, while the Department of Telecommunications and Information Services has worked with the Sheriff's Department's Jail Management System to prepare for the connection to the hub system. Although the Department of Telecommunications and Information Services had initially expected that the Sheriff's Department would be connected to the hub in February or March 2007, that connection date has now been delayed until sometime in FY 2007-2008.

Budget Management

JUSTIS implementation has been funded largely by the General Fund, appropriated in General City Responsibility. Responsibility for managing the JUSTIS budget has passed between the Department of Telecommunications and Information Services and the Mayor's Office of Criminal Justice. Originally, the JUSTIS budget was commingled with the Court Management System budget, overseen by the Court Management System Committee, then passed to the Mayor's Office of Criminal Justice and finally to the Department of Telecommunications and Information Services. Throughout the ten-year history, problems have incurred in budget management, tracking grants and paying invoices.

The Mayor's Office of Criminal Justice, as the executive sponsor, assumed responsibility for a consolidated JUSTIS project budget in FY 2004-2005 but was hampered by turnover in finance and budget staff. Further, the Mayor's Office of Criminal Justice failed to implement a financial tracking system to track actual expenditures against the budget. Responsibility for day to day budget management was transferred to the Department of Telecommunications and Information Services in FY 2006-2007.

Operating and development costs have been combined in each year's budget, due to the expectation each year that the development phase was near completion with only operating costs remaining. Because components of the JUSTIS project were not completed in the expected timeframe, costs that were initially budgeted as "operating" were in fact "development".

From FY 1997-1998 through FY 2006-2007, approximately $22.5 million has been appropriated to the JUSTIS project, including (a) $15.6 million in General Fund monies, (b) $5.8 million from grant monies, and (c) $1.1 million from other sources. The Board of Supervisors appropriated an additional $3 million in General Fund monies for the JUSTIS project in FY 2007-2008 for programmers, case management and hub conduits, and maintenance, upgrades, and support for existing case management systems. Including the FY 2007-2008 appropriation, total appropriations to the JUSTIS project, beginning in FY 1997-1998, are approximately $25.5 million.

The JUSTIS project and budget have been open-ended, with neither a firm completion date or project budget. Although the JUSTIS hub connection and server consolidation are expected to be completed in FY 2007-2008, timelines to connect the departments' case management systems have not been met and full project implementation is not ensured in

this fiscal year. The City has developed no plan (including projected timelines, budgets, management, and roles) to shift funding for JUSTIS from a finite development project, albeit with no estimated completion date, to an ongoing function, and continues to appropriate funds for JUSTIS in General City Responsibility rather than the respective City department budgets.

Conclusion

After more than ten years and a project budget of an estimated $25.5 million through FY 2006-2007, the JUSTIS project is still not complete. The JUSTIS project has lacked key components for successful information technology projects, including an executive sponsor, and a single project manager to oversee the full project. The 2003 reorganization of JUSTIS governance helped clarify the project goals and structures, moving the project toward a master plan rather than an ad hoc process. However, the appointment of the Mayor's Office of Criminal Justice as the executive sponsor has not been successful. The Mayor's Office of Criminal Justice has not provided the necessary project leadership due to high turnover in department executive and financial staff. Nor does JUSTIS have a single project manager to oversee the full project. All the JUSTIS project's consultant, IT Project Methods, provides project management services to the Governance Council and participating departments, the JUSTIS project has lacked a dedicated City project manager.

Recommendations

The Director of Telecommunications and Information Technology should:

3.1 Present a report to the Board of Supervisors prior to December 31, 2007, on the status of JUSTIS implementation, including project timelines and costs.

The Chair of the Committee on Information Technology should:

3.2 Develop policies and procedures governing interdepartmental projects, including responsibility for project and budget management.

3.3 Develop a policy to assign a dedicated project manager on large-scale projects that exceed some threshold amount, to be defined by the Committee on Information Technology.

Costs and Benefits

These recommendations offer an enhanced organizational structure to improve planning, project management, and increased accountability. With better planning, management – including budgetary oversight – and increased accountability by participants, projects will face fewer delays and cost overruns.

4. Information Technology Resources

- **The City's current procedures to allocate information technology staff and other resources to individual departments are inefficient. Staffing and resource decisions are made on a department by department basis without consideration of the City's overall information technology needs.**

- **In the absence of a citywide plan for information technology staff or criteria to identify staffing needs, City departments hire information technology staff outside of the budget and civil service classification process. Consequently, departments frequently assign staff to work out of class or hire information technology staff into vacant non-information technology positions.**

- **Information technology position responsibilities change due to technology shifts, but departments do not redefine position responsibilities and train incumbents to meet these responsibilities. The Budget Analyst found in prior management audits of the Public Utilities Commission and the Department of Public Works that information technology staff skills were not aligned with the departments' information technology needs.**

- **The Committee on Information Technology failed to function effectively from 2003 through 2006 and has only been reconstituted in 2007. Consequently, the City has lacked information technology planning, coordination and guidance.**

- **City departments plan for their information technology projects in the absence of a citywide plan or criteria for implementing technology, often implementing systems that are underutilized, inefficient, or incompatible. For example, several City departments incorporated into the General Services Agency have incompatible human resources systems. Both the Port and the Public Utilities Commission have implemented maintenance management systems that were poorly utilized, as noted in the Budget Analyst's management audit reports. Further, the Port implemented an Oracle financial system that is incompatible with the City's general ledger system, FAMIS, requiring duplicate data entry.**

- **The Committee on Information Technology needs to assume a more formal role in developing a citywide information technology plan and serving as a forum to exchange information.**

The City's current procedures to allocate information technology staff and other resources to individual departments are inefficient. Staffing and resource decisions are made on a department by department basis without consideration of the City's overall information

technology needs. Because information technology is a support rather than a core function, it competes with other departmental priorities for resources. The extent to which departments allocate resources to information technology depends on the importance placed on information technology by department managers and funding availability. Consequently, some departments have fewer resources to meet their internal business and public service needs than other departments that are richer in information technology resources.

Information Technology Staffing

City departments have in-house information technology and staff as well as purchasing services provided by the Department of Telecommunications and Information Services. While larger departments and enterprise departments are largely self-sufficient in managing their information technology, smaller and General Fund-supported departments tend to rely more heavily on the Department of Telecommunications and Information Services.

Departments generally have the right mix of information technology skills but total resources vary significantly among departments, and departments that are similar in size and function may have noticeable differences in information technology staffing. This management audit evaluated the (a) number of information technology staff compared to the total full time equivalent positions, (b) types of services provided, and (c) number of unique systems maintained.

Departments' information technology staff differ in classifications and expertise. Some information technology managers have managerial experience but comparatively little information technology knowledge. Some non-managerial information technology staff lack a traditional technical background, either because they have moved between departments or because their work is primarily functional rather than technical.

The table below shows the number of information technology staff and the number of computer end-users for selected departments. As shown in the table, the number of information technology staff to end-users varies from a high of 263.25 in the Fire Department to a low of 12.28 in Human Resources. Although the variation results in part from the different functions of the respective departments, variation also exists among departments with similar functions. For example, the General Services Agency (excluding the Department of Public Works) has a larger number of end users per information technology staff than other departments that perform primarily business functions.

Table 4.1
Ratio of Information Technology Staff to Computer End-Users

Department	Information Technology Staff (FTE)	Computer End-Users	Servers	Ratio of Information Technology Staff to End-Users
Fire	4	1,053	27	263.25
General Services Agency	6	500**	25	83.33
Municipal Transportation Agency	30	2,083	172	69.43
Assessor	3	114	5	38.00
City Attorney	7	330	12	47.14
Planning	5.25	161.5	26	30.76
Building Inspection	16	298	30	18.63
Public Health	166	6,000*	331	36.14
Human Resources	14.25	175	12	12.28
Human Services Agency	63	1,900	61	30.16
Juvenile Probation	5	142	13	28.40
Recreation and Park	5	255	26	51.00
Treasurer / Tax Collector	5	225	12	45.00
TOTAL	**329.5**	**6,737**	**752**	**n/a**
Median	***6.00***	***255***	***26***	***38.00***
Average	***25.35***	***1,017***	***58***	***40.04***

* Estimate

** This includes the General Services Agency, the Mayor's Office and some Sheriff staff for which the General Services Agency information technology staff are responsible.

Departments must prioritize information technology staff relative to other departmental staff needs during the budget process. In the absence of a citywide plan for information technology staff or criteria to identify staffing needs, City departments hire information technology staff outside of the budget and civil service classification process. Consequently, departments frequently assign staff to work out of class or hire information technology staff into vacant non-information technology positions.

Information technology position responsibilities change due to technology shifts, but departments lack a plan to redefine position responsibilities and train incumbents to meet these responsibilities. The Budget Analyst found in prior management audits of the Public Utilities Commission and the Department of Public Works that information technology staff skills were not aligned with the departments' information technology needs.

