City of Manhattan Beach

Information Systems Assessment

March 2013

Prepared by:

NEXLEVEL

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1 Executive Summary

1.1 IS Assessment Purpose

The City of Manhattan Beach (City) contracted with NexLevel Information Technology, Inc. (NexLevel) to complete an Information Systems Master Plan (ISMP). An important step in the creation of the ISMP is an assessment that focuses on the effectiveness of the City's current technology service delivery in supporting the City's day-to-day operations. More specifically, the assessment focuses on how the City is leveraging technology to attain its mission and vision.

The IS Assessment provides an objective review of the City's current technology environment, along with a set of recommendations pertinent to the City's existing technical environment (i.e. Infrastructure, network, applications, and technical standards and policies) and IS Division needs. The IS Assessment provides two types of recommendations:

1. Projects or initiatives that will be carried forward into the ISMP and included in the overall project prioritization process; and
2. Tactical initiatives that can be implemented at a division or department level and will not be included as part of the ISMP.

1.2 Approach

In support of the ISMP, NexLevel performed an assessment of the IS Division and the City's current use of technology. NexLevel reviewed the City's use and management of technology based on a series of Assessment Dimensions which define public agency technology service delivery and management best practices, including:

- Governance
- Service Delivery
- Business Technology Applications
- Infrastructure
- Security
- Administration
- Documentation

The IS Assessment includes a high-level view of all technology operations, as a weakness in any one particular dimension can adversely impact the overall effectiveness of the organization. To achieve best practices for technology management, an organization needs to perform strongly in all dimensions as identified in Figure 1 – Technology Assessment Framework.

Figure 1 – Technology Assessment Framework

The following provides a brief definition of each assessment dimension:

- Technology Governance - The leadership, reporting structure, management overview, and consistent tracking of technology services that ensure end-user business needs and requirements are met.
- Service Delivery - The function of coordinating the processes involved in providing robust customer technology support including training, helpdesk, and service delivery management frequently based on established service level agreements (SLAs).
- Business Technology Applications – The business and operational software applications supporting the City.
- Infrastructure - The technology equipment, operating systems, support software, and communications network services used within the City to provide computer services to end users.
- Security - The effective application of policies and standards, user conduct, software tools (filtering, monitoring, etc.), and audits to validate that the City's material and software resources are used only for their intended purposes.
- Administration – The management of the technology in terms of budgets, maintenance agreements, and software licenses.
- Documentation – The development and maintenance of current and accurate documentation on all technology activities such that processes can be completed in the absence of any one individual while promoting cross training, enabling backup and recovery, and reducing the risk of change.

The completion of the IS Assessment followed a structured methodology focused on ensuring staff involvement and input. More specifically, the IS Assessment included the following major activities:

- Individual interviews with Mayor Lesser and the City Manager
- Face-to-face interviews with the IS Manager and IS staff
- Face-to-face interviews with more than 45 City staff
- Web-based user satisfaction survey with 156 City staff
- Tour of IS Division offices and data centers

- Review of technology related documentation (e.g. budget, policies, procedures, etc.)
- Review of the findings of the Citywide website survey conducted with residents in fall 2012
- Follow up interviews and queries with IS Division staff to resolve or clarify issues
- Compilation of information regarding technology practices in similar organizations
- Research and analysis of findings
- Two project prioritization workshops attended by executive management staff

1.3 Assessment Dimension Rankings Summary

To provide a summary overview of the assessment results by dimension, NexLevel plotted each dimension that indicates the level of deficiency or risk. The diagram allows the reader to quickly identify areas requiring focus, as well as areas that are performing at or near best practice levels. Our results are provided in Figure 2 – Assessment Dimension Summary Results.

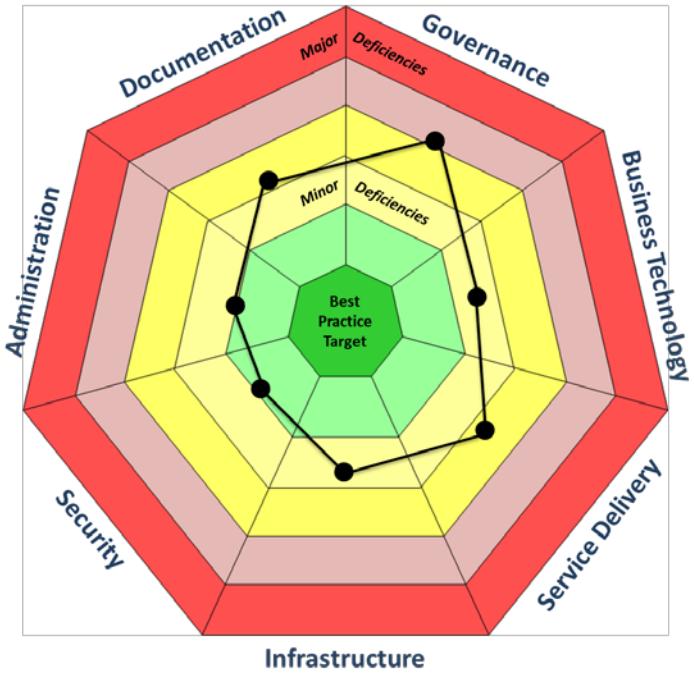

Figure 2 – Assessment Dimension Summary Results

The IS Assessment report is organized by the above dimensions. In each section, NexLevel identifies the basis for the rating and offers recommendations to help the City perform at or near a best practice level.

1.4 User Satisfaction Survey Results Summary

As part of the IS Assessment, a web-based user satisfaction survey in was used to gather information relative to IS Division service management and delivery. The survey was made available to the City's 441 staff and 156 responded (a 35% response rate).

Table 1 – Technology User Satisfaction Survey Results provides a summary of the survey responses related to the City's technology delivery and support. The table also provides a comparison against peer organizations and best practices.

For each survey questions, staff was asked to respond on a scale of 1 (low satisfaction) to 5 (high satisfaction). In the table, the percentages are calculated based on the percentage of respondents rating each question a 4 or above, indicating an acceptable level of satisfaction.

The "Peer Average" is the average score of all surveys conducted by NexLevel within other California governmental jurisdictions. NexLevel has conducted over 20 of these surveys during the course of work with local government agencies. The "Best Practice Goal" is based on the NexLevel team's collective experience with California municipal entities. Our experience shows that an effective, well-balanced technology organization will meet or exceed Best Practice Goal – this should be the target for the IS Division.

Table 1 – IS User Satisfaction Survey Results

Survey Question	Manhattan Beach Satisfaction	Public Agency Peer Average	Best Practice Goal
Speed of the Internet	15.3%	57.1%	85%
Computer programs meet business needs	36.0%	69.1%	80%
Equipment used (computer, printer)	37.4%	63.5%	80%
Version of the computer programs used	41.4%	65.8%	75%
Management of technology projects	42.5%	64.2%	80%
General IS related training received	43.3%	47.7%	75%
Communications network availability	43.8%	75.8%	90%
Speed of communications network	43.9%	67.6%	85%
Technology leadership and planning	45.0%	62.3%	85%
Check back on service provided	54.3%	64.8%	80%
Time to satisfy request for service	55.2%	73.8%	80%
Overall service	56.3%	78.7%	85%
Time to respond service request	56.7%	73.9%	85%
Understand departments' business needs	58.4%	68.0%	75%
Ability to solve problem on the first call	62.0%	79.2%	85%
Understand the City's business objectives	64.0%	73.7%	75%
Communications with users	66.4%	72.2%	80%
Technical knowledge of staff	69.7%	84.8%	85%
GIS solutions	71.9%	72.5%	85%
Control of viruses and malware	76.0%	84.0%	90%
Control of spam	85.1%	87.3%	90%

1.5 Conclusions and Recommendations

Overall, the City performs effectively in many of the assessment dimensions. However, as the results of the user survey indicate, the IS Division is challenged to meet customer service expectations of the users. This report identifies opportunities for improvement to help the City evolve technology management and support activities to ensure a secure, reliable, and robust technology environment while also providing a high level of customer service. Table 2 – IS Assessment Recommendations provides a summary of the recommendations by Assessment Dimension.

Table 2 – IS Assessment Recommendations

Dimension	Recommendations
Technology Governance	◆ Reassign non-technical duties to allow IS Division staff to focus on technology support ◆ Increase the number of hours the IS Division staff is available by restructuring how the IS Division is staffed ◆ Assign a full time IS Division staff member to support public safety ◆ Procure services from experienced technology providers (private sector) to assist the IS Division in reducing the current service request backlog ◆ As new technology is introduced, carefully evaluate the required technology support for both implementation and on-going support ◆ Implement a formal training plan and budget for IS Division staff training ◆ In public safety, whenever possible, assign application system administrative duties to non-sworn personnel ◆ Implement a service level agreement (SLA) for public safety to identify the responsibilities of the IS Division staff and the public safety staff ◆ Reconfigure the IS Division work area to provide work areas with fewer interruptions ◆ Re-focus IS Division staff meetings to place the highest priority on critical IS support issues ◆ Establish a formal Technology Steering Committee to oversee the City's technology strategic direction ◆ Provide dedicated project management of new technology initiatives and upgrades
Service Delivery	◆ Establish and fund a user training program ◆ Periodically analyze Help Desk calls to identify the reasons for the calls ◆ Implement a procedure to ensure issues are resolved to the user's satisfaction ◆ Implement a process to periodically review all open call tickets ◆ Develop service level agreements (SLAs) to identify the mission critical 24/7 technologies ◆ Establish formal procedures for requesting after-hours support and identify the IS Division staff member(s) responsible for providing support ◆ Create an IS Division service catalog describing services provided by IS and expected service levels ◆ Implement automated network management tools ◆ Create baseline metrics for servers ◆ Implement change management processes
Business Technology Applications	◆ Active – Recreation class registration, facility reservations and point of sale - Make the application available to staff working in all City locations ◆ Tiburon Computer Aided Dispatch (CAD) and Police Records Management System (RMS) – Continue to remain current with software releases ◆ GoReach – Customer Relationship Management (CRM) - Continue use of the CRM module; acquire a work order management system to support City maintenance activities

