Technology Master Plan

April 2024

**NEWARK
california**

Optimal Technology Guidance

CLIENTFIRST
TECHNOLOGY CONSULTING

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Engagement Purpose and Background

Technology Master Plan Objective

This Technology Master Plan articulates a vision for supporting the work of the City through efficient technology use. This includes ensuring the proper technical resources and organizational structure to manage information technology and the applications utilized by the departments effectively. This plan identifies strategies for developing and implementing technology initiatives and projects supporting the organization's operational needs. The plan's recommendations focus on improving both the City's IT infrastructure and business applications.

Over several years, a well-documented plan guides the planning, procurement, implementation, and technology investment management for IT functions and City operational departments. It also provides strategies for resources related to operational technology and information technology service delivery.
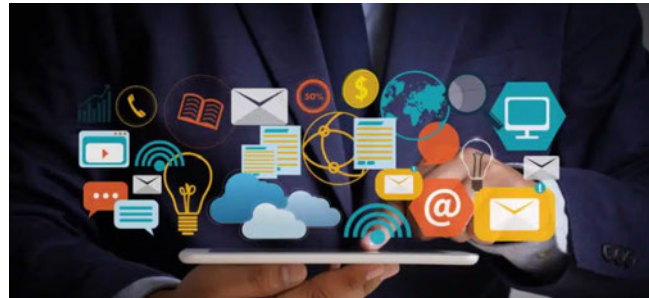
This plan is the result of a thorough analysis of the following:

- Interviews and workshops involving all levels of the City's operational staff, including the management team, end users, and other stakeholders, as available
- Existing hardware and network infrastructure, staffing, funding, applications, business systems, projects, processes, telecommunications, training, and other investments and resources currently in use by the City
- Identification and prioritization of initiatives and projects to undertake over the next five years
- Identification of the resources required to accommodate current and future technology requirements, such as IT operations and management, legal requirements, cybersecurity requirements, service delivery, cloud computing, staffing, and more.

Deliverables

The assessment and plan includes:

- Project purpose and background
- Methodology for implementation and maintenance of the assessment
- Current technology environment summary
- Key benchmarking metrics

- Strategies, goals, and objectives
- Technology initiatives (projects) by priority
- Key issues
- Timelines
- Technology plan budgets

Methodology and Approach

ClientFirst uses a five-phase methodology for technology master planning. This phased approach serves as the cornerstone of the project by allowing a collaborative process to shape and develop the recommendations.

PROJECT INITIATION AND TECHNOLOGY INVENTORY	Stakeholder Team Development Change Management Technology Inventory Kick-Off
ASSESSMENT	Non-IT Department Assessment Workshops IT Infrastructure, Operations, and Staffing Review Assess Strengths and Weaknesses Define Strategies, Goals, and Objectives
RESEARCH AND PROJECT/ INITIATIVE DEVELOPMENT	Develop Preliminary Initiatives / Projects Staffing Recommendations Research Alternative Solutions Preliminary Budgets and Prioritizations
PLANNING AND PRIORITIZATION WORKSHOPS	Project Sponsor and IS Project Committee Executive Management Cost-Benefit, ROI Considerations
FINAL REPORT AND PRESENTATIONS	Develop Final Report Leadership and Elected Officials Presentations /Workshops

Technology Assessment Summary

Overview

Technology Best Practices

Following best practices as a part of each technology project initiative is critical to ensuring the initiative's success and allowing the City to realize the potential benefits. This plan details several best practices to ensure the City's future success. Key best practices include:

- **Software Needs Assessment**: Software needs assessments identify and define the detailed needs of the City's users and stakeholders.
- **Business Process Reviews**: A business process review systematically examines an organization's business processes and workflows to identify areas where the City can improve its efficiency and effectiveness.
- **Software Selection**: Selecting the right system and technology is more critical than ever because operational efficiency and effectiveness are directly dependent on the use of business applications. Organizations that follow best practices recognize that they must take advantage of automation to meet growing constituent and staff demands.
- **User Training**: Ensuring the City's staff can utilize the available software applications is critical to ensuring maximum application utilization and adoption to promote efficiency and productivity, thereby reducing and eliminating manual processes and workarounds.
- **Project Management**: Successful implementations follow the same basic formula. As detailed in the plan, utilizing documented and proven best practices will provide the City with a solid foundation for success.

With each of these technology project initiatives, whether improvement or replacement, utilizing a best practice approach to the project will benefit the City. Key benefits include:

- **Improve Chances of Success**: Following best practices improves the chances of successful software implementation because they are based on the experience of others who have successfully implemented software.
- **Reduce Risk of Failure**: Following best practices reduces the risk of a software implementation failure by identifying and mitigating potential risks.
- **Time and Money Savings**: Following best practices streamline the implementation process and avoid costly mistakes.
- **Improve Quality of Software**: Following best practices improves the quality of the software implemented by ensuring that the software meets the applicable users' needs and is rigorously tested.
- **Improve User Experience**: Following best practices improves the user experience of the software implemented by ensuring that the software is easy to use.

In developing this plan, ClientFirst applied a best practices approach combining decades of public sector technology experience with industry-standard best practices such as Control Objectives for Information and related Technology (COBIT), Information Technology Infrastructure Library (ITIL), and Prosci Change Management. ClientFirst utilized this experience and body of knowledge in the analysis and recommendations throughout this project and planning reports.

IT Infrastructure

Staff have done a good job improving the IT Infrastructure. Additional work is necessary to consolidate and standardize backups and network equipment. Staff have made significant improvements to the City's cybersecurity posture, with additional improvements planned. Additional IT operational tools are necessary to move from a reactive state to proactive management and incident response.

This report includes recommendations to support the ongoing focus on improving system redundancy and resiliency to reduce the impact of an individual equipment failure that would impact resident services and staff productivity.

Enterprise Applications

The City's business applications can meet the department's operational requirements overall with some exceptions:

- ███████████, the City's vendor for its Enterprise Resource Planning (ERP) system (financials, human resources, and payroll), has announced that the product is no longer being sold to new prospects but they have not announced an end of life. Also, there are no plans announced to discontinue support. It is prudent to conduct business process reviews to identify and inventory all functional gaps and system needs and develop an improvement plan to determine if an ERP upgrade or replacement is needed. The City will need to determine whether moving to Enterprise ERP or exploring the marketplace for a new ERP system is the better and more cost-effective strategy.
- TRAKiT is the primary Land Management system. The City is in the process of upgrading its TRAKiT software to the cloud version. The upgrade is expected to fix some known issues.
- The existing enterprise asset management (EAM) system, PubWorks, used for work order fulfillment and infrastructure asset management, does not have the needed functionality for key processes, causing staff to continue the use of manual workarounds. The City has begun researching replacement alternatives. It should also consider adding scope to the ERP acquisition to include integration for the chosen EAM solution.

Overall, significant user training and support across departmental applications is needed. Staff report that many systems are underutilized due to a lack of training. These gaps in user knowledge prevent the City from realizing the productivity gains and cost reductions associated with effective application utilization.

Application Systems Utilization

Over the past several years, many municipalities' constituents have begun demanding more efficient interaction, online transactions, and transparent information availability, increasing the need to improve enterprise business application utilization and the sustainability of the IT infrastructure that supports them. The City will not be able to meet these demands without updating and improving its approach to business application utilization.

Despite there being over 240 different application systems and modules, there are still numerous examples of processes that are manual or require inefficient use of workarounds and a shadow system such as Excel, including reporting, budgeting, project tracking, and contract tracking, to name a few.

The City requires a Business Application Training Plan and future business application analyst support staff in the IT department to support departmental users' ongoing needs.

Staff realize that business applications, process updates, and improvements are necessary to meet constituents' needs. An increased desire to leverage business applications that serve constituents has resulted in a desire to increase investment in technology, leading to the creation of this plan. Over time, we recommend that the City undertake detailed assessments and process reviews to improve efficiency and resident services in most business applications.

Mobility

The demand for more flexible working arrangements remains strong. The City's existing file-sharing methodology must be updated to utilize Microsoft 365, OneDrive, and SharePoint. Staff should be trained to use tools enabling mobility and collaboration. IT has recently procured additional training resources to help departments adapt to these new tools. Improving OneDrive and SharePoint adoption rates will provide staff with additional collaboration, communication, and productivity capabilities.

Internal IT Services Demand

The demand for IT services exceeds available resources. This Technology Master Plan contains more than two dozen application improvement initiatives. Several of these initiatives have significant large application systems improvements. Further, the City has very limited GIS capabilities versus peer agencies. Some departments have a significant need for GIS assistance.

Additional investment in improving and managing business applications is necessary to support increased communications, applications, data sharing, and reporting needs. Successful implementation will also require additional resources dedicated to cybersecurity and business application analyst(s) assisting departments in improving application utilization and efficiency.

The plan aims to affect a digital transformation in the City, reducing reliance on paper, manual processes, and shadow systems while increasing automation and efficiency.

Current Technology Environment

ClientFirst undertook an extensive analysis of the City's existing technology environment. Additional investments in cybersecurity mitigation efforts, disaster recovery planning, and internet resiliency are outlined in the plan. COVID-19 caused a rapid move toward mobile computing, including the expanded use of Microsoft 365. Staff training has not kept pace, causing limited utilization of these new tools. Investment in staff training should reduce risk while improving collaboration capabilities and productivity.

We recommend that the City expand capital replacement planning to include all technical equipment and a long-term sustainability plan to institutionalize ongoing investment in technology.

The table below summarizes the current technology environment in the City:

Item	Quantities
Number of Agency Facility Addresses	7
IT FTE (including contracted IT Staff)	7
Number of Employees (FT/PT/Seasonal PT)	158/1/127
User Log-Ins	275
Telephones	252
Smartphones	135
Mobile Devices	222
Laptops	195
PCs	225
Printers	30
Physical Servers	15
Virtual Servers	64
Network Devices (e.g., routers, switches, access points, etc.)	73

The City also utilizes over 240 application systems and software modules. Major enterprise application systems include:

Application Functionality	Vendor
Financial Management	███████
Human Resources Management	███████
Payroll	███████
Applicant Tracking	CalOpps
Enterprise Asset Management (EAM)	PubWorks
Electronic Document and Records Management	Laserfiche
Land Management Software	TRAKiT
Recreation Software	Sportsman

Key Statistics and Metrics

The following analysis provides feedback on key measurements regarding technology investments and IT support operations:

|	
Technology Budgeting/Expenditures	Technology Spending vs. Operating-Related Budgets
IT Staffing	IT Staffing Ratios
IT Capital Replacement Schedules	Equipment Replacement Schedules

Technology Spending Comparisons

Analyzing technology spending versus operating budgets indicates whether the technology systems and IT support function receive sufficient organizational resources to provide the necessary services. Over time, underfunding typically:

- Reduces the IT Department's ability to respond to requests
- Reduces system availability
- Negatively impacts organization-wide productivity and constituent services

The following table depicts the City's Technology Spending versus Recommended Best Practices and a local government benchmark of 29 agencies.

Recommended Low	Benchmark	Recommended High	FY22 (Actual)	FY23 (Actual)	FY24 (Adopted)
3.00%	4.06%	6.00%	2.05%	3.81%	3.45%
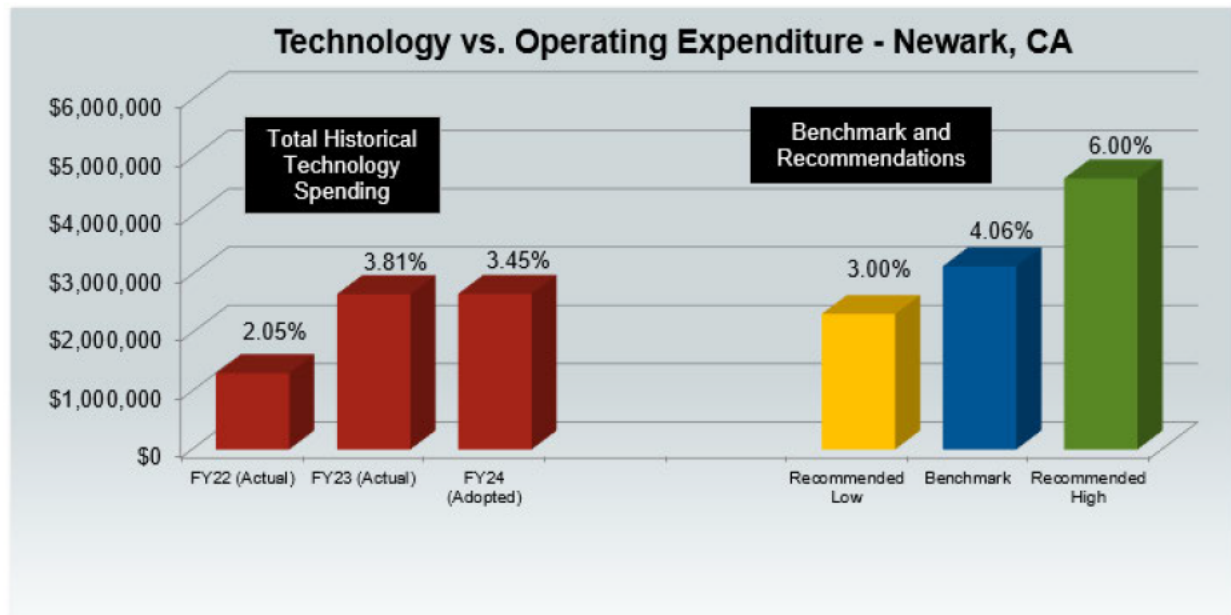
City Operating Expenditures vs. Technology Expenditures

	FY22 (Actual)	FY23 (Actual)	FY24 (Adopted)
Operating Exp.	$63,784,367	$69,875,924	$77,416,637
Technology Exp.	$1,307,998	$2,661,716	$2,668,214

The ClientFirst local government IT spending benchmark ranges between 1.2% and 8.1% applicable agency-wide spending. Survey results of 29 well-performing agencies have an average technology expenditure of 4.06%.

The City's historical technology expenditures are below local government industry standards. Until recently, the City's technology expenditure have been significantly below local government industry standards. T*he City has been under-investing in technology*. The benchmark is the average of other well-performing agencies. The benchmark is a reference point for analysis purposes, not a recommendation.

Under-investment in technology is most apparent in departmental applications. Recent improvements in IT funding have generated very positive improvements in IT Infrastructure. The plan calls for increased spending on departmental application improvements, selection, and implementation. The plan also calls for increased spending on IT operational tools to improve efficiency and reduce risk. Funding for additional IT infrastructure upgrades is included in the current year's budget. Increased departmental application funding will:

- Improve application utilization and staff effectiveness
- Improve constituent services
- Align City application system selection and implementation with best practices
- Reduce the risk of failed implementations or frequent system replacement activity
- Reduce overall cost-of-ownership by improving quality

The heightened level of cyber threats and increasing cybersecurity insurance requirements are raising the City's ongoing investment in cybersecurity. In addition, the need for several large technology projects, including a possible upgrade or replacement of the ERP solution over the next few years, will result in expenditures above the recommended benchmark. We expect the recommended application system and IT operations enhancements to increase productivity throughout the City.

IT Staffing Ratios

The following table depicts the City's IT Staffing Ratios using Computers/Devices per IT Staff and Servers per IT Staff as benchmarks. To develop this benchmark, we reviewed ClientFirst benchmark data of other local government agencies similar to the City in size and complexity. More than 70 agencies' data are included in the benchmark. Employees per IT Staff is a commonly used metric in the industry to validate staffing levels. As the number of individuals served and the resulting equipment increases, staffing levels should also increase, resulting in a smaller ratio.

	Recommended Best Practice	Municipality Benchmark	Newark
Computer/Devices per IT Staff	60	66	92
Servers per IT Staff	10	10	11
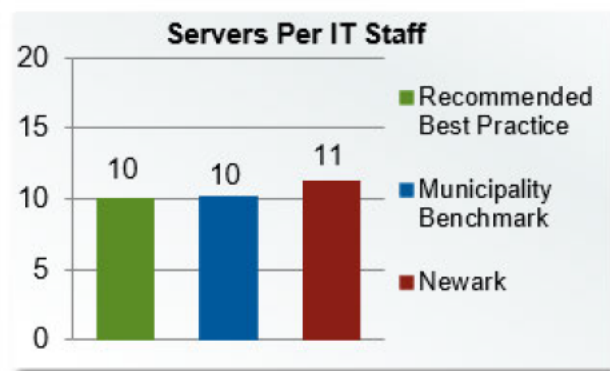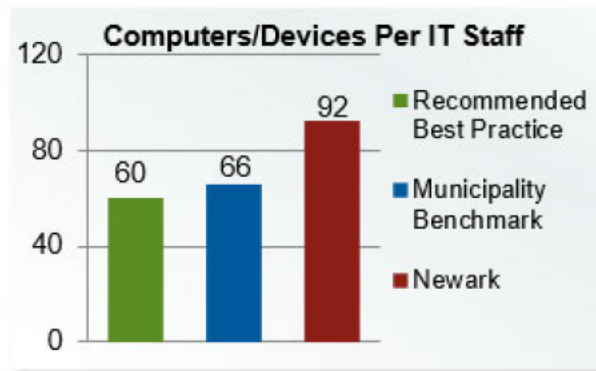
In this comparison, the City's IT staff supports approximately 50% more computers and mobile devices than recommended or compared to peer agencies. The comparison of servers per IT staff shows Newark is close to the municipal benchmark.

These benchmarks do not completely reflect the City's needs related to closing a technology deficit and departmental business applications. Departmental demand is high for digital innovation, improved application integration, constituent service levels, and internal information flow. Staffing recommendations include near term contract assistance with the potential to expand business systems analysis skills in the IT team to support the expanded need for business applications support over the longer term.

Equipment Replacement

Capital equipment replacement is an important measure of the ability of the hardware to support the ongoing vendor changes to application software adequately. These changes often require additional resources and more robust hardware. Slow capital replacement cycles can increase downtime overall and slower system response times.

The following table represents IT equipment replacement recommended best practices and a local government benchmark of 57 small to mid-size local government agencies.

	Recommended Best Practice (Years)	Municipality Benchmark (Years)	Newark (Years)
Laptops	4	4	4
PCs	5	4	4
Servers	5	5	N/A
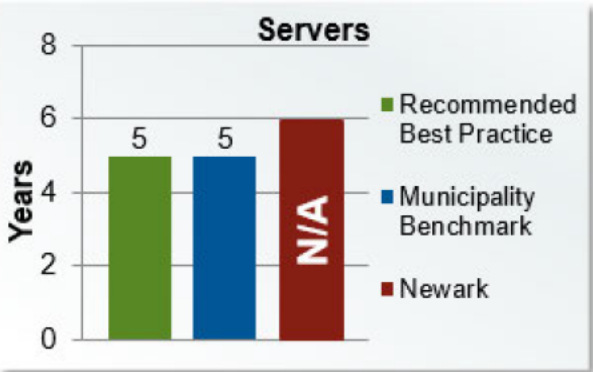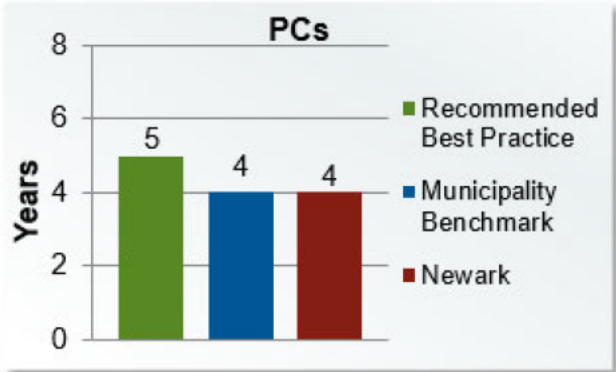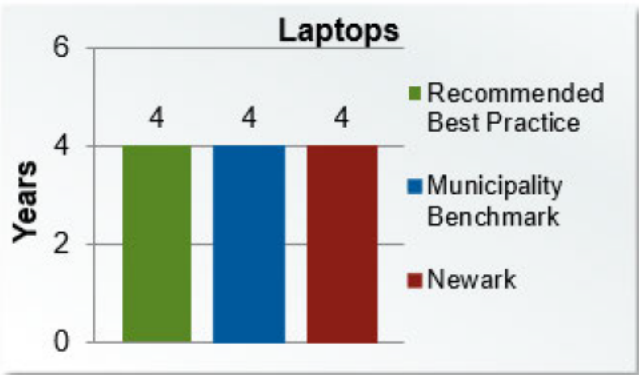
The City does not have a documented IT equipment replacement policy. IT has focused on replacing older desktops and laptops. Server replacement is budgeted for the coming year. We recommend that the City document a computer replacement plan and expand computer equipment replacement schedules to include all electronic devices (e.g., audiovisual, door access control, public safety video, etc.).

Technology Decision-Making Principles

Vision / Mission Statement

The City of Newark Information Technology Department is dedicated to providing the highest quality of technical services that are secure, cost effective, efficient, and tailored to the needs of the City and the greater community it serves. The department is committed to the values of Reliability, Innovation, Customer Service, and Excellence.

Strategic Framework going forward

Strategic framework is key to the success of the IT Department. It provides a disciplined approach for IT to succeed and ensures alignment with the City's vision and service goals. It provides a framework for staff to design project milestones and plan delivery of the projects in a timely manner.

The core objective of such a strategic framework is to provide general, macro-level direction for IT to move forward, and thereby giving teams the ability to evaluate their project plans before implementing and spending resources on a project.

The proposed strategic framework for the City is divided into five (5) main areas. They are:

- Governance
- Security
- Infrastructure
- Software
- E-Government

Technology Strategies, Goals, and Objectives

Key strategies for leveraging and maximizing the City's information system utilization are listed below. Each strategy identifies initial goals and objectives. The reports appended to this Technology Master Plan provide additional strategies and details.

- **Technology Current State Assessment Report:** Findings, goals, and objectives have been translated into specific project initiatives.
- **Plan Budget:** Budgetary costs for each initiative, prioritization, and implementation time frame.

Key strategies detailed below include:

- Ensure Technology Governance
- Continue to Improve Cybersecurity
- Strengthen Infrastructure Resilience and Disaster Recovery Capabilities
- Improve Application Utilization
- Establish a Citywide Technology Training Program
- Adopt a Best Practices Approach to Software Needs Assessments
- Adopt a Best Practice Approach to Software Selection and Implementation
- Expand Business Analysis Staffing Capabilities
- Investigate and Adopt Artificial Intelligence as a Core Strategy

Ensure Technology Governance
The City's Technology Steering Committee will be a critical contributor to the successful management of this plan.
Goals and Objectives

- Expand a Technology Steering Committee's scope to include participation in the implementation of this Plan. Focus committee meetings on:
    - Assisting in the prioritization of technology projects and training needs.
    - Monitor the plan and recommend adjustments and budgetary needs on a regular basis.
    - Improving collaboration on projects and initiatives.
        - Focus on application integration across departments.
        - Identify key business process issues and improve.

- Establish training goals and develop analytical skills throughout the organization.

Continue to Improve Cybersecurity

Continued improvement in cybersecurity threat prevention will be necessary to
reduce risk and maintain services and data integrity.

Goals and Objectives

- Cybersecurity insurance carriers are rapidly increasing base requirements for maintaining cybersecurity insurance.

  - The City's cybersecurity insurance provider has assigned a third party to assist in cybersecurity improvements. Much of the work effort continues to fall upon IT staff.

- The City has made significant improvements in cybersecurity. Additional improvements are necessary to meet these increasing requirements.

  - IT operational improvements are necessary to comply with current cybersecurity mandates.
  - Additional work on IT policies and procedures is necessary.
  - Incident Response and Disaster Recovery plans should be reviewed and expanded.

Strengthen Infrastructure Resilience and Disaster Recovery Capabilities

Resiliency is critical to providing services and maintaining
ongoing operations during incidents and equipment failures.

Goals and Objectives

- Continue to implement redundant high-speed internet connections.
- Expand backups to include cloud-based storage and restoration capabilities for all City systems.
- Information technology security efforts include additional monitoring and advanced threat-protection tools.
- Develop and test a disaster recovery plan.

  - Continue to identify high-priority systems and recovery time frames.
  - Exercise and test disaster recovery plans regularly.

Improve Application Utilization

Improved application utilization will increase staff efficiency and speed constituent service delivery.

Goals and Objectives

- Develop improvement plans for departmental and enterprise applications utilization and efficiency.

  - Identify and implement improvements to speed up business processes and reduce manual workarounds.
  - Continue to work with departments to increase efficiency by leveraging application software functionality to streamline and automate processes.

- Plan for and fund adequate user training and support for business application systems.
- Maintain a culture of departmental ownership for core applications.

  - Continue to adapt and improve processes and data availability while integrating business application software.

- Increase IT resources available to assist departments, improve business processes, and increase application utilization.

  - Application support is critical in any organization that relies on software applications to operate. By ensuring that applications are available, functioning correctly, and easy to use, application support teams can help organizations improve their efficiency, productivity, and financial position.

Establish a Citywide Technology Training Program

Technology training is critical to improving efficiency and staff utilization of applications.

Goals and Objectives

- All departments requested technology training, including Microsoft Office classes and departmental software applications.
- Utilize the Technology Governance Committee to develop citywide training priorities and create a biennial budget to fund training.
- Incorporate sufficient training in business application improvement or replacement projects.

Adopt a Best Practices Approach to Software Needs Assessments

Detailed assessments are an essential step in evaluating current and future needs for application projects

Goals and Objectives

- Key considerations and resources needed to be successful include:

  - Identify the assessment objective. Understanding the "big picture" is critical to success.
  - Identify the appropriate resources/stakeholders to conduct and participate in the assessment process.
  - Determine the documentation detail level needed to communicate current and potential future needs. Possibilities include:

    - Distributing surveys or information requests to end users and compiling the results
    - Conducting workshops as a group to review the results of questionnaire feedback and identified issues
    - One-on-one interviews with power users and/or subject-matter experts
    - Reviewing or observing business processes
    - Documenting detail needs as described above

  - Develop a plan to implement the findings and recommendations that result from the assessment process.
  - Obtain third-party subject matter expertise and project management for large complex projects.

Adopt a Best Practice Approach to Software Procurement and Implementation

Best Practice software selection, including utilization of third-party subject-matter experts, reduces implementation risk.