Departments offer internal training and outside classes to maintain information technology staff skills, but many information technology staff reported the need for additional support to develop and maintain specialized skills, such as Geographic Information System (GIS) mapping. In order to accomplish more with the City's available expertise, the Budget Analyst recommends that the Department of Telecommunications and Information Services maintain a list of information technology staff throughout the City with expertise in specific information technology functions to support training and mentoring of information technology staff. This citywide list of information technology experts within City departments could be available, either informally or with a formal work order agreement, to share their expertise with other departments.

Role of Department of Telecommunications and Information Services

The Department of Telecommunications and Information Services supports core citywide service areas such as email, phone, and large network functions. Because many departments have specialized system applications and needs, departments' own in-house staff typically support department-specific information technology needs. Additionally, large departments with substantial in-house information technology capacity support most of their own information technology functions.

Committee on Information Technology

The Department of Telecommunications and Information Services provides staff support to the City's information technology policy-making body, the Committee on Information Technology. The Committee on Information Technology is made up of representatives from City departments and is responsible for making policy recommendations and reviewing major projects. All City departments are required to submit a folio to the Committee on Information Technology each year to update the departments' information technology plans, although most City departments have not complied with this process. A 2006 Civil Grand Jury report found that, in 2005, only 11 City departments actually submitted these folios.

Role of the Committee on Information Technology

The Committee on Information Technology makes recommendations on departmental information technology purchases and develops citywide technology standards. However, the Committee on Information Technology failed to function effectively from 2003 through 2006 and has only been reconstituted in 2007. Consequently, prior to 2007 the City lacked information technology planning, coordination and guidance for four years.

To better plan for and allocate information technology resources, the Committee on Information Technology needs to be a more effective planning and coordinating body. The Committee on Information Technology should perform a central role in policy development, strategic coordination, budgeting, resource allocation, and inter-departmental communications.

The current Committee on Information Technology structure has problems in assisting departments and setting standards, including:

- A disconnect between the Committee on Information Technology policymakers and the operational information technology staff who oversee information technology systems. Currently, information technology line staff hold informal monthly meetings to discuss issues with other departments and Department of Telecommunications and Information Services staff, but these are not formalized within the Committee on Information Technology structure.

- A broadly defined vision which lacks focus on end users and department-specific issues.

- Insufficient oversight to ensure that departments (1) are meeting their information technology goals; and, (2) are moving in tandem with other departments' technological progress.

The Department of Telecommunications and Information Services and Committee on Information Technology have worked to improve the role and function of the Committee on Information Technology, including the establishment of four subcommittees. Two of these subcommittees, the Planning and Budget Subcommittee and the Resource Subcommittee, could have significant impact improving the City's allocation of information technology resources.

According to the Committee on Information Technology's website, the objectives of the Planning and Budget Subcommittee are to ensure that:

- The most appropriate use of technology resources are used, including labor, hardware/software, and services; and,

- The City's processes and procedures are designed and implemented to maximize efficiency and effectiveness.

Information Technology Capital Projects

Information technology capital projects are implemented on an ad hoc basis with minimal communication among City departments, the Department of Telecommunications and Information Services and budget staff. In the absence of an information technology capital plan, the City risks redundancy in information technology projects and inadequate oversight over project implementation and costs.

City departments plan for their information technology projects in the absence of a citywide plan or criteria for implementing technology. Consequently, departments implement systems that are underutilized, inefficient, or incompatible. For example, several City departments that have been incorporated into the General Services Agency have incompatible payroll systems. Both the Port and the Public Utilities Commission have implemented maintenance management systems that are poorly utilized, as noted in the Budget Analyst's management audit reports. Further, the Port implemented an Oracle financial system that is incompatible with the City's general ledger system, FAMIS, requiring duplicate data entry.

The Committee on Information Technology should lead the City's information technology capital planning process, formalized in the Administrative Code, including:

- Preparation of an annual information technology capital plan that includes an evaluation of the City's information technology infrastructure, identifying information technology improvements necessary for City functions;

- Identification of all new information technology infrastructure plans;

- Identification of potential costs and a financial plan to fund information technology projects; and,

- Recommendations to the Board of Supervisors and the Mayor regarding annual information technology projects and funding.

Technical Oversight of Information Technology

The Committee on Information Technology and the sub-committee membership consist of information technology and non-technical department staff to provide policy guidance for departments' business needs and systems requirements. However, the City lacks a formal process for information technology managers and staff to share technical information and make technical decisions. The Department of Telecommunications and Information Services should establish a formal technical group of information technology managers and staff to meet and discuss information technology issues.

Two informal groups in information technology staff currently exist. One consists of information technology managers from large departments, such as the Municipal Transportation Agency and the Airport. The second group is a voluntary information technology managers meeting held monthly in City Hall, consisting of City departments' information technology line staff and mid-managers. These information meetings provide a forum to share citywide information technology issues and expertise and should be formalized.

Conclusion

The City lacks a formal information technology planning process to coordinate information technology projects and allocate resources. This has resulted in inefficient allocation of staff and implementation of projects. Therefore, the City, through the Committee on Information Technology and the Department of Telecommunications and Information Services, needs to (a) make better use of the expertise that already exists in a number of City departments, and (b) improve its information technology planning processes in a manner similar to the City's existing capital planning process. The City can establish formal information technology managers' meetings and provide adequate means of communication for information technology personnel across departments.

Recommendations

The Board of Supervisors should:

4.1 Adopt an Administrative Code provision establishing a citywide information technology capital planning process under the direction of the Committee on Information Technology.

The Chair of the Committee on Information Technology should:

4.2 Prepare an annual information technology capital expenditure plan based on the citywide information technology capital plan and submit a report for the Board of Supervisors containing details of the annual capital expenditure plan.

4.3 Request the Mayor to include the capital expenditure plan in the annual proposed budget to be submitted to the Board of Supervisors.

4.4 Establish formal information technology managers' meetings.

The Department of Telecommunications and Information Services should:

4.5 Maintain a list and serve as a clearinghouse of information technology expertise in City departments.

4.6 Implement a citywide information technology mentoring program.

Cost and Benefits

Implementation of these recommendations would result in more efficient allocation of resources.

5. Information Systems Security

- **No City department or entity is responsible for overseeing the City's information systems security, resulting in inconsistent and inadequate system security in City departments. Only 14 of 55 City departments, or 25.4 percent, have information system security plans, and of these 14 departments, the plans are often incomplete. As a result there is an unacceptably high level of risk that the City's information systems could be compromised through unauthorized access.**
- **In a review of ten City departments, only four had assessed the vulnerability of their information systems to unauthorized access. These vulnerability assessments found that department employees entered confidential data into their personal data drives; vendors and contractors had broad access to department information systems; and the public had broad access to the internet on public access computers. According to one department's Information Technology Director, although the department maintains important public and financial records, the department lacks sufficient resources to ensure that the department's information is secure.**
- **None of the ten City departments consistently implemented policies and practices to protect their systems' security. Although one department has a policy to install and update anti-virus software on each workstation, the department's review of its own practices found that not all workstations and servers had current security patches and anti-virus definitions.**
- **The City lacks a specific personnel classification that is responsible for departments' information system security functions or a set of core competencies required for information technology positions. Nine separate civil service classifications are responsible for security management, although information system security management is not included in the job description, skills or functions for most of these classifications.**
- **Currently, the Department of Emergency Management, Fire Department, and Police Department participate jointly in the e911 system, but lack a formal decision-making process to determine how each department could link the City's administrative applications and the e911 system more efficiently without compromising system security. This results in (a) duplicate systems requiring manual extraction of data or (b) segmented system applications and databases which fragment work flow and increase data entry and duplication errors. The Committee on Information Technology should develop decision-making guidelines for City departments that share information systems to allow more efficient management of these systems. This is especially important as the need for City departments to share systems increases in order to provide better public services.**

Information Systems Security

Information security can broadly be defined as an assembly of people, processes and technology that are aligned to prevent the unauthorized access to an enterprise's telecommunications, data storage systems, and business applications. The risk of unauthorized access to such system includes but is not limited to:

- Tampering with or destroying computer files or applications so as to render them unreliable or unusable;
- Gaining access to sensitive information to which an individual is not entitled such as financial or personal data that is of a confidential nature; and,
- Executing business transactions for which the individual is not properly authorized or that go undetected by the affected entity.

The following principals are critical to the provision of an effective information security program[1]:

1) System Architecture: System architecture refers to the manner in which a telecommunications system, and the array of computer applications and data storage systems hosted thereon are designed and built. An agency should incorporate various electronic and physical safeguards into its system architecture.

2) Planning: An organization should establish a comprehensive set of policies and procedures that describe: (a) the information security objectives of the organization; (b) the manner in which people, process and technology will be deployed to effectively safeguard the information assets of the organization; and (c) the standards of conduct to which individuals accessing the organization's computer systems are expected to adhere.

3) Implementation: An effective information security program is contingent upon an effective implementation program, including: (a) organizing and staffing, (b) employee training and awareness; and, (c) ongoing monitoring and assessment.

City Departments' Inconsistent Information Technology Security Practices

The City lacks a central department or oversight body to implement and enforce information technology security practices. The Administrative Code does not assign any City entity with responsibility for ensuring the safety and security of the City's information systems. As a result, City departments are unclear about their responsibility to maintain adequate security for their information systems.