Dimension	Recommendations
	◆ GIS – Enhance the value of the GIS system by integrating GIS with other address-based applications; provide access to GIS in the public safety MDCs ◆ Granicus – Additional training and experience will increase the value of the applications ◆ Vision Internet (Web site application) - Continue with periodic upgrades when new features are available ◆ Vision Internet (Intranet application) – Implement the Intranet ◆ Tyler Eden – Financials, Payroll and Utility Billing – Determine if Tyler Eden can provide additional functionality; if not, acquire a replacement system ◆ Zoll Fire Records Management – Explore other options including working with other local fire agencies ◆ Accela Permits Plus – Permitting System - The application cannot provide the desired features and functionality; replacing Permits Plus is required ◆ LibertyNet Document Management – Replace the application; vendor support ends in 2014 ◆ NEOGOV Recruiting – Replace the current version that is no longer supported; integration with a human resources application is desired ◆ RTA Fleet Management – Replace the application
Infrastructure	◆ Expand the wide area network to be inclusive of all City facilities ◆ Add a redundant network connection between City Hall and the City Yard ◆ Implement the Intranet included in the Vision Internet web site procurement ◆ Publish a Remote Access policy with guidance from the Technology Steering Committee ◆ Implement virtual server technology to replace current servers as they need to be replaced ◆ Train IS Division staff on server virtualization software and possibly contract services to support the initial deployment ◆ Publish a formal technology refreshment policy and establish the budget ◆ When appropriate, use temporary labor to install new equipment ◆ Establish a policy to encrypt laptop computers ◆ Monitor the evolution of mobile computer devices ◆ Establish a mobile computer refreshment policy and budget ◆ Evaluate the mobile computer features and functions of current and future business applications to take full advantage of mobile computing ◆ Implement security procedures, policies and tools to ensure mobile devices can be “wiped” if lost or stolen ◆ Analyze recommendations for data center enhancements identified in the facilities study currently under way
Security	◆ Include an evaluation of current DOJ requirements with the annual network penetration test ◆ Consider implementing a visitor sign in and visitor badges ◆ Implement the ability to encrypt email ◆ Routinely review the designated department representatives who have desktop

Dimension	Recommendations
	administrative rights ◆ Ensure the IS Division immediately acknowledges requests for assistance installing software and/or equipment, and responds in a timely manner ◆ Create and publish a Business Continuity Plan (BCP) ◆ Consider reinstating the Tyler Eden disaster recovery cold site ◆ Establish a procedure to periodically install patches on the EOC laptops ◆ Document procedures for supporting the EOC and ensure staff is trained on the procedures ◆ Implement procedures to install server patches on a more frequent basis ◆ Centralize log files to prevent overwriting
Administration	◆ Review and update the current process whereby all technology expenditures across City departments are captured and reported on, to ensure total technology related costs are easily captured and reportable ◆ Major technology procurement should be reviewed by the Technology Steering Committee ◆ Citywide, review all maintenance agreements annually ◆ Create a centralized repository of all Citywide maintenance agreements within the IS Division ◆ Implement a centralized license management role within the IS Division
Documentation	◆ Create and centralize technical documentation ◆ Engage the Technology Steering Committee in the review of all existing policies ◆ Distribute policies to staff ◆ Establish processes whereby IS Division monitors compliance with policies

The remainder of this report provides detailed discussions for each assessment dimension and provides recommendations that will improve the City's technology management (i.e., customer service, communication with users, etc.). In addition, the recommendations in the IS Assessment help prepare the City to implement the ISMP.

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2 Technology Governance

Governance is generally defined as the leadership, communication structure and processes that ensure the organization's information technology sustains and extends the City's strategies and objectives. More specifically, Governance helps ensure that:

- Technology is aligned with the business (strategic alignment)
- Technology is a business enabler and maximizes benefits (performance measurement)
- Technology resources are used responsibly (resource management)
- Technology risks are managed appropriately (risk management)
- Technology delivers value to the organization (value delivery)

In today's environment, industry studies completed by respected research firms have suggested that as high as 20% of all technology investment is wasted each year. When you factor in the potential wasted investment, along with the annual expenditure of an entity on technology, the importance of technology governance in managing and ensuring an adequate return on investment is significant.

The overall success of a technology organization is generally measured by their ability to help the organization achieve their business goals. In addition, as an organization's dependency on technology to support day-to-day business goals increases, the importance of a strong technology governance structure becomes more critical.

This dimension evaluates the organizational foundation of technology service delivery within the City. A strong delivery structure, management overview and consistent tracking of technology services will ensure end-user business needs and requirements are met.

2.1 IS Division Resources and Scope of Services

The IS Division reports to the Director of Finance and is staffed by a combination of full time and part time positions. Figure 3 – IS Division Organization Chart illustrates the approved staffing level of the IS Division.

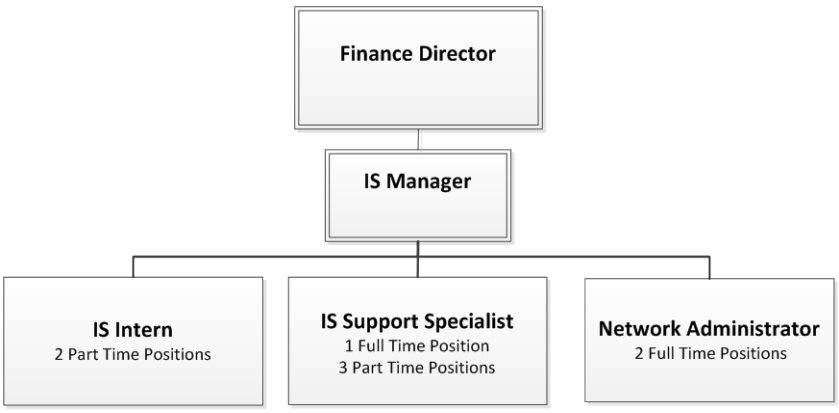

Figure 3 –IS Division Organization Chart

The IS Division staff scope of services includes:

- Hardware support and deployment (desktops, laptops, printers, servers)

- Communications (voice & voice mail, wide area network, wireless access, internet, network security)
- Help Desk services
- Website content oversight
- Broadcasting of City Council and other public meetings

While the IS Division participates in software installations and provides a limited role in software version upgrades, users in City departments generally manage the implementation of new technology, provide on-going application administration, and coordinate software version upgrades.

In addition to the services provided by IS Division staff, the City relies on the following services supported by resources other than City staff:

- Fire and Police Computer Aided Dispatch (CAD), records management system (RMS), radio services, and mobile data computer (MDC) support is provided through a Joint Powers Agreement (JPA) with the South Bay Regional Public Communications Authority (SCRPCA) located at the Regional Communications Center (RCC). City IS Division staff is responsible for supporting Fire and Police technology needs outside of the scope of services provided by the RCC.
- Various applications are vendor hosted and supported through the internet (referred to as "cloud" or Software as a Service (SaaS) applications).

The City's IS Division is faced with a variety of challenges in their efforts to meet the needs and expectations of their City clients. These challenges include:

- IS Division staffing structure – As shown in Figure 3, the IS Division consists of nine total positions, including one IS Manager, two part time IS Interns, one full time and three part time IS Support Specialists, and two full time Network Administrators. Part time positions in the City have been budgeted at 19 hours per week, which can be a deterrent to recruiting and maintaining consistent staffing for these positions. Recruitment for one vacant part time IS Support Specialist position began in July 2012 and was filled recently. Recruitment for a second vacant part time IS Support Specialist position is underway.
- Lack of IS Division staff assigned to public safety – Typically, an organization the size of Manhattan Beach, with full service Police and Fire Departments, has at least one technology position assigned to directly support these critical 24/7 operations. In addition, other organizations typically establish a standard protocol for after-hours support, so that critical issues can be addressed as quickly and efficiently as possible.
- IS Division training – IS Division staff have participated in various levels of training dependent on the budget and staffing levels in the Division. The IS Division Intern positions do not require specific training prior to hire; thus, these positions typically learn "on the job", creating an additional burden on existing staff.
- IS Division videography responsibilities – Typically, video coverage, editing, and broadcast of public meetings and events is not the responsibility of a City's technology Division. These duties are more typically the responsibility of a Public Information Officer, with the videography duties being done by part time staff.
- IS Manager's scope of responsibilities – the IS Manager is responsible for items that are typically not overseen by technology divisions. For example, content to be placed on the City's website is reviewed and approved by the IS Manager for verbiage, consistency, and style. Also, the IS Manager attends City Council meetings to assist the City Clerk with technical support issues, assist with broadcasting, and to help identify members of the

public attending for recognition events, so that her staff can properly record the event. The IS Manager utilizes overtime or flex scheduling for this, thus increasing costs or reducing availability for IS support during regular business hours. Duties such as these are typically managed through a Public Information Officer or similar position in the City Manager's Office.

These challenges will continue to affect the timeliness and quality of technology support services provided to City departments.

Recommendations

The following recommendations are provided based on NexLevel's experience with other agencies, best practices, and our observations during interviews with City personnel. We believe that implementation of these recommendations will improve the level of support provided by the IS Division.