Goals and Objectives

- Utilize best practices for selecting and implementing business application systems.
- Focus on reducing the number of separate departmental systems to eliminate the need for custom interfaces.
- Prepare the City to select new and critical enterprise applications.
- Utilize third-party subject-matter experts to assist with selecting large/complex application software.
- Consider cloud applications when appropriate.
- Assign an internal project manager for enterprise software implementations or upgrades.

  - Follow best practice project management methodologies as appropriate.
  - Increase focus on software training during implementation or major upgrades.
  - Include contingency funds where possible to meet unforeseen project circumstances.

Investigate and Adopt Artificial Intelligence as a Core Strategy

Artificial Intelligence and machine learning can be applied in many ways to increase efficiency, provide data more transparently, and improve responses to resident queries.

- Develop an Artificial Intelligence policy to ensure the proper use of AI tools.
- Identify processes that AI may be able to improve.
- Increase retention of historical information for trending and decision support as appropriate.
- Train management to recognize potential AI opportunities.
- Train IT and other knowledge workers to leverage AI.
- Utilize AI to assist in polishing staff reports.

Technology Initiative Summaries

Introduction

Technology Planning includes assessing, researching, prioritizing, budgeting, and planning future technology initiatives. For example, some initiatives are ready for approval and implementation. In contrast, others require further assessment and research before the City can determine priority, resource requirements, and cost-benefit.

Productivity Improvement – Many of the plan initiatives will directly impact overall productivity within the organization. Some of these initiatives will significantly impact business processes, reducing staff time required to complete specific tasks. In contrast, others will ease or speed up the delivery of services to City constituents.

↑ **Productivity**

↓ **Costs**

Reporting and Data Availability – Many initiatives outlined will directly impact the data available for reporting and management decision-making. New application systems and, in some cases, improvement of existing software systems are necessary before additional functionality can be made available.

IT Infrastructure Improvements – The technical initiatives focus on improving the City's technological infrastructure to provide staff and residents with secure, reliable, and supportable network services. IT Infrastructure improvements may involve equipment upgrades, cybersecurity enhancements, or operational improvements focused on efficiently and effectively delivering business applications to City users.

Technology Initiative Categories

The assessment process resulted in 80 major initiatives and projects. Combined, there are hundreds of findings and recommendations throughout the report. ClientFirst classified the major initiatives into eight categories in the Current State Assessment, including:

Best Practices	**Departmental Applications and Systems**	**Smart Technologies**	**IT Infrastructure**
Cybersecurity	**IT Operations**	**Tele-communications**	**IT Staffing**

The following are the total initiatives by priority and initiative category, including sub-initiatives that are budgeted separately.

Categories	Priority			Total
	High	Medium	Low	
Best Practices	9	6	1	16
Department Applications and Systems	12	3	7	22
Smart Technologies	5	3	2	10
IT Infrastructure	11	1	0	12
IT Operations	7	1	0	8
Cybersecurity	5	1	0	6
IT Staffing	3	1	1	5
Telecommunications	1	0	0	1
Total	**53**	**16**	**11**	**80**

Initiative Totals by Priorities

	High	Medium	Low
	53	16	11
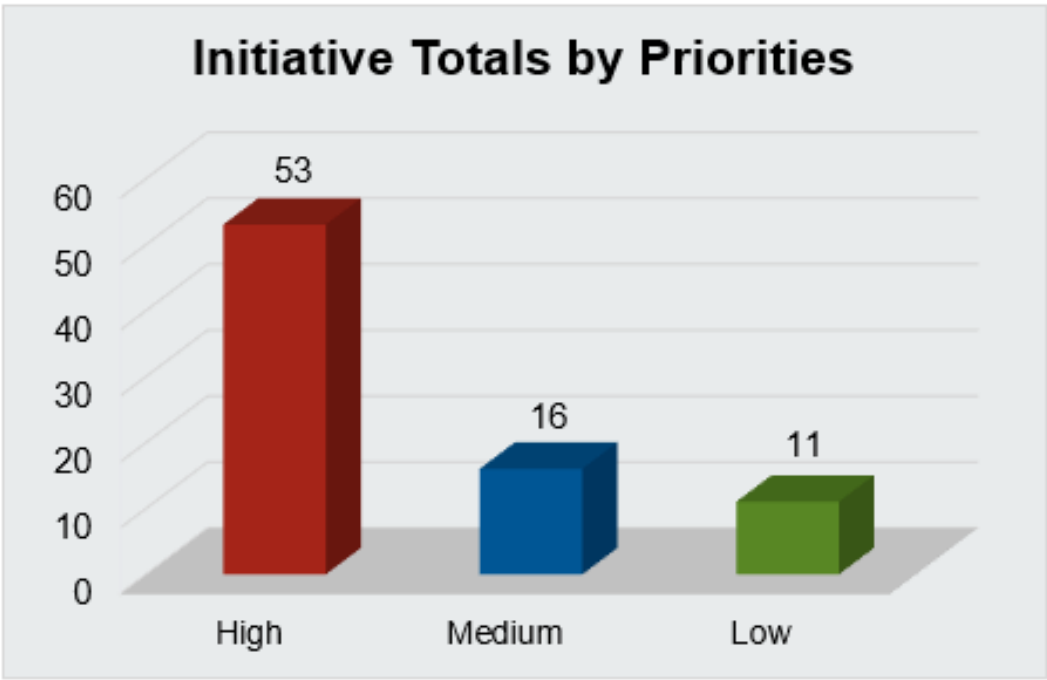
Priorities by Initiative Category
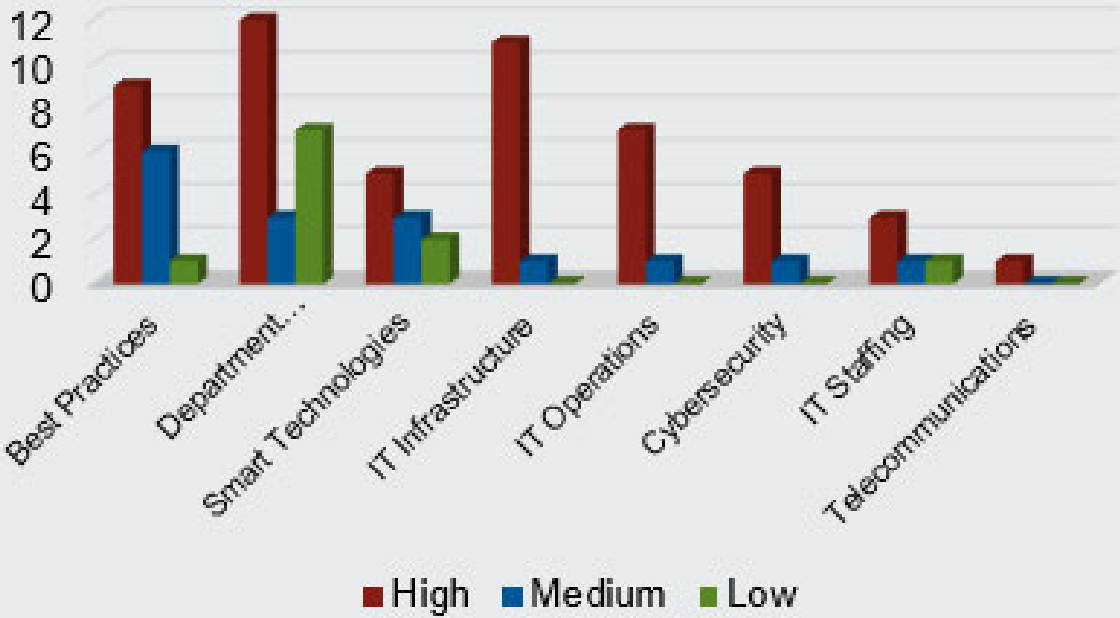
Key Issues and Initiatives

The key issues and initiatives identified during the planning process could also be considered a high priority. Each initiative listed below either provides long-term building blocks for the plan's success or mitigates risk. Therefore, the City has noted these as the initiatives from this plan to keep at the forefront during its future implementation.

Disaster Recovery & Incident Response Planning	• The City does not have Disaster Recovery or Business Continuity Plans. • The City does not have a Cybersecurity Incident Response Plan. • Incident Response Planning can reduce the time required to respond to a cybersecurity issue, potentially reducing its impact. • We recommend that the City develop an Incident Response Plan as soon as practical. • Disaster Recovery Planning has changed recently due to the prevalence of cloud-based backup and restoration services. • Once cloud-based recovery is implemented and tested, the Disaster Recovery Plan should be modified to reflect changing technology. • Continue to implement redundant high-speed internet connections. • Investigate high-speed fiber connectivity to all city facilities as a part of the Broadband Master Plan. • Expand backups to include cloud-based storage and restoration capabilities throughout the City. • Information technology security efforts to include additional monitoring and advanced threat-protection tools. • Develop and test a disaster recovery plan. ◆ Continue to identify high-priority systems and recovery time frames. • Exercise and test disaster recovery plans regularly.

Enterprise Asset Management Replacement (EAM)	• An EAM system comprises a suite of modules in a software application that manages work orders, preventative maintenance, and asset management of City infrastructure. • The City has gone out to market for a new EAM. We recommend including scope in its ERP acquisition to include integration of the City's chosen EAM solution to the ERP solutions Project Accounting module and the necessary accounting to the ERP system's General Ledger. • Conduct comprehensive business process reviews. Compile the findings into a detailed list of needed features and functions. ♦ Utilize Best Practices enterprise system assessment methodologies • Conduct the implementation per best practices. Follow the guidelines in the Enterprise Applications Implementation Project Management Best Practices Initiative.

Enterprise Resource Planning (ERP)	• The ERP system is the set of core applications used to operate the City's most common accounting, financial, and human resources operations.
	• The ERP vendor recently announced that they are no longer selling the system to new prospects and will assist customers to identify if there is another product available to meet the needs of the city, such as their premier mid-market local government ERP system.
	• The plan recommends an assessment and process reviews to properly scope the implementation services to avoid implementing a system that does not adequately meet the needs of Finance and other departments.
	• Follow a system selection best practices approach to choosing an ERP system that best fits the City's needs:
	    ♦ The selection process should include the following:
	        ▪ Assess and define needs across the organization
	        ▪ Develop an RFP based on the needs assessment
	        ▪ Analyze and determine short-list vendors
	        ▪ Conduct detailed, tailored demonstrations
	        ▪ Perform reference checks
	        ▪ Conduct site visits
	        ▪ Select finalist
	        ▪ Conduct due diligence, contract review, and negotiation
	• Conduct the implementation per best practices. Follow the guidelines in the Enterprise Applications Implementation Project Management Best Practices Initiative.

|	

GIS Improvements	• GIS and spatial maps are key components in managing the City's assets and development.
	• GIS can provide critical information and data elements that benefit many of the City's operations, including future Smart Technologies.
	• GIS systems can be integrated with land management, asset management, and document management applications to improve field-based information storage and retrieval.
	  ◆ Expanded integration with the City's enterprise applications will improve application effectiveness.
	• The plan recommends expanding the City of Newark's GIS capabilities to supply departments with geospatial data and coordinate training on GIS tools.
	• The plan recommends the development of GIS datasets that can be used to create geospatial data interfaces for major application systems.
	  ◆ This will improve information availability and efficiency.

Microsoft 365 (SharePoint/Teams)	• Microsoft 365 is the cloud-based alternative to on-premise email. It can also be utilized for video conferencing, chat, file sharing, and other productivity functions. • The plan recommends training on Microsoft 365 to expand department utilization and increase productivity. ◆ File collaboration and sharing are particularly important for department staff. • We recommend inventorying desktop applications and working to standardize versions.
Telephone System Improvements	• The City's telephone system has grown organically. Management of telecommunications costs has been limited. • As recommended by the auditors, staff are currently evaluating proposals for telecommunications systems to rationalize and potentially replace the current system. • We expect the telecommunication system procurement to reduce costs and provide more effective communications for residents and other constituents.

Sustainability Planning	• Historically, the City has invested limited funding in replacing aging applications and technology infrastructure. • The spending has been less than required to maintain systems adequately. • All technology, including door access control, staff workstations, mobile devices, network infrastructure, telephone systems, radio, video surveillance systems, wireless, and all major application systems upgrades, should be included in Sustainability Planning. • Technology has a limited lifespan and must be upgraded and replaced regularly. • Planning for replacement is a key component of Sustainability Planning and budget management.
Public Safety Video Expansion	• Public safety video expansion is necessary to meet current standards for the Police Department to improve staff safety and facility security. • Also included are additional door access controls and panic buttons for staff security. • A Public Safety Video procurement bid is in progress, with a presentation of the low bid proposal to Council for approval in the Spring, with installation expected over the summer.

Summary Plan Budget Analysis

The Technology Master Plan budget is not an entirely new set of spending requirements. The plan encapsulates City information technology issues and departmental needs. Departments themselves typically fund some project initiatives, and some may already have capital reserves set aside, while others are part of the normal biennial IT budgeting process. These are estimated budgets for each project initiative. All project approvals will follow standard City budget requests and procurement policy and procedure requirements.

Budgets by Initiative Category

Categories	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	Totals
Best Practices	$ 12,900	$ 50,000	$ 25,000	$ 35,000	$ 30,000	$ 15,000	$ 167,900
Department Applications and Systems	$ 313,830	$ 491,254	$ 1,037,641	$ 724,652	$ 1,219,673	$ 1,076,624	$ 4,863,674
Smart Technologies	$ 53,577	$ 1,556,520	$ 1,679,786	$ 290,000	$ 105,000	$ 110,000	$ 3,794,883
IT Infrastructure	$ 175,000	$ 2,928,000	$ 393,000	$ 318,000	$ 471,000	$ 323,000	$ 4,608,000
IT Operations	$ 33,000	$ 100,350	$ 60,100	$ 45,100	$ 45,100	$ 45,100	$ 328,750
Cybersecurity	$ 63,904	$ 272,100	$ 283,455	$ 121,978	$ 300,677	$ 129,560	$ 1,171,674
IT Staffing	$ -	$ 100,000	$ 90,000	$ 251,000	$ 382,500	$ 387,275	$ 1,210,775
Telecommunications	$ -	$ 177,000	$ 177,000	$ 177,000	$ 200,000	$ 200,000	$ 931,000
Totals	$ 652,211	$ 5,675,224	$ 3,745,982	$ 1,962,730	$ 2,753,950	$ 2,286,559	$ 17,076,656
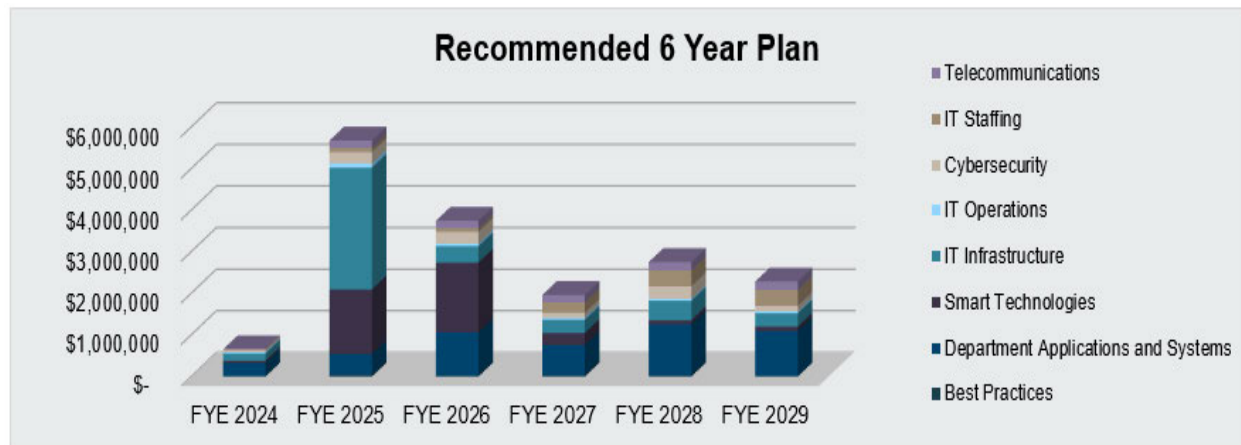
Budgets by Priority and Fiscal Year

Categories	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	Totals
High Priority	$ 597,554	$ 5,615,760	$ 3,466,670	$ 1,411,302	$ 1,717,351	$ 1,448,672	$14,257,308
Medium Priority	$ 47,377	$ 51,820	$ 271,286	$ 413,000	$ 247,750	$ 257,888	$ 1,289,121
Low Priority	$ 7,280	$ 7,644	$ 8,026	$ 138,428	$ 788,849	$ 580,000	$ 1,530,227
Totals	$ 652,211	$ 5,675,224	$ 3,745,982	$ 1,962,730	$ 2,753,950	$ 2,286,559	$17,076,656

Budgets by Priority and Fiscal Year
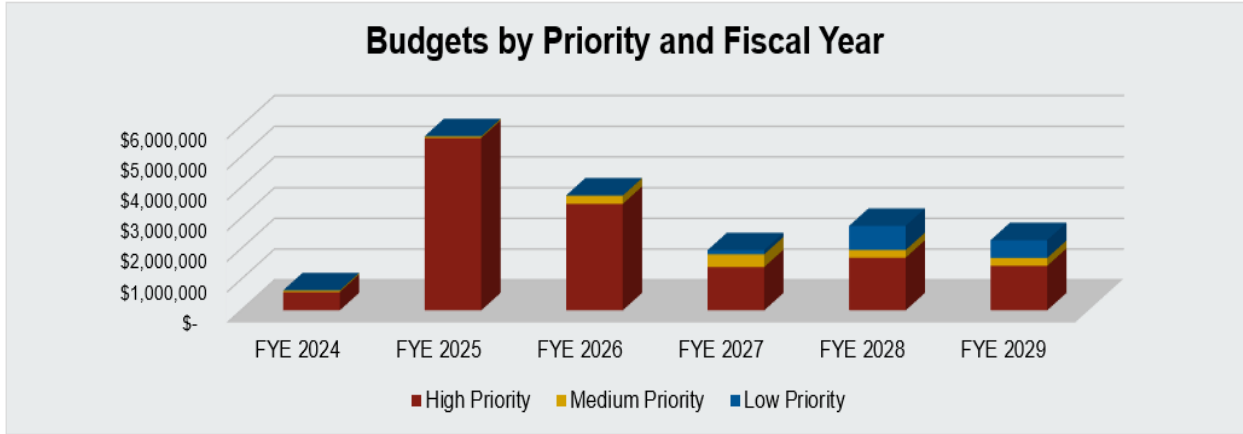
Next Steps

Moving Forward

Moving forward over the next 18 to 24 months, the key focus areas for information technology include cybersecurity and continued IT infrastructure improvements. Immediate focus on cloud-based backup and restoration and disaster recovery planning is necessary.

Major application system improvements or replacements are also necessary, including assessing the current ERP system to assure that business processes are being met. A project such as this is often the largest technology project an agency undertakes. Other important projects include implementing public safety video and telephone system improvements.

Creating a Cybersecurity Incident Response Plan while implementing internet redundancy is a critical component of a successful technology plan implementation.

This report contains ambitious and costly technology objectives for the City. If the City chooses to implement these systems rapidly, organizational change management and strategic oversight will be critical to the City's success. We often continue to work with agencies on these issues during assessment, planning, and implementation. We have found that slow and steady progress following best practice methodologies leads to an improved likelihood of success, higher quality implementations, and improved staff utilization and data management of new systems.

Cybersecurity – The demand for cybersecurity resources continues to increase. Developing policies and procedures, expanding the City's cybersecurity toolset, and improving resiliency and recoverability are important components of a cybersecurity program that will reduce the risk of compromise and improve recoverability.

Application Utilization – City departments want to improve their core business processes and fully utilize their applications. The City should work to encourage a sense of application ownership and continuous improvement by the departments. Improved application utilization is the most effective way to increase data availability, facilitate staff productivity, and improve customer service.

IT Staffing – City IT staff have many responsibilities. Expanding City business analysis skillsets and creating a focal point for cybersecurity improvements will provide the IT team with additional capabilities necessary to assist departments in making business process and application improvements while reducing cyber risk. Third-party subject-matter experts can initially fill these roles.

ClientFirst expects that the projects outlined in this report will result in improved productivity and customer service, as well as improved resiliency and sustainability.

The City should review and update the plan annually, using an abbreviated version of this assessment and planning methodology. In this way, the plan will be a vehicle to guide the City's information technology activities. Plan updates should be synchronized annually, but also with the City's biennial budget process to represent technology initiative costs properly.

Benefits

The completed plan is a dynamic tool to be revised and updated as business conditions and requirements change. Objectives may change as the organization and its environment evolve. The City will not realize certain objectives and benefits if the planning function is not ongoing.

Implementing this Technology Assessment and Plan should realize significant benefits, including:

- Increased collaboration and communication on technology projects within the organization
- Improved resident services through expanded data availability and online capabilities
- Transformation of the organization's overall understanding, knowledge, and stewardship of information technology
- Clear direction for IT operations and technology projects for the next several years, focused on meeting the organization's needs
- Citywide department consensus and understanding of all technology initiatives and their priorities
- A roadmap for the selection, implementation, and improvement of business applications to better serve residents and staff

Immediate Next Steps

We recommend that the City expand the scope of the Technology Steering Committee to review the plan and budget and advise on priorities and any new projects that may arise. Next, the City should assign lead and participatory resources to the top-priority technology and other high-priority initiatives. Finally, initiative leaders should report status updates for active initiatives to the Technology Steering Committee as part of each meeting agenda.

The Committee should discuss significant issues for each initiative by providing general feedback, collaboration, and lessons learned, as many initiatives cross departmental boundaries.

We also recommend developing a training seminar series for key department stakeholders and system users to improve application utilization, management, and support. This is an effective way to maintain momentum and kick off the tremendous change that is to occur in enhancing operations and constituent services.

Technology Master Plan Capital Budget

The following section provides the five-year master planning budget detail by project initiative. Please note that these *subtotals are not the biennial IT Department operating budget*. These are estimated budgets for each project initiative. All project approvals will follow normal City budget requests and procurement policy and procedure requirements.

Technology Current State Assessment (Project Initiatives)

The following section contains the Technology Current State Assessment documentation in its entirety. The assessment resulted in 80 major technology initiatives and projects with hundreds of additional recommendations.

Technology Current State Assessment

December 2023

NEWARK
california

Optimal Technology Guidance

CLIENTFIRST
TECHNOLOGY CONSULTING

Table of Contents

Best practices are methods recognized as consistently providing better results than those achieved with other methods. We believe that the following best practices will enhance the City's ability to select, procure, and maintain more effective solutions in the future and improve staff productivity overall.

1. Technology Governance
2. Applications Management Best Practices
3. User Training and Support
4. Software Needs Assessment Best Practices
5. Business Process Reviews
6. Software Selection Best Practices
7. Applications Implementation Project Management Best Practices
8. Enterprise Reporting Best Practices
9. IT Project Planning and Implementation Best Practices
10. Cloud Computing
11. COBIT (Control Objectives for Information and Related Technologies)
12. IT Project and Services Portfolio
13. ITIL (Information Technology Infrastructure Library)
14. Sustainability Planning
15. Training Room

Best Practices

1. Technology Governance

Background

Technology Governance

Traditionally, key technology decisions are made by IT professionals and a select few organization managers. This approach does not always ensure the most effective delivery of technology to stakeholders (all departments and constituents). Technology governance can provide a collaborative forum for major decisions, planning, internal communication, and department staff training. Technology governance can also provide a methodology for stewardship of technology resources on behalf of the stakeholders who require IT services.

Steering Committee

A Technology Steering Committee is composed of a group of employees and managers representing a cross-section of the organization's leadership, departments, and disciplines who assist in providing long-term direction for an organization's technology resources. This committee can assist and facilitate prioritization and focus on the development of organizational concepts and planning. Some specific responsibilities may include:

- Identifying and developing technology initiatives and projects
- Assisting with prioritization of technology initiatives
- Monitoring the Technology Master Plan and projects' progress
- Providing a forum for lessons learned during the implementation of technology projects
- Reviewing and providing feedback on long-term, unresolved Help Desk issues
- Reviewing and assisting with the implementation of technology standards and policies
- Providing support for technology across the organization

Implementation of a technology governance methodology can create an effective forum for departments to become more knowledgeable about technology and how it can be used to enhance customer service. Technology governance assists in identifying effective uses of technology within the organization's technology budget, creating efficiencies throughout the City's business processes.

Findings and Observations

- Prioritizing technology projects across Departments will be critical to the success of IT.
- A Technology Committee was formed in 2020. It has been renamed the IT Steering Committee and meets bi-monthly.
- The implementation of a Technology Steering Committee provides a great opportunity for City departments to collaborate on future technology use and application needs that will improve their day-to-day operations and constituent services.
- The committee structure will ensure that technology issues, needs, and investments have a formal identification process and a mechanism for transparently making investment decisions.

Recommendations

- Review the Technology Steering Committee charter and membership base.
- Utilize the Technology Steering Committee as the initial forum for departments to propose and present new technology-related projects.

  - Assure best practices are followed and applied to the review, selection, approval, procurement, and implementation project management of approved projects.
  - Assure ongoing application maintenance and support meet department needs.
  - Discuss ongoing security concerns and security awareness initiatives.

- Continue to utilize the Technology Steering Committee to assist with:

  - Communicating significant changes
  - Coordinating application software training needs
  - Identifying potential improvements in inter-department information flow

Recommended Next Steps

- Develop a Technology Steering Committee Mission Statement.
- Review Technology Steering Committee membership focusing on who:

  - Can represent their department and understand department priorities
  - Have a holistic view of citywide needs and budget constraints

- The Technology Steering Committee should be focused on:

  - Adjusting priorities based on limited IT resources
  - Annual IT initiative/project review and prioritization
  - IT policy implementation and security awareness
  - New project reviews and feedback
  - Lessons learned from ongoing projects

- Ensure representation of departments on the Steering Committee for regular technology-based communication, ongoing education, and continued collaboration.
- Monitor and discuss active initiatives and projects at each Committee meeting.