[1] Network Security Fundamentals, Gert DeLaet & Gert Schauwers © 2005 Cisco Systems Inc ISBN 1-58705-167-2.

Neither the Committee on Information Technology or the Department of Telecommunications and Information Technology have explicit responsibility for setting information system security standards. The absence of a single City entity with responsibility for ensuring the safety and security of the City's information systems has also left individual departments on their own in the development of security plans, without the benefit of an authoritative guide for the design and implementation of such policies. As a result, the policies developed by individual departments are frequently either incomplete or reflect a lack of understanding with respect to the fundamentals of information security.

Only 14 City departments, or 25.4 percent of 55 City departments, reported that they had an information technology security plan in place. Of these 14 departments' security plans, one-half lacked at least one of the three elements of an effective security program, described above, including (a) system architecture, (b) planning and (c) implementation, and more than one-third lacked any of the three elements described above.

Information System Security Vulnerability Assessment

A closer review of ten City departments[2] identified a number of weaknesses in the security practices that could jeopardize the information assets of individual departments and that of the City's communications network as a whole.

Only four of the ten departments had conducted a vulnerability assessment of the department's communications, data storage, and enterprise application systems in the past two years. Two of the departments stated that the assessment had found deficiencies, including:

- Confidential department data was entered into department employees' personal data drives.
- Contractors and vendors had broad access to department modems.
- Public access computers had broad access to internet sites.
- User password policies did not meet industry standards.
- Workstations and servers were not current with the latest security patches and antivirus definitions.

According to one department's Information Technology Director, although the department is responsible for important public and financial records, the department lacks sufficient resources to assess the department's system security, and consequently cannot ensure that the department's information is secure.

[2] These ten departments are: Treasurer/Tax Collector, Assessor/Recorder, Elections, Recreation and Park, General Services Agency, Human Services Agency, Building Inspection, Planning, Public Health, and Fire.

Departments' Information System Security Policies

The ten City departments did not uniformly implement information system security best practices. Consequently, department staff were insufficiently informed of system security needs and the department's information system was vulnerable to security breeches.

All ten departments reported implementing certain policies and practices, including:

- Installation and updates of anti-virus software on each workstation;
- Restricted physical access to the department's servers; and
- Prohibiting end-users from installing third party software on their workstation.

However, as noted above, one department's vulnerability assessment showed that, despite the policy to install and update anti-virus software on each workstation, not all workstations and servers were current with the latest security patches and antivirus definitions.

Eight of the ten departments reported implementing policies to:

- Prohibit external connections, such as modems, that bypass the City's firewall; and
- Require employees who access the department's network from outside the system to use a secure communications protocol.

Only six of the ten departments required employees to change their passwords at periodic intervals. Only four of the ten departments set up the workstations to notify employees during log on that the use of the computer system is for authorized use only.

Five of the ten departments required that one or more members of the Information Technology staff attend at least one conference, workshop or seminar on information system security annually.

Three departments reported that they had not distinguished between public and confidential or restricted records maintained in their information systems nor trained employees on the distinction. Although the departments which had legal requirements to maintain confidential or restricted records, such as Public Health, Elections, and the Human Services Agency, reported doing so, other departments had failed to implement policies or practices defining public and restricted records.

City Personnel Responsible for Information System Security

The City lacks a specific personnel classification that is responsible for departments' information system security functions or a set of core competencies required for information technology positions. Nine separate civil service classifications, ranging from 1073 IS Director to 1022 IS Administrator II are assigned responsibility for departments' information system security, as shown in Table 5.1.

Table 5.1

Personnel Classifications Used by Selected City Departments for Information Technology Systems Security

Classification	Classification Description
1073	IS Director
1071	IS Manager
1070	IS Project Director
1054	IS Business Analyst – Principal
1044	IS Engineer Principal
1043	IS Engineer Senior
1042	IS Engineer Journey
1023	IS Administrator III
1022	IS Administrator II

Source: Budget Analyst survey

Based on a review of job descriptions for the above nine classifications, only the 1022 IS Administrator II and 1023 IS Administrator III positions are explicitly responsible for managing information system security. The job descriptions for 1070 IS Project Director and 1071 IS Manager positions imply responsibility for information systems security within the broader information system management responsibilities. The job responsibilities for the other classifications - 1054 IS Business Analyst and the IS Engineer series positions - do not include ongoing responsibility for managing information systems and system security.

Implementing Security Policies Among Departments

Systems Communications Issues and Inefficiencies

Because the Committee on Information Technology has been limited in overseeing the City's information technology functions, City departments have no formal process to manage shared information technology systems. The Department of Emergency Management and the Fire and Police Departments share the e911 system, which is comprised of several subsystems related to emergency communications, response, and information systems applications coordinated by the Department of Emergency Management.

Information security policy established by the Police Department, based on California Law Enforcement Telecommunications Systems (CLETS) guidelines, prevents the linkage of the e911 system to the citywide network. The Department of Emergency Management contends that while there was no express statutory requirement or written departmental policy that mandated the e911 system be separate from the citywide network, the decision to do so was largely based on (a) network security concerns and (b) issues regarding the permissible use of emergency communications bond and fee revenue.

According to information technology staff in the Department of Emergency Management, the e911 system needs to be physically separate from the citywide network given the vulnerabilities in the citywide system – many of which still persist. Because the citywide system is connected to the Internet, the system is less secure and more prone to viruses and other technical complications which can result in network failures. The e911 system, which was developed using secure fiber optic ring technology, is much more advanced than the citywide system and is not connected to the Internet.

Additionally, the e911 system is linked to CLETS, which contains criminal history, vehicle, and wanted-suspect files. CLETS interfaces with California Department of Justice files in Sacramento as well as with Federal Bureau of Investigation National Crime Information files in Washington, DC. Given the classified nature of this information, accordingly any network linked to CLETS must be highly secure to ensure restricted access to authorized personnel only. According to the Department of Emergency Management, any departmental request to link outside networks to the e911 system would require approval from the California Department of Justice and in some cases the Federal Bureau of Investigation.[3]

Because finance and administrative staff in the Fire Department must frequently utilize data and applications in both systems, these individuals currently have two separate computers to access the e911 and citywide systems respectively. This two-computer system is inefficient and costly to maintain. According to the Fire Department, costs for maintaining the two-computer system are approximately $70,000 annually which include costs for 130 duplicate computers and additional software licenses, associated maintenance and replacement costs, and the cost of the duplicate infrastructure (i.e. additional routers, switches) needed to support the system. As a result, most of these workstations are extremely old and create multiple support problems for information technology staff. Moreover, because of the ongoing need to maintain this equipment, existing information technology resources can not be dedicated to new projects.

Additionally, because the two systems cannot communicate with one another, e911 systems data is not readily available for use in citywide systems applications. Currently, scheduling information for Fire Department field staff, which is stored in the e911 system, must be manually pulled and entered into the citywide system, which contains the payroll processing application. According to the Department of Emergency Management, once the City's payroll system is updated, a secure interface can be developed between the two systems, allowing for the electronic transfer of data. Similarly, other Fire Department functions, such as reporting and billing for false alarms, require additional staff time due to the lack of systems communications. False alarm incidents, which are reported in the e911 system, must be manually extracted and populated into the citywide system for repeat offence billing.

[3] Because CLETS is linked to the e911 system, according to IT staff from the Department of Emergency Management, such approval is necessary whether or not systems communications would permit direct access to CLETS.

The Police Department has issues similar to the Fire Department although the main problem is not separate networks. Rather, according to the Police Department, the lack of uniform, citywide information security policies and procedures has led to segmented systems applications and databases which fragment work flow and increase data entry and duplicative errors.

Security risks on the citywide network have improved as technology has advanced, but these improvements still lack the sophistication of the e911 system. Information technology staff from the Fire and Emergency Management Departments agree that sufficient security measures could be developed (i.e. firewalls, encryptions, and narrow pathways) to allow for limited systems communications for the purposes of conducting specified administrative tasks, although linkages to the e911 system would still require full agreement from each respective department and state approval given CLETS.

Currently, the three departments participating in the e911 system have procedures to allow administrative changes to the shared system. However, these departments lack a formal process to determine to what extent more efficient linkages could be made between the City's administrative applications and the e911 system without compromising system security. The departments are dependent on working through their different understandings of security and bond financing requirements for the e911 system and the impact on linking to the City system without guidelines for decision making. The Committee on Information Technology needs to develop a formal decision-making process for City departments that share information systems to allow more efficient management of these systems. This is especially important as the need for City departments to share systems increases in order to provide better public services.

Conclusion

The City lacks a central authority to establish and oversee the City's information system security, resulting in inconsistent and inadequate system security in City departments. Very few City departments have information system security plans, and for those that do have plans, the plans are often incomplete. As a result there is an unacceptably high level of risk that the City's information systems could be compromised through unauthorized access.

The Committee on Information Technology, which provides leadership and coordination of the City's information technology pursuant to the Administrative Code, should assist City departments in planning for their information system security. The Committee on Information Technology should develop a risk assessment plan, identifying which departments are most vulnerable to security breeches and procedures and resources necessary to reduce security risks, and establish baseline information system security procedures for the City departments.