- The City currently is structured such that the IS function is a Division of the Finance Department. However, based on the City's expanding demands for technology at all levels of the organization, and the reliance and importance on that technology in maintaining and enhancing operations, the City should consider establishing the IS function as a standalone department. Elevating the function to department status would likely result in improved alignment of the technology needs with the City's priorities, including maintaining secure and reliable technology infrastructure. Further, just as Human Resources and Finance provide internal services, the IS Division's services are utilized by virtually all employees and are an important support system to daily operations. If not acted upon in the short term, NexLevel anticipates that in the long term, it will be necessary for the City's technology service organization to have representation at a department level, as this organizational structure will eventually be the industry norm.
- Reassign video broadcast and recording services from the IS Division network administrators to another City department to allow IS Division staff to focus on technology support. The IS Division's performance of these functions is unusual when compared to other peer municipalities and pulls focus away from the maintenance and support of the City's technology infrastructure and new projects. The City might want to explore options such as hiring students pursuing careers in the film industry to assume these duties.
- Reassign the approval process for content changes to the web site. Typically this function is not performed by a City's technology resources. More commonly, it is considered a part of the duties of a Public Information Officer (PIO) or a representative in the City Manager's office, or these duties are the direct responsibility of each City department requesting the web site content change. The time spent by the City's IS Division staff supporting this function detracts from their core functions of maintenance and support of the City's technology infrastructure and new projects. The City should reassign web page change approvals to another department to allow the IS Division to focus on technical support.
- Increase the total number of hours the IS Division staff is available by restructuring how the IS Division is staffed. This could include merging part time positions into full time positions. The use of part time positions presents a challenge because technology professionals typically seek full time employment, resulting in the City losing experience and expertise when a part time staff member resigns, and difficulty finding qualified candidates when positions are vacant.
- Assign a full time IS Division member to public safety (Fire and Police Departments), as it requires dedicated support.
- Identify and procure the services of experienced technology providers (private sector) to assist the IS Division in reducing the current service request backlog. The task assignments should be specific to allow the temporary contractors to work effectively without continuous

direction required from the incumbent staff. For example, installation of refreshment desktops.

- As new technology is introduced, carefully evaluate the required technology support for both implementation and ongoing support, and allocate the necessary budget to ensure support resources are available. As the City moves forward with the implementation of new technology identified in the ISMP, demands for IS Division support will increase. If the resource requirements are temporary (i.e., project management for new system implementation), then an effective service approach is to use outside resources to augment the City's IS Division resources. This strategy will allow the City to access resources with specific skills on an as-needed basis. It should be noted that the introduction of new technology will continue to affect user departments; thus subject matter experts within departments will continue to be integral to the effective implementation and ongoing use of these new technologies.
- Implement a formal training plan and invest in on-going training for the IS Division staff. Currently a significant portion of the staff training is learned on the job. It is more effective and will improve customer service to proactively train staff using formal technology training.
- In public safety, whenever possible, assign application system administration duties to non-sworn personnel (i.e. administrative analysts, records supervisor, etc.) when the technology is not specific to sworn officer duties. Provide for on-going training from the application vendors as needed. Numerous technology applications are in use at the Police Department to support business activity. With the periodic rotation of positions within the Police Department, application administrative responsibility passes to individuals in new positions who may not be familiar with the application. Police staff expect the IS Division to be able to support all technology in use, including application use and system administration, and this is not a realistic expectation.
- Implement an IS Division service level agreement (SLA) for public safety to identify the responsibilities of the IS Division and the public safety staff. The SLA should define the responsibility for application management and support, technical systems administration and hardware support.
- Reconfigure the existing work areas of IS Division staff to increase productivity and reduce interruption during critical tasks. Currently, the IS Division staff share one work area, which is not conducive to productive work. A revised work area that provides fewer interruptions will improve overall service delivery. It should be noted that the IS Division is scheduled to relocate to new work space, thus providing improved work configurations for IS Division staff.

- Re-focus IS Division staff meetings to place the highest priority on critical IS support issues.

2.2 Technology Oversight

The City lacks a formal technology governance structure that provides well-defined processes for setting IS Division staff direction and priorities, providing oversight, and guiding the City's overall technology service delivery and management. Without a strong technology governance structure, IS Division staff may tend to set priorities using their own judgment, which may not align with the organization's leadership needs and expectations.

While the City does have an established IS Steering Committee consisting of representatives from each department, the quarterly meetings are not always attended by all Committee members, which reduces the overall effectiveness of the meetings. In addition, the meetings are generally used for communicating information from the IS Division to the departments, and the Committee functions as more of a user group than a Steering Committee.

Recommendations

The City should establish a formal Technology Steering Committee to oversee the City's technology strategic direction and ensure that IS Division resources stay aligned with the City's top priorities. It is important that membership consist of department heads and selected line staff, and that attendance and participation is not delegated to others with less authority. Those with limited technical knowledge or experience may hesitate to participate in technology governance. However, technology affects the delivery of business services, and participation in governance by senior executives of the organization is needed for effective service delivery to meet organizational needs.

The Technology Steering Committee will create an effective forum to plan, communicate, and coordinate technology projects, as well as to ensure decisions about projects, resources, and priorities are made with an enterprise-wide view. The scope and responsibilities of the Technology Steering Committee include:

- Technology Strategic Plan – The Technology Steering Committee will provide input to, and review of, the technology project priorities and timelines.
- Strategic Direction/Alignment – The Technology Steering Committee will provide input and feedback relative to each activity. This dialog will ensure appropriate priority and efficient and effective use of technology systems and services.
- IS Division Project Review – The Technology Steering Committee will review IS Division projects for consistency and compliance with the ISMP to ensure the City's business systems are supported by the existing platforms and that they can be easily integrated, as needed, with other City applications. This will be a collaborative effort to ensure technology solutions are solving real business needs and that the requirements of all impacted departments are addressed.
- Policy Guidance – The Technology Steering Committee will review technology policies and guidelines provided by the IS Division staff. The Technology Steering Committee will approve these policies, communicate them to staff and ensure citywide compliance.
- Platform Usage – The Technology Steering Committee will discuss how new technologies will be used and provide input to the IS Division staff relative to performance metrics, equipment utilization and hardware/software acquisitions.
- Technology Information – The Technology Steering Committee will receive updates and status reports relative to technology issues, information security and evolving technology trends from the IS Division staff. Members will disseminate this information, when appropriate, to their respective staffs. The Technology Steering Committee will periodically review all open Help Desk calls to monitor the backlog.

2.3 Project Management

Project management is the discipline of planning, organizing, securing and managing resources to achieve specific goals. Ineffective project management can result in extended timelines, budget overrun, and project failure.

In Manhattan Beach, the Department that is implementing the new technology performs project management duties. IS Division staff attends the initial project meeting and provides or coordinates software and hardware installation services.

Recommendations

Provide dedicated project management support for new technology initiatives and upgrades. While it is appropriate for department personnel to serve as subject matter experts (SMEs), assigning project management to department staff inexperienced with the implementation of technology is

problematic. Projects should be executed following basic standard project management practices and templates that include project charter, project plan, schedule, budget, and status reporting. The use of a standardized project management framework will help ensure a comprehensive understanding of projects among stakeholders and impacted staff and reduce project risks.

A project manager needs the skill set, time and authority to effectively perform the required project duties. The project manager should be accountable to the project owner, as well as the Technology Steering Committee to provide project updates.

- Project management services could be procured from a consultant as needed to support active projects. Other alternatives are to provide project management training to designated staff, or to create a project manager position in the City.
- Prior to initiating a project, a formal project charter should be completed to help ensure that the project is well defined. A project charter authorizes a project and ensures that necessary resources are provided to be successful. It is a document that provides an understanding of the role and responsibilities of all affected staff before the project starts. It simply provides a common understanding of what the project is about, why it is being done, who is involved, roles and responsibilities, schedule and delivery approach.
- Once a project is initiated, the City should have standardized templates for the project manager to track and report on project progress. At a minimum, the project manager should complete the following templates throughout the project.
    - Project Plan
    - Issue Management
    - Risk Management
    - Project Schedule and Resource Tracking
    - Budget Tracking
    - Project Status Reports

3 Service Delivery

This dimension identifies core competencies that are the foundation of all technology organizations. To be successful, the technology organization must be capable of addressing these areas, effectively balance among them, and plan resources to ensure coverage in all capacities. NexLevel evaluated the daily operation of the IS Division service delivery environment including user and IS staff training, help desk, and service delivery management.

3.1 User Training

User training is important because it supports staff productivity and lessens the possibility of unintentional errors. Training is a challenge to schedule because it requires staff to be away from their day-to-day operational duties, requires a training budget, and if an onsite training room is not available, requires travel to an off-site location.

The budget for user training was eliminated due to budget considerations. Training classes are not available to users as they transition to the newest version of Microsoft operating system and Office applications. In the face-to-face department interviews, staff expressed frustration with having to learn new technology on their own after the installation of new software/hardware on their workstation.

Recommendations

- Establish and fund a formal ongoing user training program. Training is a key component of every technology implementation. While the IS Division has posted tips and tricks on the Intranet for users to identify common issues and resolution, this is not an effective approach for user training.
- Consider establishing a formal training room so staff do not have to travel off site for training or IS Division staff do not have to perform set up each time training is required.

3.2 IS Division Staff Training

Technical training for IS Division staff supports the ability to remain current on technology versions in order to increase competency to provide optimum support. Training increases the effectiveness of staff and can result in fewer support issues. Without formal training, staff must learn on the job, which is generally not as effective, as it can be time consuming and lead to learning by trial and error.

There is a limited budget for IS Division staff training; thus only the most critical training courses are attended, and by only a portion of IS staff.

Recommendations

- Establish a training plan and budget for each IS Division staff member that aligns with current and upcoming support needs.
- If space permits, establish a permanent training room.

- Periodically analyze the Help Desk calls to identify the primary reasons for the calls and determine if additional training might reduce the call volume.

3.3 Help Desk

A Help Desk provides assistance to users requiring support for hardware issues, use of software applications or assistance with other technology systems. Ideally, as the single point of contact, the timely resolution of issues is the goal and best practices strives to resolve issues on the user's first call to the Help Desk.

The IS Division staff support 441 users. Users submit requests for service via email or a phone call to the Help Desk. The IS Division Interns are responsible to field the calls to the Help Desk. The Help Desk uses Manage Engine, a Help Desk application, to manage Help Desk requests and provide activity reports. Remote access to desktops is available to enable IS Division staff to resolve issues without leaving their work area.

The data collected during interviews and responses to the survey indicate the majority of the users contact the Help Desk for assistance once or twice a month. This is consistent with the number of tickets reported in the Manage Engine help desk application. For FY2011/12, the IS Division reported 6,552 help desk tickets. The survey indicates the top five reasons for contacting the Help Desk for support are email, network, printer, desktop and Internet.

During interviews, users identified concerns that tickets were closed without issue resolution and that tickets remained open for extended periods of time.