Benefits

- Increased transparency, responsibility, and accountability
- Prioritization of initiatives
- Improved compliance and consistency
- Enhanced communication and collaboration
- Higher degree of business and technology alignment
- Widespread personal and professional growth

2. Applications Management Best Practices

Background

Many agencies underutilize their software systems, resulting in a loss of productivity due to manual processes, inefficient workarounds, and ineffective or unnecessary reconciliations. Additionally, most agencies do not have sufficient resources in their IT organization to document operational requirements for applications and business processes. Identifying additional application improvement opportunities requires prioritizing and evaluating alternative solutions and identifying sufficient implementation, ongoing management, and support resources. Successful projects spread responsibility for a technology project between department subject matter experts, other stakeholders, and the technical team. This best practice applies to the system's implementation and ongoing support and maintenance.

Gaining greater utilization of the existing application modules is vital to increasing staff productivity throughout the City. Accomplishing this is often challenging due to limited resources, the diversity of application providers, and the systems in use.

The City can greatly benefit from evolving beyond traditional application management practices. Implementing the following recommendations can improve functionality and system use, as well as overall productivity, customer service, and transparency.

The roles and responsibilities for application support and management need to be identified and assigned for all department operational software. The "Future Application Roles and Responsibilities" matrix recommends a starting point for identifying staff and end-user roles.

The following table is an unofficial inventory of the City's different software applications or modules throughout all departments. The City of Newark currently utilizes over 200 applications, modules, and systems. Major systems include:

Application Functionality	Vendor-Application Name
Financial Management	███████████
Human Resources Management	███████████
Payroll	███████████
Applicant Tracking	CalOpps
Enterprise Asset Management (EAM)	PubWorks
Electronic Document and Records Management	Laserfiche
Land Management Software	Central Square Community Development
Recreation Software	Sportsman is going to ████

Below is a sample listing of the City's applications and modules. This list is not an official or complete inventory.

- 10-21 App
- AC Alert
- Accurint LE Plus
- Achieve Social
- Adobe
  - Acrobat
  - Creative Cloud
  - Illustrator
- InDesign
- Adobe Pro
- AdTech Legal Advertising
- Agenda Quick
- AirMap
- Alameda SFTP
- Amazon Business
- APBNet
- Arbor Access
- Archive Social
- Aries
- Asana
- Authorize.net
- AutoCAD/Civil 3D
- Avery
- AWS

- ██████████████
  - B4UFLY App
  - BACIAA Wildapricot
  - BAHM
  - Blue Jeans
  - BlueBeam
  - Box
  - Brightwheel
- ██████████████
  - Partnership
  - Cal Opps
  - Calendarly
- ██████████████████
  - Callyo.com
  - CalOpps
  - Calopps.com
  - Cal-Photo
  - Canva
  - Capcut
- ██████
- ██████████████
  - Castviz
- ██████████
- ██████████████
- ██████████████
- ██████████████████
- ████████
- ██████████
- ██████████████
  - Compass
- ██████████
- ██████████
  - CoStar
  - CPOA
  - Crash Math
- ██████████
- ██████████████
- ██████████
- ██████████████
- ██████████████
  - DocuSign
- ██████████████
- ██████████
- ██████████████
  - Domainsnext Registration
  - DropBox
  - Dymo Label
  - eFax
  - eGIS

- Egis.fremont.gov
- Enterprise GIS
- Equifax Report
- eSign Genie
- Esri ArcGIS Enterprise
- e-TRAKiT
- ██████████████
- ██████████████████
- ██████████████
- Everbridge
- Evernote
- FAA
- Facebook
- ██████████████
- Fastrak
- FEMA
- Field Light Programming
- Fincen.gov
- First Two
- ██████████████
- FortiClient VPN
- Foxit
- GEMS OTS Grant
- ██████████
- Google
  - Analytics
  - Drive
  - Forms
  - Meets
- Grammarly
- Granicus
- Greenhalo
- Groups.io
- Harris/Wintegrate
- HdL Corn Coren
- HDL Prime
- Hightail
- Hootsuite
- iAnnotate
- ICAC icacdatasystem.com
- In-house GIS (ESRI)
- Instagram
- Issuu
- ██████████████
- KnowBe4
- Laserfiche
- Le.alcoda.org

- Leadsonline.com Cell-Hawk
- legalupdates.com
- Leginfo.ca.gov
- Lers.google.com
- Lesp.ncmec.org
- Lexipol KMS
- LexisNexis
- Life 360
- LinkTree
- LinkedIn
- Livermore PD Records
- Loomly
- Mailchimp
- ██████████████
- Microsoft
  - Excel
  - Notes
  - OneDrive
  - OneNote
  - Outlook
  - PowerPoint
  - Publisher
  - SharePoint
  - Teams
  - Visio
  - Word
- Mindbase
- Missionvalleyca.infinite campus.org
- Modena
- Monday.com
- Mrgsuite.com
- MuniCode
- My AED
- NCRIC
- NDCAC
- NDI
- Netfile
- Netflix
- NextDoor
- Nixle
- Odyssey – Court System
- ██████████████
- ██████████
- Pge.com
- Photos/Paint 3D
- Placer

- ▬▬▬▬▬▬
- Portal.doj.ca.gov
- POST EDI
- POST Learning Portal
- POST PASS Portal
- Procreate
- PubWorks
- ▬▬▬▬▬
- ▬▬▬▬
- Rems.ed.gov
- Resideo Total Connect 2.0
- RIPA Repository
- Risk.net
- RLSlawyers.com
- Search.org
- ▬▬▬
- Skyebrowse
- Snapchat
- SnapMap
- SolarApp+
- Sportsman
- Spotify
- SQL
- ▬▬▬▬▬▬
- Startup Space

- ▬▬▬▬▬
- Survey Monkey
- Swim Lesson Levels
- Synergy.newarkunified.org
- ▬▬▬▬
- Tango
- Target Solutions
- Teams
- Text My Gov
- TRAKiT
- Trakstar
- TurboData
- Tweetdeck
- Twitter
- ▬▬
  - ▪ ▬▬▬▬
  - ▪ ▬▬
  - ▪ ▬▬▬
  - ▪ ▬▬▬
  - ▪ ▬▬▬▬▬
- Uscourts.gov
- Utility TeleCom
- Vector solutions
- Veoci

- ▬▬▬▬▬▬
  ▬▬▬
- ▬▬▬
- ▬▬▬
- Vimeo
- VIMS
- VIQnsconnect.aiassist.ai
- Visual Statement Edge FX
- Waitlist me
- WebEx
- Western States Information Network (WSIN) riss.net
- WhatsApp-Promotores
- When to work
- Whooster.com
- Wintegrate
- Wix.com
- YoDeck
- YouTube
- ▬▬▬▬▬
- Zoom

Findings and Observations

- Both initial and ongoing software training is needed for many existing and future applications throughout the City (see "User Training and Support" initiative).
- Several core applications in the City require further effort to improve utilization and/or possible replacement.
- Key tasks that will lay the foundation for a successful implementation down the line are:
  - Committing resources from the beginning of an initiative to document business processes
  - Documenting functional needs for applications
  - Prioritizing requirements
  - Evaluating vendor solutions
  - Assigning the right project team members
- Greater utilization of the City's software systems will significantly increase staff productivity and data sharing throughout the City.
- The City should identify application support and management roles and responsibilities. Then, assign them to each department's operational modules. We recommend starting with:
  - Enterprise Resource Planning (ERP)
  - Enterprise Asset Management (Work Order System)

Other application systems utilized by multiple or all City departments

See the list of major applications above. Identifying capable staff to fulfill the roles and responsibilities for optimizing applications will help the City achieve the goals of the "Applications Management Best Practices" initiative in the future. Examples include:

Process Owner

- Primarily makes final decisions on process policies, procedures, and deliverables for their area of expertise
- May also be responsible for oversight and delivery of daily, weekly, monthly, and annual processes
- Stays current with applicable industry best practices, technology, and application capabilities
- Stays current with existing application vendors' capabilities, offerings, and enhancements

Power User

- Department expert on application/module
- Possesses the greatest knowledge of application/module
- Lead trainer/support person for other department staff that utilize the application/module
- Usually has formal training and is responsible for application configuration setup and changes on an ongoing basis
- Stays current with the applicable industry best practices, technology, and application capabilities
- Stays up to date with current application vendors' capabilities, offerings, and enhancements

IT Roles and Responsibility

The IT Department serves an important role in the implementation and ongoing support of application systems. However, they are not usually operational experts, as described above. IT roles and responsibilities should be clearly defined and complement the skills and knowledge of other project/support team members. Some common IT staff responsibilities include:

- Maintain supporting equipment/peripherals
- Network support and maintenance
- Provide Help Desk support to users
- Perform backups of system data
- Copy/refresh data between development, training, and production databases
- Implement and test security roles
- Database Administration
- Assist with the installation, upgrades, and ongoing maintenance of the application systems

It is important to note that IT staff involvement in supporting and maintaining enterprise application systems is critical. However, they may have limited operational process knowledge and IT resources available.

When defining roles and responsibilities, consider how users obtain assistance with issues, receive appropriate training, and become proficient in utilizing application systems.

The most successful application support infrastructure teams comprise technical and operational staff. While IT staff may serve numerous roles, they are not process owners or power users. Individual departments should take as much responsibility as possible for supporting and maintaining modules used in their primary business operations.

Module Lead

- Responsible for gathering documentation/information and coordinating the activities of other key Module Stakeholders
- Lead participant in reviewing assembled software and business process needs requirements
- Liaises and/or coordinates with department staff, project managers, and vendors
- May also be a feature function reviewer
- Provides feedback or clarifications on software needs
- Lead department implementer for new software module/functionality

Module Stakeholders

- Participate in business process reviews to determine software requirements
- Assist in gathering documentation and identifying department or division needs
- May also provide feedback or clarification on software needs
- Participate in the implementation, testing, documentation, and training of other users

Recommendations

- Consider adding staff to the IT Department to provide specialized enterprise application support to department users.
- Departments should be encouraged to become more responsible for application setup and configuration changes with IT personnel's assistance. Provide training if department personnel cannot make these changes. Third-party subject-matter expertise can be helpful for large or complex projects.
- Assign staff-specific roles and responsibilities for each application or module.
- Key assignments should be responsible for understanding industry best practices and solutions as well as taking the lead in continually assessing and inventorying needs.
- Inventory and maintain current and future feature/functions; reporting, training, and support gaps; and lists of improvement needs by software module.
- Consider cross-training department personnel on utilizing report writing tools to generate required reports with proper security access. More complex reporting often requires a specific understanding of database structures in the application, necessitating IT assistance.
- Process owners and/or power users should actively monitor upcoming functionality improvements in new software releases. In addition, it would be helpful if process owners monitored and discussed application usage with other peer Cities and entities. Incorporate the feedback from intercity exchanges into the City's systems to improve functionality further and increase usage across the City.

Benefits

- Higher return on software investment from the increased use of application features
- Lower costs and less reliance on vendor assistance
- Less time required by IT staff due to increased user independence.
- Identification of application user roles and responsibilities
- Improved efficiencies and productivity
- Improved customer service

3. User Training and Support

Background

Software systems are tools utilized to conduct daily business operations. Like other tools, becoming proficient in the software's use and ensuring all necessary functionality is key to achieving greater productivity and efficiency, which leads to cost savings.

Findings and Observations

- Staff requested additional training across many software applications in the department surveys and assessment workshops.
- A consistent and more structured training program for certain applications and systems could benefit new employees and existing users.
- Additional training could improve staff productivity.
  - When software systems are underutilized, additional training can significantly improve staff productivity.
  - Ongoing training on new software releases also protects the City's investment in software by optimizing functionality within existing applications.
- End-user training also helps to ensure that application ownership resides at the department level.
  - Applications ownership at the department level ensures that support is a collaborative effort among end users and IT services.
  - This collaboration optimizes support for the application and the utilization of limited IT resources.
- As application software programs change and become more complex, training staff members to use them properly becomes more critical.
- A renewed City-wide emphasis on targeted staff training for applications software will pay significant dividends in increased staff effectiveness and productivity.

Staff Feedback

Building

- Staff need training on TRAKiT, eTRAKiT, Bluebeam, SolarApp+, █████████, Microsoft (Excel, Outlook, SharePoint), Laserfiche, Green Halo, eGIS, ESRI, Agenda Quick, Granicus

City Manager's Office

- Staff need training on Granicus, OneDrive, Microsoft Suite, Excel, PowerPoint, Teams, SharePoint, OneNote, Veoci, and the Website

Community Development

- Staff need training on █████████████, Adobe Creative Cloud, Microsoft Office (Teams, Outlook, Publisher, SharePoint, OneDrive), HdL Prime, Laserfiche, Trakit, Enterprise GIS, Granicus, Lexus Nexus, Canva, BlueBeam

Engineering

- Microsoft Office 365 was deployed to all staff without training.
- For OneNote—Most staff aren't aware that the app is currently available. For those who do use it, what we know has all been self-taught. I'm sure we are currently using only a fraction of its full potential.
- Need ArcGIS training.
- Need Bluebeam training. When it was initially purchased, we asked IT if there were any training or tutorial videos available. We were told there were none. Due to a lack of familiarity with software and the lack of time to self-teach, the application remains underutilized as many staff continue to defer to using Adobe Acrobat instead.
- Need training on how to use Teams more/most effectively. What we currently know has all been self-taught. I'm sure we are currently using only a fraction of its full potential.
- There are two versions of OneNote installed on workstations – OneNote (which I believe is with the MS Office 365 suite) and OneNote for Windows 10 (which I believe was installed with the Windows 10 OS). It would help to have IT clarify which one we should be using.
- Training is required on how to use SharePoint and OneDrive most effectively. Staff have been able to share files within a working group; however, we have not yet figured out how to access the shared file link without going back to the original email, which we have found to be most inefficient.

Facilities

- Staff need training on █████████████████████████████

Finance

- Need training on OneDrive vs SharePoint

Human Resources

- Need training on the Badging system by Genetec, SharePoint, Visio, Acrobat Pro, ████ ████ and Trakstar

Police

- Employees have historically received little to no training in software systems
- Staff need training on ███████████████████████████████

Recreation & Community Services

- Staff need training on Sportsman, DocuSign, Adobe (Illustrator, Photoshop, InDesign), ████ ████████████████████ Microsoft (OneDrive, SharePoint), Tango, YoDeck, Field Light Programming, Vector Solutions, Authorize.net, Foxit, My AED, GIS

Recommendations

- Develop a Business Applications Training Plan.

  ◆ Utilize the Technology Steering Committee to assess the training required to address department needs and determine anticipated enrollment.
  ◆ Business process improvement reviews will also uncover many needs for additional training across departments and application systems.
  ◆ Incorporate a formal training plan into the City's new employee onboarding process and utilize technology to assign the training plan to make it easier for new hires to track progress.

- Determine strategies and engage software vendors to accomplish training needs, such as:

  ◆ Self-learning aids

    ▪ Enterprise software vendors sometimes have online resource portals and an extensive user community where users can query and ask other users questions.

  ◆ Internal classes
  ◆ On-site vendor training
  ◆ Lunch-and-learns
  ◆ Monthly updated training sessions for both new and existing employees
  ◆ Application champions/power users

- If available, participate in software vendor user conferences and local user meetings.
- Create a repository of basic how-to training aids and other information (e.g., videos and past class information)
- Consider procuring a screen-capture video solution to assist with developing internal video training aids.
- Consider training as a factor in performance evaluations.

  ◆ Accomplish this by involving department management and agreeing to the classes each employee would benefit from.

- Consider efforts to reduce and/or limit the total number of software vendors and databases whenever possible.

  ◆ This will reduce and limit overall cost-of-ownership, support requirements, and training and reporting needs.
  ◆ This will also improve overall integration capabilities.

- Current and future needs can be evaluated and prioritized through a combination of mechanisms, including the Technology Steering Committee.

Benefits

- Improved operations management
- Improved utilization and efficiency of software applications
- Activation and use of existing functionality that is currently unknown but important to the City
- Review and activation of new functionality provided in future applications software releases
- Increased information sharing
- Better identification of training needs
- Increased training alternatives
- Centralized training, with documentation of who has been trained and when
- Improved software administration (fewer staff members required to service user community)

4. Software Needs Assessment Best Practices

Often, one of the first requirements identified in technology-related software implementation and improvement projects is to conduct an assessment. Detailed assessments are an important step in evaluating current and future needs for technology projects. Still, they can apply to just about anything requiring an evaluation. Many Cities are unfamiliar with this detailed process, nor do they have staff with the skills or experience to conduct successful assessments.

This initiative aims to identify what an assessment is, when it is best applied, the basic guidelines for conducting one, and to provide recommendations for finding the right resources for the process.

What is an Assessment?

The official definition of "assessment" is "the action of evaluation and making a judgment" (Webster's Dictionary). For technology projects, assessments most often refer to the process of making a judgment regarding the current and future state use of an application, interface, or integration needs. Assessments conducted for business applications typically result in one of the following decisions:

1. Improvements to specific deficiencies in an existing application, interface, or integration

2. Implementation of a new application, interface, or integration to eliminate existing manual processes

3. Replacement of an existing application, interface, or integration that is not capable of meeting the City's requirements

Components of a technology assessment may include an evaluation of the City's:

- Documenting process workflows and/or workflow diagrams
- Software functional requirements (portals, dashboards, mobile app, and online credit card processing), including the deployment/adoption of new features rolled out in vendor software releases after the original implementation
- Gaps with existing systems and potential needs for improvements
- Third-party system interfaces or integrations
- Data conversion needs (the type of records and the number of years of data)
- Current and future reporting needs
- Unmet training needs
- User licensing needs (e.g., number of users, type of licenses, concurrent users, mobile users, and inquiry vs. edit capability)
- Assessment of IT infrastructure requirements

Guidelines for Conducting an Assessment

Every assessment is unique. Some may include *business process reviews* in which current operational processes are analyzed and evaluated. If needed, more comprehensive business process reviews may include formal workflow analysis and/or process diagrams. Most assessments result in customized feature/function requirements for an implementation, replacement, or improvement project. Large or complex projects should follow the guidelines of the "Business Process Review Best Practices" initiative.

For technology master plans, high-level assessments identify needs and gaps in existing technologies to determine individual project needs. This process results in recommendations to complete more detailed assessments and/or business process reviews of specific application and infrastructure systems (a different project purpose). The technology plan becomes a roadmap for the City to prioritize, budget for, and implement short- and long-term technology strategies resulting from City-wide collaboration efforts.

Regardless of the type of assessment needed, some key considerations and resources are needed to succeed. These include:

- Identify the assessment objective
- Identify the appropriate resources/stakeholders to conduct and participate in the assessment process
- Determine the level of documentation detail needed to communicate both current and potential future needs
- Develop a plan to implement the findings and recommendations that result from the assessment process

Each of these areas is discussed in more detail in the sections below.

Identifying the Assessment Objective

Always consider the big picture when determining an assessment's objective. The scenario below is an illustrative example:

A City implemented a new ERP system four years ago. While the application met the Finance Department's needs, other departments that utilized different system components struggled and continued to produce reports that required data manipulation using spreadsheets and manual processes.

In this scenario, the Finance Department may not have favored replacing the core enterprise application system. On the other hand, other departments may have been open to evaluating alternative solutions.

Unless it is apparent that the incumbent vendor cannot perform the functions needed or is sunsetting the product, determining the gaps in the existing system before pursuing its replacement is always recommended. This analysis will guide the resulting action plan.

These big-picture items, the detailed feature/function needs, and subsequent documentation can lay the foundation for implementing a new system or replacing the old one, if appropriate. Additionally, detailed needs documentation becomes the foundation for improving or replacing a system.

Identifying Stakeholders and the Right Resources

Having the right resources involved in conducting an assessment is critical to achieving the objectives of the process. There are two types of resources recommended:

- The interviewer
- Stakeholders

The interviewer should have business analysis skills, including:

- Analytic thinking
- Good listening
- Problem-solving
- Oral and written communication skills
- General knowledge of the application or processes in question
- Possibly a role in support of the application
- Familiarity with the existing vendor
- Reputation from the end users as a champion for their needs
- Ability to articulate the department's needs in a concise manner
- Ability to lead the follow-up effort with the vendor upon the conclusion of the assessment

Stakeholders' use of the system or role in the process will vary, and their needs may differ. Stakeholders should represent the application end-user community and/or assessment focus.

Identifying and interviewing two key stakeholder groups is important to capture their needs and determine improvement recommendations to address their concerns. The first stakeholder group should represent the department responsible for administering a system or module. Those stakeholders should understand the configuration of the current system or module and some of the application's functional deficiencies.

The second group of stakeholders should consist of cross-departmental end users who may have insights into the day-to-day use of the system or process. Their operational perspective should complement that of the administering department's staff.

Documentation Details and Communication Methods

The assessment type dictates the level of documentation detail needed. A successful assessment process will articulate findings with a recommended follow-up plan.

Various tools and techniques are available to gather the needed information for making recommendations during the assessment process. Some of these tools/ techniques, depending on the type, size, and complexity of the project or system, could include:

- Distributing surveys or information requests to end users and compiling the results
- Conducting workshops as a group to review the results of questionnaire feedback and identify issues
- One-on-one interviews with Power Users and/or subject-matter experts
- Reviewing or observing business processes
- Documenting detail needs as described above

The goal is to achieve collaboration and involvement from the user community without judgment or criticism. In addition, the recommendations made due to the assessment process need to identify useful, realistic, and implementable solutions.

Developing an Improvement or Implementation Plan

Assessment findings and recommendations must be realistic and include a feasible action plan.

If the City has a limited budget or staffing resources, it may not be a realistic recommendation to replace the system at that time. An interim alternative may be to utilize the needs assessment documentation to work with the existing system to set up features not originally implemented or available at that time, set up workflow automation, or improve existing integrations.

If additional training is needed, the assessment should outline all the City's training needs, identify who should participate, and who should conduct research with the vendor regarding the amount and cost of the training. A long-term strategy might also be identified for an ongoing training program to ensure that software updates/new releases are implemented and to onboard new employees.

The resources needed to execute the action items identified in the assessment may include executive leadership, a project manager, temporary staffing, training facilities, hardware, data extraction experience, GIS assets, and a citywide change management strategy.

Each assessment will be different depending on the specific objective and project needs. The City should evaluate the skillsets of staff available to lead an assessment and determine whether third-party assistance is needed. The assessment process determines specific requirements and is crucial in optimizing technology investments.

5. Business Process Reviews

Background

A Business Process Review (often called Business Process Improvement) is a method of analyzing and evaluating current processes for:

- Identifying enhancement opportunities and streamlining processes
- Automating manual processes
- Eliminating or dramatically reducing the use of shadow systems and processes
- Eliminating paper, other equipment, and supply costs
- Maximizing the human resources involved in processes
- Embedding or transferring the knowledge of subject-matter experts (SMEs) into the processes and associated workflows
- Optimizing the configuration and functionality of the system to support process improvements
    - Note that system features, functions, and capabilities can also dictate process improvement opportunities
- Defining functional requirements for business application implementation, replacement, or improvement projects
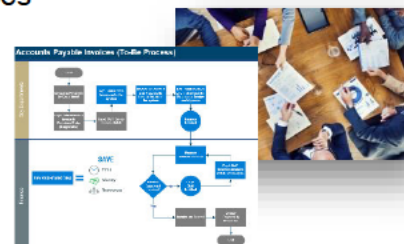
Business process reviews and looking for ways to improve productivity are continuous processes. To optimize application utilization, business processes, and system configurations should undergo continuous improvement in response to the following:

- Emergence and introduction of new technologies
- Release of application software updates containing new features, functions, and capabilities
- Changes in law, regulations, or rules
- Changes in the needs and demands of the City's constituents and the public user community
- Unforeseen changes in access to resources or funding
- Changes in business operation processes
- Although process reviews and improvements should be continual, it is most common for process improvement projects to occur:
    - In preparation for, and during the implementation of, new, replacement, or improvement of business application systems
    - When new technology becomes available that provides opportunities for additional automation
    - On a pre-established process review and improvement cycle (e.g., annually)

Business process reviews for complex processes can also include as-is and to-be documentation and diagrams.

Recommendations

- Perform business process reviews throughout the City, breaking processes down by department, division, application module, and finally, the process level, e.g., procurement or cashiering. This should also take into consideration cross-departmental interactions and dependencies.
    - Conduct business process reviews before implementing new software and major changes to existing platforms.

◆ Begin by analyzing the staff feedback throughout this report to identify high-priority opportunities.

• Conduct Business Process Review efforts in conjunction with evaluating any required business applications.
• City management needs to be aware of the potential need for employee reassignment or redeployment and the operational and emotional effect this may have (see "Workload Transference" concept described below).
• Consider initially utilizing a third-party SME or consulting firm to schedule, structure, and conduct the necessary business process review and improvement efforts for large, complex projects.

Workload Transference (A Business Process Concept)

As a result of business process improvements, including those that occur during the implementation of new systems, the City's processes will be changed and streamlined. These changes sometimes require shifting workload (tasks and amount of effort) from one person to another. Even though a particular individual may experience an increased workload, the total work effort for the entire process is reduced. This is called "workload transference" and is why reallocation and change in personnel duties are sometimes required to achieve the potential gains from implementing system improvements. The diagram below represents this principle.

"As Is" Process (prior to new system)

PERSON #1 2 Work Units	PERSON #2 4 Work Units	PERSON #3 4 Work Units	PERSON #4 3 Work Units	PERSON #5 2 Work Units	=	TOTAL 15 Work Units

"To Be" Process (after implementation of new system)

PERSON #1 5 Work Units	PERSON #2 Participation Eliminated	PERSON #3 2 Work Units	PERSON #4 2 Work Units	PERSON #5 1 Work Unit	=	TOTAL 10 Work Units
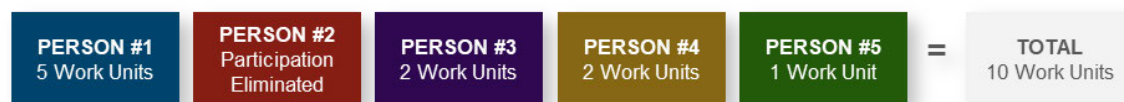
Even though Person #1 in the process has an increase of three work units, the work units of the individuals down the process stream have been reduced. The result is a total workload reduction for the entire process stream (reduction of five work units).