Responsibility for information system security within City departments needs to be clearly defined. The Committee on Information and Technology should identify the set of skills necessary to manage information system security and ensure that these skill sets are

included in the job functions of select information technology classifications. Only positions with the identified system security skills and job functions should then be assigned responsibility for the departments' information system security.

Recommendations:

The Chair of the Committee on Information Technology should:

5.1 Establish policies and standards for each City department to develop a risk assessment plan that (a) identifies the City departments with the greatest security risks, and (b) resources necessary to reduce security risks.

5.2 Recommend annual funding for City departments' information system security programs based upon the risk assessment.

5.3 Establish criteria for City departments' information system security policies and procedures.

5.4 Define job skills and functions necessary to manage departments' information system security programs.

5.5 Develop formal decision-making guidelines for City departments that share information systems.

Costs and Benefits

City departments will incur costs to evaluate and implement programs to increase information system security. The Committee on Information Technology should develop a plan to identify and reduce City departments' information system security risks and recommend annual funding based on that plan as part of the annual budget process.

6. Information Technology Systems Inventory Management

- **There are no policies, procedures, or standards for safeguarding and accounting for computer equipment, or for replacing computer equipment. Although the Committee on Information Technology and the Department of Telecommunications and Information Services are responsible to provide information technology leadership, they have not provided leadership citywide or to City departments for better management of their information technology inventory.**

- **City departments have inconsistent practices in managing information technology inventory. In a review of 13 City departments, inventory reports varied significantly in the information that they provided, ranging from (a) basic information, such as the equipment vendor, serial number, and model, to (b) more detailed information such as the name of the staff person assigned to each computer, the operating system version, and the date of equipment deployment.**

- **Larger City departments, such as the Municipal Transportation Agency and Public Utilities Commission, have formal asset management tools to maintain and manage information technology systems and equipment. However, most City departments lack a formal method to manage their information technology assets, impairing their ability to forecast replacement cycles and future financing requirements.**

- **Enterprise departments, with a consistent revenue stream, are able to replace or upgrade their information technology systems on a regular basis. General Fund-supported departments generally have much longer replacement cycles than enterprise departments. For example, the Fire Department has a 400 megahertz, Windows 95 desktop in its administrative office that takes several minutes just to load the computer's basic operating system. By contrast, every desktop computer within the Department of Building Inspection is less than one year old.**

- **Because older equipment is only able to operate using older operating systems and older versions of applications, those departments with older computers generally support a greater number of operating system types and application types. For example, the Fire Department supports Microsoft Office versions 97, 2000, and 2003, and, therefore, Fire Department information technology staff must be able to support Microsoft Windows versions 95, 98, 2000, and XP.**

The objective of information technology management is to provide and support information technology systems in a manner that minimizes the overall total cost of ownership, which includes all costs associated with procuring, deploying, operating, and disposing of information technology systems. Given how much the City has expended in its procurement and deployment of information technology systems, an important measure of the City's overall success in its procurement and deployment is how well it manages its information technology systems.

Lack of Citywide Policies and Procedures

There are no policies, procedures, or standards for safeguarding and accounting for computer equipment, or for replacing computer equipment. Although the Committee on Information Technology and the Department of Telecommunications and Information Services were established to provide information technology leadership, they have not provided leadership citywide or to City departments for better management of their information technology systems.

Inventory Management

The Budget Analyst obtained computer equipment inventory reports from 13 City departments in order to determine the existence and adequacy of such reports. The report formats varied significantly in the information that they provided, ranging from (a) those reports which only provided basic information, such as the equipment vendor, serial number, and model, to (b) those reports which provided additional information such as the name of the staff person assigned to each computer, the operating system version, and the date of equipment deployment.

Should the City attempt to realize some form of centralized information technology systems management, it should establish minimum criteria for the contents of departments' inventory reports, which would enable a central agency to access inventory information on a citywide basis for better management of citywide information technology systems. Specifying minimum criteria for the content of computer inventory reports would not prohibit departments from using additional data fields particular to their own specialized management needs.

The Budget Analyst selected nine departments for a sample of desktop and laptop computers in order to determine the accuracy of the equipment inventory reports. The inventory report provided by the Office of the Assessor-Recorder included a data field for equipment serial number, which is a necessary component of an information technology systems inventory. However, the majority of the individual records in the Assessor-Recorder's inventory did not actually include a serial number. The Budget Analyst was thus unable to audit a sample of the equipment reported by the Office of the Assessor-Recorder.

The Budget Analyst's review of the information technology systems inventories of the remaining eight departments is summarized in the following table.

Computer Equipment Audit Results

Department	No. of Desktop Computers	No. of Laptop Computers	Sample Size	No. Not Located	Desktop Replacement Cycle	Comments
Building Inspection	357	12	31	0	3 Years	All new desktop computers
City Planning	162	2	30	0	6 to 7 Years	Win 2000
Elections [1]	180	32	30	0	5 to 6 Years	Win 2000 & XP. All computers located on initial visit.
Public Health (General Hospital) [2]	1,083	91	30	4 desktops	Funding dependent. Some computers are 10 years old.	Inventory includes an additional 424 thin clients at SFGH. [3]
Treasurer-Tax Collector	296	17	31	0	3 to 4 years	All computers located promptly on initial visit.
Fire	365	31	36	0	Funding dependent. Field workstations were purchased before 2000. Some Win 95 in use.	All computers located promptly on initial visit (two-day duration because of dispersed locations).
Juvenile Probation	127	4	36	0	3 to 4 Years	
Recreation and Park	240	31	45	2 laptops, 2 desktops	4 to 8 years	
Total	**2,810**	**22**	**269**	**8**		

As shown in the table above, of the total sample of 269 computers, out of a population of 2,810 total computers, the Budget Analyst was able to verify the existence of all but eight computers, four each in the Recreation and Park Department and San Francisco General Hospital. Although there was variation in the control environments of the six remaining departments, in general those control environments functioned appropriately, with little search time necessary to identify the selected computers.

San Francisco General Hospital and the Recreation and Park Department operate in the most challenging control environments of the selected departments. At San Francisco General Hospital, many of the computers, even desktop computers, are mobile, and medical staff move them around freely. Computers allocated to the Recreation and Park Department are dispersed to approximately 59 sites throughout the City, and the

[1] On a daily basis, the Department of Elections uses two laptop computers and up to 40 desktop computers.
[2] The numbers of desktop and laptop computers shown are for San Francisco General Hospital only, and do not include computer equipment on site but owned by the University of California, San Francisco. In addition to the SFGH assets, the Department of Public Health has 2,308 desktops and 247 laptops assigned to Community Health; 210 desktops and 6 laptops assigned to Jail Health Service; and 375 desktops and 15 laptops assigned to Laguna Honda Hospital.
[3] A thin client is a network computer without a hard disk drive, which, in client/server applications, is designed to be especially small so that the bulk of the data processing occurs on the server.

information technology staff allocated to the department consist of six information technology positions, including one manager.

This review indicates that, while certain City departments are accounting for their computer assets effectively, others, as exemplified in the Office of the Assessor-Recorder, the Recreation and Park Department, and San Francisco General Hospital, need to improve their accountability of computer assets. To ensure against future inventory errors, the Budget Analyst recommends that the City develop (a) citywide policies on maintaining computer inventories and (b) a quality control process to ensure adequate compliance with such policies.

Use of Asset Management Tools

City departments with large information technology systems, such as the Public Utilities Commission and the Municipal Transportation Agency, use formal asset management tools for management and maintenance of their information technology systems. Asset management tools can automate and track equipment and software inventories. These tools have the capability to collect hardware (e.g., Pentium IV processor) and software (e.g., Windows 2000 Operating System) information and can greatly enhance a department's ability to manage: (a) the life cycle of its computer assets, from deployment to disposal; (b) software license compliance; (c) software patches; and, (d) software distribution and upgrades.

The Public Utilities Commission, whose information technology systems includes an International Business Machine (IBM) mainframe, 120 servers, 1,725 desktop computers, and 394 laptop computers, uses an asset management tool named Track-IT Enterprise. Track-IT is an automated asset management tool which electronically maintains a hardware and software inventory of all of the Public Utilities Commission's systems. Track-IT automatically conducts an audit of any hardware or software when it is first connected to the Public Utilities Commission's network and a network user logs on. Thereafter, Track-IT repeats this audit every 90 days in order to maintain up-to-date inventory information in the Track-IT database.

With an effective asset management program, departments can better forecast budget expenditures throughout the life cycles of all of their information technology systems.

Computer Replacement Policies and Practices

The ages of existing information technology systems vary significantly by department. Typically, enterprise departments - with a consistent revenue stream - are able to use more recent technology and replace their information technology systems on a regular basis. This contrasts with General Fund-supported departments, which generally have much longer replacement cycles than enterprise departments. For example, the Fire Department has a 400 megahertz, Windows 95 desktop in its administrative office that takes several minutes just to load the computer's basic operating system. By contrast,

every desktop computer within the Department of Building Inspection is approximately one year old.