Recommendations

- Implement a procedure to ensure issues are resolved to the user's satisfaction prior to closing tickets.
- Implement a process to review open call tickets by date opened on a routine basis to ensure issues are resolved in a timely manner. This should also include proactively communicating the status of open tickets to the users until the issue is resolved.

3.4 Service Hours of Support

The Help Desk is staffed Monday through Friday from 8:00 AM to 5:00 PM. Consistent with industry best practices, the network administrators perform server maintenance outside of regular business hours to minimize adverse impact to the users. Typically server maintenance requires downtime, and the number of users impacted by downtime should be kept to a minimum.

Technology support outside of City Hall business hours is requested by contacting the IS Manager. The Fire and Police Departments report concerns about the lack of a formal extended hours support policy for critical services. The City recently implemented standby services for after-hours support.

Recommendations

- As noted in section 2.1, develop service level agreements (SLAs) to identify the mission-critical technologies that must be available for public safety functions 24/7.
- Establish formal procedures for requesting after-hours support and identify the IS Division staff member(s) responsible for providing support.

3.5 Service Delivery Management

The City's technology infrastructure support is provided by a combination of the IS Division, the RCC, and application vendors. The IS Division is the first line of support for desktops, laptops, printers,

servers, network management and connectivity (including cables, switches and routers), security, the telephone and voice mail systems, audio/visual and cable broadcast equipment, and the physical server and telecommunication facilities. Administration of the City's business applications is the responsibility of the individual department. The RCC supports the public safety computer aided dispatch, records management, mobile data computers and radio communication.

The IS Division does not have a service catalog or service level agreements (SLAs) with the departments. As a result, there is not a mechanism in place to proactively manage user expectations.

With regard to the City's servers, server capacity management and planning is important because it measures the amount of data storage available to ensure the systems are supporting the growing needs of the user community. The IS Division currently performs this function using informal processes and does not have formal tools to proactively identify capacity related issues.

In terms of upgrades and changes to existing hardware and software, the IS Division does not follow a standard methodology to inform users of upcoming changes and manage the rollout of the changes.

Recommendations

- Create an IS Division service catalog with published service levels that can be used to manage user expectations. The service catalog should describe what the Help Desk supports and what the user can expect. This would include describing the service levels in the maintenance agreements the City has with outside vendors and service providers.
- Implement automated network management tools to assist with troubleshooting and data storage management.
- Create baseline metrics for servers including CPU utilization, memory, and storage. Once established, the IS Division should evaluate the current environment against the baseline on a regular basis to identify issues or trends.
- Implement basic change management processes that ensure timely communication with users, effective planning and management of risks associated with changes being introduced, and creation of supporting documentation for future reference. The processes should ensure changes are well planned and fully documented to include change management logs that record the who, what, where, and when, for changes made. Most technology organizations of similar size to the City use basic desktop tools (i.e. MSWord, Excel, and email distribution lists) to support change management. While there are software solutions to help in this area, it is recommended the IS Division initially keep it simple by maintaining a repository of logs and emailing users of changes via distribution lists.

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4 Business Technology Applications

This dimension evaluates the City's core business technology applications supporting the department operations by analyzing their strengths and weaknesses, as well as the ability to support future needs. Collectively, the City's applications make up an application portfolio. Managing this portfolio has many similarities to how a financial portfolio may be managed. For instance, the application portfolio owner should be continually evaluating the performance of each individual asset (application) in terms of delivering value to the City, as well as evaluating the risk associated with the portfolio (technology obsolescence, patch/release management, etc.). In addition, the application portfolio owner needs to carefully analyze and assess the impact of new applications with recognition that all applications execute on a shared infrastructure.

The City's Application Portfolio investment is significant, in terms of both the original investment (licensing, implementation, training, etc.) and ongoing maintenance and support. In addition, the true return on investment of the City's technology infrastructure (network, desktops/laptops, servers, data centers, etc.) is largely realized through the effectiveness of the Application Portfolio. A strong Application Portfolio running on a weak technology infrastructure leads to high user frustration and underutilized assets. In turn, a weak Application Portfolio running on a strong technology infrastructure results in poor leverage of the City's investment. It is for this reason that a high priority must be placed on implementing the right applications (in terms of features, functions, compatibility, vendor roadmap, and support) to realize the maximum benefits from the City's investment in technology.

Table 4 identifies the City's core applications. A comprehensive application inventory is provided in Attachment B.

Application	Department Owner	Vendor
Finance / Payroll / Utility Billing	Finance	Tyler Technologies Eden
Permitting	Community Development	Accela
Geographic Information Systems (GIS)	Finance/IS Division	ESRI
Document Management	City Clerk	Hyland – LibertyNet
Agenda Management, Streaming Video	City Manager/City Clerk/IS Division	Granicus
Registration/Scheduling	Parks and Recreation	Active Network (Class)
City Website	Finance/IS Division	Vision Internet
Computer Aided Dispatch (CAD) and Record Management System (RMS)	RCC	Tiburon and Zoll
Pavement Management	Public Works	RTA
Customer Relationship Management	Finance/IS Division	Government Outreach
Recruiting	Human Resources	NEOGOV

Table 4 – Application Support Responsibilities

4.1 Business Technology Effectiveness

The effective selection, implementation, and management of the applications included in the City's Application Portfolio is critical to attaining a high-level of staff productivity, cost-effective service delivery, efficient business processes, and a return on the City's technology investment. To help evaluate the effectiveness of the City's Application Portfolio, NexLevel presents a chart where the vertical axis represents "Technology Capabilities" (i.e. features and functionality) and the horizontal axis represents "User Effectiveness" (i.e. how effective is staff at leveraging the application). The chart provides the ability to quickly understand which applications are being effectively leveraged and which applications are failing to effectively support the City business and operations activities. For those applications that are failing, the chart quickly identifies the reasons for underperforming applications such as poor technology (i.e. limited features and functions) or weak user effectiveness (i.e. poor processes, lack of training, etc.).

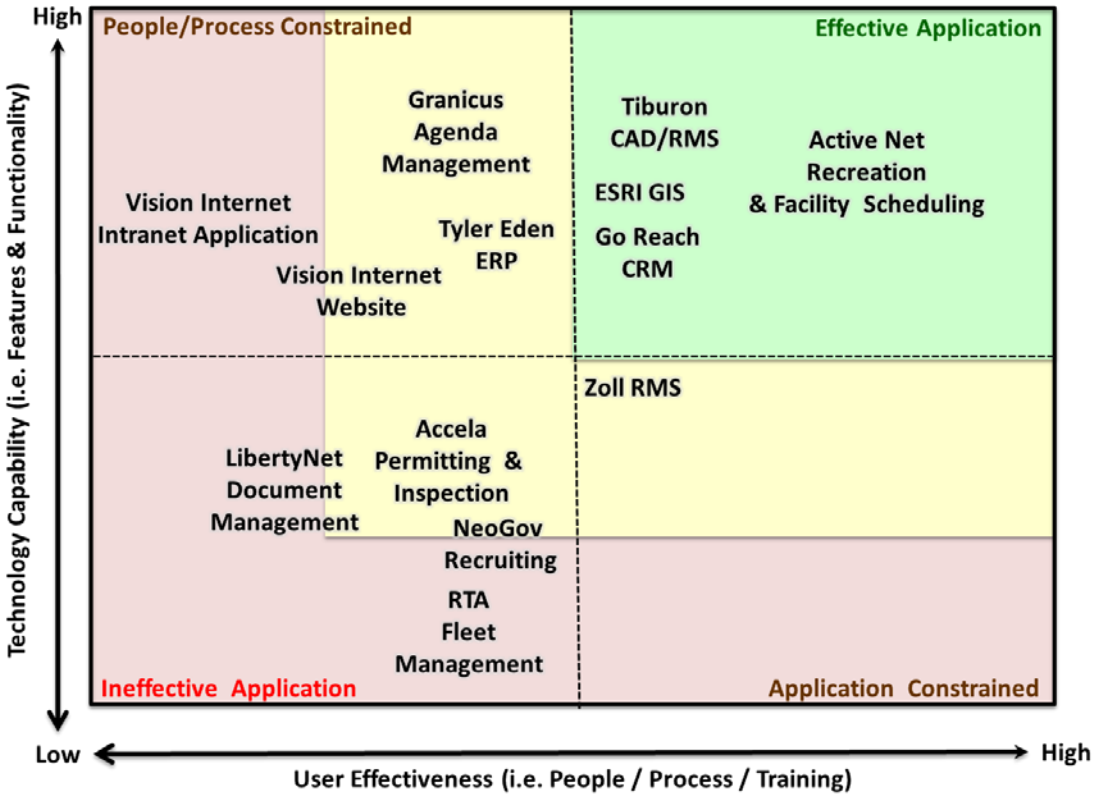

Figure 4 – Business Technology Effectiveness Diagram

4.2 Effectiveness Analysis

An analysis of the Business Technology Effectiveness chart allows the City to quickly identify specific applications within four areas:

- **Effective Application (Green)** – Indicates that the application is current with today's best practice features/functions and the vendor has a published roadmap to continue to evolve and support the application. In addition, it indicates the City is effectively leveraging the application through well-trained users, strong processes, and alignment to business objectives.

  Possible High-Level Recommended Actions – continue to invest, keep current with vendor releases, use of standard operating procedures reflecting application capabilities, occasional refresher user training, and active participation in user conferences to influence product direction.

- **People/Process Constrained Application (Yellow)** – Indicates that the application is relatively current with today's best practice features/functions and vendor has a published roadmap to continue to evolve the application. However, the application effectiveness is not fully realized due to lack of training or application knowledge, work processes that do not align with application, lack of integration with other key systems, and/or inconsistent adoption by the user community.

  Possible High-Level Recommended Actions – determine if additional training, integration and/or process re-engineering will enable "Effective Application Leverage." If yes, then continue to invest in the application. If no, then consider replacement as budget and resources allow – Probably not a critical project.

- **Application Constrained (Yellow)** – Indicates that staff is effectively leveraging the application features and functions, but the application lacks the capability to effectively support business practices or efficient business processes.