Note: It is important to understand that this is an example of a single process. This example represents a reduction of hours and effort, **not a reduction in employee count**.

Benefits

- Improved efficiencies through:

  - Process enhancements and streamlining
  - Automation of manual processes
  - Elimination or dramatic reduction of shadow systems and processes
  - Elimination of paper, other equipment, and/or supply costs
  - Maximization of the human resources involved in processes

- Improved utilization of existing systems through reconfiguration and setup, gaining productivity and achieving better results
- Preservation of institutional knowledge by embedding or transferring staff knowledge into processes and associated workflows
- Maximized investment in software applications and technologies by incorporating process improvements in system workflows, configuration, and setup
- Customized requirements for business application implementation, replacement, or improvement projects

6. Software Selection Best Practices

Background

Selecting the right system and technology is more critical today than ever because the efficiency and effectiveness of the City are directly dependent on its use of technology and information systems. Cities that follow best practices recognize that they must take greater advantage of automation to meet growing constituent and public demands.

Following best practices while procuring new software solutions can transform a City's operations, processes, and constituent services. Without proper preparation, planning, and methodology for selection and implementation, Cities face many problems and risks, including:

| Organization Strategies, Goals, and Objectives |
| Data and Business Processes |
| Core Business Appl and Systems |
| IT Infrastructure and Services |

→ **Technology Master Plan**

- Spending sometimes hundreds of thousands of dollars more than necessary in the total cost of ownership
- Failed or prolonged implementation
- Implementation of systems that still do not meet the City's functional needs
- Low productivity
- Poor contract negotiation position
- Lack of and/or reduced integration between other software systems

Cities typically fall short of their implementation goals due to one or more of the following factors:

- Insufficiently defining system objectives and requirements
- Failing to involve both management and users adequately
- Underestimating the costs and effort required
- Failing to plan for expansion adequately
- Failing to evaluate software properly

The City should utilize a structured analysis and selection methodology to implement key software systems and reap the full benefits properly. A structured approach to selection and implementation results in significant benefits, including:

- Reduced risk of a failed or prolonged implementation
- Lower total cost of ownership
- Independent and objective analysis of potential alternatives
- Well-defined objectives and requirements

⚠️ STARTLING STATISTICS

- Only 32% of projects are on time, within budget, deliver all required features and functions, and achieve measurable business and stakeholder benefits.
- Approximately 44% of projects are "challenged" (late, over budget, and/or have less than the required features and functions). [6]
- 69% of project failures are due to a lack of and/or improper implementation of project management methodologies.
- Nearly 40% of those surveyed said that a "lack of employee buy-in and executive support" was the biggest challenge facing a successful implementation. [7]
- A recent customer survey shows that enterprise implementation projects:
  - Have only a 7% chance of on-time implementation
  - Will likely cost more than estimated
  - Will likely deliver unsatisfying results (only 21% will realize half or more of expected benefits) [8]
- In a past study of local government enterprise implementations published in Government Finance Review, it was found that the average project was 176% over budget and 243% beyond the planned implementation timeline.

- Opportunities for staff and project participants to learn about application functionality and business processes outside of their scope of work that they may not see during their day-to-day tasks
- Selection of technology that meets the City's short- and long-term objectives and requirements
- Effective contract negotiation through well-prepared and documented needs
- Overall project time savings
- Improved implementation readiness
- Longevity of the system selected for years to come

Findings and Observations

- Software selection and procurement that follows best practices include departmental end-users in the assessment process to capture each business unit's functional needs.
- A best practices approach to software selection can avoid thousands of staff labor hours performing tasks that modern enterprise systems can automate and/or streamline.
- Following selection best practices, beginning with an assessment, streamlines processes and consolidates siloed systems into a fully integrated enterprise system.

Recommendations

- We recommend that the City adopt these best practices when initiating the search and procurement of application software. Larger, more complex projects generally require more due diligence. However, even small projects can benefit from these methodologies.
- Utilize best practice selection methodology when evaluating new software.
- Consider third-party subject-matter experts (SMEs) when selecting or improving complex or highly specialized solutions.
- For major enterprise-level systems:
  - Complete process reviews and document detailed feature/function specifications as part of an RFP.
  - Include cross-function stakeholders in each software evaluation and implementation project by module (e.g., budgeting should include all staff who participate in that process; fixed assets should only include staff who participate in that process)
  - Identify all reporting needs.
    - This will help inform implementation decisions to capture all data and fields required to create a report.
    - This focus can save significant implementation and system costs.
- For department-specific applications:
  - Develop a high-level application requirements inventory.
    - Requirements do not have to be as detailed as an enterprise-level system.
    - This allows the City to structure software demonstrations to show functionality relevant to the departmental end-user.
  - Functionality was identified, and associated costs may be shared among two or more departments. For example, Public Works, Community Development, and Recreation may all use Project Tracking and Collaboration.
    - This is also an effective way to build a business case for the new applications.

Benefits

- Reduced preparation time for deployments
- Better identification of integration requirements
- Reduced license fees
- Increased utilization of application systems
- More effective due diligence
- System functional alignment with overall City goals
- Higher probability of having a successful implementation

Example Work Plan

Step	Software Selection Workplan
Project Coordination and Management	
1	**Project Coordination and Management** - Finalize the project work plan and timelines and arrange communications, logistics, and support. Schedule various meetings with personnel from each functional area to review and discuss existing and future information system needs. Provide ongoing project coordination and status updates. The project manager will:
	Act as a liaison between the executive stakeholder team, project team, vendor(s), and City staff
	Develop and manage a comprehensive project plan detailing project stages, milestones, and resources
	Manage the Change Management Process with oversight from the City's Executive Project Steering Committee
	Develop a communications plan and provide monthly executive/project status reports detailing any key decisions, issues, and action items
Phase 1 - Project Team Development and Kick-off	
2	**Project Initiation and Project Team Development** - Develop and finalize the makeup of the Project Team,-documenting required roles and responsibilities as well as ensuring representation from all key stakeholder groups. Follow "Enterprise Application Support and Management Best Practices." This will include the following steps:
	Development of a Project Charter
	Establish a project management office (PMO), per Project Management Institute (PMI) best practices
	Develop Module/Functional Area Teams based on *Enterprise Application Management and Support* best practices. These Teams will also be utilized during the actual software implementation and should include cross-function stakeholders/users from multiple divisions and departments, as appropriate
	Assist with educating Project Team and Module Team members on defined roles and responsibilities, facilitated through the completion of forms and gathering of information for use in workshops, including background concepts, instructions, and finalization
	Conduct a formal Kick-Off Meeting to officially start the project and provide an overview of the project to the Project Team, Module Team members, and other engagement participants.

Step	Software Selection Workplan
	Phase 2 - Assessment and Process Reviews
3	**Needs Assessment Questionnaires/Information Requests** - Develop tailored assessment questionnaires and information requests related to existing and future information systems that need to be used during the discovery process. Questionnaire results will be utilized to guide the business process reviews by module/function, including automating manual processes, streamlining others, improving integrations, and identifying unmet reporting needs.
4	**Business Process Review and Requirements Workshops** - Meet with Module/Functional Area Teams to review existing manual and automated systems and operations, including any custom-developed workaround systems or processes. Change management and best practices for vendor selection and implementation preparation should be addressed throughout all workshops. Workshops should also identify deficiencies in current processes and establish expectations for improved design and efficiencies in a modern software solution. Also, include documentation of all other system integration and data conversion requirements.
5	**Software Functionality Requirements Documentation** - Review information gathered during the process reviews and develop system requirements (software feature/function requirements) specific to the City's needs.
6	**System Functionality Requirements and Documentation Revisions** - Incorporate and revise the process review and requirements specification documents by incorporating reviews and feedback from the various Module/Functional Area Teams.
7	**IT Information Meetings and Interviews** - Conduct information-gathering activities focused on the ability of the existing IT staff and infrastructure to support the needs of the new system and review the readiness to implement and support the platform that will be required for the new software system, including:
	IT Network and Infrastructure
	Storage and Backups
	Servers, Server Applications, and Management
	Cybersecurity
	Disaster recovery
	Desktop environment
	Document information and summarize the required preparation initiatives, findings, and recommendations
	Prepare a memo assessing gaps and the readiness of IT infrastructure to support the City's general needs and the introduction of the new software system. The memo is to include the following:
	General readiness of IT to support the City's new system needs and support the introduction of a new software system
	IT Initiatives with findings and recommendations, including the following scope:
	IT Environment and Infrastructure
	IT Applications Support Staffing Structure

Step	Software Selection Workplan
8	**Assessment and Recommendations Reporting** - Based on the information gathered and analysis performed, prepare an assessment/gap analysis report and presentation documenting current processes, with recommended improvements and future needs, including:
	New System Opportunities and Existing System Challenges
	Findings and Recommendations
	New-Solution Requirements
	Integration Needs
	Conversion Requirements
	Implementation Risk Assessment
	Budget, Resource, and Timeline Considerations
Phase 3 - Develop Request for Proposals (RFP)	
9	**Preliminary Vendor Communication/Research**—Based on the assessment process and new system requirements, Research and prepare a list of pre-screened information system vendors and their contact information. The objective is to identify vendors specializing in government agencies with application modules for future needs already in use in the industry. Vendors do not respond to all RFPs, so pre-communication is helpful to obtain proposals that are in the City's best interest.
10	**Develop Request for Proposals (RFP) Documents** - Prepare Request for Proposal (RFP) or Bid documents. RFPs should include, but will not be limited to the following:
	Project objectives and process
	Evaluation criteria
	Proposal forms and supporting information
	Software feature function compliance
	Vendor software support, reference ability, and reputation
	Reporting capabilities and ease of use
	Modern technology utilization
	Customer base similarities
	Cost (proposals for SaaS/cloud and on-premise options, professional services, third-party integrations, and conversions)
11	**RFP Issuance and Facilitate Vendor Response Activities** - Facilitate pre-proposal vendor response activities, including:
	Manage vendor questions and answers during established proposal response timelines
	Assist with required RFP addenda

Step	Software Selection Workplan
	Phase 4 - Vendor Proposal Evaluation and Finalist Vendor Selection
12	**Vendor Proposal Evaluations**—Analyze and evaluate proposal responses. Provide an initial Summary Vendor Comparison Worksheet and Vendor Executive Summary Analysis Memorandum that compares key system evaluation requirements, including feature/function compliance statistics, side-by-side.
13	**Vendor Analysis Workshop to Determine Vendor Finalists (Short List)**—The Project Team and Executive Project Steering Committee should conduct an analysis results workshop that includes reviewing the Vendor Comparison Worksheet and Vendor Executive Summary Analysis to determine a short list of vendors to provide comprehensive software demonstrations.
14	**Develop Demonstration Documents, Agenda, and Coordination** - Develop documents, including an agenda and sample guides for vendor demonstrations. Send these documents to vendor finalists for their preparation. Also, prepare Vendor Demonstration Evaluation Forms for use by all participating City staff during demonstration sessions.
15	**Facilitate Vendor Demonstrations** - Schedule demonstration dates and facilitate initial vendor demonstrations to address applicable requirements. City personnel should evaluate vendor demonstrations using Demonstration Evaluation Forms.
16	**Post Demonstration/Visit/Reference Check Due Diligence and Follow-up** - Conduct/facilitate additional finalist vendor(s) follow-up issues and due diligence. This may include additional demonstrations, Q&A facilitation, reference checking, and site visits. Also, prepare a form to be used by Project Team members to conduct finalist reference checks and/or calls and a Site-Visit Form for City personnel to use during the site visit(s). IT should also review the technical requirements in the selected vendor's proposal and prepare a memo outlining observations and recommendations.
17	**Facilitate Final Vendor Selection**—The Project Manager should meet with the City's Project Team and the Project Executive Steering Committee to discuss and finalize the vendor selection. The Vendor Demonstration Evaluations, combined with additional due diligence analysis, should be used to facilitate finalist selection.
	Phase 5 - Implementation Plan Review Contract Negotiations
18	**Implementation Plan (SOW) Review** - Review and finalize the Statement of Work, Implementation Schedule/Plan, Project Management Office, resource requirements, and timelines.
19	**Contract Review and Negotiation Assistance** - Review vendor contract documents and negotiate terms and special requirements, including legal representation. Consider using a Best and Final Offer (BAFO) approach when finalizing costs.

Example RFP Feature/Function Specifications

Application	Feature Number	Feature/ Function / Capability	Standard - Current	Standard - Next	Report Writer	3rd-Party Application	Custom Modification	Not Available	Comments
Budgeting	2.042	GENERAL LEDGER AND BUDGET REPORTING - Provide reporting ability for general ledger and budget reporting on cash and modified accrual basis.		1					
Budgeting	2.043	YEAR TO DATE BUDGET - Ability to query or generate a report that includes the following columns: Original Budget, Budget Adjustments, Revised Budget, YTD Expenditures, encumbrances (at PO), Available Budget.		1					
Budgeting	2.044	BUDGETED VS ACTUAL - VARIANCE/COMPARISON REPORT - Ability to generate a budget vs. actual variance report by year, G/L account, percentage variance, and amount variance.		1					
Budgeting	2.045	BUDGET VS. ACTUALS COMPARATIVE REPORT - Ability to produce budget vs. actual comparative reports, including Over Budget, Zero Budget, and % Expended to Date reports by overall budget, fund, or department.		1					
Budgeting	2.046	BUDGET TO ACTUAL HISTORY BY ACCOUNT - Ability to generate a report listing (10) years of budget-to-actuals for an account.	1						if the history is there, yes.
Budgeting	2.047	AVAILABLE BUDGET BY ACCOUNTS - Ability to display percentage of available budget for an account or a group of accounts.	1						
Budgeting	2.048	ADJUSTMENTS/TRANSFERS REPORT - Ability to print individual budget transfers with account number, account name, current budget, adjustment amount, and revised budget, in columnar format.		1					
Budgeting	2.049	REPORT GENERATION - Provide ability to automatically print batch balancing and edit reports upon completion of either initial entry or adjusting of budgets.		1					
Budgeting	2.050	BUDGET - PRINTING - Provide ability to print and export information displayed on the screen to Excel.	1						
Budgeting	2.051	BUDGET - PRINTING - Ability to save budget reports to PDF file format.	1						
Budgeting	2.052	MONTHLY BUDGET TO ACTUALS REPORT ON DASHBOARD - Ability to display monthly budget to actual reports by Department/Division on user dashboards.	1						
Budgeting	2.053	INTERFACES AND INTEGRATION							
Budgeting	2.054	BUDGET IMPORT - EXCEL - Provide the ability to import detailed project budgets (e.g., engineering, maintenance, etc.) into the Budget module from Microsoft Excel.	1						
Budgeting	2.055	BUDGET EXPORT - EXCEL - Provide the ability to export detailed project budgets (e.g., engineering, maintenance, etc.) into Microsoft Excel.	1						
Budgeting	2.056	INTEGRATION - GENERAL LEDGER - Ability to automatically post budget amendments to the General Ledger.	1						
Budgeting	2.057	INTEGRATION - PROJECTS ACCOUNTING - Ability to establish a budget for projects in the Project Accounting module that will roll with the main operating budget subtotals.	1						
Budgeting	2.058	INTEGRATION - FIXED ASSETS - Ability to pull vehicle/asset replacement budgets based on end-of-life date and replacement cost from the Fixed Assets module.	1						
Budgeting	2.059	INTEGRATION - ELECTRONIC DOCUMENT MANAGEMENT SYSTEM - System must integrate with Electronic Document Management System (To Be Determined).	1						

7. Applications Implementation Project Management Best Practices

Background

Implementing a new system can be challenging, particularly when a City's staff has not gone through the process for a long time, if at all. To complicate things further, City staff have other "day job" responsibilities, limiting time for overseeing project tasks during implementation.

Many Cities are skeptical about whether any project can succeed based on past experiences. A poorly implemented system results in frustrated end users, and the benefits once hoped for in a new system are unrealized.

This does not have to be the case. It is possible to successfully implement a new system or reimplement an existing system with the proper planning and utilization of proven implementation best practices.

Successful projects have several common elements that contribute to their success:

- Clearly defined goals and objectives (Project Charter)
- Adequate and inclusive resource allocations (Resource Management)
- Adherence to implementation best practices and utilization of well-established Project Management methodologies (Comprehensive Project Management Plan)
- Adequate budget to accomplish goals and objectives
- Clearly defined scope of deliverables (Scope Management Plan)
- Defined and well-executed change management strategies to assist in end-user adoption and provide adequate training (Resource and Change Management Plan)
- Executive Sponsor engagement (Top-level support and communications)

All these elements are important to the overall success of a project and achieving the objectives and goals set forth when implementing a new system, especially major enterprise application systems.

When a project begins, a clear vision of the desired goals and objectives should be documented and communicated to stakeholders impacted. This phase is called Project Initiation and Planning and begins by establishing a Project Charter.
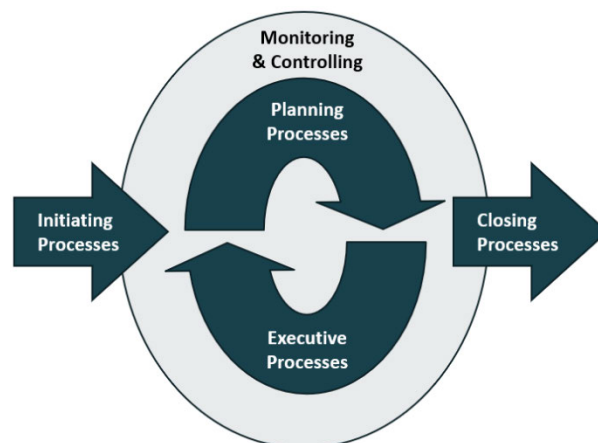
Project Initiation Phase

The initiation phase of a project is an important step when formulating the business case and authorization to begin a project. For any typical technology project, this process begins with developing a project charter and assessing the impacted groups (stakeholders). The project charter becomes the roadmap toward success, which begins during the selection process. A common mistake is assuming that project initiation begins when starting the project implementation. The process begins much sooner during the assessment/vendor selection period. It is during this time that a City identifies the specific functional requirements needed and what the overall objectives and goals are for the project.

The purpose of a project charter is to outline the goals/objectives of a project and to identify the budget, deliverables, timeline, and resources needed to meet the stated goals. Specifically, the project charter includes the identification of the following:

- Project definition and stakeholders impacted
- Identification of project sponsors, who in turn give project oversight authority to the project manager
- Preliminary scope and estimated timeline
- Business objectives and success measurement metrics
- Project budget

In addition, the project charter is also the tool utilized to receive executive sponsor buy-in and authorization to proceed with the project as outlined.

Once the City authorizes the project and develops the initial project charter, the City's designated project manager will continue to work with staff to develop the detailed components of the project management plan during the project planning and initiation phase.

Project Planning Phase Knowledge Areas

The planning phase of a project plays a critical role in its overall success. During this phase, the team lays out each plan component to account for the time, budget, and scope constraints. Below is a brief description of tasks for each knowledge area.

Scope Management Plan

A Scope Management Plan begins by collecting the requirements needed to meet the project's business objectives. Depending on the project type, this process usually begins with needs assessment activities, such as process reviews, workshops, interviews, surveys, and observations, to document the City's operational business needs, impacts, and resources needed for the project.

It is important to identify and document the project scope as early in the process as possible. Scope changes will likely impact other project dependencies, such as budget and timeline. In addition, the project scope will impact the choice of vendor solution.

If the vendor selection process includes a thorough assessment and the development of detailed feature/function requirements, the City will be much further ahead in this process during implementation. The goal then becomes communicating and clarifying the intent with the vendor and making the applicable configuration changes in the new system to meet these needs. This will reduce the need for frequent change orders and potentially costly budget increases.

Time (Schedule) and Resource Management Plans

A baseline schedule that considers the available resources and required activities is determined based on the identified project scope. These plans include the following activities:

- Define specific activities/actions needed to meet deliverables
- Define the sequence of activities to be completed and identify interdependencies
- Estimate activity resources (quantity, duration, schedule availability)
- Develop a baseline project schedule

As mentioned earlier, resources chosen to participate in project activities are critical to the project's success. Many people assume that the IT Department should run a technology project. IT staff support the individual departments and guide infrastructure and integration. Still, they are not necessarily experts on what each department does daily in their business operations and workflows. There are some exceptions, but it is not the standard in today's world of doing more with less. Including power users and subject-matter experts (SMEs) from all impacted functional areas on the project team is important. These individuals will play a critical role in identifying old and new business practices/workflows and, ultimately, the configuration of the new system to meet the needs of their respective departments. This should be a collaborative approach, and staff from all levels should be involved so that one person does not make all the system setup decisions.

Through a collaborative effort, configuration choices will be more deliberate to achieve productivity efficiencies, resulting in higher adoption of the new system by end users.

The experts in business operations are the power users within the individual departments. These users need to be involved and take ownership of the new system. They need to be involved in the configuration choices of the new system, the testing and documentation of new processes, and the training/mentoring of end users.

It is critical to identify this team of power users, and module leads early on, what role they will play on the project, how much time they can allocate, and strategies for backfilling the gaps to cover normal business activities during their absence. Completing a roles and responsibilities matrix is the first step in determining the necessary resources to complete the project. This process goes hand-in-hand with determining the overall project schedule. If no one can spend time on the project completing tasks that are required, the project timeline will continually get pushed back and the project costs to complete it will increase. The overall project schedule should realistically reflect the resources available to complete tasks.

Note: The amount of vendor involvement in the system configuration varies. Most vendors train the City to use the tools and complete the configuration. Therefore, it should not be assumed that the vendor will do this work for your City. Allocating resources and time to the project is necessary.

Risk Management Plan

A risk management plan aims to identify potential risks, assess the impact of the risk on the project, and determine potential mitigation strategies to address each identified risk. Risks should be identified early for enterprise system projects to avoid major delays and budget overruns. Some risks have more substantial impacts on a project and require aggressive actions. In contrast, others are low-impact risks that only require monitoring and awareness. The goal of the risk management plan is to be proactive in dealing with potential issues on the project and adjusting accordingly to the overall project management plan.

Cost Management Plan (Budget)

The Cost Management plan builds on the initial scope and resource plans. There is a direct correlation between time, scope, and costs for every project, commonly called the Project Manager's Triple-Constraint Triangle. This theory maintains the presumption that an adjustment to one of these areas will have a positive/ negative effect on the other elements within the constraint triangle. For example, extending the project schedule directly impacts the project's cost.

Thoroughly analyzing requirements and project scope during the planning phase avoids significant budget overruns later in the project. It also allows for contingency planning as part of the project risk assessment.

Quality Assurance Plan

A Quality Assurance Plan containing detailed test plans is not just nice but an essential success factor for all project initiatives.

To meet the project's business objectives, a well-conceived quality assurance process needs to be identified and implemented as part of the overall project management plan.

Identifying a test plan takes place during the scoping of deliverables. When a City takes the time to identify and document key functional goals and their impact on business operations, this documentation can become the basis for testing these functional areas. The resources assigned to the project also play a critical role in carrying out these test plans and ensuring that the system is ready for end-user training. These resources must thoroughly understand business operations and new procedures that will change in the future. These project team members must be able to communicate these changes to the rest of the City with a high degree of understanding behind the decisions made.

Communication Plan

The Communications Plan deals with the "people side of change" and is integral to any project's success. An inclusive communications plan informs all participants and stakeholders about the project's status, deliverables, and activities. Methods of communication vary, depending upon the audience and stakeholders involved.

Based on the initial stakeholder assessment completed during the project initiation activities, a mutually agreeable communications plan is developed for each project. The plan will identify the means, frequency, and audience of the various types of communication channels desired for the type of project initiated (e.g., bi-monthly status calls, monthly executive sponsor high-level briefings (project dashboards), detailed action item lists, newsletters, and intranet postings).

Execution Phase

The execution phase focuses on deploying and executing each of the previously discussed components of the project management plan.

These activities include day-to-day deployment activities such as installation, configuration, development of custom integrations, data conversions, and testing.

Other types of project activities during the execution phase include:

- Completing data conversion mapping and testing
- Completing customizations and configuration of the system
- Developing process documentation and user guides
- Scoping, developing, installing, and testing standard and custom interfaces
- Execution of the communications plan and monitoring of change management initiatives
- Coaching, mentoring, and motivating team members to take positive action and accountability for their assigned work
- Addressing critical issues before, during, and after they may arise to determine contingency/mitigation strategies (risk mitigation)

Monitoring and Controlling Project Phase

While the execution phase of a project is critical to fulfilling the deliverables identified in the contract, failing to adequately system test and prepare for end-user training could nullify all the hard work and efforts during this period.

It cannot be stressed enough how important it is to have a documented test plan, change management plan, and training plan that all fall under this project phase.

Test Plan Guidelines/Recommendations

Successful projects have detailed, structured test plans, ensuring all processes, procedures, data conversions, and configuration work are complete before end-user training. The timing of this testing period is also critical because the system should be "Go Live" ready when proceeding to end-user training.

The last thing a City wants to happen is to expose end users to a poorly tested system during their training and spend most of their first interaction fixing errors. These end users will lose faith in the new system, not see its benefit, and become frustrated that they do not know how to do their job with it.

To avoid this situation, a test plan must be documented and implemented before end-user training with enough time to fix issues identified during its execution.

A successful test plan includes:

- End-to-end testing of every core module
  - This testing should be scenario-based (how to initiate a report, route to a supervisor for approval, check for validation errors, and finally, lock the final report)
  - Staff conducting the testing should include all levels of the City, especially key staff performing the functions to receive their input.
  - After testing each core application, the next step is testing the integration between systems and interfaces. This integration testing should include all project team staff, key subject-matter experts, and possibly other staff that will train end users.
  - During this testing phase, key process changes should be identified and documented.
  - In addition to core module and integration testing, all reports and other procedures should be reviewed and tested during this time.

Change Management Plan

Throughout the project's execution phase, changes will most likely be identified to the scope, needed resources, project schedule, and potential costs. All these adjustment types should be managed and addressed through a formal, agreed-upon change control process overseen by the project manager.

The success metrics established during the planning phase will also be used to monitor the projects' health and progress. Project plan documents will be updated and maintained throughout the project's life cycle.