Because older equipment is only able to operate using older operating systems and older versions of applications, those departments with older computers generally support a greater number of operating system types and application types. For example, the Fire Department supports Microsoft Office versions 97, 2000, and 2003, and, therefore, Fire Department information technology staff must be able to support Microsoft Windows versions 95, 98, 2000, and XP.

Given this finding, the Budget Analyst recommends that the Committee on Information Technology, with the assistance of the Department of Telecommunications and Information Services, develop and implement a citywide information technology replacement plan.

Laptop Usage Policies

Many City departments utilize both desktop and laptop computers. This is significant because, unlike desktop computers, which are large and generally include several large components, laptop computers are light and portable and, therefore, more susceptible to theft or loss than are desktop computers. To guard against potential theft or loss, the Municipal Transportation Agency has a policy on the issuance of laptop computers to department personnel which is to provide laptop computers to staff only (a) on loan under special circumstances and (b) if the proper authorization has been provided through an authorization form signed by a supervisor.

In order to better monitor the issuance of laptop computers and guard against their potential theft or loss, the Budget Analyst recommends that the City implement a citywide policy similar to the Municipal Transportation Agency's policy, requiring strict controls around issuance of laptop computers to department personnel including clear lines of authority for management of such an issuance process.

Conclusion

Currently, citywide policies, procedures, and standards for accurate information technology systems inventory management are non-existent. What policies, procedures, and standards do exist have been implemented by individual departments and are inconsistent in the information they track and the means by which they are updated. Several City departments have not invested the resources or the controls which would ensure an appropriate level of computer asset accountability.

Recommendations

The Chair of the Committee on Information Technology should:

6.1 Develop citywide information technology inventory management policies, procedures and standards.

6.2 Develop a citywide plan for replacing and upgrading General Fund department information technology.

6.3 Develop a citywide policy and controls for issuing and monitoring laptop computers.

6.4 Request all City department directors to maintain information technology inventories consistent with the Committee on Information Technology's standards.

Costs and Benefits

Implementation of these recommendations would reduce the risk of loss and associated costs due to theft, waste, or abuse.

Department of Telecommunications and Information Services' Response

CITY AND COUNTY OF SAN FRANCISCO

DEPARTMENT OF TELECOMMUNICATIONS
& INFORMATION SERVICES

CHRIS A. VEIN
CHIEF INFORMATION OFFICER AND EXECUTIVE DIRECTOR

TELEPHONE: 415.554.0801

October 2, 2007

Mr. Harvey Rose
Board of Supervisors Budget Analyst Office
1390 Market Street, Suite 1025
San Francisco, CA 94102

Dear Mr. Rose:

As Director of DTIS and chair of COIT, I am submitting our final response to the Budget Analyst report titled Management Audit of San Francisco's Information Technology Practices.

If you have any questions, please contact me at (415) 554-0801 or Jon Walton, COIT Planning Director at (415) 554-5728.

Sincerely,

Chris A. Vein
Chief Information Officer and
Executive Director

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Executive Summary

The City has aggressively improved the planning, budgeting, and operations of its information technology (technology) governance structure and Department of Telecommunications and Information Services (DTIS) operations.

This is demonstrated by the fact that the majority of the recommendations included in the Budget Analyst's audit of citywide technology support changes are already underway. The City looks forward to discussing the remaining recommendations with the Analyst and the Board of Supervisors (BOS) to gain clarification and determine the most appropriate action.

The City's technology governance organization has been re-energized by the reformation of the Committee on Information Technology (COIT) and the work plans of the four COIT subcommittees. The Department of Telecommunications and Information Services (DTIS) has been reorganized, focusing on improved staffing, operations, and technology. The current City policy is that individual departments are responsible for departmental technology operations and technology improvements.

Since the audit recommendations are supportive of the work underway by COIT and DTIS, we chose not to comment in detail on the background audit findings. Our responses are focused on the actions underway to implement the recommendations at the end of each chapter.

Finally, the recommendations for implementing changes have been given primarily to the Executive Director of DTIS who also serves as the City CIO and Chair of COIT. The Director of DTIS (City CIO) is committed to supporting and implementing those changes which are within the purview of DTIS. The Chair of COIT will present the recommendations to COIT as a body for review, approval and action.

This report does not recommend changing the current City policy of technology autonomy of the departments. Therefore the responsibility for the implementation of COIT policy and guidelines will remain the direct responsibility of the individual departments.

Background

The City and County of San Francisco (City) has a long history of both recognizing the strategic value of technology and continuously attempting to approve it. Examples include:

- In 1996, the City approved a strategic information technology (IT) plan, identifying problems to be resolved, and a framework for doing so.
- In 2001, the City hired a consulting company to determine how well the City was meeting that strategic plan. A plan to centralize IT was developed but not implemented.
- In 2000, and again in 2004, the City approved a Telecommunications Plan likewise identifying telecommunications problems and suggesting solutions.

The historic impact of unsuccessfully addressing the City's IT and Telecommunications needs includes insufficient planning for the future, inefficient use of resources, and development of redundant operations. The lack of consistent leadership or direction to drive this initiative has resulted in many key stakeholders pursuing "private need" versus "public good" by managing strictly to department IT needs or wants. This has increased existing fragmentation and decentralization of IT policies, procedures, standards, and services at increasing (poorly measured due to its decentralization) cost to the City and its citizens.

Call for Action

In the last four years, renewed energy has been directed at these challenges:

- The Mayor identified the rebuild of DTIS as a key "signature" initiative
- The Board of Supervisors, through its committee structure, held hearings addressing technology governance and operations
- The Committee on Information Technology voted to develop new organization, policies, processes, and procedures.
- Mayor Newsom created a new leadership position, that of a City Chief Information Officer, to lead realignment efforts.
- Numerous audits including a Civil Grand Jury Audit of Citywide technology, a Controller's Audit of DTIS, and now the Board of Supervisor's Budget Analyst's Report have and will provide guidance to the City.

Action Plan

The current plan recognizes that certain technology functions should remain under the jurisdiction of the citywide technology department (DTIS) and other functions should remain decentralized with the departments. This Federated Model balances the unique nature of our government with best practices in the technology industry and other governments. Included in the Federated Model are:

1. A technology planning and budgeting plan and process that identifies, prioritizes, and funds initiatives that support stated City policy and operational objectives.
2. Revitalized technology governance (COIT), citywide technology organization (DTIS), and departmental IT organizations. Use of the Federated Model will facilitate the working relationship between these organizations.
3. Investment in our aging technology infrastructure and operations with a focus on building new capabilities; consolidation of duplicated technology operations to take advantage of economies of scale; and standardization of technology across the enterprise.
4. Simplification of business and technology applications and operations will ensure that technology is actually supporting a more efficient and effective government. Through the 311 project, the City will have an opportunity to review how it provides services, optimize our service delivery method, and support it through automation.
5. Investment in our City technology staff

Implementation of this strategy is not without its challenges. Primary is agreement on the vision and cooperation and sharing in its execution. Too often, there is a conflict between the City's technology organizations over money and authority. Our technology community must emphasize collaboration, communication, shared responsibility, knowledge-sharing, and increased services built on:

- A shared vision of a service centric government enabled by technology
- Common goals of technology interoperability, and scalability, security.
- Excellence at the organizational, staff, policy and procedure, and technology levels.

Preliminary Results

Highlights of the changes at COIT correspond to the new governance structure put in place.

1. Seven meetings in 2007, focused on creating a shared vision and action items
2. New COIT Director hired with extensive public and private sector governance experience
3. New COIT website unveiled
4. Four COIT subcommittees formed and working
5. COIT Subcommittee charters and work plans approved

Highlights of the changes at DTIS correspond to the new organizational structure in place:

1. Department has been restructured, collapsing some and creating other divisions
2. Key new staff hired at senior levels
3. Business model changed, focusing on a more rational chargeback structure
4. Focus on process improvements, both technical and business
5. Technology updates in process, including replacement and new hardware software

It is clear that implementation is not just the responsibility of the Chair of the Committee on Information Technology or the Director of the Department of Telecommunications and Information Services. Rather, it is the responsibility of all departments and staff to support and work toward a common goal.

Response Approach to the Board of Supervisor's Audit

Given the broad range of items listed, it is not practical to provide a line-by-line response to this audit. **Therefore, our approach is to provide introductory comments to the chapters or sections and specifically comment on only those items where correction is paramount to understanding the recommendations.**

Each recommendation is followed by a statement of agreement or disagreement and explanation of those statements. Our intent is to be brief.

Audit Introduction

Response to Introduction

Comments on the Committee on Information Technology Section

The introduction and body of the report contains many observations and recommendations that point out the current state of decentralized authority and management of technology systems, budget, and staff in the City. While most of the recommendations make good business sense, the report puts the responsibility of implementation of these recommendations either with COIT and/or DTIS. However, it does not address the overarching fact that neither COIT nor DTIS, by administrative code, or practical application, have the authority over citywide technology staff, project, budgets, policy, or performance.