  Possible High-Level Recommended Actions – Evaluate whether the application is current in terms of releases/patches, request increased vendor support or modifications, evaluate technology infrastructure if performance related, or evaluate integration to other applications. If application constraints cannot be overcome, then the City may want to consider replacement.

- **Ineffective Application (Red) -** Indicates that the application lacks features and functions to support efficient business processes, as well as the users are not prepared to fully leverage the application. This determination can be the result of one or more factors such as the organization's use of an older version of software and the way the software is being utilized.

  Possible High-Level Recommended Action – Determine specific business requirements and needs and proceed with procurement to replace application as budget and resources allow. Avoid additional investment unless critical issues arise.

Effective Applications

Based on the IS Assessment activities and user department interviews, the following applications are viewed as effective in supporting the City's business and operational needs:

- **Active Net**
  Recommended Actions – The Active Net applications effectively support the City's Parks & Recreation activities. Registration for recreation classes is available on the City's web site. Internal access to the application is not available at all of the City's recreation facilities,

which is a limitation to the department's efficiency. Access to the Active Net applications for some of the facilities will first require connectivity to the City's wide area network and then additional software licenses and equipment. Connection to the wide area network will also allow staff located at remote facilities to have access to City email and in-house systems.

- Tiburon Computer Aided Dispatch (CAD) for Fire and Police
  Recommended Actions – Continue to remain current with software releases and look to take advantage of new features and functions as they become available.
- Tiburon Records Management System (RMS) for Police
  Recommended Actions – The application, supported by the RCC, is effectively meeting requirements. No recommendations.
- Government Outreach (Go Reach) Customer Request Management (CRM)
  Recommended Actions – The CRM application is available on the City's web site and allows citizens submit requests for service. This tool is also used by staff to track work requests. The application works effectively for CRM purposes, but it is not intended to function as a work order management application. The acquisition of a work order specific application is recommended for enhanced work order management features.
- Geographic Information System (GIS)
  Recommended Actions – The value of the of the ESRI GIS application can expand through integration with other applications (i.e. Business License, Utility Billing) by associating data with a physical location. Access to GIS in the Fire MDCs would enhance fire operations and risk management activities including event pre-planning.

It should be noted that just because an application is an effective technology, there could be opportunities to improve the application leverage via more effective integration with other core technologies, increased user training, or business process re-engineering to better leverage application. If an application does not continue to evolve, along with user adoption of new features/functions, then eventually that application will fall into an ineffective state.

People/Process Constrained

Based on the IS Assessment activities and user department interviews, the following applications are viewed as not fully effective in supporting the City's business and operational needs due largely to user ineffectiveness:

- Tyler Eden ERP Applications
  Recommended Actions – The Tyler Eden applications currently in use at the City effectively supports the basic financial system, utility billing and payroll functions, but lacks desired features including automated time card entry, a Human Resources module, inventory, CIP budget, project accounting, purchase requisitions, fixed asset management, workflow and employee self-service. The first recommendation is to determine if Tyler Eden can provide enhancements to increase organizational efficiency and productivity. The acquisition and implementation of a new financial, payroll and human resources system should be considered if Tyler Eden cannot provide expanded functionality.
- Granicus – Agenda Management
  Recommended Actions – Granicus is a proven solution used by numerous municipalities and is fully featured to support the City's agenda management process from origination through completion. Recently implemented, the Agenda Management application will be a viable solution to support these important City tasks.
- Vision Internet – (Web Site Application)
  Recommended Actions – The City recently conducted a community survey soliciting suggestions for web site improvement. The web site design will be refreshed along with an

upgrade of the content management system. The upgrade will get underway when approval of the new design is obtained.

- Vision Internet – (Intranet Application)
  Recommended Actions – When the City procured Vision Internet for the web site, an intranet application was included in the procurement. The intranet is not fully implemented primarily because user departments were unable to appoint a staff member to maintain each department's content.

Application Constrained

Based on the IS Assessment activities and user department interviews, the following applications are viewed as not fully effective in supporting the City's business and operational needs due limited technology features and functions:

- Zoll Records Management System (RMS)
  Recommended Actions – The Fire Department's Zoll RMS application provides fundamental information, but the inspection application is cumbersome and requires duplication of effort. Obtaining reports from the information gathered by the application is difficult. Other local fire agencies are implementing another RMS solution, and a global procurement approach may offer advantages to the City.

Ineffective Applications

Based on the IS Assessment activities and user department interviews, the following applications are viewed as lacking the features and functions to support City business and operational needs. In addition, significant people and process issues exist which prevent applications from being more effective in supporting City business:

- Accela Permits Plus – Building Permit Application
  Recommended Actions – Permits Plus, an older application version, cannot provide desired features including allowing the public to request inspections and view permit status online, mobile access for field staff, and workflow to internally support inspections by various departments. Accela Automation is the newer application version replacing Permits Plus, and solutions are available from other vendors. Replacing Permits Plus is required to make the desired enhancements available.
- LibertyNet Document Management
  Recommended Actions – The LibertyNet application is not effectively supporting document management because the search features do not consistently provide results. LibertyNet was purchased by another vendor (Hyland) and support will be discontinued in 2014. The acquisition of a new document management application is recommended. The scope of the project should include conversion of the document images from the LibertyNet application.
- NEOGOV Recruiting Application
  Recommended Actions – The City uses an older version of the NEOGOV recruiting application that is no longer supported by the vendor. The City's version allows positions to be posted on the web site, but applicants must print a copy of the application and submit it on paper rather than allowing the application to be submitted on line. Replacement of the City's version of NEOGOV is recommended. Integration with a human resources application to automate processing when an applicant is hired would further automate processing.
- RTA Fleet Management
  Recommended Actions – The fleet management application provides limited information needed for making repair or replace decisions, and it does not provide the ability to track vehicle expenses by department. The fleet management needs may be addressed in a work order management system.

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5 Infrastructure

This dimension focuses on the effectiveness and management of the City's technology infrastructure. The activities evaluated in this dimension are the daily, weekly, monthly, and yearly tasks that ensure a reliable, robust and high performing technology infrastructure. Areas of review include the network architecture, Internet and Intranet access and usage, remote access management, server administration, desktop standards, operational procedures, environmental considerations, and equipment refreshment planning.

5.1 Network Operation

The IS Division network administrators support the City's wide area network (WAN) which includes connection to most of the City's facilities (e.g. City Hall, Public Safety, City Yard, the fire stations, Cultural Arts, Joslyn Center, Begg Pool, Dial A Ride, RCC, and the SCADA system locations). The WAN connectivity includes fiber, wireless, Verizon frame relay, DSL and T-1 leased lines.

The network services provided to the City by the IS Division include:

- Wide area network (WAN)
- Internet connectivity
- Wireless connectivity in Council Chambers, Joslyn Center and the EOC located in the Public Safety facility
- Network security
- Network management services

The SCADA system is supported by Public Works while the IS Division only supports the network the SCADA system uses. The SCADA system network consists of City owned fiber and frame relay lines leased from Verizon.

There are a number of City facilities that are not part of the WAN (e.g. Live Oak Park, Sand Dune Park, and Marine Avenue Park), as a result staff located at these facilities do not have access to email or City applications such as Active Net.

The connection between City Hall and the City Yard uses point-to-point communications which means if the connection is unavailable, staff located at the City Yard will lose access to all systems.

The IS Division has done a good job documenting the network layout which is described as a "flat" network, rather than designed with network segments. On a large, flat network, performance can degrade and security concerns increase. VLANs, or network segments, serve as a security boundary and improve performance by isolating network traffic.

Recommendations

- Expand the WAN to be inclusive of all City facilities.
- Add a redundant network connection between the City Yard and City Hall to eliminate the possibility of downtime caused by a single point of failure. As a result of the relocation of the Public Works staff from City Hall to the City Yard the need for reliable network connectivity is more important.

- The IS Division staff recognizes advantages to using VLANs (versus a "flat" network configuration) but have not had the resources or expertise to design and implement a layered network infrastructure. In the event that VLANs are required to enhance network capabilities, assistance by an outside network professional is recommended.

5.2 Internet Access

During meetings with the departments and results of the User Satisfaction Survey, the City's Internet connectivity speed was reported as a significant issue. An upgrade to the Internet connectivity was recently completed to increase the speed from 3 Mbps (megabits per second) to 45 Mbps. The upgrade has resolved the issue, but users reported the slow connectivity continued for the previous 18 to 24 months.

The City's application portfolio includes several applications that are in the "cloud", meaning access to the application is available only through the Internet. Poor Internet performance has impeded staff productivity. Examples of workarounds reported include driving with a laptop to the mall in order to download needed information and several staff members reported working from home or on personally owned equipment to circumvent the slow speed of the City's Internet.

IS Division staff recognized the issue in fiscal year 2011/2012. The scope of the project required an RFP and changes to the City's Internet protocol (IP) address scheme including the City's web page, which would have resulted in the City's web site being unavailable for up to 48 hours. The project did not proceed.

The recently completed upgrade started in June 2012. The original project schedule was 2 months but the project required Verizon to install new infrastructure, which delayed the installation until February 2013.

Access to the Internet is filtered to block access to non-business categories (e.g. gambling, hobbies, crafts, etc.). The exception to this is where job duties specifically require additional access (e.g. Police, Parks and Recreation, etc.). Other categories are available for a limited amount of time per day (i.e. sports). Internet use is recorded and Directors are provided Internet usage reports for their staff.

Recommendations

- Implement procedures to proactively monitor Internet capacity to effectively plan for increased bandwidth.
- Update and distribute the existing Internet Use policy with input and guidance from the Technology Steering Committee.

5.3 Intranet

Intranets have the potential to help staff quickly access common information, share information, and more effectively collaborate. At a minimum, an Intranet should include current information such as templates, forms, policies and procedures, staff directory, and other citywide reference information. The potential feature and functionality of an Intranet can expand significantly beyond the minimum to include department level sites, electronic forms, workflows, training materials, alerts, videos, picture galleries, frequently asked questions and more.