Training Plan

End-user Training takes place after successful testing. Cheat sheets and other procedural change documents should all be prepared and ready to be distributed during training. It is common to have limited vendor training ("Train the Trainer"), which would imply that the department will need to prepare for training the rest of the City's staff on their own. The Resource Plan for the project will need to reflect this. It is important to select trainers who understand the system's setup, ideally are part of the configuration choices made during implementation, can speak well, and are respected by their peers (Power Users). There is enough time between completing the test plan and proceeding to end-user training so that instructors can prepare the curriculum and materials for this training.

Go Live

If the administering department executes the other phases of the project well, then cutover should be a non-event and go smoothly. Issues will always come up at go live, but they can be greatly minimized by following these best practices.

A cutover plan identifies the vendor and City resources supporting users during the cutover. Training materials should be easily accessible on the City's intranet, and power users should be scheduled to assist with any questions or issues that may come up.

Project Closure

The final phase is Project Closure. On any given project, there are always lessons to be learned and processes identified that could be improved to benefit future initiatives.

This final project phase is an opportunity to compile lessons learned, conduct a final project analysis against metrics established early on, and archive project documentation and supporting materials for future reference.

By following these project management implementation best practices, your City will be more likely to achieve the results desired and have a successful cutover in a reasonable implementation time frame. In addition, end users will be more successful in adopting significant business practice changes, ultimately improving productivity, transparency, and customer service.

8. Enterprise Reporting Best Practices

Background

Enterprise software applications that support the critical business functions and operational processes of the City also store and retain the City's critical information and data.

It is important to follow best practices when establishing strategies to meet the City's reporting needs. Implementing these reporting strategies will require users to have access to the data and the tools to extract it into a meaningful format.

Reporting tools provide information in many formats, including, but not limited to:

- Traditional rows and columns (tabular)
- Pivot tables
- Graphic, e.g., line, bar, and pie, including dashboard presentation
- Overlay

Ideal reporting systems can also provide the results in an actionable format, including, but not limited to:

- Using analysis tools to apply filters and factors to view and better understand the information
- Using the data to determine options and apply decision criteria (what-if scenarios)
- Sharing and combining data with information from other departments, systems, or even external data sources

To maximize the usefulness of a City's software, the City must be able to extract the needed data from the system through reporting tools. Only then can the full value of an enterprise system be realized.

Findings and Observations

- Reporting is a core business function. During many workshop sessions, staff expressed the need to improve reporting and data sharing and learn how to produce their reports.
- Many staff do not have the training or knowledge to generate standard, ad-hoc, or custom reports.

Recommendations

- The City should conduct a complete inventory of all reports, including shadow system reports, such as those compiled in MS Excel or Access, for each functional area.

  - We have included a sample of a report tracking sheet (below) containing the types of information that should be captured. ***Note****: This is only an example. Headings and data fields can be added, changed, or deleted to best meet City needs.*

- Any new application systems under consideration should address current shadow systems or unmet reporting needs. By having the City's reporting needs identified before implementation, configuration considerations can be accounted for to ensure the City captures future business processes and reporting needs in the new system.
- The City should use all available reporting tool options. Potential options for meeting reporting needs are listed below and *in order of preference and priority*. These options often depend on the technology, database, database structure, and development tools the application vendor(s) applied when building their systems.

- ◆ **Dashboard(s)** – Many enterprise application software vendors provide dashboards. Dashboards provide a launching point for the platform. They can also display information that is of interest to the specific user's role. For example, the status of expenditures against budget or the number and types of work orders issued versus completed for a particular time are just a few examples of potential data to display. These results are often displayed graphically as context-sensitive content, so clicking on the graphic enables drilling down to the detailed information in the application. Users can pin frequently used reports on the Dashboard for quick access and execution.
- ◆ **Vendor Application Standard Reports** – Most vendors provide prewritten reports with the software application. These are reports that the software vendors have determined are most needed or requested by the application user community. These standard reports usually have additional criteria to select, e.g., applying a date range or specifying a particular value type. Some vendors have written these reports using their report-writing services, such as SSRS, which uses standard reports as a starting point for customization using the vendor's ad hoc reporting tools.
- ◆ **Ad Hoc Reports** – Ad hoc reporting tools allow for the customization of reports without needing a technical skillset. Many report-writing tools are intuitive enough for non-IT-oriented department staff to create customized reports independently. Familiarity with the application and data contained in the system is a prerequisite to using any ad hoc reporting tool. However, any mid- to high-volume application user who is also computer proficient usually has the system knowledge to use an ad hoc reporting tool. As noted earlier, more sophisticated reports may require the assistance of IT staff. Ad hoc reports are a powerful tool for the user community, allowing them to meet their basic reporting needs independently. Typical ad hoc reporting tools that are available include:

  - Application vendor proprietary tools
  - Vendor-incorporated SQL Server Reporting Services (SSRS)
  - Third-party reporting/BI tools (e.g., Crystal, Cognos, and Business Objects)
  - Other non-SQL, server database-specific reporting tools, e.g., Oracle reporting tools

- ◆ **Financial Analysis and Financial Statement Report-Writing Tools** – These reporting tools are a form of ad hoc reporting but include additional capabilities related to financial analysis and financial reporting needs of finance and accounting staff. A few common reporting tools for this need are listed below:

  - A reporting tool developed by the software application vendor for use with their particular application
  - Tools to produce financial reports, like ACFR builders and other tools to produce other GASB-related/required reports
  - Third-party financial reporting tools offered to work with the more common financial/accounting systems in the local government market space

- ◆ **Application Vendor Business Analytics and Key Performance Indicators (KPIs)** – Some application systems have tools for performance-based analytics and other performance measure-related reporting. These often accompany a dashboard with the characteristics described in the *Dashboard* option above. Many of these tools also provide more sophisticated capabilities for exporting pivot tables and other advanced capabilities in Excel. Some software vendors are beginning to offer these capabilities as an optional "bolt-on" to their application solutions.

- **User-Programmed/Coded Reporting** – These are reports built using internal IT staff and could also include hard-coded reports that a vendor may custom-build for the customer. Exploring standard and ad hoc reporting options before turning to this option is recommended. Use coded reporting when the business need is so sophisticated or complex that a coding method is the only way to accomplish the desired outcome. Examples of this type of report include:

  - SQL queries.
  - Other coded/programmed reports.

- **Application Vendor-Written Custom Applications** – Because of the vendors' detailed knowledge of their systems, they are often a good resource for hiring to write custom reports. It is often best to have several reports grouped, which will help keep costs more manageable as vendors will provide discounts for larger blocks of hours for these reporting services. It is also a good idea to request that the vendor build these reports using their report-writing tool, if possible, so responsibility for maintaining them can be assumed in the future, as needed, or used as a base to build variant (modified) reports.

- Maintaining a report inventory provides a means for documenting the responsible party(s) and roles of those responsible for reports (user, IT, or vendor). This is in line with "Application Management Best Practices." Identifying those responsible for report creation and development and maintaining the inventory list is important. We recommend that department staff members become engaged in producing reports. This should not solely be an IT function. Department operational staff are most familiar with their business processes and data. We recommend that department staff receive report writing training and gain the ability to develop reports within their functional area.

Report Name	Priority & Reporting Tool Used	Dept	IT	Vendor	Report Options

- Identifying the responsible party is a necessary part of the report inventory process. Each core application will have staff identified who perform certain roles, e.g., system admin, code table maintenance, and report writer. The table below is an example of a roles and responsibilities matrix. Some cities use this, or something similar, to identify the roles and responsibilities of department staff when implementing and maintaining their applications. Included among these roles is report writing for each functional area. These individuals responsible for generating reports should be identified for each functional area within the City.

Staff Roles and Responsibilities

PO = Process Owner(s)   IT = IT Responsibilities   ML = Module Lead

PU = Power User(s)   MS = Module Stakeholders

	General Ledger	Budgeting	Project Accounting	Purchasing	Bids Management	Contracts Management	Inventory	Accounts Payable	Accounts Receivable	Cashiering
PO =										
PU =										
IT =										
ML =										
MS =										

- After completing the existing report inventories and identifying City reporting roles and responsibilities as recommended above, an assessment and gap analysis should be conducted to include:
    - A review of existing reports to determine how well they meet needs, as well as if any modifications are required to meet needs better or provide more value
    - A detailed list of necessary reports for all departments and divisions. These may include identifying any formatting requirements or Excel export needs and reporting tool options to be applied (per the definitions above). In addition, City-wide cross-application reporting needs should be identified, which may require additional processes to combine data from multiple sources using multiple reporting tools and options.
    - After identifying the department's reporting needs, conduct a workshop to prioritize these reports with the participation of all staffing levels within the City. This would include line and field staff, supervisors, management, and executive leadership to capture all reporting needs across the City.
    - Define priorities using a High, Medium, and Low scale. Plan for High-priority reports in the first third of the implementation period. Complete Medium-priority reports in the middle third of the implementation period. Lastly, complete low-priority reports in the final third of the implementation period. Use cost-benefit and impact on operations as factors in these prioritizations.

9. IT Project Planning and Implementation Best Practices

Background

Following best practices for all significant implementation projects is recommended. The complexity and risk determine the actual level of needed due diligence. The following is an outline of IT Project Planning and Implementation Best Practices:

- **Determine Scope of Work** – Work with all stakeholders to determine what needs to be accomplished.
- **Design** – The design effort may become a separate project for larger, more complex projects. For smaller projects, integrate design into budgeting.
- **Specifications** – Include appropriate vendor-agnostic specifications with procurement requests, reducing ambiguity and creating better vendor comparisons.
- **Collaborate**—Include input from each stakeholder group to document all requirements in specifications. This allows all stakeholders to buy into the final solution. The Technology Steering Committee should review this as part of its roles and responsibilities.
- **Develop Budget** – Project budgets include hardware, software, consulting, and subject-matter expert (SME) costs. Estimate consulting costs by outlining the work steps and the required hours.
- **Gain Sign-Off—Once the budget is complete, review the scope of work and costs with the project sponsor and gain their approval before continuing, including consent from** the Technology Steering Committee.
- **Create Project Plan—Based on all stakeholders' needs, delivery dates, and** necessary tasks, develop a project plan and estimated implementation date.
- **Outline Communication Plan** – Outline the process for communicating implementation dates, improvements, and training to appropriate staff members.
- **Document Other Plans** – Other plans may include training, testing, contingency, and back-out. Develop these plans on an as-needed basis.
- **Configure, Implement, and Train** – Utilize planning methodologies and technical expertise, configure the necessary system components, and implement the solution with the least possible impact on staff and productivity. The Technology Steering Committee should receive status reports on the progress of the implementation, including whether the project is on time and within budget, user needs are being met, and vendors are following through with their contractual obligations.
- **Post-Implementation Review** – Complete a post-implementation review with successes, lessons learned, and any unresolved issues requiring vendor assistance. Report the results of the Technology Steering Committee's review.
- **Post-Implementation Support** – All implementations that affect multiple users require on-site, post-implementation support to eliminate remote response times.
- **Documentation** – Develop any necessary procedures and update documentation as part of the project.
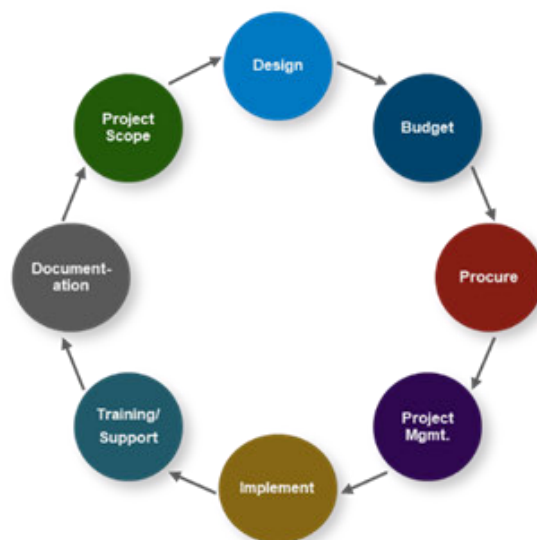
Recommendations

- Develop a project portfolio methodology for all IT and software-related projects.
- Follow planning and implementation best practices.
- Provide project management training for IT staff involved in major systems upgrades.
- Review all major active and upcoming projects during Technology Steering Committee meetings.
- Obtain services of third-party project managers and/or subject-matter experts to supplement internal resources as appropriate and/or cost-beneficial.

Benefits

- Prioritization of projects
- Reduced periods between transitions
- Increased information-sharing capabilities
- Enhanced communication and consensus
- Increased anticipation and management of technology upgrades
- Improved analysis and planning
- Increased departmental collaboration
- Measurement and tracking of results and outcomes

10. Cloud Computing

Background

Cloud computing can be described as IT services or equipment that are available through the Internet. This can range from having a server hosted by a third party, accessing information from a portable device, processing requests from the field, subscribing to an Internet-based software solution (often referred to as "software as a service" or SaaS), and more. The benefits of cloud computing allow individuals to collaborate using an Internet-based central toolset with the ability to access information regardless of location.

Cloud computing is one of the most prominent discussions among current trends in IT. Significant benefits can be achieved, including security, disaster recovery, and cost savings. However, cloud computing options for many systems may not be the most cost-effective or secure approach.

Findings and Observations

- The organization uses primarily on-site software and servers.
  - The City is implementing off-site backups and off-site disaster recovery planning.
  - The City uses cloud-based Office 365 for electronic mail.
- The use of cloud-based systems can increase IT operational costs while decreasing capital project costs.

Recommendations

- The City should continue to consider cloud computing options for future projects.
- Most vendors are moving to cloud-based subscription services exclusively.
  - Cloud systems require IT administration in ways that are similar to on-premise systems.
- Software as a Service application can reduce ongoing support requirements for upgrades and system maintenance.

11. COBIT (Control Objectives for Information and Related Technologies)

Background

Control Objectives for Information and Related Technology, also known as COBIT, helps to ensure alignment of IT with the environment through the adoption of incentives, metrics, and oversight. IT governance is the responsibility of the City Manager's Office and IT leadership. It consists of the leadership and organizational structures and processes that ensure the enterprise's IT sustains and extends the organization's strategies and objectives. For IT to be successful in delivering services, management should put an internal control system or framework in place. The COBIT control framework contributes to these needs by:

- Linking to the organization's requirements
- Organizing IT activities into a generally accepted process model
- Identifying the major IT resources to be leveraged
- Defining the management control objectives to be considered
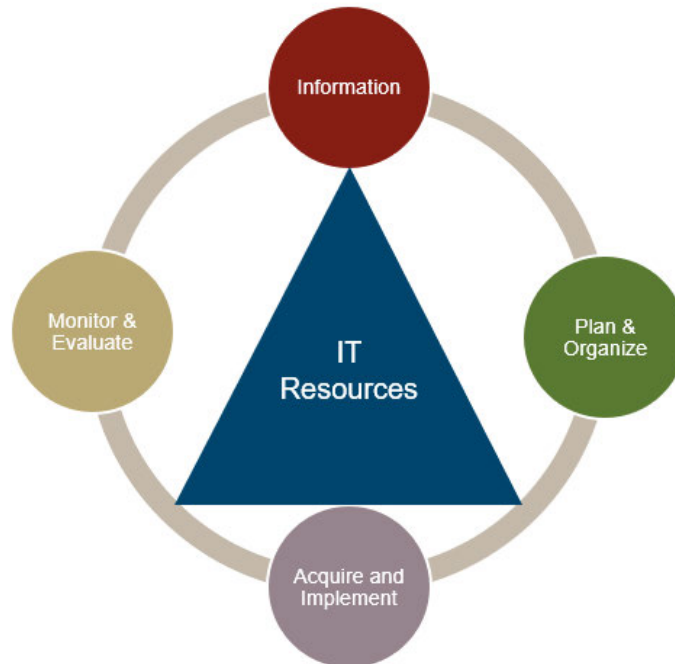
The orientation of COBIT consists of linking organizational goals to IT goals, providing metrics and maturity models to measure their achievement, and identifying the associated responsibilities of organization and IT process owners. The benefits of implementing COBIT as a governance framework over IT include:

- Better alignment based on an organizational focus
- A view of what IT does that is understandable by management
- Clear ownership and responsibilities based on process orientation
- General acceptability with third parties and regulators
- Shared understanding among all stakeholders based on a common language

COBIT is an IT governance framework and supporting toolset that allows managers to bridge the gap between control requirements, technical issues, and business risks. COBIT enables clear policy development and best practices for IT control throughout organizations. COBIT emphasizes regulatory compliance, helps organizations to increase the value attained from IT, enables alignment, and simplifies implementation[1]. ClientFirst utilizes the concepts from COBIT throughout its IT Planning process.

Benefits

- Reduced unplanned work
- Increased number of successful changes
- Improved operations management
- Secure sharing of infrastructure and asset information
- Increased anticipation and management of technology upgrades
- Reduced total cost of ownership

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[1] www.isaca.org – COBIT, 2009

12. IT Project and Services Portfolio

Background

An *IT Support Services Portfolio* is a complete list of IT projects and services provided to City staff and the public. The support services portfolio outlines IT responsibilities for each service and any service-level agreement for those services (e.g., 24/7 support required, disaster recovery priorities, user-access permissions, report writing for certain software modules, server uptime requirements, etc.) Application support is only one aspect of the complete portfolio. Other IT services include projects, Service Desk, data network, telephone systems, cybersecurity, etc.

Recommendations

- Create an IT Projects and Services portfolio to effectively communicate and set expectations for all users regarding what support services IT provides and communicate service-level standards.
- Maintain a five-year project portfolio and budget.
    - Create a separate "small projects" portfolio for non-TMP projects requiring less than forty (40) or eighty (80) hours of IT work.
- IT Steering Committee (see *Governance* initiative) should track and review the portfolio and receive regular updates from IT staff and departments on the status of projects.

13. ITIL (Information Technology Infrastructure Library)

Background

This lifecycle approach to IT organization results in strategies that align service management with business strategy, structure IT services to meet the real business environment, and build a support model for the day-to-day procedures needed to support business objectives. Through an understanding of the Information Technology Infrastructure Library (ITIL) and how it relates to IT operational environments, ClientFirst can identify the strategy and resources needed to accomplish the business objectives based on the current structure of the IT Department.

The service lifecycle
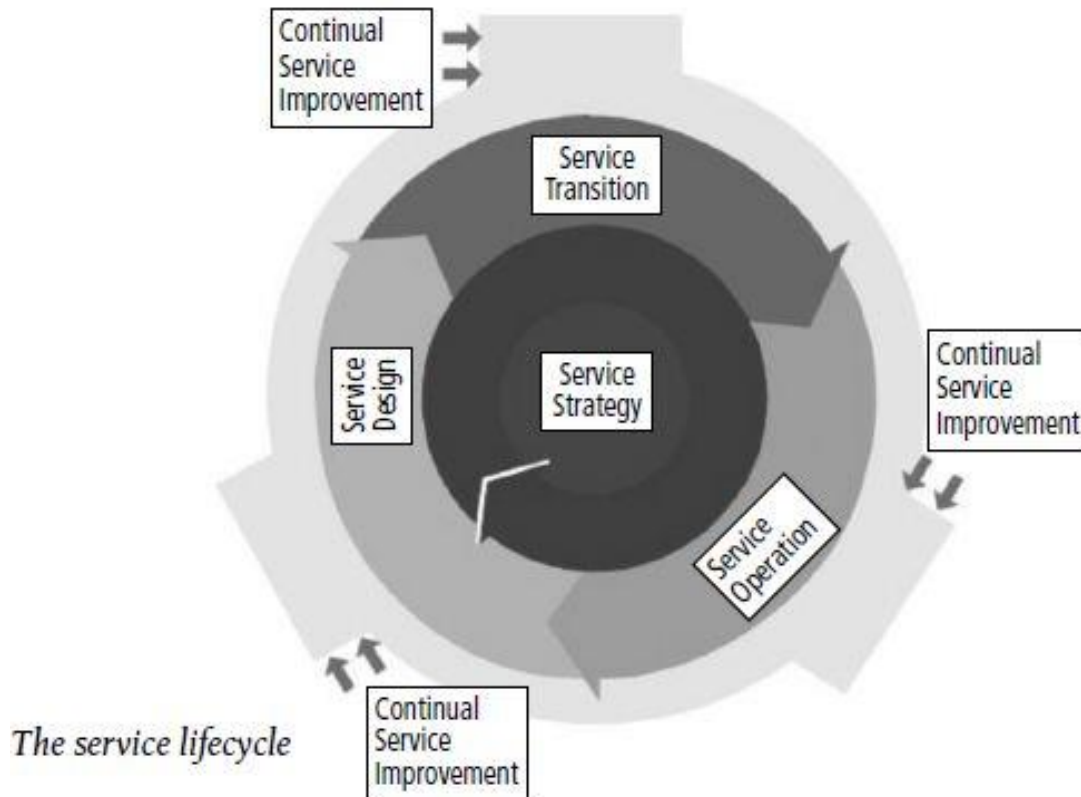
ITIL provides a common framework understood by suppliers, clients, vendors, and businesses through a set of global standards. ClientFirst utilizes these concepts for service delivery throughout its IT planning process to provide a sound approach to support IT initiatives[2]. ITIL is a framework intended to assist organizations with the alignment of IT operations with business objectives through an IT service strategy of continuous realignment. ITIL is considered a best-practice approach to IT service delivery that can be molded to fit all organizational structures. *ITIL v3* groups IT service into four (4) categories: Strategy, Design, Transition, and Operation. The Manassas Park IT manager maintains the ITIL foundational certification, which meets our recommendation.

Recommendations

Additional ITIL training would benefit senior technology staff.

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[2] www.itil-officialsite.com – ITIL, 2009

Benefits

- Reduced unplanned work
- Increased number of successful changes
- Improved operations management
- Secure sharing of infrastructure and asset information
- Increased anticipation and management of technology upgrades
- Reduced recovery times
- Reduced total cost of ownership
- Improved alignment of technology with business requirements and needs

14. Sustainability Planning

Background

Sustainability planning is the process of mapping the acquisition, maintenance, upgrade, improvements, training, and eventual replacement of major application systems over a long-term period (e.g., ten years). Sustainability planning helps in four significant ways:

- Identifies all technology costs and provides a basis for considering cost recovery mechanisms
- Reduces the significant periodic spikes in capital expenditures for large software solutions
- Schedules upgrades and replacements of departmental business application systems in a convenient and timely manner
- Provides for ongoing user training

Sustainability planning includes computer replacement planning to create a holistic view of necessary technology expenditures over the long run. Sustainability planning can be used to develop a minimum annual set-aside.

The growing practice of sustainability planning provides a more practical and realistic way to determine and plan for the ongoing operational needs of all departments.

Because software applications are the primary technology tools of business departments, the City can benefit from the implementation of sustainability planning versus the more limited practice of replacement planning.

Return-on-Investment (ROI) Considerations

A study conducted by Express Metrix for quantifying ROI as it relates to IT and software asset management describes the following ROI benefits of replacement planning within an organization:[3]

- Reduced cost of ownership related to IT assets by determining licenses for which an organization is overspending and reducing Service Desk costs
- Managed technology change by developing software procurement models that map current and future needs with technology migration and upgrade planning
- Minimized security risks by preventing unauthorized use, enforcing desktop standards, and identifying PCs with unlicensed applications

In a study conducted by the Aberdeen Group, the following are the cost savings that occurred after incorporating a sustainability plan:[4]

- System automations reduced paper costs by up to 11%.
- Efficiencies reduced facility costs by up to 10%.
- Waste and disposal costs were reduced by up to 8%.
- Transportation and logistics costs were reduced by up to 5%.

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3 Express Metrix.

4 Aberdeen Group, 2009., 2009.

Findings and Observations

- The City has increased technology spending over the last few years. The increase can be attributed to:

  - IT upgrades to improve application availability
  - Projects to reduce risk
  - Increased cybersecurity risk and associated cybersecurity tools.

- Most key application systems are currently located on-premises.

  - Cloud-based applications are becoming more and more prevalent.

- The vendor for the ERP system has announced that the product will be phased out and will no longer be maintained at some future date.
- Based on survey and assessment interview results, the City has a strong desire to utilize technology better to improve efficiency, increase resident services, and enhance public safety operations.

Recommendations

- Develop a sustainability plan for major IT and department software applications.

  - IT would benefit from an Internal Service Fund (ISF) or similar cost recovery mechanism for enterprise applications, IT infrastructure, and departmental systems costs.
  - Consider subscription-based software for other software, including Adobe, AutoCAD, etc.
  - Larger core applications (e.g., Financials, Land Management, Work Order Management, Recreation, etc.) benefit most from sustainability planning.

    - These systems should be replaced every 10-15 years if procured and managed properly.
    - Sustainability planning can identify costs associated with periodic application upgrades and associated training.

- Investigate and track annual maintenance, support, and upgrade costs for all major systems to determine if the cost structure is sustainable. If the cost structure is not sustainable, consider alternatives and priorities over the next five-year period.

Benefits

- Increased long-term investment through scalability
- Reduced maintenance expenses
- Increased trust in systems
- Reduced risk and liability
- Reduced total cost of ownership
- Avoidance of unforeseen upgrades
- Informed purchase timing
- Software lifecycle evaluation

15. Training Room

Background

Implementing any new/upgraded software application requires significant collaboration and testing efforts on the part of the project team members and end users. As part of the overall best practice approach to this effort, a dedicated, fully configured, and accessible training room facility is recommended. Having a dedicated training room during the implementation period provides several benefits. These include:

- A neutral place, outside of the normal workplace without distractions, to focus on project tasks
- A fully configured testing environment for project team members to access at any time
- A place where focus groups can gather to obtain further system knowledge
- A reduction of ongoing IT resources needed to tear down and reinstall equipment for each project activity required
- Encouraged collaboration and teamwork by providing the facilities needed to test, train, and share project progress throughout the organization

Findings and Observations

- The City will benefit from a full-time training room with dedicated PCs to complete the projects outlined in this plan.

   - An optimally configured training room would include six to eight PCs.