Current Administrative Code describing the role of COIT

"The Committee on Information Technology shall take a leadership role in encouraging and coordinating departmental efforts in the use of new technology. The Committee shall promote interdepartmental cooperation and City standards. It shall review major interdepartmental and citywide projects and make policy recommendations thereon."

While COIT and DTIS will continue to encourage, coordinate, and review technology initiatives in the City, the implementation of many of the recommendations will remain at the departmental level.

Comments on the Reorganization of the Committee on Information Technology Section

It is the intent of the COIT subcommittees to meet on a regular basis. The COIT website (http://www.sfgov.org/site/coit) notes the following meetings have been held by the COIT and the subcommittees in 2007;

- COIT – February, March, May (3 times), June, July
- Architecture – March, April, August, September
- Performance – April, May, June, August, September
- Planning and Budgeting – May (3 times), September (2 times)
- Resources – April, May, July, August, September

One of the challenges the subcommittees have faced in holding the meetings is that the department's staff that make up the membership of the meetings often have conflicting work priorities for the dates/times that the meetings are scheduled. While the members are committed to supporting the subcommittees this has unfortunately affected the schedule due to cancellations and rescheduling to ensure a quorum of the members. To address this challenge the subcommittees have recently discussed having members provide alternate attendees to attend meetings and contribute to the COIT work so that the meetings and decisions could move forward in a more timely fashion.

COIT has provided direction to the subcommittees through the COIT Director and the COIT Chair. Explanatory letters were written to Department Heads whose staff were invited to join the Subcommittees and meetings were held with each Subcommittee Chair about strategic direction and implementation. Other meetings were held with City groups to discuss strategic direction and implementation. The result of this direction can be measured by the progress each of the subcommittees has made in the development of work plans and revised subcommittee charters which are scheduled to be presented to COIT.

Comments on the City's Chief Information Officer Section

In 2006, the classification for the Director of the Department of Telecommunications and Information Services was elevated in recognition of the important and growing role of technology in the City and the need for a citywide Chief Information Officer. The Mayor approved the elevation of the Director of DTIS as the citywide CIO.

Currently there is no formal, or dotted line, reporting relationship between the City CIO and the various department CIO's or technology staff.

Comments on the Methodology Section

As will be repeated throughout comments to the audit, there are many participants in the City's technology strategy and operation. The recommendations throughout the audit do not focus on the specific roles and responsibilities of the Departments within this framework. Many of the recommendations contained in the report will require equal participation and responsibility by COIT, DTIS, and City departments.

Section 1 – Information Technology Planning and Purchasing

Response Introduction

The City has long accepted a highly decentralized approach to technology management and projects. While the implementation of the recommendations in this section will improve many issues, it does not address the basic issue that strategic decisions need to be made regarding the relationship, roles, and function of DTIS, Department IT staff, and COIT.

One of the basic tenants of technology strategic planning is the requirement that the technology plans are created to support the business of the organization. Therefore, it is critical that department technology plans be aligned to business plans. As part of the effort to update or create technology plans departments should ensure the accuracy of their business plans in FY 07-08. Under the new technology budget planning process approved by the COIT Planning and Budgeting Subcommittee, all departments submitting budget requests for projects with a total cost of more than one million dollars will be required to submit a copy of their department technology budget plan with the request.

Specific Introductory Comments

DTIS negotiated the Oracle Enterprise Agreement in 1998 at the direct request of COIT. SPMG (a subcommittee of COIT) was created and it created a Client Server Applications Committee who determined the products and platforms to be procured. DTIS also interviewed the departments to validate that all requirements were being met. DTIS, as requested by COIT, negotiated the financial arrangements and administered the contract. The final contract included all Oracle products available at the time for three hardware platforms.

Response to Analyst's Recommendations

The COIT Planning and Budgeting Subcommittee was established to specifically address the development of the policy and guidelines for technology planning and budgeting projects as outlined in this section.

The Chair of the Committee on Information Technology should:

1.1 Request each City department to develop an information technology-specific strategic plan which provides specific, quantifiable goals within a timeline that the department can check against actual outcomes.

Agree. This task is underway.

The new COIT Planning & Budgeting Subcommittee work plan includes a task described as the definition of a new citywide technology budget calendar and process. One of the elements of the new COIT Planning & Budgeting Subcommittee process will be a requirement that departments submit an annual

technology plan to COIT for review as part of the annual budget process and that departments demonstrate how all new technology budget requests support the departments strategic technology plan. This initiative may require additional funding in FY 08-09 to provide expert training to each department staff in the development of department technology plans.

1.2 Develop incentives that guide each department to re-visit its strategic plan as a means of ensuring achievement of strategic plan goals.

Agree. This task is underway.

The new COIT Planning & Budgeting Subcommittee process will require that departments submit an updated department technology plan to COIT for review as part of the annual process. Any department not submitting a strategic technology plan as part of the technology budget process may not be eligible for COIT technology project funding. The time line for the implementation of this element of the COIT Planning and Budgeting Subcommittee process will be dependent on the availability of funding for the external technology planning experts and department staff resources.

1.3 Create communications tools for information technology managers to communicate more effectively with each other.

Agree. This task is underway.

COIT is improving communication between technology managers by;

COIT has created a new COIT website that technology managers can use to review COIT agendas, meeting minutes, and presentations.

COIT, and the COIT subcommittees, are holding monthly meetings that are open to all staff and public to attend and provide input.

Each of the four COIT subcommittees has key IT managers from different departments to ensure that each major service area has representation on each subcommittee. IT managers from around the city are encouraged to attend and participate in the subcommittee meetings.

COIT staff is meeting with department IT managers on a regular basis to exchange ideas and to solicit input on the technology governance process.

1.4 Develop and recommend to the Board of Supervisors a protocol that requires Board of Supervisors review and approval of all City information technology contracts funded with City monies prior to transfer to a separate authority.

Agree.

COIT will work with Purchasing and the Controller to determine a policy and process to implement this recommendation and present the plan to the Board for approval.

The Director of the Department of Telecommunications and Information Services should:

1.5 Work with the Purchaser and Controller to develop procedures to track City department purchasing requests against their long-term information technology goals in order to ensure that purchasing requests are not only needs-appropriate but also goals-appropriate

Agree.

DTIS will work with Purchasing and the Controller to determine a plan to implement this recommendation and present the plan to the Board for approval as part of the budget process.

1.6 Develop a process to continually solicit feedback from City departments in order to determine the most-appropriate technological offerings of any enterprise license agreement and then negotiate lower license costs by aggregating all City departments' total information technology needs.

Agree.

The identification of enterprise agreement opportunities is part of the COIT Resources Subcommittee FY 07-08 work plan.

DTIS will solicit input from departments on specific product and contract needs as part of the business case development process for each of the COIT approved enterprise agreements.

This may require additional funding in FY 08-09 as the staff position requested by DTIS in the FY 07-08 budget process to focus on enterprise agreement contracts was not funded.

The Office of Contract Administration should:

1.7 Review the Office of Contract Administration's procurement policies in order to ensure that departments have the appropriate information to make information technology procurement decisions and that processes are applied consistently across all departments.

The Office of Contract Administration will begin review shortly.

Section 2 – Information Technology Project Management

Response Introduction

The COIT Performance and Resources Subcommittee was established to specifically address the development of the policy and guidelines for technology projects as outlined in this section.

Specific Introductory Comments

The current administrative code notes that COIT provides policy and guidance to departments. Therefore the following describes the roles of DTIS, COIT, and departments with regards to project management.

1. COIT is focused on setting policy and developing guidelines that departments can use to better manage projects.

2. DTIS manages projects as a service to other departments and programs based on a case by case request.

3. Departments typically control the entire project including the assignment of project manager, staff resources, management of consultants, and project budgets.

COIT and DTIS will continue to take action to develop policy, templates, and guidelines for departments; however the final responsibility of the implementation of project management policy is with departments.

Response to Analyst's Recommendations

The Chair of the Committee on Information Technology should:

2.1 Establish criteria for information technology project management, including definitions of (a) project leadership, (b) business objectives, (c) budgets.

Agree. This task is underway.

The establishment of citywide technology project management standards that address these items is part of the Performance Subcommittee FY 07-08 work plan. DTIS has submitted a set of project management templates and proposed guidelines for consideration by the Performance Subcommittee.

2.2 *Establish project management guidelines for inter-departmental projects based on the information and technological needs of each of the participating departments.*

Agree. This task is underway.

The establishment of citywide technology project management standards that address these items is part of the COIT Performance Subcommittee FY 07-08 work plan. DTIS has submitted a set of project management templates and proposed guidelines for consideration by the Performance Subcommittee.

2.3 Establish simple, flexible, citywide project management tools and guidelines for City department information technology.

Agree. This task is underway.

The establishment of citywide technology project management standards that address these items is part of the COIT Performance Subcommittee FY 07-08 work plan. DTIS has submitted a set of project management templates and proposed guidelines for consideration by the Performance Subcommittee.

The recommendation of the procurement and implementation of COIT approved project management tools will be requested as part of the FY 08-09 budget process.

2.4 Assist City departments in reviewing the key service delivery functions within each department to identify relationships and inter-dependencies between core information technology systems.

Agree. This task is underway.