The City procured an Intranet as part of the Vision Internet web site implementation 2007. The Intranet was intended to replace a Microsoft FrontPage site that was developed internally. Unfortunately, the implementation of the Vision Internet Intranet solution was not successful as it required the individual departments to migrate, manage, and create their own sites.

Recommendations

- Implement the Intranet included in the Vision Internet web site procurement. To ensure the Intranet is successfully implemented, the City should follow formal project planning and management processes. In addition, the City will need to ensure the training and support structure exists to maintain the Intranet.

5.4 Remote Network Access

Remote access to the City's network is available and is provided on a limited basis because of network security concerns. Remote network access is available for use by prescreened vendors to service specific software applications and for the IS Division network administrators. Remote access for the City's vendors is provided using WebEx under the supervision of the IS Division staff.

During the assessment and survey, staff expressed a desire for remote access and a better process to manage vendor access.

Recommendations

- Publish a Remote Access policy with guidance from the Technology Steering Committee. Since security is of critical importance, the City will need to implement the tools and procedures to ensure the network and City data is adequately protected. The IS Division will identify any costs or modifications required to allow secured remote network access.

5.5 Servers

The City has standardized on HP servers that are refreshed every 4 years. Data storage is supported with a 7.0 terabyte storage area network (SAN) and a 4-terabyte network attached storage (NAS) device. Currently the City has 30 stand-alone file servers supporting the department applications and technology infrastructure.

Server virtualization is specially designed software that allows one physical server to be configured into multiple virtual servers sharing a data storage device. In the past few years server virtualization has emerged as a leading technology because it conserves space, power consumption and reduces the amount of air conditioning required to cool the data center environment. Server virtualization also provides enhanced management capability and redundancy.

Microsoft Exchange is a core system for the City, and Microsoft Cluster Server software is implemented to provide failover and increased availability for the application.

Recommendations

- Implement virtual server technology to replace current servers as they need to be replaced and to support new technology implemented as part of the ISMP.
- Train IS Division staff on server virtualization software and possibly contract services to support IS Division staff with the initial deployment.

5.6 Routers and Switches

The City has standardized on Cisco communication equipment. The core switch is configured with dual supervisors and the vendor provides 4-hour response time on a 24/7 basis. Since a core switch failure disrupts all network communication, the City has followed best practice to create redundancy to ensure continuing operation.

Rather than obtaining maintenance agreements on other Cisco equipment, the City keeps spares to reduce ongoing maintenance expenses. Consistent with best practices, routers and switches are

located in secured closets within City facilities. The router and switch closets were described by staff as organized with appropriate cable labeling.

Recommendations

- The City conforms to industry best practices. No changes are recommended.

5.7 Desktop/Laptop/Printer

The City has standardized on Dell desktops and laptops. The City has network printers available that provide users with a choice of printers. Multifunction devices provide scanning and fax ability. Tablet computers have been issued to City Councilmembers and the department Directors for use in agenda distribution.

The City's refreshment policy is currently set at 5 years, extended from 4 years due to budget considerations. The current budget includes desktop and laptop replacement; however, deployment has been delayed because of limited IS Division staff resources. Until recently, a new desktop was deployed only when an existing desktop failed due to the IS Division staffing constraints.

The City has standardized on Microsoft operating system and desktop software (e.g. Microsoft Office 2010, Windows 7), although the migration to the newer versions of Microsoft software is not complete.

The IS User Satisfaction Survey Report indicates the level of user satisfaction with the equipment (i.e. computers, printers) used in performing their job is below the peer average score.

Desktop virtualization is an emerging technology. Performance results may vary with the applications in use. The IS Division has appropriately identified evaluation of the suitability of desktop virtualization as a future project.

Recommendations

- Publish a formal technology refreshment policy and supporting budget that establishes a 4 year replacement cycle. This helps ensure a reliable, robust and high performing computer environment. Technology refreshment is important because as equipment ages, it becomes less reliable and requires a higher level of support. In addition, business technology application providers continually upgrade their software to run on current hardware and software versions. A strong technology refreshment policy allows for an orderly replacement of aging equipment and reduces the adverse impact of equipment failure.
- When appropriate, use temporary labor to install new equipment to ensure timely installation.
- Establish a policy and methods to encrypt laptop computers to prevent unauthorized access in the event loss or theft.

5.8 Mobile Computing

A challenge for technology professionals is the deployment and support of mobile computing devices (i.e. smartphones, tablets, etc.). While the current use of mobile computing is limited, it should be expected that at some point, nearly all employees will have devices that provide them access to the City's system while working away from City facilities. There are numerous benefits to providing staff mobility in terms of access to City systems; however, it also creates a support challenge and increases network and data security risks.

There is a growing demand for "bring your own device" (BYOD), meaning the ability to use a personally owned device to conduct City business.

Technology support for BYOD is creating new challenges for technical support staff. Aside from the security concerns of using personal devices for access to City systems and data, the technical staff is

also challenged with troubleshooting personal device issues as they can't be familiar with every model available.

Recommendations

- Monitor the evolution of mobile computing devices (i.e. smartphones, tablets, etc.) and implement standards, training, and support as necessary to allow staff to leverage mobile technologies to improve service delivery.
- Establish a mobile computing refreshment policy and budget. The Technology Steering Committee should establish a refreshment policy for mobile devices along with a budget. New product offerings may provide additional benefits for staff, which could require more frequent replacement.
- Evaluate the mobile computer features and functions of current and future business applications to take full advantage of mobile computing.
- Implement security procedures, policies, and tools to ensure mobile devices can be "wiped" clean if lost or stolen.

5.9 Data Center Environment

The primary data center is located in City Hall and contains the computer and communication equipment that supports the City's software applications and voice/voice mail systems. The data center is located in a secured environment with controlled access. The room is orderly and the equipment labeled.

UPS (uninterruptable power supply) units are installed that will supply approximately one hour of battery backup in the event of a power failure. Power to the room is supplemented with a generator that can supply power for an extended time, and the generator is tested periodically.

A backup air conditioning system is installed, and heat alarms alert building maintenance in the event the temperature rises above recommended levels. The server racks are bolted to the floor for seismic safety.

A secondary data center is located in the Police facility and houses servers that support applications used by the department, as well as video surveillance equipment. The equipment is in a shared space that is also used for storage. The room is secured.

The protection and security of the City's data center is important because the performance of the equipment is critical to providing services. The City's data centers are adequately protected from the common vulnerabilities.

Recommendations

- Limit access to the storage area in the Police Department that contains data center equipment.
- A facility study will be underway that includes an evaluation of the City Hall data center to ensure the equipment is properly protected from damage or failure due to inadequate air conditioning or power supply.

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6 Security

This dimension evaluates how the City manages security and risk. Effective security and risk management starts at the top levels of the organization by establishing standards and expectations. Once those are established, it is up to the departments to implement the tools, processes, and practices to meet the standards and expectations. Maintaining a secure and protected technology infrastructure is of primary concern for any technology organization. Effective security involves a combination of policy and standards, personal user conduct, software tools (filtering, monitoring, etc.), and occasional audits to validate effectiveness.

6.1 Network

The security of the City's network is a critical component of technology best practices. In today's world, every computer is subject to malicious attack through the Internet. Skilled computer hackers attempt to break into networks to obtain private information, to utilize disk space for their own use, to attempt to cover malicious attacks to other organizations, or to cause damage to information.

The City has implemented intrusion detection software (IDS) to continually monitor the network for malicious activities. The network is protected by a firewall and DMZ (a sub-network that helps protect the City's local area network from external attacks).

A network penetration test is performed annually by an outside security consultant, and issues identified in the test are remediated. This is best practice and should continue.

Recommendations

- Expand the annual network penetration test performed by a network expert to include an evaluation of the Department of Justice (DOJ) current requirements and mandates.

6.2 Physical

The public entrance to the Finance and IS Division work area in City Hall is staffed by City employees at the front counter. The data center is locked and access requires a key.

The lobby at the public safety facility is staffed and entrance to the facility requires permission. The data center in the public safety facility is locked and requires a key.

Recommendations

- Consider implementing a visitor sign in and visitor badges.

6.3 Data

From a user perspective, passwords are often considered an inconvenience, but they are a critical component to an organization's security program. Passwords serve to restrict access to computer applications to only those that have authorized access. Passwords are most effective when parameters are

established that prevents choices that can be easily hacked (i.e. "password," a common name, 12345, etc.). The City has established a password policy.

The City currently does not encrypt email which would protect email content from access by unauthorized individuals. Encryption is appropriate for communicating confidential information.

Recommendations

- Implement email encryption to protect confidential information.

6.4 Desktops

Desktop level security procedures are instrumental to an effective security program. A key component of desktop security is restricting administrative rights to desktops. Administrative rights restrict the authority to someone designated as the system administrator to control what hardware and software can be installed on a desktop computer.

Allowing users to have the ability to install software on their desktops presents risk because malware, non-standard software, or improperly licensed software could be installed. An infected desktop has the potential of quickly impacting City computer users and stopping all business applications.

The IS Division's policy is to restrict administrative rights on the desktops, which is consistent with best practices. However, the IS Division reported designated staff in certain departments have administrative rights to allow designated staff assist others when updates or changes are needed. When meeting with the departments, this policy was not clear. Users expressed frustration with delays from having to request service from the Help Desk for what they view as routine changes.

Recommendations

- Review annually the designated department representatives who have desktop administrative rights. Provide ongoing instruction to train the representatives on acceptable practices. Consider establishing an Administrative Rights User Agreement to define protocols for administrative rights. Determine if additional department representatives are needed.

- Ensure the IS Division responds immediately to all requests asking for assistance for the installation of software and/or equipment that require administrator privileges.

6.5 Data Backups

A mission critical function for any technology department is protecting and backing up business and operational data. An effective backup and recovery strategy can protect the City from data lost due to hardware failure, damaged equipment, or software failure. Another benefit to having backups is to protect users who may inadvertently delete important files. Having an effective backup strategy provides an opportunity to recover from such an event.

A full backup is completed weekly, followed by daily incremental backups. For disaster recovery purposes, the tapes are stored off site at the RCC. IS Division staff indicate that users frequently request file restores and staff is confident recovery could be completed using the backup tapes.