Recommendations

- We recommend the establishment and continued maintenance of a training room for:

   - Testing new applications that are being implemented
   - Implementing and testing updates to existing applications, as well as supporting application management best practices
   - Lab activities, including testing implementation of new application features or reconfiguration of existing application setup
   - Lab activities for resolution environment in instances where staff members are experiencing extensive computer difficulties
   - Use by staff (users) to improve upon existing application skill sets and competencies
   - Maintaining an existing and new applications inventory and training room PC images can be a challenge

      - Consider using applications push or the IS imaging solution to push applications to training PCs easily. Time spent automating maintenance of training room PCs will pay large benefits in reduced maintenance in the long run.

- Identify approximately 500 square feet of space for use as a training room
- Eight to twelve computers or workstations should be maintained in a room that provides adequate individual space for each workstation
- A permanent training room will be needed if the organization implements ongoing user training, refresher training, and other training needs
- Due to the expected volume of upcoming applications training, two or three training rooms may be needed at various times

   Consider refreshing training rooms as a part of executing the *Computer Equipment Replacement Planning* initiative

The Departmental Applications and Systems category includes technology initiatives that are primarily department business applications-related and were identified during the assessment process. Many of these initiatives and recommendations can significantly impact overall productivity, enhanced communications and information sharing, improved constituent service, improved transparency, and, in some cases, cost savings.

16. Enterprise Resource Planning (ERP) Improvements
17. Budget Software Improvements
18. Expense Reimbursement Software
19. Time and Attendance System Improvements
20. Human Resources System Improvements
21. Trakstar
22. Risk Management Software
23. Scholarship Management Software
24. Electronic Content Management System (ECMS) Improvement
25. Agenda Management Improvements
26. Public Safety Scheduling Software
27. Law Enforcement Training and Standards (LETS) Software
28. Electronic Ticketing and Citation System
29. Land Management System Improvements
30. Enterprise Asset Management (EAM) Replacement
31. Recreation System Improvements
32. Pool Management and Recreational Staff Scheduling
33. Volunteer Management System
34. Microsoft Office 365 and Teams
35. Digital Signatures
36. Dashboard Preparation and Automation
37. Intranet

Departmental Applications and Systems

16. Enterprise Resource Planning (ERP) Improvements

Background

Enterprise resource planning (ERP) is an organization-wide software solution that allows integration among various departments and their respective functions. The result is a centralized communication, data storage, and operations management system. Replacement or improvements to ERP solutions bring about processes from which multiple departments can benefit. Common organization-related ERP application modules include Accounting, Financial Reporting, Payroll, and Human Resources.

NOTE: See "Benefits of Modern ERP Software" below for more detailed functionality commonly found in leading ERP solutions.

Enterprise Application System Overview
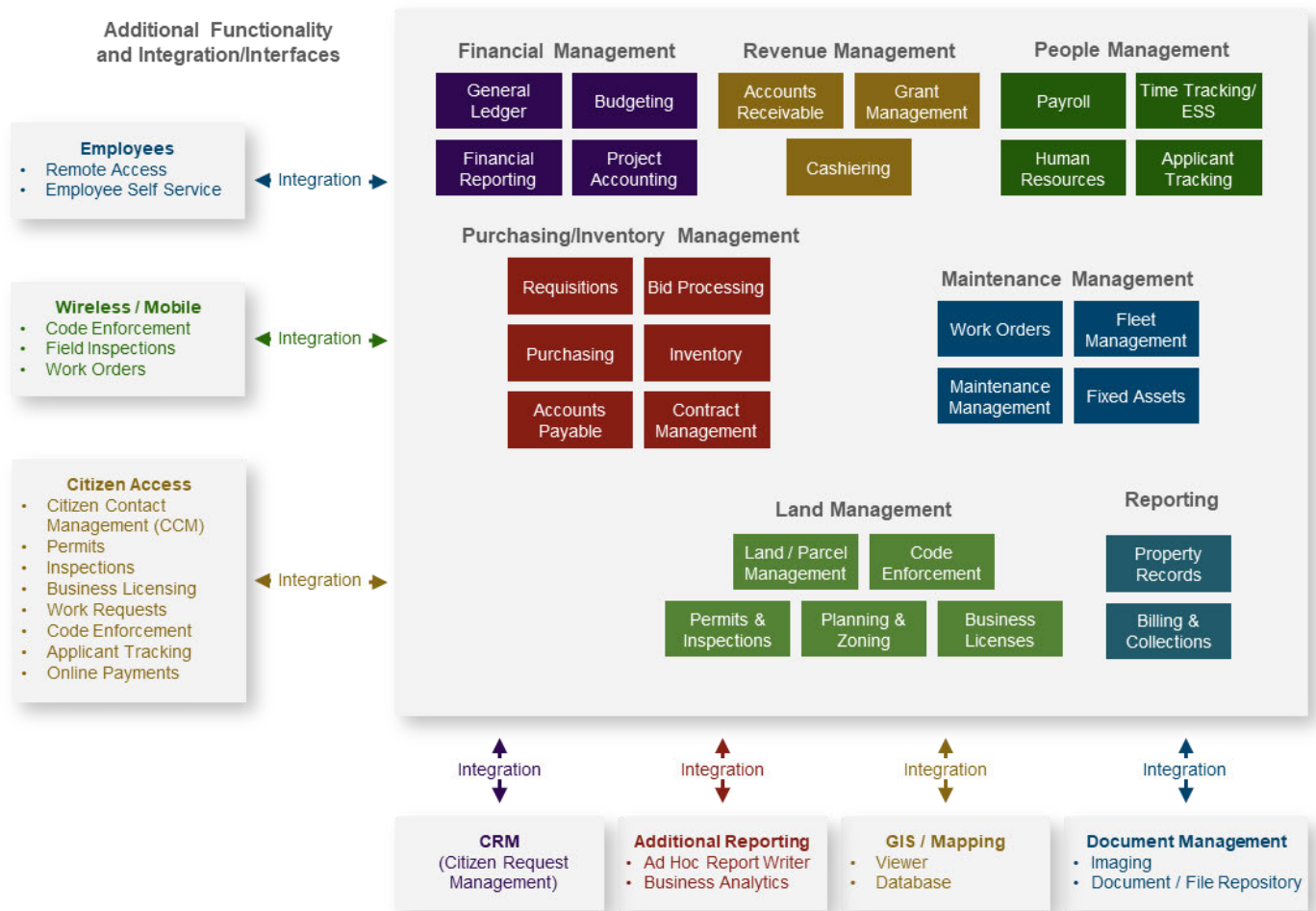
Findings and Observations

- The City staff has been using the following ▮▮▮▮▮▮▮▮▮▮ modules as its ERP system since 2020:
  - ◆ Financial Management
  - ◆ Human Resources

- ◆ Payroll
  - ■ █████
  - ■ ████████
- █████████ is used by many mid-sized local government agencies throughout the country.
- Key functionality was never implemented as needed.
- ██ █████
- ████ has typically offered to replace those products with the equivalent Enterprise ERP ███████ products; however, the City will be responsible for the cost of implementing those solutions.
- The City is not utilizing ██████████ capabilities to its fullest potential.
- Many departments expressed frustration with the current ERP system, including:
  - ◆ continued manual processes
  - ◆ lack of access
  - ◆ lack of functionality
  - ◆ lack of training on the system.

Staff Feedback

City Manager's Office

- Need bid opening software for CIP projects to enable online submission

Finance

- Staff log into the Bank and download each user statement to Excel. Statements are then emailed to users. Accounts are coded, backup docs are attached, and they are sent back to Finance. Information is then imported into ██████████.
- The City uses US Bank for CalCards
- PAFs need to be online
- Can't replicate needed templates in ████ HR module
- Reporting is not very good
- ██████████ Police scheduling is not working well
- Using FoxIt for these rather than ██████████
- NW didn't have the flexibility to forward workflow
- HR couldn't apply the workflow that it wanted

Community Development

- Community Development is only using ██████████ for invoice and work order workflow

Building Inspection

- Staff don't have access to needed information inside ██████████

Facilities Maintenance

- Need a better understanding of the reports available to the departments

Recreation & Community Services

- Personnel Action Requests are manually processed

Engineering

- Expense reimbursements are processed manually
- Personnel Action Requests are handled manually
- Employee performance evaluations are a manual process using PDF files
- Need the ability for Project Managers to, at any time, create a report on the status of the current budget for any active CIP Project or account – including a detailed breakdown of encumbrances to date and actual expenses to date. Similar to how you can, at any time, see the current balance of your checking account and a detailed list of all previous transactions.

Recommendations

- The City will eventually need to replace the existing ERP solution, as it has been sunsetted by the vendor.
- In the short term, explore ▮▮▮▮▮▮ capabilities for CalCard processing.
- Consider developing a system improvement plan and project statement of work (SOW) that captures all of the City's requirements before going to market.
    - ◆ We recommend the City conduct the following "Business Process Reviews Best Practices" to identify and inventory all functional gaps and system needs.
        - Conduct a needs assessment and process review for each area.
            - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies.
        - This process should also include:
            - Inventorying all reporting requirements
            - Identifying all integration/interface requirements with other applications
        - Identify any requirements that the vendor is not capable of providing that can then be dealt with by other means, such as more efficient workarounds, third-party applications, modifications, and changes in organizational processes and procedures,
- Develop a system improvement plan to close these gaps, including vendor-developed end-user training plans.
- Follow the "Applications Implementation Project Management Best Practices" guidelines to increase the probability of implementation success.
- Alternatively, the City could assess the ERP solution's short—and long-term needs as part of the ERP replacement project.
- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall, long-term system for the City's needs.
- The best practices approach to implementing new or upgraded enterprise systems should involve end users from multiple departments in the setup and configuration of the system, enabling all necessary business processes to be identified and implemented.
- Given the complexity of implementing a new enterprise system, the City should consider using a third-party subject-matter expert with extensive experience with ERP Systems procurement and implementation in the local government market. Following best practices will reduce risk and ensure a successful outcome.

Benefits of Modern ERP Software

An Enterprise Resource Planning (ERP) System automates and integrates many core organization-wide functions into a single technology platform while automating manual processes and providing a central location of information and reporting. Each suite is composed of individual modules that process specific business functions. Suites can include:

- Finance and Accounting
- People Management

Each suite and its modules enable an enterprise-wide integrated communication, storage, and operations system. Configuring and implementing a system using industry best practices is a critical foundational component to digitally transforming an organization and can achieve significant operating efficiencies and return on investment (ROI).

An enterprise system allows collaboration and information sharing between divisions, departments, and citizens to provide transparent, efficient government operations. The benefits of a well-researched, well-implemented enterprise system rooted in the assessment and streamlining of City processes are numerous and include:

- Ability to analyze and streamline inter-departmental and department processes
- Built-in integrations between Land, Work, Financial, and People Management application suites
- Effective mobile solutions
- Newer information technology platforms (processing, capacity advantages)
- Real-time notifications/queues
- Task tracking
- Real-time access to information
- Elimination of duplicate data entry
- Improved data integrity and capacity for data-driven decision-making
- Centralized location and customer account maintenance
- Reliable information
- Workflow capabilities
- Centralized cash receipt capabilities
- Efficient revenue collection
- Reduced operating costs
- Improved department and inter-departmental communication
- Foundation for continuous future improvement
- Potential reduction in annual maintenance and support fees
- An improved online experience for citizens, providing them with a valuable and convenient experience

Financial Management

A financial management suite is a collection of software in an enterprise system that encompasses the financial and accounting tasks and processes performed to ensure all organization-wide activity is properly accounted for and accurately reported to local, state, and federal agencies. Benefits of a financial management suite include:

- Centralized accounting data
- Quick generation of financial reports
- More efficient budgeting processes
- Real-time access to available budgets and funding
- Better spending controls for departments and projects
- Management of grants and funding sources
- Real-time inquiries into capital improvement project progress
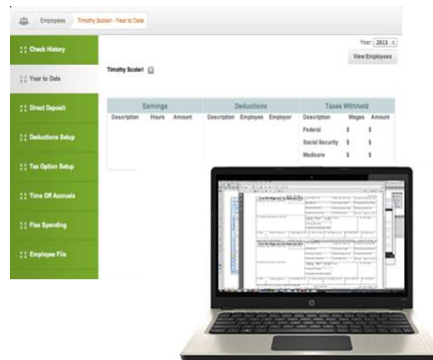
People Management

A people management suite is a collection of software that manages the organization's workforce and provides automation of tasks for human resources, payroll, timekeeping, and applicant tracking functions. *Employee self-service* (see below) is also available to allow employees flexibility in retrieving information conveniently. Benefits of a people management suite include:

- Paperless personnel forms
- One-time data entry
- Tracking of employee files
- Incorporation of employee self-service (ESS)
- Integration between timekeeping, payroll, human resources, and financial management
- Quick, reliable reporting to federal and state agencies
- Improved employee satisfaction
- Automated time entry approvals and payroll calculations
- Minimal steps between processing payroll and issuing direct deposits and checks

Employee Self-Service

Employee self-service (ESS) allows employees to provide, change, and retrieve their personal information through an online employee portal, reducing the manual interaction required with the Human Resources Department. ESS offers an online option for employees to access and manage the following information for themselves:

- Address changes
- Tax allowance changes
- Open enrollment benefits
- Dependent changes
- Leave/vacation accrual balances
- Electronic paystub copies
- Year-end W-2s
- Populating and retrieving timesheets
- Time off requests
- Many other forms and applications
- Reporting

The number one pain point City staff confront is the challenge of quickly and accurately locating information for reporting. The use of disjointed applications that reside in siloed information systems or individual desktop computers exacerbates this problem. In such an environment, staff spend extensive time searching and consolidating information for reporting. Enterprise systems allow for the rapid retrieval of information from a single source. They have numerous standard reports that are easily accessible and shared. Users can also create their reports. The time efficiencies allow staff to devote time to developing business analytics that allow the City to

make data-informed and evidence-centered decisions. The benefits of improved reporting include:

- Aggregated data across divisions, departments, and the organization as a whole
- Improved data accuracy and reduced human error
- Intuitive report creation capabilities
- Board-ready reports
- Sharing of created reports
- Elimination of labor-intensive report creation
- Business Analytics
- Improved data-driven decision-making

Individual User Dashboards

A user dashboard is an information management tool that visually tracks, analyzes, and displays key performance indicators (KPI), metrics, and data points to monitor a business area, department, or specific process. They are customizable to meet the specific needs of a user, department, or organization. Invisible to end-users and running in the background, a dashboard connects files, attachments, services, and APIs. The information can be presented as tables, line charts, bar charts, and gauges. It is the most efficient and accurate way to track, present, and summarize multiple data sources. Agencies can monitor and analyze information that is of tangible value. Benefits of dashboards include:

- Quick links for immediate notifications and access to required tasks and approvals
- Easy modification of dashboards for each user's preference
- Automated generation of dashboard information
- Transformation of data into visual information
- Easy-to-understand graphics
- Real-time analysis
- Drill-down access to activity detail

17. Budget Software Improvements

Background

Financial planning and budgeting software enable the automation of many budgeting processes. It allows for the checking of transactions against budgets, managing the multi-month budget creation process online, running statistical data, linking dollars to results in real time, and managing both existing and projected general, payroll, and capital improvement budgets. Modern budgeting software allows for decentralized budget entry, efficient management of the schedule within the budget cycle, and automated workflow from creating to the approval lifecycle. Some systems can create a budget book or document.

Modern systems are commonly a part of a larger enterprise financial system. However, there are stand-alone systems that can integrate with core enterprise financial systems. They both share some of these functionalities:

- Build reports and templates from the prior year or average of years
- Create an unlimited number of budget projections for up to ten years in advance
- Work in summary or detail views
- Define approval processes
- Use position and budget control to forecast salary and benefit costs and simulate changes to positions with what-if scenarios
- View dollars available after considering salary and benefit commitments through payroll encumbrances
- Budget amendments/transfers
- Decentralized budget request entry
- Automated workflow and approval
- User-defined budget scenario analysis
- Dashboarding for analysis and tracking
- Robust reporting

Some sample stand-alone vendors in the marketplace may include:

- Questica
- ClearGov
- Workiva
- Spendesk
- Anaplan
- OpenGov

Multi-Year Budgeting

Finding and Observations

- All budget book works are currently done on paper or in Excel.
- The City is currently implementing ClearGov for budget book creation. The City is still exploring how/if ClearGov can integrate with █████████.
    - If possible, the City wants to use ClearGov exclusively for the budget creation process.

Recommendations

- Follow the guidelines in the "Software Needs Assessment Best Practices" initiative to fully understand the City's needs as it begins implementation of ClearGov.
    - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies. This process should also include:
        - Inventorying all reporting requirements Identifying all integration/interface requirements with █████████ and other applicable systems.
        - Identifying any data conversion needs
    - Follow the guidelines in the "IT Project Planning and Implementation Project Management Best Practices" initiative to increase the probability of successful implementation.
- Perform a post-implementation assessment to determine the remaining gaps.

Benefits

- Efficient maintenance of the budget
- Time savings due to automating account updates
- Fewer errors
- Improved transparency
- Efficient reporting

18. Expense Reimbursement Software

Background

Employee expense management is a process for employees to request reimbursement for non-payroll-related expenses. Current generation ERP systems and commercial off-the-shelf (COTS) products simplify that process by automating the reimbursement lifecycle. Submitting for reconciliation and payment can be done without paper, reducing manual errors and freeing the user from the hassle of storing paper receipts. Employees can upload trip details using their mobile device cameras, with mobile apps, or by attaching a copy of an image. Agencies can define limits and spending policies. Users can easily generate reports and analyze them within the software.
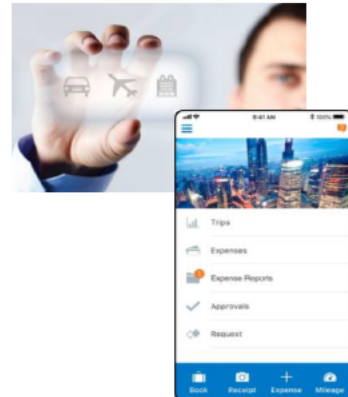
A typical Expense Management system or module can perform the following processes:

- Allow for employee-initiated expenditure reimbursement submittal for all non-payroll-related expenses
- Route travel planning and pre-trip approval
- Capture and attachment of documents
- Issue reimbursement or payment

Findings and Observations

- Travel and expense reimbursements are managed using an Excel form and attaching supporting documentation to an email.
  - These paper travel packets are then scanned into ▮▮▮▮▮ Accounts Payable workflow for payment to the employee.
  - Travel advances use the same process.

Recommendations

- Many modern ERP systems include this type of functionality. Should the City decide to purchase new ERP software, we recommend including business requirements for this functionality in the overall feature/functions.
- Alternatively, there are third-party expense management software solutions that may be able to integrate into the ERP solution.
- Follow the guidelines in the "Software Needs Assessment Best Practices" initiative to determine detailed feature/function requirements for an Expense Reimbursement system.
  - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies
  - This process should also include:
    - Inventorying all reporting requirements
    - Identifying all integration/interface requirements with other applications, such as accounts payable
- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall, long-term system for the City.
- Follow the guidelines in the "IT Project Planning and Implementation Best Practices" initiative.

19. Time and Attendance System Improvements

Background

The tracking, recording, and storing of employee time and attendance information is a significant undertaking. A manual system with repeated entry and review steps often leads to inaccurate reporting, payroll discrepancies, and lost data. Automated time management systems can provide:

- Single-occurrence data entry, with integration to time clock equipment, as needed
- Standardized employment rules and implementation
- Centralized database for electronic review of records
- Consistent enforcement of vacation and sick policies, FLSA requirements, and union rules
- Web- and server-based options
- Integration with other functions, such as accounting and/or payroll
- Automated calculations and accruals based on user parameters
- Such systems:
  - Reduce duplicate efforts, thereby saving valuable time and resources
  - Decrease inaccuracies and human error
  - Improve management of vacations, sick leave, and other absences

Findings and Observations

- The City is using ▮▮▮▮▮▮▮▮ for this function citywide, except for some part-time and temporary employees.
- Some staff would like time clocks.

Recommendations

- It is recommended that the City conduct a comprehensive post-implementation review to determine any remaining gaps and determine a plan to mitigate them.

Return-on-Investment (ROI) Consideration

- In a software selection study conducted by Nucleus Research, an organization that transitioned to an automated time-entry system saw a return on investment within six months and an overall return of 225% of its initial investment.

Benefits

- Consistent and standardized organization-wide timesheet system
- Reduced manual processes
- Increased processing volume
- Reduced data entry errors
- Reduced payroll processing time (from improved processes, policies, and practices)
- Single automated interface to ERP system

20. Human Resources System Improvements

Background

A human resources information system (HRIS) contains numerous Human Resources-related functions within a single solution while also providing accurate and secure access to employee information. An HRIS typically includes, but is not necessarily limited to, the following capabilities:

- Employee Internal/External Training
- Professional Development
- Certifications and Licenses
- ACA Management and Reporting
- EEO Reporting
- OSHA Reporting
- HIPAA Reporting
- Insurance and COBRA Reporting
- Emergency Medical Information
- Workers' Compensation
- FMLA Benefit Payments
- Benefits Administration
- Seniority Tracking
- Retiree Tracking
- Terminations

- Employee Grievance Tracking
- Position Control
- Applicant Tracking
- Organizational Chart Generation
- Wage/Promotion/Disciplinary History
- Performance Evaluations
- Leave Requests
- Compensation Reporting
- "What If" Scenarios
- Labor Negotiation Tools
- Merit/Step Increases
- Tuition Reimbursement
- Travel Management
- Employee Surveys
- Beneficiary Information

HRIS solutions also integrate with payroll processing and employee self-service (ESS) portals, enabling employees to retrieve their information in real time, 24/7.

Findings and Observations

- The City is using ███████████████████████ HR module for human resources management. The HR system went live in 2021.
- Staff report that it was not fully implemented, and key functionality processes are handled outside of the system in Excel or third-party software.
- ████████████████████████████████████ ████████████████████████
- There are many manual processes and third-party software solutions related to human resources in use.

Staff Feedback

Human Resources

- Bilingual pay requests are manually tracked and processed
- Full and Part-Time employees are tracked manually in Excel
- Benefits and open enrollment are tracked manually
- PAR tracking is currently done through hard copies in the employee's personnel file rather than electronically in ██████████.
- Leave reports are manual. ██████████ does not provide all the employees' leave balances in one report. Staff must do multiple reports and combine the data.

- Temporary employee hours reports are manual. The reports are created and sent to each department.
- Staff would like to get Personnel Action Requests out of Foxit.
- Staff want tools for benefits administration, reporting and analytics for recruitment and retention, new hire orientation forms, and applicant tracking.
- Departments weren't trained on the ▮▮▮▮▮▮ HR Module.
- Not all historical employee data is in the system.
- No training has been provided for the new HR staff since implementation
- Using Monday.com for position control
- ▮▮▮▮▮▮ went live in 2021
- Staff would like to use cost projections in ▮▮▮▮▮▮.
- Recruitment Workplan—This should be part of the recruitment solutions. CalOps is currently used but doesn't have this functionality. It is run by another county and is very limited.
- Use a spreadsheet to enter all employees (FT and Temporary). Want to be able to pull a report from NW.
- Benefits Tracking - Open enrollment in October. Would like to automate notifications to employees about deadlines.
- CalPERS does medical benefit management.
- USI handles all other benefits. There is an employer portal for managing the plans. Betty also handles all employee changes.
- Tried to use ▮▮▮▮ for Open Enrollment, but it was rushed, so opted not to use ▮▮▮▮
- Open enrollment is managed through an Excel spreadsheet and a PDF form
- REC - Explore ▮▮▮▮ Open Enrollment functionality. Need to start earlier in the year to accomplish the implementation
- ACA is not being tracked. A third party does the tracking

Recommendations

- The City should perform a gap analysis of the ▮▮▮▮▮▮ HR functionality and determine what manual processes and third-party solutions can be eliminated.
- Work with the vendor to develop a System Improvement Plan and project statement of work (SOW) that captures all of the City's requirements. This plan would ultimately result in obtaining a quote or contract amendment with ▮▮▮▮▮▮ to implement the solution according to the City's needs.

  - It is recommended that the City follow the "Business Process Reviews Best Practices" initiative to identify and inventory all functional gaps and system needs.

    - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies.
    - This process should also include:

      - Inventorying all reporting requirements
      - Identifying all integration/interface requirements
      - Identifying any data conversion needs

    - Identify any requirements that the vendor cannot provide that can then be dealt with by other means, such as more efficient workarounds, third-party applications, modifications, and changes in organizational processes and procedures.

  - Develop a System Improvement Plan to close these gaps, including vendor-developed end-user training plans.

◆ Follow the guidelines in the "Applications Implementation Project Management Best Practices" initiative to increase the probability of implementation success.

- Alternatively, the City could assess the HR solution's short—and long-term needs as part of the ERP replacement project.

21. Trakstar

Background

Trakstar is a talent development platform that offers a suite of software components to help organizations manage employee performance, learning, engagement, and analytics. The Trakstar platform is designed to help HR professionals automate manual processes, improve employee productivity, and make smarter decisions about their workforce.

The main components of the Trakstar software platform include:

- **Performance Management:** This module helps organizations implement a consistent and fair performance review process. It includes features such as goal setting, continuous feedback, 360-degree reviews, and succession planning.
- **Learning Management:** The learning management module helps organizations create and deliver engaging training programs for employees. It includes features such as course creation, auto-enrollment, quizzes and assessments, and reporting and compliance.
- **Applicant Tracking:** This module helps organizations streamline the hiring process. It includes features such as job postings, collaborative hiring, and reporting tools.
- **Workforce Analytics:** The analytics module helps organizations use critical workforce data to make better business decisions. It includes features such as performance reports, metrics, and benchmarking.

In addition to these core components, Trakstar also offers integrations with other HR systems, such as payroll and ERP systems, making it easy for organizations to centralize their employee data and get a complete view of their workforce.

Findings and Observations

- The City has acquired TrakStar for its performance evaluations and learning management system.
- The City does not have a Learning Management System (LMS). Training Videos and classes are stored on a shared Google Drive.
- The City has used Vector Solutions for performance evaluations. Spreadsheets are used to track the last evaluation date, ratings, supervisor, and chain of command.
- TrakStar is being explored for the following manual processes as well:

  - Separated employee processing
  - Recruitment work plans
  - Orientation paperwork
  - Orientation prep work
  - TB test result tracking
  - Fingerprint tracking for under 18 years old

- The City does not have a Learning Management System (LMS).