During the FY 08-09 budget process the COIT Planning and Budgeting subcommittee and the Performance subcommittee will jointly review department project proposals to identify commonalities and opportunities for cooperation.

The Director of the Department of Telecommunications and Information Services should:

2.5 Establish information sharing channels for information technology and other department staff so that project ideas, success stories, and challenges are shared within and across departments.

Agree. This task is underway.

DTIS is working with the COIT Performance Subcommittee to host meetings on a quarterly basis for the purpose of exchanging ideas and sharing knowledge. The first meeting hosted by COIT and DTIS of key technology projects resulted in a meaningful exchange of ideas and information and an agreement to continue the meetings on a quarterly basis.

DTIS will work with the COIT Performance Subcommittee to create an Intranet portal for use by City technology project managers to access project management templates.

2.6 Improve access to project management training for information technology and administrative staff.

Agree.

DTIS will work with DHR to determine a plan to implement this recommendation and present the plan to the Board for approval as part of the budget process.

The Controller should:

2.7 Work with City departments to develop accounting and budgeting systems that track information technology project costs, including staff time and overhead.

The Controller's Office is in the process of developing an improved method of tracking IT related budgets and expenditures as part of the new standard budget process parameters that will be incorporated in the new budget system.

Section 3 – The Justice Information Tracking System (JUSTIS)

Response Introduction

The history of the JUSTIS Project provides a case study in how a project on the brink of failure, as this was pre-2003, can be remediated with the application of professional project management, a disciplined approach to setting priorities, and commitment from each of the member departments to collaborate in creating a system that serves the entire criminal justice community far better than would have been possible through individual efforts.

Upon the conclusion of providing input with referenced documents into two draft versions of this report and meeting with the analysts who authored this document, we concur with the findings and recommendations of this report.

Response to Analyst's Recommendations

The Director of Telecommunications and Information Technology should:

3.1 Present a report to the Board of Supervisors prior to December 31, 2007, on the status of JUSTIS implementation, including project timelines and costs.

Agree.

DTIS will work with the key stakeholders of this project to prepare a presentation on the JUSTIS project for the Board of Supervisors prior to December 31, 2007.

The Chair of the Committee on Information Technology should:

3.2 Develop policies and procedures governing interdepartmental projects, including responsibility for project and budget management.

Agree. This task is underway.

The COIT Performance Subcommittee is currently evaluating existing project management guidelines and policies as part of their work plan. It is anticipated that a recommendation regarding citywide project management policies, guidelines, and templates will be completed and approved in FY 07-08. Once these policies have been approved it will be the responsibility of departments to implement the COIT policies for department technology projects.

3.3 Develop a policy to assign a dedicated project manager on large-scale projects that exceed some threshold amount, to be defined by the Committee on Information Technology.

Agree.

The COIT Performance Subcommittee is currently evaluating existing project management guidelines and policies as part of their work plan. One of the elements of this policy will include the requirement that for large projects, departments or programs will be that a project manager is identified, and other key staff resources, as part of the project plan. Once these policies have been approved it will be the responsibility of departments to implement the COIT policies for department technology projects.

Section 4 – Department Information Technology Resources

Response Introduction

The observations in this section of the report regarding the variance in levels and skills of staff resources, technology planning and budget allocation are a direct result of the current decentralization of technology leadership and resource allocation in the City.

While the recent formation of the citywide CIO position and the reformation of COIT are important steps to potentially change the issues, the CIO, DTIS and COIT will not be able to make any significant progress in these areas without administrative code change, funding, and resources support.

The COIT Planning & Budgeting Subcommittee has initiated the process to significantly revise the City wide technology budget process for FY 08-09. This revised process will integrate the various technology budget elements of new projects, technology capital needs, operational spending, and equipment replacement. The new citywide technology budget instructions will be published in November and will include a higher level of detail than previously requested.

Response to Analyst's Recommendations

The Board of Supervisors should:

4.1 Adopt an Administrative Code provision, establishing a citywide information technology capital planning process under the direction of the Committee on Information Technology.

Agree. This task is underway.

The COIT Planning and Budgeting Subcommittee has approved a revised COIT budget technology planning process and budget process which includes the citywide capital technology needs. The Chair of COIT has drafted a set of proposed changes to the administrative code regarding the citywide technology capital planning and budget process. It is anticipated that the proposed administrative code changes will be presented to the Board of Supervisors prior to December 2007.

The Chair of the Committee on Information Technology should:

4.2 Prepare an annual information technology capital expenditure plan based on the citywide information technology capital plan and submit a report for the Board of Supervisors containing details of the annual capital expenditure plan.

Agree. This task is underway.

The revised COIT technology budget plan process plans for the submittal of a proposed citywide technology budget to COIT in April of each fiscal year. This budget plan will include the annual technology funding needs of the departments and a projection of future needs. The budget plan will also include the technology capital for the City.

4.3 Request the Mayor to include the capital expenditure plan in the annual proposed budget to be submitted to the Board of Supervisors.

Agree. This task is underway.

Based on the new COIT Budget and Planning calendar it is anticipated that COIT will be approving a final citywide technology budget plan in April of each fiscal year for review and approval by the Board of Supervisors.

4.4 Establish formal information technology managers' meetings.

Agree. This task is underway.

COIT and each of the COIT Subcommittees hold regular monthly meetings to discuss all elements of technology. The meeting agendas and minutes are posted on the COIT website. These are public meetings and technology managers are encouraged to attend and provide input on all elements of the City technology budget, planning, standards, and policy process.

The Department of Telecommunications and Information Services should:

4.5 Maintain a list and serve as a clearinghouse of information technology expertise in City departments.

Agree.

DTIS will work with DHR to determine a plan to implement this recommendation and present the plan to the Board for approval as part of the annual budget process.

4.6 Implement a City-wide information technology mentoring program.

Agree.

DTIS will work with DHR to determine a plan to implement this recommendation and present the plan to the Board for approval as part of the annual budget process.

Section 5 – Information Systems Security

Response Introduction

As noted in other sections of this report, while DTIS and COIT will develop policies and guidelines and provide assistance to departments, the City has created an organization that accepts and supports that information systems security area decentralized function that is almost entirely department based. If the will of the City is to improve citywide security through direct DTIS and COIT oversight, then authority of these organizations will need to be changed in the administrative code. Otherwise the responsibility of implementing will remain primarily the responsibility of departments.

The benefits of the approval of the security budget item in the FY 07-08 budget for DTIS is creation of the position of a citywide Information Systems Security Manager. This position will facilitate in the development of a departmental and citywide security policy and procedures. He/She will also plan and conduct audits, develop and implement security metrics, monitor results and report to COIT and the COIT Architecture Sub Committee. The budget item will also deliver a benefit by allowing DTIS to provide security services such as intrusion detection, automated vulnerability assessment, secure files transfer and encryption services.

DTIS has begun educating its staff in employing the Carnegie Mellon Software Engineering Institute Operationally Critical Threat, Asset, and Vulnerability Evaluation (OCTAVE) approach to threat and risk assessment. OCTAVE is a framework for identifying and managing information security risks. It defines a comprehensive evaluation method that allows an organization to identify the information assets that are important to the mission of the organization, the threats to those assets, and the vulnerabilities that may expose those assets to the threats.

DTIS and the COIT Architecture Subcommittee have been working evaluating security practices and documentation developed by the California Counties Information Systems Directors Association as a template for citywide security policies and procedures.

Response to Analyst's Recommendations

The Chair of the Committee on Information Technology should:

5.1 Establish policies and standards for each City department to develop a risk assessment plan that (a) identifies the City departments with the greatest security risks, and (b) resources necessary to reduce security risks.

Agree. This task is underway.

The COIT Architecture Subcommittee is evaluating security practices and documentation developed by the California Counties Information Systems Directors Association as a template for citywide security policies and procedures. With the results of the current evaluation will develop a citywide Security Policy

as part of the FY 08-09 work plan to provide guidance and direction to City departments.

Departments will then need to conduct an assessment of their technology systems based on the citywide security policy and guidelines. Departments who identify resource needs as part of their security assessment will need to either reassign internal resources to implement the final policy or submit a request as part of the annual COIT budget process.

5.2 *Recommend annual funding for City departments' information system security programs based upon the risk assessment.*

Agree. This task is underway.

After approval by COIT of the citywide security policy departments will need to conduct an assessment of their technology systems based on the citywide security policy and guidelines. Departments will be advised to submit budget requests to meet the security policy guidelines as part of the new COIT budget process. The COIT Planning & Budgeting Subcommittee will evaluate, prioritize, and approve budget requests based on the criteria established as part of the COIT budget process.

5.3 Establish criteria for City departments' information system security policies and procedures.

Agree. This task is underway.

The COIT Architecture Subcommittee is evaluating security practices and documentation developed by the California Counties Information Systems Directors Association as a template for citywide security policies and procedures and will develop a citywide Security Policy as part of the FY 08-09 work plan to provide guidance and direction to City departments.

5.4 Define job skills and functions necessary to manage departments' information system security programs.

Agree.

The COIT Resources Subcommittee will work with DHR to review the current job technology position classifications and make recommendations regarding technology security skills and functions.