Recommendations

- The City conforms to industry best practices. No changes are recommended.

6.6 Business Continuity

Business continuity planning provides the foundation for how business would be conducted after a major catastrophic event. The City does not have formal plans related to technology disaster recovery or business continuity.

Recommendations

- Create and publish a Business Continuity Plan (BCP) to ensure adequate processes, procedures, and resources are available to support an orderly recovery of the City's applications within the defined timeframe and in priorities as deemed by the departments.
- Consider establishing the use of the Tyler Eden "cold site" to provide backup and recovery of the City's financial and payroll data. A disaster recovery cold site is available for the Tyler Eden applications (financial, utility billing and payroll). At one time, the City's agreement with Tyler Eden included the disaster recovery site; however, use of the cold site was never implemented.
- Develop and test a disaster recovery plan for the IS Division.

6.7 Emergency Operations Center (EOC)

The City's primary EOC is located in the Public Safety facility. The secondary EOC is located at the RCC. The City participates in annual disaster drills that are managed by the Fire Department. The City's EOC Committee meets monthly to plan and prepare to effectively support activity during EOC activation. The Committee has identified desired improvements for the EOC and improvements should be included in the ISMP.

In the event of an emergency activation, IS Division staff is responsible for ensuring Internet connectivity, computers and printer services are working.

Laptop computers are used in the EOC, and during the last drill, Microsoft patches were installed preventing the laptops from being used until the installations completed.

Recommendations

- Ensure the procedure to periodically install patches on the EOC laptops is completed timely.
- Develop and publish detailed procedures for supporting IS related EOC responsibilities. This will ensure that IS related support functions are addressed in the event that IS staff is unable to respond to the EOC during an emergency,

6.8 Virus/Spam Protection

The introduction of a virus to a network could cause the network/data center to fail and/or damage City data. The City uses the TrendMicro application for network and desktop virus and malware protection. The updates are pushed through the network to the desktop computers and are applied when the user logs into the network.

Recommendations

- The City conforms to industry best practices. No changes are recommended.

6.9 Patch Management

Timely patch management is instrumental for protecting the City's data and ensuring that hardware/software executes as intended. Microsoft frequently issues patches for file servers and desktop computers and the timely installation of patches is important for security and optimum

application performance. The City subscribes to Microsoft Windows Server Update Services (WSUS) to obtain patches when they are released. The users are instructed to leave their desktops running overnight on Tuesdays to allow the current patches to be installed, and IS Division posts friendly reminders. The desktop policy for patch installation conforms to best practice.

The IS Division applies patches to the servers quarterly during non-business hours to avoid staff disruption. Applying patches often times requires that servers be rebooted; thus making them unavailable to the users.

Recommendations

- Implement procedures to install server patches on a more frequent basis.

6.10 Server Event Logs

Log files maintained on each server contain information about server performance anomalies. The information can prove invaluable when troubleshooting. As the log file size increases, the errors overwrite the previous information. In the event that an issue repeats, the initial information can be lost. Therefore, it is important that log files are maintained to prevent overwriting.

Recommendations

- Centralize log files to prevent overwriting.

7 Administration

This dimension focuses on how effectively the IS Division manages the technology infrastructure in terms of budgets, maintenance agreements, and software licenses. As the title indicates, these functions are largely administrative activities and do not require deep technical expertise.

7.1 Administrative Staff

Administrative duties required in the IS Division include processing accounts payable, software license and maintenance renewals, and budget preparation. The IS Manager is assisted by one of the part-time IS support specialists in performing administrative duties.

Recommendations

- When possible, migrate administrative duties to clerical personnel to free up the IS Manager's time for more strategic and important activities.

7.2 Budget

Typically municipalities spend between 3.0% and 5.0% of their annual general fund on technology. The City's annual budget for FY13/14 indicates the IS Division represents approximately 2.89% of the general fund budget. However, this doesn't represent technology related expenditures managed at the department level. As an example, business application maintenance costs are included in the department budgets (e.g. Finance for Tyler Eden, Community Development for Accela, etc.). The City does not centralize its technology related expenditures in the IS Division, but instead budgets for IS related expenses in the City department that is primarily utilizing the application. This practice is followed to allow for the full costing of specific functions (i.e., the total cost to operate the building division includes the cost of maintaining the permit software application). While this methodology is conducive to capturing total costs for specific City functions, it can impede the ability of the City to capture the total cost of providing information services across all departments.

Recommendations

- Review the current processes and procedures in place that enable the Finance Department to capture and report on the full cost to provide information services to the City, in order to ensure that all technology costs across departments are easily captured and reported.

7.3 Procurement

The City's purchasing policy requires IS Division approval for all technology purchases. This is important to ensure that new purchases align with current technology standards, can be supported, and does not adversely impact the existing network and users. In addition, the IS Division is best positioned to identify opportunities to leverage existing technology infrastructure.

Recommendations

- Major technology procurements should be reviewed by the Technology Steering Committee. The Technology Steering Committee should establish acquisition standards and policies, and communicate expectations to users.

7.4 Contract & Vendor Management

The business application maintenance agreements are included in the department budgets. The departments are responsible for maintaining the agreements and ensuring the support service levels meet the City's requirements. Best practices encourage a collaborative approach to proactively managing technology vendors and agreements.

Recommendations

- Citywide, review all maintenance agreements annually to confirm the agreements provide the appropriate level of service.
- Create a centralized repository for all maintenance contracts within the IS Division. This method allows for the consolidation of like vendors, acquisition of volume discounts, and having a single point of contact for all technology agreements within the City. This methodology also provides increased control over the total technology expenditure within the City.

7.5 Software License Management

The City maintains a Microsoft Enterprise Agreement (EA) for the desktop/laptop operating system, Office Productivity Suite, Email Exchange and back office applications. The EA is a three-year contract with an annual renewal and provides newer software versions at no additional cost to the City. Microsoft licensing can be complex and expensive. The EA assures the latest Microsoft software products are available within the annual costs of the agreement. The City conforms to industry best practices.

The departments are responsible for application licenses and maintenance support.

Recommendations

- Implement a centralized license management role (which should include department applications) within the IS Division to ensure the City is complying with software licensing agreements. This also helps the City fully identify the total cost of technology.

7.6 Inventory Management

Inventories of the desktop and laptops are maintained using the IS Division's Help Desk software, Manage Engine. This software provides an automated tool for inventory management. In addition, the City conducts a physical inventory annually to audit the information from Manage Engine, and resolve any discrepancies.

A server inventory was not available.

Recommendations

- The City conforms to industry best practices. No changes are recommended.

8 Documentation

This dimension evaluates the effectiveness of the IS Division's documentation as compared to a best practices technology organization. While informal, undocumented processes can be effective, such processes force organizations to rely on individual expertise and knowledge. Best practices organizations maintain current and accurate documentation on all activities such that processes can be completed in the absence of any one individual. Strong documentation promotes cross training, enables backup and recovery, provides succession planning and reduces the risk of change when introducing new technology.

8.1 Technical Documentation

Maintaining a current and accurate document repository for any technology organization is a challenge. Often times, technical staff is required to "wear many hats" and can trend towards operating in a reactive mode. Some organizations may be able to perform with minimal documentation, as they appear to effectively and quickly communicate with one another – this usually exists in environments where permanent staff have a long term working relationship. However, in the long run, all organizations are best served by ensuring appropriate focus is placed on documentation.

The IS Division was able to provide some written documentation in response to NexLevel's request. An inventory of the documentation provided is included in Attachment A of this report.

It is important that the IS Division is allowed to allocate sufficient time to create and maintain technical documentation. If necessary, this helps ensure that external technology professionals would be able to quickly understand and support the technical infrastructure in a reasonable, proficient manner. In addition, it supports bringing new staff up to speed quickly.

Recommendations

- Regularly review technical documentation for all aspects of the IS Division's day-to-day operation to ensure the documentation is kept current and is retained in a centralized location. Personal folders, notes and instructions should be written in a consistent format and moved to a central repository.

8.2 Policies & Procedures

The IS Division provided NexLevel with the Microsoft Home Use Policy and Citywide IS User Policy. While the Citywide IS User Policy provides a foundation to build on, it needs to be updated to reflect the current environment, computing trends, and changed procedures.

A core component of technology best practices is to establish and enforce comprehensive technology policies and procedures. Effective policies and procedures guide computer users in the use of technology to ensure a secure, reliable, and supportable environment. The following list identifies common technology polices that exist with best practice public agencies.

- Internet Use
- Help Desk

- Public Information
- Document Retention
- Equipment Acquisition
- Equipment Sanitation/Disposal
- Software License
- Green IT
- Administrative Rights
- Anti-Virus
- Change Control - Freezes & Risk Evaluation
- Data Security
- Desktop Move/Add/Change
- E-Mail Archiving and Retention
- Inventory
- IT Services Catalog
- Mobile Device Acceptable Use
- Password
- Patch Management
- Remote Access
- Removable Media Acceptable Use
- Social Media
- System Backup/Recovery
- Technology Training
- Third-Party Access
- Wireless Access Point

Recommendations

- Engage the Technology Steering Committee in the review of all existing policies to obtain input on potential gaps or shortcomings. Develop and publish new polices.
- Distribute policies to staff and consider requiring signatures to indicate that the policies are reviewed during annual performance reviews.
- Establish processes whereby the IS Division monitors compliance with established policies, and the Technology Steering Committee acts as the enforcement of the policies.

Attachment A - Documentation

Table 5 presents the documentation provided by the IS Division during the completion of the IS Assessment.