  - Training Videos and classes are stored on a shared Google Drive.
  - TrakStar is being implemented as an LMS.
  - Vector Solutions is also used for HR Training purposes.
  - The City has many repetitive trainings and other training-specific needs that are handled through manual processes.

Recommendations

- A system like this is typically built out and improved over several fiscal years. We recommend budgeting for multiple fiscal years for its construction.
- We recommend following guidelines in the "Business Process Reviews Best Practices" and the "Software Needs Assessment Best Practices" to identify and inventory all functional gaps and system needs across all departments.
  - ◆ Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine what to eliminate or reduce to create efficiencies.
    - ▪ Identifying all integration/interface requirements with other applications
- Follow the guidelines in the "IT Project Planning and Implementation Best Practices" initiative.

22. Risk Management Software

Background

Risk management software enables agencies to monitor and report on risk-based activities and cases. The insights gained from risk management software can lower agencies' Total Cost of Risk by allowing for informed decision-making. Modern Risk Management software can perform the following activities:

- Incident management
- Claims management
- Exposure and asset management
- Insurance renewal data automation
- Risk engineering and property loss control
- Cost allocation and calculation
- Safety management

Finding and Observations

- The City does not have a Risk Management solution.
- Both the City Manager's Office and Human Resources manage this process.
- ▮▮▮▮▮▮▮▮▮▮ does not have a Risk module.

Recommendations

- The City should consider implementing a new Risk Management system.
- It is recommended that the City conduct comprehensive business process reviews to determine detailed feature/function requirements for a new system.
    - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies.
    - This process should also include:
        - Inventorying all reporting requirements
        - Identifying all integration/interface requirements with other applications
        - Identifying any data conversion needs
- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall, long-term system for the City's needs.
- Follow the guidelines in the "IT Project Planning and Implementation Best Practices" initiative.
- Alternatively, the City could assess short- and long-term needs for a risk management solution as part of the ERP replacement project.

Benefits

- Increased compliance
- Increased risk mitigation
- Reduced exposure
- Time savings
- Cost savings

23. Scholarship Management Software

Background

Scholarship management software is a type of software that helps organizations manage the entire scholarship lifecycle, from application to award disbursement and post-award tracking. This software can help organizations streamline the application process, automate tasks, and make better decisions about their scholarship programs.

Scholarship management software typically includes the following features:

- **Online application processing:** Scholarship management software allows students to apply for scholarships online, which can help organizations save time and paper.
- **Application review and selection:** Scholarship management software can help organizations automate the application review and selection process, which can help ensure that scholarships are awarded fairly and efficiently.
- **Award disbursement:** Scholarship management software can help organizations disburse scholarship awards to students electronically, which can help reduce errors and delays.
- **Post-award tracking:** Scholarship management software can help organizations track the progress of scholarship recipients and ensure that they are meeting the requirements of their awards.

Scholarship management software can be used by a variety of organizations, including educational institutions, foundations, and corporations. It can be particularly beneficial for organizations that award a large number of scholarships each year or that have complex scholarship programs.

Vendors in the marketplace include:

- AwardSpring
- Good Grants
- OpenWater
- SmarterSelect
- Submittable
- WizeHive

Findings and Observations

- The City uses Excel and paper to manage its scholarship award activities.
- Approximately 150-200 scholarships are awarded per year, amounting to over $30,000.
- The City has explored WizeHive software.

Recommendations

- We recommend that the City acquire Scholarship Management Software.
- Follow "Software Needs Assessment Best Practices" to determine detailed feature/function requirements for a new system.
  - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine what to eliminate or reduce to create efficiencies.
    - Identifying all integration/interface requirements with other applications
- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall, long-term system for the City's needs.
- Follow the guidelines in the "IT Project Planning and Implementation Best Practices" initiative.

24. Electronic Content Management System (ECMS) Improvement

Background

An Electronic content management system (ECMS), sometimes called an electronic document management system (EDMS), is a software system for organizing and storing different kinds of electronic documents. In addition to document scanning, storage, and records retention management, modern systems have additional functionality, including:

- Integrated document and process workflow management, including internal request management, routing, and distribution.
- Forms management (web and internal)
- Document sharing and versioning
- Project and process collaboration
- Extensive search and retrieval capabilities
- Sophisticated security functionality
- Web publication or posting for all above items, if desired
- GIS integration and integration with electronic signatures
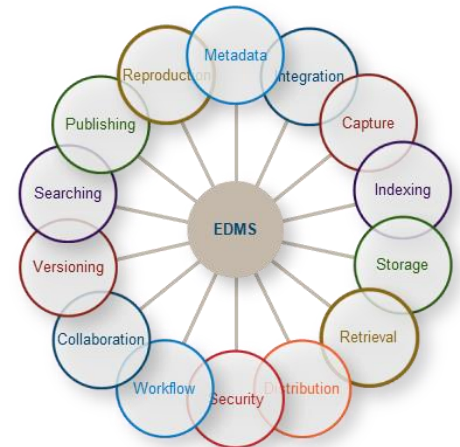
Findings and Observations

- The City uses Laserfiche for document storage and management.

    - A migration is underway to move Laserfiche to the cloud.
    - The original implementation of the system was limited.

- Laserfiche is underutilized, and staff require training.
- The migration to the cloud was recently completed, but the system is not yet set up for record retention policies.

    - It is already integrated with Docusign and TRAKit.
    - The City would like to implement a contract documents approval workflow and storage workflow.
    - The City wants to add more departments as users of the system.
    - Document scanning and digitization of historical documents will be an ongoing, multi-year effort.

Recommendations

- We recommend that the City continue working to improve the existing Electronic Content Management System.
- Consider working with third-party subject-matter experts and Laserfiche to develop a system improvement plan and project statement of work (SOW) capturing all the City's requirements. This will likely result in obtaining a quote or contract amendment with Laserfiche to implement the plan.

    - We recommend following the "Business Process Reviews Best Practices" initiative to identify all functional gaps.
    - Review relevant manual processes and shadow systems. These may include spreadsheets, paper, and other databases. Identify where manual effort and shadow systems can be eliminated to create efficiencies. This process should include:

- Inventorying all reporting requirements
- Identifying all integration/interface requirements with other applications

  ◆ Identify any requirements that the vendor cannot satisfy but can be dealt with by other means, such as more efficient workarounds, third-party applications, modifications, changes in organizational processes and procedures, etc.

- Develop a system improvement plan to close these gaps. This may include vendor-developed end-user training plans.
- Follow the guidelines in the "Applications Implementation Project Management Best Practices" to increase the probability of implementation success.

Benefits

- Automated workflow and routing
- Online document retention and archiving
- Improved version and authorization control
- Improved public records access
- Increased information-sharing and collaboration capabilities
- Ability to provide Web posting and public access to customers and the public.
- Improved and more efficient abilities to comply with the increasing volume and complexity of regulations and retention requirements.
- Improved physical abilities and accessibility to security.
- Electronic capture, routing, and approvals of manual paper processes
- Increased productivity through automation of manual processes and time reduction in retrieving and sharing information.
- Reduced costs of printing, paper, storage space, and labor
- Minimized paper waste
- Increased accessibility to information via the Web, including full automation of some types of documents immediately upon creation without additional processing or labor.
- Protection of vital records through storage redundancy
- Ability to digitize often accessed paper documents to reduce the time required to retrieve these documents from physical files.

25. Agenda Management Improvements

Background

Agenda management systems allow an agency to centralize, automate, and manage the entire agenda creation and management process. These systems allow access to information for all departments and users involved in the process. Modern systems are offered as standalone modules, as modules in a suite of applications from a single vendor, or as part of an Enterprise Content Management System (ECMS).

Agenda Management systems allow staff to submit proposed agenda items online and attach supporting reports or package documentation. Once submitted into the system, the system automatically routes requests for approval through preconfigured workflows. Approvers can receive email notifications with links to items awaiting review. The system administrator or other responsible parties can add items to meetings and then prepare agendas, review and recommend revisions, finalize packets, and publish them. Agenda content is available online throughout the process and is easily accessible to those with a role in the process.
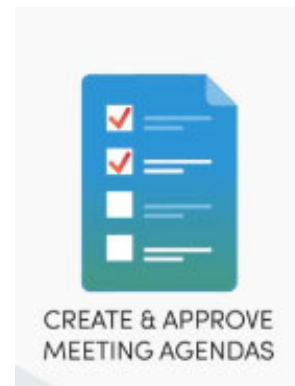
In many instances, agenda and legislative management systems can be integrated with media management systems to stream and record video and audio information, time stamp it, and tie it to the correlating meeting agenda or activity during a meeting. The system can push/publish agendas, minutes, media, and meeting activities to the City's website.

Findings and Observations

- The City uses AgendaQuick or its agenda management processes
- The software is difficult to use.
    - Report writing and document editing are both "clunky" to use.

- Only council meetings are currently part of the Agenda management software. The City would like to expand the use of agenda management software to other departments.

Recommendations

- Follow the guidelines in the "Software Needs Assessment Best Practices" initiative to determine detailed feature/function requirements for a replacement Agenda Management system.
    - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies.
        - Identify all integration/interface requirements with other applications.
- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall, long-term system for the City's needs.
- Follow the guidelines in the "IT Project Planning and Implementation Best Practices" initiative.

Benefits

- Time savings from manually disseminating and routing documents for review
- Paper cost savings by disseminating and routing electronically
- Easy archival and retrieval
- View agenda items and related materials in real-time
- Public online access to agendas, minutes, legislative history, and potentially audio/video

26. Public Safety Scheduling Software

Background

The personnel scheduling needs of public safety agencies are unique and can be complex. Many different scenarios should be accounted for based on the nature of the public safety operations. These unique requirements may include odd shift schedules, shift bidding/swapping, back-filling, and overall dynamic scheduling. These systems effectively manage complex time-tracking requirements while incorporating bargaining unit agreements, overtime, and premium pay.

Staff and supervisors can securely access scheduling data internally and remotely to eliminate confusion and scheduling errors. Some systems can offer self-service tools to allow officers and staff to request schedule changes, shift swaps, leave requests, bid for days off, and other features.

The following is a short list of typical features found in public safety scheduling systems:

- Unlimited schedules/shifts
- View and print daily roster reports
- Schedule grid and calendar view
- Employee self-service in-office and remotely, including secure smartphone access
- Post open positions for sign-up or bidding
- Time exchange feature for shift swaps and shift trades
- Automated time-off request-and-approval process
- Overtime eligibility management and cost control
- Work limits
- Allow near real-time validation of time/hours worked by officers
- Holiday and events calendar
- Reporting and auditing
- Full integration with payroll, HR, and CAD/RMS applications
- Some public safety scheduling systems can also perform timekeeping and integrate with payroll

Functionality and pricing vary widely among applicable vendors. Example software vendors include:

- Telestaff
- NetDuty
- InTime
- OSL Solutions
- Aladtec
- Others

Findings and Observations

- The City is using ███████████ Advanced Scheduling for this function.
  - ◆ Advanced Scheduling requires more labor hours to use and troubleshoot than the previous product used by the City, Telestaff.
  - ◆ A comprehensive business process review and needs assessment was not undertaken prior to moving the Police department over to the ████ product.
- The City will be moving to InTime Scheduling Software and will export payroll information to ████████████.

Recommendations

- Follow the "Business Process Reviews Best Practices" initiative to determine detailed feature/function requirements and ensure all user needs are met.
- Follow the guidelines in the "Applications Implementation Project Management Best Practices" initiative.

27. Law Enforcement Training and Standards (LETS) Software

Background

Law Enforcement Training and Standards software is designed to improve community trust in police departments by helping agencies to be more efficient, effective, and accountable. By encouraging consistency and compliance with policies, LETS software helps public safety professionals perform their jobs more effectively and safely.

LETS software suites offer a variety of modules:

- **Academy Training Tracking and Reporting:** This ensures that all cadets receive the same high-quality training and meet the agency's training standards.
- **Field Training Management:** Ensures that all new officers receive the training and support they need to be successful in their roles.
- **Training and Equipment Tracking:** Ensures that all officers receive the training they need and that the agency is properly managing its equipment inventory.
- **Use of Force Management:** Ensures that all use of force incidents are properly investigated and that officers are using force lawfully and proportionately.
- **Internal Affairs Case Management:** Ensures that all internal affairs investigations are conducted thoroughly and fairly.
- **Stop Data and Bias Enforcement:** Helps the agency identify any potential racial profiling issues and take steps to address them.
- Employee Complaints and Compliments Management: Helps the agency identify and address any potential employee morale issues.
- Vehicle Pursuit Reporting: Identifies trends in vehicle pursuits and helps the agency take steps to reduce the number of pursuits.
- **Data Analytics and Reporting:** This department collects and analyzes data to help the agency identify trends and patterns in its data and make better decisions about its operations.

Vendors in the marketplace include:

- LEFTA Systems
- Agency 360
- Frontline

Findings and Observations

- Reviews, oversight activities, and reporting are processed manually. For example:
  - Use of force reviews
  - Vehicle pursuit reviews
  - Field files, supervisor-employee performance observations
  - Field Training Daily Observation Reports

- Staff would like to submit crime or incident reports online with API integration to the Records Management System.

Recommendations

- We recommend that the City consider acquiring Law Enforcement Training and Standards Software.
- Follow "Software Needs Assessment Best Practices" to determine detailed feature/function requirements for a new system.

- ◆ Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine what to eliminate or reduce to create efficiencies.
  - ▪ Identifying all integration/interface requirements with other applications.
- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall, long-term system for the City's needs.
- Follow the guidelines in the "IT Project Planning and Implementation Best Practices" initiative.

28. Electronic Ticketing and Citation System

Background

Electronic citation (eCitation) technology represents a continuing transformation in public safety technology. Citation systems offer agencies the ability to issue tickets and citations electronically. Transitioning from traditional handwritten citations into digital files that can be quickly populated and accurately issued significantly enhances the effectiveness and safety of law enforcement officers in the field.

Citation management systems provide the following capabilities:

- **Citations**—eCitations allow for tracking citations (moving violations or others) from issuance to determination. The systems provide the ability to set classes and fine structures. Violation and history, along with people, addresses, and related subjects, are also maintained for quick inquiry.
- **Parking Tickets**—Many systems provide a parking tickets component that streamlines the administrative adjudication process for parking and equipment violations. The system can also track late payments and assess late fees.
- **Access Permits and Parking Stickers**—Some systems allow organizations to sell, manage, and enforce tags or stickers for parking or other services, which can generate a revenue stream. Some organizations have used this capability to issue annual passes for unlimited visits to parks or other facilities or programs.
- **Mobile or Field Capabilities**—This includes the ability to issue citations in the field with a small portable printer connected. Vendors typically support a variety of handheld devices, including handheld computers, laptops, and tablets. Many also integrate license plate recognition technology.
- **Reporting** – These systems support reporting, including a number of standard reports that can be picked from a list and run as needed. They also include ad hoc reporting capabilities, so specific reports can be created as needed.
- **Online Services and Payments**—Most systems also allow the public to access their citations and tickets and pay any associated fines online using credit cards.

The diagram below illustrates a typical citation management system.

Citation Management System
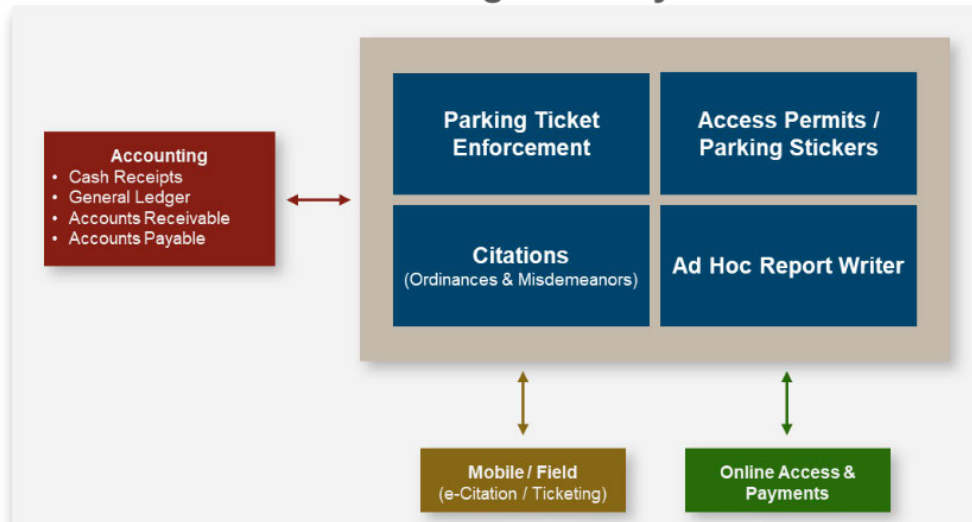
Findings and Observations

- The City uses TurboData for eCitations, but there aren't enough ticket-writing devices.
- The City will be moving to Crossroads for eCitations.

Recommendations

- Complete a post-implementation review with successes, lessons learned, and any unresolved issues requiring vendor assistance.

  - Identify user training requirements by specific users responsible for issuing eCitations.
  - Assimilate the training needs with "User Training and Support" initiative.
  - Offer regular training to keep staff skills fresh and to ensure they can use the software effectively.

29.   Land Management System Improvements

Background

A Land Management System (LMS), sometimes called Community Development, is a software suite comprising several applications that manage the creation, issuance, and tracking of development-related activities commonly associated with planning and zoning, permitting, inspections, licensing, code enforcement, and parcel/address management. An LMS system is a core solution for most cities. Modern LMS systems enable an enterprise-wide integrated communication, storage, and operations system. A system that is configured and implemented using industry best practices can achieve significant operating efficiencies and return on investment (ROI) for the City.

The illustration and table in the following pages show typical modules available in land management systems.
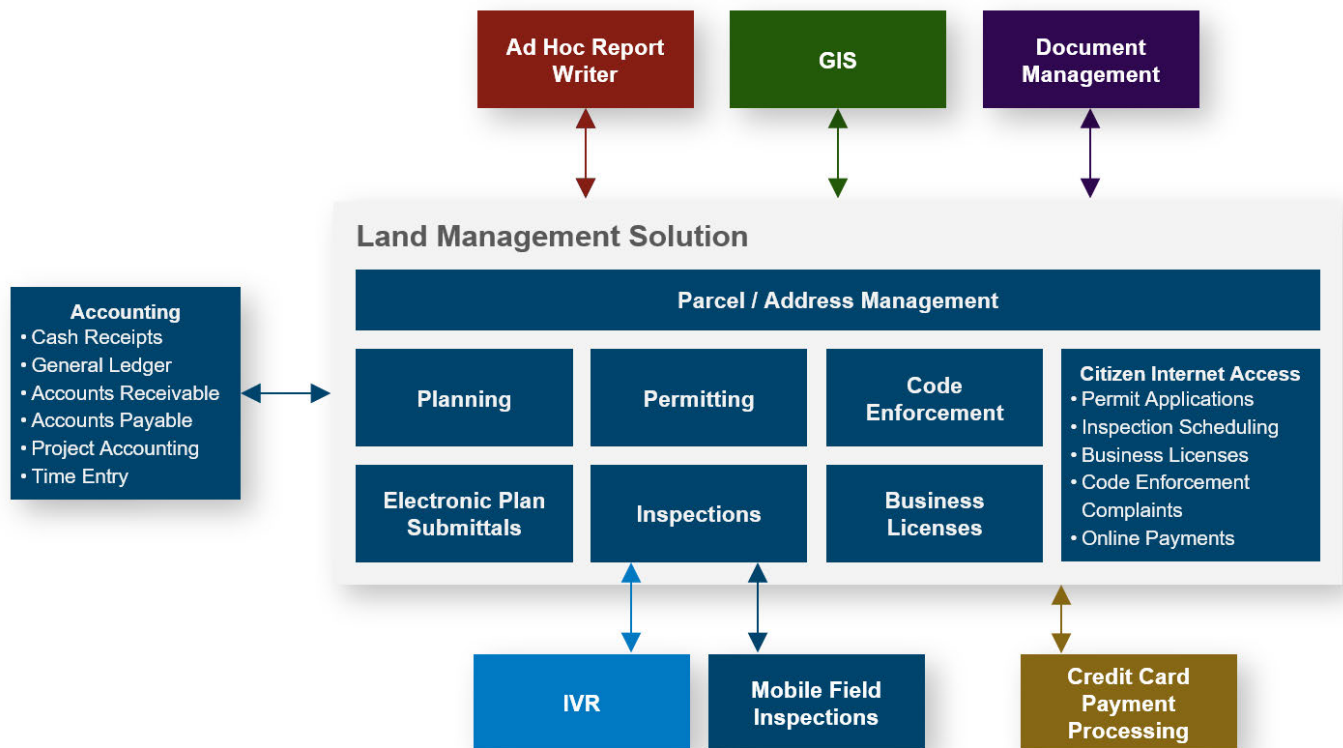
Findings and Observations

- TRAKiT is the primary system for land management in the City. The modules owned are:

  - GeoTRAK
  - PermitTRAK
  - ProjectTRAK
  - CodeTRAK
  - LicenseTRAK

  - CRM TRAK
  - AEC TRAK
  - TrakiT Mobile
  - eTRAKit Portal

- In addition to TRAKiT, multiple programs are also in use to accomplish the necessary tasks. These include:

  - Word
  - Blue Beam
  - Adobe
  - DropBox
  - Outlook

- The City is in the process of upgrading its TRAKiT software to the cloud version. The upgrade is expected to fix known issues.

  - All stakeholders do not use TRAKiT, and the software is underutilized as a whole.
  - System setup doesn't always reflect how users conduct their work

- There has been significant growth in development over the last three to four years; more investment and thousands of residential units

  - The City tracks 30-40 cases per day and lacks the functionality to mass-create cases
  - Code enforcement is a priority for the City Council

- The City will be conducting a business process review with the existing vendor.

Staff Feedback

Community Development

- Planning Project Public notices are a manual process created in Word and PDF.
- Weed abatement notices are manually processed
- Bluebeam is used to review architectural plans
- Some people redline in Adobe and others in Bluebeam
- Plans are shared through email or Dropbox
- Bluebeam features are not fully utilized
- Need to standardize across the City on the use of TRAKiT and BlueBeam
- The following processes are all manual:

  - Public notice mailings
  - Conflict of interest checks
  - City Council and Planning Commission Emails
  - Zone district confirmation
  - General Plan land use confirmation
  - Site development regulation summaries or calculator
  - Newspaper advertisements for hearings
  - Public self-service websites
  - Accessory Dwelling Unit Calculator
  - Entitlement Application submittals
  - Radius map/addresses
  - Weed abatement coordination

- Need the ability to create month-end or user-defined reports for a number of permits and licenses issued, related fees, and more
- Would like to automate the following reports on a set schedule for users to view:

  - Building permit reports
  - Development project reports
  - Code enforcement reports
  - Department work plan tracking and management

- ◆ Consolidated industrial property data
- ◆ Citation and fine reports
- ◆ Housing development records
- ◆ Commercial development, change in tenants, and owners

- Would like to see development project summaries and status
- Need a property owner/renter registration and contract database
- Not using attachment tools. Using shared folders instead
- Letters are created outside of TRAKiT
- Departments are using different approaches for workflow
- Staff aren't using the eTRAKiT Portal
- Not using credit card payments online. Payments are processed through Finance
- Taking credit card payments on a paper form
- The department is not an owner of the software. Community Development is a user
- Need Bluebeam to integrate with TRAKiT
- Planning doesn't use the eTRAKiT portal
- Letters are created outside of TRAKiT and then uploaded
- There are no online payments. Staff fill out a form with the credit card number and give it to Finance
- Contact info is entered into the system but isn't stored
- Staff are looking to implement a database for property owner/rental registration that shows who rents out-there properties, stores contact info, and more

Building Inspection

- iTRAKiT is going away in 2024. Replacement will be needed
- Staff want online inspection scheduling with customers' ability to look up inspection time windows online
- City website needs to be easier to navigate for the public
- Many auto data validation system checks are not working
- eTRAKiT is not set up due to out-of-date parcel information
- Need credit card processing
- Would like a kiosk at the counter to take permit payments
- There are 80 permit types and 2,000 subtypes
- Finance dual enters payments in both ▮▮▮▮▮▮ and TRAKiT
- The migration contract includes hours for process auditing and system changes
- With TRAKiT/eTRAKiT upgrades, website pages for building inspection should also be upgraded to improve customer experience and access to data

Engineering

- We need Bluebeam training. Due to a lack of familiarity with the software and the lack of time to self-teach, the application remains underutilized, as many staff continue to defer to using Adobe Acrobat instead.
- There are too many workarounds.
- Working functionality is inconsistent.
- Current access does not permit fee adjustments.
- Transportation permits were never set up.

Environmental Services

- Data validation is not being utilized on submissions for Environmental Services. Staff receive incomplete submissions.

Facilities Maintenance

- Staff need access to blueprints, plans, and as-builts while in the field.
- iWorQ was chosen as the new vendor. Implementation hasn't started yet.
- Currently, staff only capture about 90% of the work orders submitted in the system.
- Staff are unable to input preventative maintenance schedules in the current system.
- Staff want the ability to enter data into the system remotely.

Recommendations

- As part of the migration to the cloud:

  - We recommend including budget for iTRAKit data to be migrated.
  - We recommend including budget to fix the geodata
  - We recommend including budget for a financial export

- Consider working with third-party subject-matter experts and CentralSquare to develop a system improvement plan and project statement of work (SOW) that captures the City's functionality gaps and additional requirements. This plan would ultimately result in obtaining a quote or contract amendment to implement the solution according to the City's needs fully.

  - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine automation improvements that will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies.
  - This process should also include:

    - Inventorying all reporting requirements
    - Identifying all integration/interface requirements with other applications

  - Identify any requirements the vendor cannot provide that can be handled by other means, such as more efficient workarounds, third-party applications, modifications, and changes in organizational processes and procedures.
  - NOTE: Land Management System (LMS) implementations on an organization-wide basis are complex undertakings and, on an organization-wide basis, are commonly under-scoped and underfunded, leaving organizations with limited utilization and intended benefits.