5.5 Develop formal decision-making guidelines for City departments that share information systems.

Agree. This task is underway.

The COIT Architecture Subcommittee is evaluating security practices and documentation developed by the California Counties Information Systems Directors Association as a template for citywide security policies and procedures and will develop a citywide Security Policy as part of the FY 08-09 work plan to provide guidance and direction to City departments. An additional element of the Architecture Subcommittee work plan will include data sharing and network connectivity guidelines.

Section 6 – Information Technology Systems Inventory Management

Response Introduction

The responsibility for Technology Equipment Inventory is currently a decentralized function that is the responsibility of each of departments in the City of San Francisco.

The COIT Resources Subcommittee is planning on developing guidelines and policies related to this business area.

If COIT and DTIS manage a citywide technology equipment management program, it will require a comprehensive shift in how the City does business. Additionally a centralized approach to this area would require an administrative code change, funding, and resources to support this change in function and responsibility.

Response to Analyst's Recommendations

The Chair of the Committee on Information Technology should:

6.1 Develop citywide information technology inventory management policies, procedures and standards.

Agree. This task is underway.

The COIT Resources Subcommittee will develop a technology equipment policy as part of the FY 07-08 work plan.

6.2 Develop a citywide plan for replacing and upgrading General Fund department information technology.

Agree. This task is underway.

DTIS has issued an RFQ to hire a consultant to conduct as study and recommendations regarding annual replacement of technology equipment.

The recommendations regarding the funding of a citywide replacement plan for PC's will be part of the annual COIT 08-09 budget process.

6.3 Develop a citywide policy and controls for issuing and monitoring laptop computers.

Agree. This task is underway.

The security policy under development by the Architecture Subcommittee will include an element that address the process by which mobile devices should be managed to ensure the security of City information.

6.4 Request all City departments' directors to maintain information technology inventories consistent with the Committee on Information Technology's standards.

Agree. This task is underway.

The COIT Resources Subcommittee is developing a citywide policy regarding the management of City equipment as part of the FY 07-08 work plan.

The cost associated will the implementation of any tools to meet this requirement will be included as part of the COIT FY 08-09 budget process.

Summary of Agreement/Disagreement with Recommendations

Section	Agree	Disagree	Lead Department	Actions Underway
Information Technology Planning & Purchasing				
1.1 - Department technology plans	X		COIT - Planning & Budgeting subcommittee	As part of the new COIT FY 08-09 technology budget and planning process, departments with large budget requests will be required to submit budget plans. All departments will have technology plans in 2-3 years.
1.2 - Annual review of department plans	X		COIT - Planning & Budgeting subcommittee	As part of the new COIT FY 08-09 technology budget and planning process, department technology plans will be reviewed.
1.3 - Create communication tools for managers	X		COIT	New COIT Website developed and published in September. 2007. Four COIT subcommittees are meeting on a monthly basis and include key City IT managers from each major service area.
1.4 – Recommend policy to review City technology contracts transfer	X		COIT	COIT will work with Purchasing and the Controller to determine a policy and process to implement this recommendation and present the plan to the Board.
1.5 - Develop procedures to track department technology purchases	X		DTIS	DTIS will work with Purchasing and the Controller to determine a plan to implement this recommendation and present the plan to the Board for approval as part of the budget process.
1.6 – Department input on Enterprise Agreements	X		DTIS	DTIS will solicit input from departments on new Enterprise Agreements that DTIS establishes with vendors.
1.7- Review City procurement policies	X		OCA	OCA will begin review shortly.

Summary of Agreement/Disagreement with Recommendations

Section	Agree	Disagree	Lead Department	Actions Underway
Information Technology Project Management				
2.1 - Establish criteria for project management	X		COIT - Performance subcommittee	The Performance Subcommittee is in the process of reviewing draft templates and guidelines provided by DTIS for consideration as City wide project management policy.
2.2 – Project management guidelines for inter-departmental projects.	X		COIT – Performance subcommittee	The Performance Subcommittee is in the process of reviewing draft templates and guidelines provided by DTIS for consideration as a City wide project management policy.
2.3 - Project management tools and guidelines	X		COIT - Performance subcommittee	The Performance Subcommittee is in the process of discussing currently project management tools used by departments.
2.4 Identify departmental inter-dependencies	X		COIT	During the review COIT FY 08-09 budget process the COIT Planning & Budgeting subcommittee and the Performance subcommittee will work to identify interdependencies.
2.5 - Establish information sharing channels	X		DTIS	DTIS created a new COIT Website. COIT subcommittee meetings include key City IT managers from each major service area.
2.6 - Improve access to project management training	X		DTIS	DTIS will work with DHR to determine a plan to implement this recommendation and present the plan to the Board for approval as part of the budget process.
2.7 - Track detailed project management costs	X		Controller	This recommendation will be part of the development of the new budget system.

Summary of Agreement/Disagreement with Recommendations

Section	Agree	Disagree	Lead Department	Actions Underway
Justice Information Tracking System (JUSTIS)				
3.1 - Present JUSTIS project to Board of Supervisors	X		DTIS	DTIS will work with the key stakeholders to present the JUSTIS project to the BOS.
3.2 - Cross departmental project guidelines	X		COIT - Performance Subcommittee	The Performance Subcommittee is in the process of reviewing draft templates and guidelines provided by DTIS for consideration as City wide project management policy.
3.3 - Develop a policy to require a project manager for every large City project	X		COIT – Performance Subcommittee	The Performance Subcommittee is developing a policy for all City technology projects which will require departments assign a project manager for large projects.

Summary of Agreement/Disagreement with Recommendations

Section	Agree	Disagree	Lead Department	Actions Underway
Department Information Technology Resources				
4.1 - Adopt code to establish capital planning process	X		Board of Supervisors	COIT has prepared draft recommended changes to the code to address the citywide technology budget process. The changes are under review.
4.2 - Prepare annual technology capital plan	X		COIT - Planning & Budgeting Subcommittee	As part of the new COIT Technology budget process, the Planning & Budgeting Subcommittee will be evaluating and recommending items that will be part of a new technology capital plan. The new technology budget process will start in November and conclude in May.
4.3 - Request Mayor to submit capital plan to BOS	X		COIT - Planning & Budgeting Subcommittee	As part of the new COIT Technology budget process, the Planning & Budgeting Subcommittee will be evaluating and recommending items to the Mayor's Budget office. The new technology budget process will start in November and conclude in May.
4.4 - Establish technology manager's meetings	X		COIT	COIT and COIT subcommittees, conduct 4-5 meetings per month regarding technology management topics which are open to technology managers.
4.5 - Maintain list of citywide technology staff skills	X		DTIS	DTIS will work with DHR to determine a plan to implement this recommendation and present the plan to the Board for approval as part of the budget process.
4.6 - Implement a citywide technology mentoring program	X		DTIS	DTIS will work with DHR to determine a plan to implement this recommendation and present the plan to the Board for approval as part of the budget process.

Summary of Agreement/Disagreement with Recommendations

Section	Agree	Disagree	Lead Department	Actions Underway
Information Systems Security				
5.1 - Establish a policy requiring departments to develop a risk assessment plan	X		COIT - Architecture Subcommittee	During FY 07-08, the Architecture Subcommittee will make a recommendation regarding a citywide security policy.
5.2 - Recommend annual funding for security	X		COIT – Planning & Budgeting Subcommittee	COIT Planning & Budgeting Subcommittee will evaluate proposals submitted by departments to address security and make a final budget recommendation regarding these items as part of the annual budget process.
5.3 - Establish citywide security policy and procedures	X		COIT - Architecture Subcommittee	During FY 07-08, the Architecture Subcommittee will make a recommendation regarding a citywide security policy.
5.4 - Define technology classification security requirements	X		COIT – Resources Subcommittee	During FY 07-08, COIT Resources Subcommittee will work with DHR to evaluate technology classification security requirements and make recommendations regarding changes.
5.5 - Develop guidelines for information sharing	X		COIT - Architecture Subcommittee	As part of the development of a citywide architecture plan the COIT Architecture Subcommittee will be developing information sharing guidelines in FY 07-08.

Summary of Agreement/Disagreement with Recommendations

Section	Agree	Disagree	Lead Department	Actions Underway
Information Technology System Inventory Management				
6.1 - Develop inventory management policies	X		COIT -Resources Subcommittee	During FY 07-08, the COIT Resources Subcommittee will be developing an inventory management policy for technology equipment.
6.2 - Develop citywide equipment replacement plan	X		COIT - Planning & Budgeting Subcommittee	During FY07-08, the COIT Planning & Budgeting Subcommittee will recommend a plan for the annual replacement of technology equipment.
6.3 - Develop laptop management policy	X		COIT - Architecture Subcommittee	During FY 07-08, the Architecture Subcommittee will make a recommendation regarding the management of laptops as part of the citywide security policy.
6.4 - Develop citywide equipment inventory program and tools	X		COIT - Resources Subcommittee	During FY 07-08, the Resources subcommittee will be making a recommendation regarding an approach and tools to better manage citywide technology equipment. This will be a FY 08-09 budget item.