Table 5 – Documentation Provided to NexLevel by the IS Division

Document	Purpose/Content
2013 IS Budget	Itemized line item detail budget for FY2012/2013.
2013 IS Performance Measures	Comparative counts by fiscal year of the network servers/workstations/printers, telephone handsets and mobile phones, unique visitors on the website, City meetings broadcasted, website e-notification subscribers, Granicus Internet viewers of City meetings.
All City Landlines	Landline inventory: DID, voice mail, name, department, location and type of service.
Citywide Information Systems Use Policy	Privacy, system changes, system security, appropriate use, enforcement, unattended workstations; employee signature on the acknowledgement of receipt. Date revised May 1, 2002.
Class Comp Study	Completed position description questionnaire for: IS Systems Manager, Intern, IS Support Specialist and Network Administrator.
CMB Network 2012	City of Manhattan Beach wide area network diagram.
Finance Org Chart	Finance Department organizational chart with division duties.
Home Use Program Policy	Microsoft policy for employee application home use.
IS Narrative FY2013	IS goals and initiatives in the 2012/2013 budget.
IS Project List 2012-2013	List of Information Systems projects and City department IS projects and initiatives identified for completion in 2012-1013. Prepared by IS staff.
IS Weekly Staff Meeting Packet 1/9/13	Weekly incoming and outgoing email summary; project list sorted by staff assigned; quarter-to-date help desk requests by department and by category; month-to-date number of completed requests by staff member; count of CRM requests received by topic, by employee and most frequent requestors; Vision content count report and audit report; IS calendar for January through April 2013.
Internet Access Request Form	Permission form for access to the Internet; date revised May 2, 2002.

Document	Purpose/Content
List of Applications	Application, type and department; January 2013.
Network Assessment	Assessment dated August 17, 2009; remediation scope of work dated December 13, 2011.
Supported Devices Count	Number of workstations, printers/scanners/plotters, telephone devices and audio/visual equipment by department.

Attachment B – Application Inventory

An application inventory is presented in Table 6. The information was obtained from the IS Division and in meetings with the departments.

Table 6 – City of Manhattan Beach Application Inventory

Application Name	Application Description	Primary Department	Data Center Model
Accela Permits Plus	Permits management	Community Development	In House
Active Net	Class registration, facilities, point of sale, aquatics registration	Parks and Recreation	Cloud and In House
Adobe	Writer, Creative Suite, Illustrator, InDesign, Photoshop, Reader	Various	In House
AFIS	Crime scene fingerprint equipment	Police	In House
Alarm Tracking System	Alarm tracking	Police, Finance and Community Development	In House
ARC GIS	GIS	Public Works	In House
Assure ID	Access pass maker	Police	In House
AutoCAD	Engineering	Public Works	In House
AutoCITE	Duncan Solutions parking and enforcement	Police	Cloud and In House
Benefits Management		Human Resources	In House
BlueCheck	Fingerprint scanner for field use	Police	In House
Calendar Creator	Editing application	Management Services	In House
California Legal Source Book	California Legal Source Book online	Police	Cloud
CARS		Police	In House
Cigma	Applicant tracking	Human Resources	In House
CLETS	California Law Enforcement Telecommunication System	Police	In House
Coplink 4	Crime fighting application	Police	In House
CopWare	Legal reference	Police	In House
Crystal Reports	Report creation application	Enterprise	In House
Dbase	Inventory	Finance	In House
DES	L3 Mobile Vision digital evidence	Police	In House
DOT	Licenses and I9 expirations	Human Resources	In House
DSX	Keypads for entry to the Fire/Police facility	Police	In House
Duncan CashKey	Parking cash key	Finance	In House
EJWard	Fuel management	Public Works	In House

Application Name	Application Description	Primary Department	Data Center Model
Election PC	Election management solution	Management Services	In House
EnerCalc	Structural engineering software	Public Works	In House
ESRI GIS	Geographic information system	Public Works	In House
Esubpoena	LA County Grand Jury	Police	Cloud
Experion	Locate Plus credit bureau	Police	Cloud
Finance Credit Network	Collections (online)	Finance	Cloud
Firefox	Browser	Various	In House
Flashback	L3 Mobile digital video recording system	Police	In House
FrontPage	Intranet	Various	In House
Go Reach	Customer Request Management	Citywide	In House
Google Earth	Earth imagery, maps, terrain	Various	In House
Granicus	iLegislate, Legistar, Media Manager	City Manager	In House & Cloud
Hazardous Materials Management	LA County support hazmat	Fire	Cloud – LA County
HDL	Sales tax and property tax information	Finance	In House
HVAC	Air conditioning management	Public Works	In House
Hy-Tek	Aquatics Meet Manager and Team Manager	Parks and Recreation	Cloud
InDesign	Graphics	Parks and Recreation	In House
Infosend	Utility bill print service and electronic bill presentment	Finance	Cloud
Internet Explorer	Browser	Various	In House
IVOS	Workers compensation management	Human Resources	Cloud
JADAC	CopsWest, CLETS, JADAC	Police	In House
Jail Wrist Band	Report	Police	In House
Jamar	Traffic strip (count cars and speed)	Police	In House
Java	Programming language	Citywide	In House
Java Professional	For brochures	Parks and Recreation	In House
JDIC	DOJ liaison	Police	In House
KATS	Canine management	Police	In House
Keller DOT	Drug testing	Human Resources	In House
KeriSys Gate	City yard gate system	Public Works	In House
Keystone	Secure keypad	Police	In House
LA County	Maintenance and monitoring of traffic signals	Public Works	Cloud – LA County

Application Name	Application Description	Primary Department	Data Center Model
LAXAPOL	Policy management system	Police	In House
LEFTS	LEFTA – field officer training	Police	Cloud
Legacy	Phone system for use by prisoners in the jail.	Police	In House
Legal Solutions	Legal management software	Management Services	In House
LexisNexis	Research	Police	Cloud
LibertyNet	Document Management	Various	In House
LS MVS	Mobile video system	Police	In House
Lync	Unified communications platform	Various	In House
MDCs	Mobile data computers in Fire and Police vehicles	Police	Cloud - RCC
Microsoft Desktop	InfoPath, FrontPage, Visio, Project	Desktop	In House
Microsoft Exchange	Email	Enterprise	In House
Microsoft Office	Access, Excel, PowerPoint, Word, Publisher, Outlook, OneNote, Internet Explorer	Enterprise Desktop Applications	In House
Musco Control-Link	Lighting control	Parks and Recreation	In House
NEOGOV	Recruiting application	Human Resources	Cloud
Nero	CD/DVD burner	Various	In House
OARRS	Emergency Management from NC4	EOC	In House
OSHA	Employee regulations	Human Resources	Cloud – CA Chamber
PaintShop Pro	Editing application	Various	In House
PDF Creator	Editing application	Citywide	In House
Pelco	Video security for the police station and jail	Police	In House
PIPS	Automated license plate recognition	Police	Cloud
Power DMS	Policy updates	Police	In House
Power DVD	Video player	Citywide	In House
Progressive Solutions	Police ticket collections and false alarm billing	Finance	In House
PUMA	For audio recording with Scorpion recorders	Police	In House
Quadrant	Cashiering (interfaces to Tyler Eden)	Finance	In House
Quicktime	Video player	Citywide	In House
Raid Bird Maxicom	Landscape	Public Works	In House
RetainPro	Retaining walls engineering design	Community Development	In House

Application Name	Application Description	Primary Department	Data Center Model
Reverse 9-1-1	Community contact for emergency notification	Police	In House
Route Match	Dial a Ride	Parks and Recreation	In House
Roxio	CD/DVD burner	Citywide	In House
RTA	Fleet management	Public Works	In House
Safari	Web browser	Various	In House
SCADA	Water management system	Public Works	In House
SMS	Subpoena management system	Police	In House
Sound Meter	Used to measure noise disturbance	Police	In House
Stanley	Secures doors to move prisoners	Police	In House
Stantec	Pavement management	Public Works	In House
Symantec EndPoint	Antivirus	Citywide	In House
Target Solutions	Training records	Fire	Cloud
Telestaff	Staffing application	Fire	In House
Tele-Works	Frequently asked questions	Various	In House
Tiburon	Computer Aided Dispatch	Fire	Cloud - RCC
Tiburon	CAD and RMS	Police	Cloud - RCC
Turbo Data	Parking ticket collections	Finance	In House
Tyler Eden Inforum Gold	Financial, payroll, animal licensing, business license and utility billing applications	Finance	In House
UCM Plus	Unemployment	Human Resources	Cloud
VLC Player	Video player	Various	In House
Vision Internet	Web site	IS	Cloud
Visual Studios	Office application	Various	In House
Voting System	Public meeting management solution	Management Services	In House
WestNet	Station alarm alert	Fire	In House
Whitman	Ambulance billing	Finance	In House
Win2Data	Property information	Community Development	In House
WinDSX	Access control system	Police	In House
Windows 7	Desktop operating system	Various	In House
Windows Media Player	Video player	Citywide	In House
Windows XP	Desktop operating system	Various	In House
WinZip	File compression	Various	In House
Wireless Video	Undercover	Police	In House

Application Name	Application Description	Primary Department	Data Center Model
Zoll	Records management system (previously SunPro)	Fire	Cloud - RCC
Zonar	AVL for Public Works vehicles	Public Works	Cloud

IS Division Application Inventory

Name	Description
Acronis TrueImage	PC backup
Barracuda	Web Filtering
CallExpress	Voicemail system
Cisco VPN	Secure remote connectivity
CommVault	Backup and recovery solution
Cytrix Client	Desktop
DameWare	Remote desktop
DaVinci	Audio management system
FinalCut	Editing app
Firefox	Browser
GEN CG	Character generator
IntelliAdmin	Remote administration software
IronPort Mail flow Central	Email filtering solution
Leightronix WinLGX	Automated broadcast and streaming video-on-demand control system
Manage Engine Helpdesk Plus	Helpdesk management solution
MDM (Web based)	Mobile device management tool
Microsoft Active Directory	MS directory service
Microsoft SQL 2000	Database
Microsoft SQL 2005	Database
Microsoft SQL 2008	Database
Microsoft Windows Server 2003	Server
Microsoft Windows Server 2008	Server
Mitel Software	Mitel PBX system
OmniPage	Document conversion software
OnTrack Power Control	Data recovery tool
PC Anywhere	Remote access software
Pinnacle Studios	Editing App
Powerchute	UPS management tool
Redhat Enterprise	Server
SnagIt	Screen capture
SQL 2008	Server

Name	Description
Symantec Ghost	Imaging software
Terastation Client Software	
TreeSize Professional	Hard disk space management