- Follow the guidelines in the "Software Needs Assessment" and "Business Process Reviews" Best Practices initiatives.
- Follow the guidelines in the "Enterprise Applications Implementation Project Management Best Practices" initiative to increase the probability of implementation success.
- Given the complexity of implementing a new enterprise system, following best practices will reduce risk and ensure a successful outcome.

30. Enterprise Asset Management (EAM) Replacement

Background

An Enterprise Asset Management (EAM) system is a software suite that manages work orders, preventative maintenance, and asset management of City infrastructure. EAM is new terminology, and many still use older terminology such as Work Order and Maintenance Management or Computerized Maintenance Management System (CMMS).

The following list and diagram illustrate the functionality of typical maintenance and asset management software.

- Service Requests
- Inspections and Condition Assessment
- Work Orders
- Preventative and Predictive Maintenance
- Facilities Maintenance
- Asset Tracking
- Warehouse Inventory
- GIS Integration
- Report Writing
- Costing and Budget Forecasts
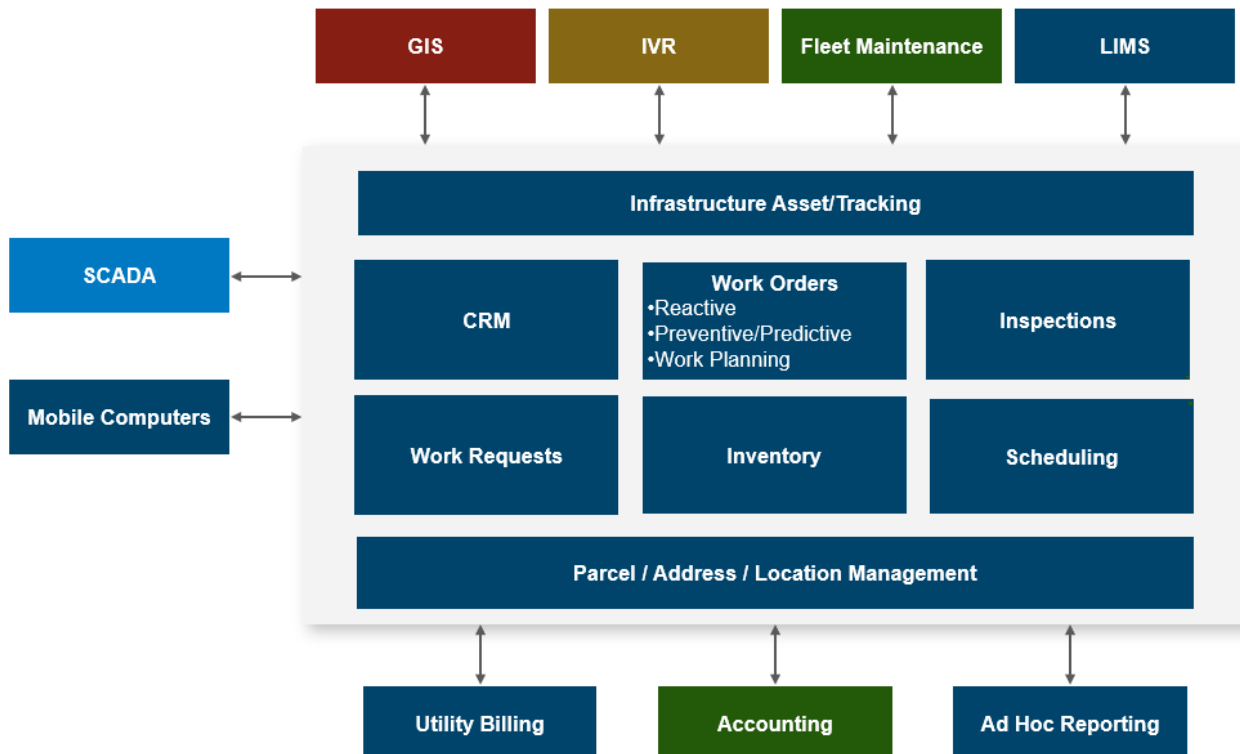
Findings and Observations

- The City is currently using PubWorks as its Asset Management System.

  - Staff don't have functionality for key processes such as supply ordering
  - There are still manual processes in use.

- The City has gone out to market for a new EAM system.

  - Proposals from iWorQ and Novo solutions are under consideration, and demonstrations have been conducted.

Recommendations

- We recommend that the City include scope in their ERP acquisition to include integration of the City's chosen EAM solution to the ERP solutions Project Accounting module and the necessary accounting to the ERP system's General Ledger.
- We recommend that the City conduct comprehensive business process reviews. Compile the findings into a comprehensive list of needed features and functions.

  - Review relevant manual processes and shadow systems. These may include spreadsheets, paper, and other databases. Identify where manual effort and shadow systems can be eliminated to create efficiencies.
  - The review process should include:

    - Inventorying all reporting requirements
    - Identifying all integration/interface requirements with other applications.
    - Identifying any data conversion needs

- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best system for the City's needs. Following best practices reduces risk and ensures a successful outcome.

  - A best-practice approach to implementing/upgrading enterprise systems includes end users from all affected departments in the configuration of the system. This ensures that all necessary business processes are identified and implemented.

- Implementing a new enterprise system is a complex endeavor. We recommend that the City explore using a third-party subject-matter expert with extensive experience in ERP Systems procurement and implementation for local government.
- Follow the guidelines in the "Applications Implementation Project Management Best Practices" initiative.

31. Recreation System Improvements

Background

Parks and Recreation systems manage park and recreation operations. Many of the systems in the marketplace offer individual modules within a suite of applications that may include:

- Membership management
- Activity registrations
- Facility scheduling
- League management
- Swim team management
- Point-of-Sale
- Equipment and locker rental
- Fundraising and donation management
- Childcare management
- Marketing
- Website content management
- Reporting
- Online Customer Access

  - Registration software
  - Facility scheduling software
  - Equipment and locker rentals
  - Customer relationship management

Findings and Observations

- The City uses Sportsman as its recreation system.

  - Since the software's implementation, the vendor has added functionality and improvements that have not yet been implemented in the City.

- The City evaluated ███████████████ Recreation System as a possible replacement but has chosen to keep Sportsman.
- There is necessary functionality that the City needs but does not have or has not implemented.

  - The City is working with Sportsman to improve the product.

Staff Feedback

Recreation & Community Services

- Need community calendars to share space availability updates for the Silliman gymnasium.
- Need the ability to purchase tickets online or at kiosks without setting up an account, i.e., guest self-service point-of-sale capabilities.
- Staff would like to utilize more and newer features in the software.
- Swim pre-sales require setting up an account. Need quicker processes for ticket purchases.
- Need a point-of-sale capability for T-shirts.
- Facility rentals don't work well.
- Sportsman software engineers are typically helpful, but the department needs dedicated internal staff that can support the Sportsman system.
- The City purchased ██████ recreation system to replace Sportsman.

- Currently, there is no functionality to do group registrations for swimming.
- Follow American Red Cross Swim Lesson programs.
- Have to get report cards, which are all paper-based.
- Sportsman has a field to track levels, but this is not a functionality designed for Sportsman. It's a workaround.
- Want a program to track swim lesson report card levels.

Recommendations

- Continue working with Sportsman to develop a project statement of work (SOW) that captures all of the City's requirements.

  - Follow "Business Process Reviews Best Practices" to identify and inventory all functional gaps and system needs.

    - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies
    - This process should also include:

      - Inventorying all reporting requirements
      - Identifying all integration/interface requirements with other applications
      - Identifying any data conversion needs

    - Identify any requirements that the vendor is not capable of providing that can then be dealt with by other means, such as more efficient workarounds, third-party applications, modifications, changes in organizational processes, procedures, etc.

  - Develop a system improvement plan to close these gaps, including vendor-developed end-user training plans.
  - Follow the guidelines in the "IT Project Planning and Implementation Best Practices" initiative to increase the probability of implementation success.

Benefits

- Improved customer service
- Improved software application utilization
- Improved reporting, resulting in better management decision-making
- Improved integration with other City systems

32.   Pool Management and Recreational Staff Scheduling

Background

Pool maintenance tracking software is a type of software that helps pool service companies track and manage their pool maintenance tasks. It can help with a variety of tasks, including:

- **Creating and scheduling maintenance tasks:** Creating and scheduling maintenance tasks for each pool that is served ensures that all pools are maintained on a regular basis and that no tasks are missed.
- **Assigning tasks to technicians:** Automating maintenance task assignments ensures that tasks are assigned to the appropriate technicians and that the technicians have the necessary information to complete the work.
- **Tracking task progress:** Tracking the progress of maintenance tasks ensures that work is completed on time and within budget.
- **Generating reports:** Reporting on various metrics, such as task completion rates, technician productivity, and chemical usage, can improve the efficiency of pool maintenance operations.

Vendors in the marketplace include:

- DigiQuatics
- PoolCop
- Pool Pal
- PoolScout
- PoolWise

Findings and Observations

- The City tracks its pool maintenance logs in paper binders.
- The City is fined if reporting is off.
- Café inventory and cold/temp logs are being moved to Sportsman.
- Staff must physically go to sites to test. All testing is done manually using beakers.

  - Staff have explored DigiQuatrics as a possible solution.

- The City owns WhenToWork, which has a time-entry option.
- DigiQuatrics will replace WhenToWork, including the cost, and will provide much more functionality, including:

  - Staff Scheduling: Quickly build staff schedules across multiple facilities
  - Sub Requests: Trade shifts instantly
  - Time Clock: Time clock with GPS
  - Messaging: Send messages to staff or groups with unlimited email + text messaging (available by default)
  - Employee Management: Store employee documents and info (required/included by default)
  - Certifications: Employee certification tracking and alerts
  - In-Service Training: Create, track, and log In-Service training
  - Shift Reports: incident/accident reporting, shift summaries, and more
  - Custom Forms: Create forms for detailed communication and tracking
  - Daily Checklists: Custom safety and facility checklists
  - Chemical Records: Online pool chemistry logs and alerts
  - Slide Inspections: Safety checklist
  - Maintenance Issues: Easy tracking and communication of issues

- Patron Counts: Patron usage tracking and reporting
- DigiStorage: Store and manage important documents for easy team access (available by default)

Staff Feedback

Facilities

- Have not done any evaluation of vendors in the marketplace
- Manually monitoring pool pH, pressure, leaks, and more.

Recreation & Community Services

- Chemical logs for the four pools in the Aquatics center are maintained manually.
- Logging and pool monitoring are manual processes, including:

  - Daily and Monthly Aquatic Center MTC log
  - Daily and Monthly AED, Oxygen, and First Aid Room logs
  - Monthly chemical logs
  - Waterslide safety checks
  - Bathroom/Facility Checks
  - Aquatic Center Facility logs for activity pool, lap pool, and lazy river
  - Spa chemical logs

- Cash handling reports are processed manually
- Café inventory and cold/temp logs are manually maintained. Moving this information to Sportsman
- Staff are maintaining paper binders for much of the reporting and tracking of aquatic center processes.
- Two or three tablets are necessary for staff to work remotely. The City has ordered tablets.
- Swim lesson grade reports are tracked on paper.
- DigiQuatics has the functionality to record and email report cards to parents.

Recommendations

- We recommend that the City acquire Pool Maintenance Software.
- Follow "Software Needs Assessment Best Practices" to determine detailed feature/function requirements for a new system.

  - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine what to eliminate or reduce to create efficiencies.

    - Identifying all integration/interface requirements with other applications

- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall, long-term system for the City's needs.
- Follow the guidelines in the "IT Project Planning and Implementation Best Practices" initiative.

Benefits

- **Improved customer service**: Pool maintenance tracking software can help improve customer service by tracking maintenance tasks and ensuring that they are completed on time and within budget.
- **Reduced costs**: Pool maintenance tracking software helps reduce costs by improving operational efficiency by identifying areas where savings can be found on chemicals and supplies.

33. Volunteer Management System

Background

A volunteer management system efficiently tracks, manages, and communicates with volunteers. Typical volunteer management systems provide online volunteer applications, alerts, and announcements, as well as the tracking of volunteer/disaster services, worker skill sets, licenses, certifications, service hours, and scheduling. Some of these systems also allow volunteers to access and update their information and schedules through an online volunteer portal and mobile devices.

Example vendors include, but are not limited to, the following:

- Sumac
- CERVIS
- YourVolunteers
- Galaxy Digital
- Volgistics

Findings and Observations

- Volunteers are managed in Excel.
- The Police Department is using VIMS for volunteer tracking.
- Staff would like volunteer onboarding to be automated.

Recommendations

- Explore whether or not VIMS can satisfy the City's total user needs. Work with the Vendor to develop a project statement of work (SOW) that captures all of the City's requirements.

  - Follow the "Business Process Reviews Best Practices" initiative to determine detailed feature/function requirements for a Volunteer Management System.

    - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies.

- Should the City determine that VIMS does not sufficiently meet the City's requirements, it is recommended that an alternative volunteer management system be identified.

  - Follow the "Software Selection Best Practices" initiative guidelines to select the best overall, long-term system for the City's needs.
  - Follow the guidelines in the "IT Project Planning and Implementation Best Practices" initiative.

Benefits

- Streamlined volunteer applications often include:

  - Centralized volunteer information
  - Skills inventory
  - Interest inventory
  - Certifications
  - Scheduling
  - Hour Tracking
  - Dashboards and reporting

34. Microsoft Office 365 and Teams

Background

Microsoft Office 365 is a subscription service that is part of the Office product line. Office 365 is focused on enterprise customers. Office 365 products and services comprise:

- Outlook, which includes email, calendaring, people, and tasks
- Hosted Services, which include Office server platforms for Exchange, SharePoint, and Teams
- Office Applications, which include Word, Excel, and PowerPoint

Microsoft is transitioning its customers to a Software as a Subscription (SaaS) model. This is a departure from the conventional software license model. The SaaS model allows Microsoft to update Office 365 software on a regular basis.

Findings and Observations

- Several departments indicated that they are not utilizing the full capabilities of Office 365 due to a lack of training and/or understanding of its capabilities.

  - Training is needed citywide to ensure staff understand how to utilize the capabilities offered by the software fully.

- Multiple versions of Microsoft products are installed, and staff desire standardization.
- The City recently purchased self-paced online training for Microsoft Office 365.
- The City has also scheduled SharePoint improvement training.

Staff Feedback

Engineering

- Microsoft Office 365 was deployed to all staff without training
- Training is required on how to use SharePoint and OneDrive most effectively. Staff have been able to share files within a working group; however, we have not yet figured out how to access the shared file link without going back to the original email, which we have found to be most inefficient
- Need training on how to use Teams more/most effectively. What we currently know has all been self-taught. I'm sure we are currently using only a fraction of its full potential
- For OneNote – Most staff aren't aware that the app is currently available. For those that do use it, what we currently know has all been self-taught. I'm sure we are currently using only a fraction of its full potential
- There are two versions of OneNote installed on workstations – OneNote (which I believe is with the MS Office 365 suite) and OneNote for Windows 10 (which I believe was installed with the Windows 10 OS). It would help to have IT clarify which one we should be using

Finance

- Just started working with O365. Focus has been on SharePoint and OneDrive
- During pandemic, O365 was deployed with no training
- Version control is problematic
- Lack of training is a problem

Recommendations

- Inventory desktop applications and work to standardize versions.
- Consider working with a third-party subject-matter expert to develop a Microsoft Office 365 Improvement Plan and project statement of work (SOW) that captures all the City's requirements.
- The assessment phase of this project should begin by educating users on the overall capabilities of Microsoft Office 365's major apps and functionalities.
- It is recommended that the City follow the "Business Process Reviews Best Practices" initiative to identify and inventory all functional gaps and system needs.

  - Develop a System Improvement Plan, including end-user training plans.

- Follow the guidelines in the "Applications Implementation Project Management Best Practices" initiative to increase the probability of implementation success.
- Convert staff home directories to Office 365 OneDrive
- Move staff-shared directories and external file sharing to SharePoint
- Provide training classes to assist staff in successful adoption of OneDrive and SharePoint.

35. Digital Signatures

Background

Digital signatures allow authorized persons to sign a document electronically from anywhere using a computer. Although commonly used interchangeably, there is a difference between an electronic and a digital signature. The distinctions are as follows:

- *Electronic signatures* verify the document by capturing the signature image.
- A *digital signature* goes further by embedding a Public-Key Infrastructure (PKI) in the document, which requires signers to have a registered digital certificate that links the signer to their signature.

The process of identifying signers and originators is the primary distinguishing feature between an electronic signature and a digital signature. Electronic and digital signatures today are equally secure, versatile, and convenient. Government agencies now recognize them as legal signatures (based on recent UETA and ESIGN acts), and many agencies use them to transact business.

Example software vendors include:

- DocuSign
- PandaDoc
- SignNow

Findings and Observations

- The City uses multiple software solutions for capturing digital signatures:
  - Adobe Sign
  - DocuSign
  - eSign
  - Genius
  - Foxit

- Each software solution is used for different processes. For example, Foxit is used for Personnel Action Requests, and Docusign is used for expense reports, contracts, and time sheets.
- The City would like to consolidate its efforts into a single user-friendly platform.

Staff Feedback

Community Development

- █████████ workflows are used for Purchase Orders and Accounts Payable invoices.
- Foxit and DocuSign should be consolidated.
- DocuSign is used for payroll reports (Bi-weekly timesheet approval, Credit card recon), contracts, and expense reports. These must be downloaded and provided to Finance.
- Foxit is used by HR (Personnel action request forms, anything for the HR Director that is approved by the city director) and Finance (Budget/amendments, reimbursements). Staff prefer DocuSign

Recreation & Community Services

- Foxit is cumbersome to use with many repetitive steps.
- Foxit is used for rentals.
- There is only one DocuSign Account per department.
- DocuSign is used for City Contracts and agreements.
- Foxit is used for internal documents.
- With Foxit, there is much redundancy in the process.
- Personnel Action Requests are processed in batches, but if one form is wrong, the whole batch has to be reprocessed.
- Staff want a better workflow.

Recommendations

- We recommend that the City standardize on a primary digital signature solution and only use alternative solutions as a required exception.
- Create an inventory of all documents and processes currently conducted in the various digital signature software solutions owned by the City.
- Explore potential integration with the City Electronic Content Management System, Laserfiche.
- Investigate vendor systems to evaluate and compare.
- Follow best practices according to the *"Software Selection Best Practices"* initiative to select the appropriate system.

Benefits

- Increased efficiency: Digital signature software streamlines the document signing process by eliminating the need to print, scan, and mail documents.
- Improved security: Digital signatures use cryptography to ensure that documents are not tampered with after they are signed.
- Enhanced compliance: Digital signature software helps businesses comply with regulations requiring electronic signatures.
- Improved customer experience: Digital signature software makes it easier for businesses to sign documents with customers.
- Reduced costs: Digital signature software helps businesses reduce the costs associated with document signing.

36.   Dashboard Preparation and Automation

Background

Many enterprise application software vendors provide dashboards. Dashboards form part of a user's homepage and display reports, key indicators, and other metrics regarding day-to-day operations, activities, and historical trends (e.g., the status of expenditures against budget, number and types of work orders issued versus those completed for a particular period, etc.) These results are often displayed graphically as context-sensitive content, so clicking on the graphic enables drilling down to more detailed information. These tools can also be utilized for periodic or monthly reporting templates for departments, divisions, and programs to visualize reports or reporting templates. Benefits of dashboards include:
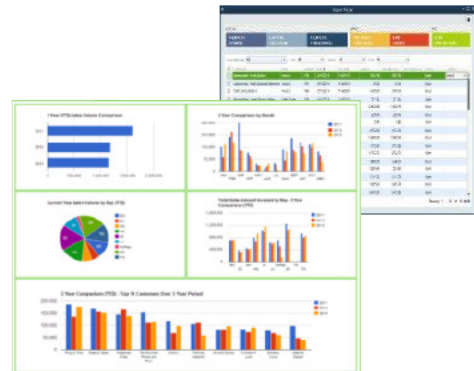
- Quick links for immediate access to required tasks and approvals
- Easy modification of dashboards for each user's preference
- Automated generation of dashboard information
- Data Visualization
- Easy-to-understand graphics
- Real-time analysis
- Drill-down access to activity detail

The market offers the following main dashboard types:

- Standalone software applications
- Browser-based applications
- Desktop applications
- Enterprise-specific functionality

The third-party marketplace for these systems is vendor-rich and dynamic. As new vendors enter the marketplace, new features and functionality emerge. Examples of public sector-oriented vendors include:

- CityView 360
- Tableau
- Power BI
- OpenGov
- Venngage
- Canva

Findings and Observations

- The City does not have a centralized dashboard functionality to help departments and key staff simplify and automate routine or monthly performance management.
- Staff would like the ability to create and share a Citywide dashboard for scheduled monthly reporting, ad hoc reporting, and other business analytics.

Recommendations

- Research the overall system capabilities of dashboard solution providers.
- Consider performance dashboards available in modern enterprise solutions before considering a third-party application.
- Complete a review and assessment of Performance Dashboard needs with a cross-section of leaders and users. Documenting the needs will result in an expectation of functionality being delivered.
- Follow the "Business Process Reviews Best Practices" initiative to determine detailed feature/function requirements for a new Business Analytics system.
- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall, long-term system for the City's needs.
- Follow the guidelines in the Applications Implementation "Project Management Best Practices" initiative.

37. Intranet

Background

An intranet has a similar function to an organization's public-facing website, except that it uses the organization's internal computer network to house a website-structured presence to share information privately and securely. Generally, it is dedicated to internal use by the organization, staff, and management.

Intranets or intranet sites provide useful information, such as communicating within the organization and reducing miscommunication by providing consistent informational and instructional content. They also reduce the time spent requesting and distributing documents between and throughout divisions and the need for maintaining physical documents. Intranets can be used to:

- Quickly communicate news, changes in policies or benefits, and emergency information
- Promote a common culture
- Offer a dynamic calendar of events, activities, and due dates.
- Important news and newsletters
- Allow easy access to policies and procedures, training manuals, or forms
- Provide contact information for divisions, supervisors, and other staff
- Collaborate on City projects with contractors and vendors
- Contain links to application-supported services (i.e., there may also be a link to Employee Self-Services that are tied to the Human Resource and Payroll applications, enabling employee capabilities to access electronic check stubs, electronic W-4 forms for filing changes or other HR services)
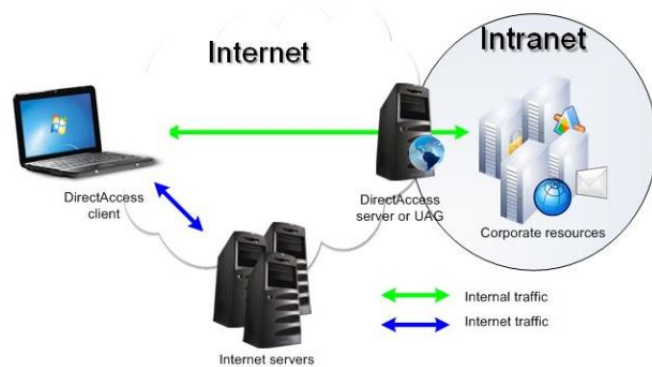
Other potential organization-wide intranet uses could include:

- Increased City employee communications
- Tricks and tools
- Contact information (internally and externally shared)
- Major project-related information
- Personnel forms
- Benefits information
- Policies and procedures
- Administrative forms
- Training libraries

Agencies that are most successful with intranets configure staff personal computers to have the organization's intranet site as the homepage that launches whenever a browser is opened.
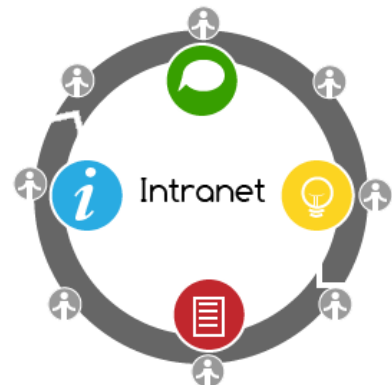
Findings and Observations

- A citywide intranet is being implemented.
- Acero is being used as the frontend with a SharePoint backend.
- A training hub is being implemented as part of the intranet effort.

Recommendations

- Conduct a citywide needs assessment for internal division communications that could be posted or stored on the intranet, such as frequently asked questions and frequently requested information, so that employees can utilize the intranet's self-service capabilities.
- Make the intranet the default Internet browser home page for all City staff.
- Use the intranet site to reduce other mass employee communications, such as email, flyers, and bulletin-board posters (as applicable).
- Provide training for employees to access self-service capabilities as users. In addition, provide training for staff in posting content and provide self-service information.
- Utilize best practices and make the intranet a component of the Technology Steering Committee's responsibilities to ensure that the site is maintained regularly and remains relevant and up to date for the City's employee community (see "Technology Governance" initiative).

Benefits

- Reduced miscommunication (single communication source)
- Electronic Documents (decreased need for physical documents, such as procedure manuals or paycheck inserts)
- Electronic Forms (decreased need for physical employee forms)
- Increased employee productivity and collaboration
- Remote access to information when outside the office

Smart Technologies is the concept of using new technologies in combination with creativity, information sharing, and the collaborative process to better serve and interact with the public.

38. Website
39. Request Management Software
40. Public Records Request
41. Kiosks
42. GIS Assessment and Master Plan
43. Mass Outbound Communications System
44. Social Media Policy and Strategy
45. Artificial Intelligence
46. Smart Cities Technology Strategies
47. Broadband Master Plan

Smart Technologies

38. Website

Background

Local government websites have evolved from their early days as simple online brochures. They've become essential portals, serving as digital town squares where citizens, customers, and the public interact with the agency conveniently and efficiently.

Modern local government websites are interactive hubs with resources and functionality. Constituents can:

- **Access essential information**: From council meeting minutes and public notices to building permits and zoning regulations, all reside within the website's virtual walls.
- **Conduct transactions:** Renewing licenses, paying taxes, registering for programs, and even reporting issues can be done seamlessly online, saving valuable time and resources for both citizens and staff.
- **Engage with their community**: Interactive forums, public surveys, and online feedback mechanisms foster two-way communication between residents and decision-makers.
- **Stay informed**: News updates, emergency alerts, and public health bulletins are readily available, keeping citizens up to date on important matters.

The COVID-19 pandemic further underscored the critical role local government websites play. When physical interaction became limited, these platforms became critical for accessing essential services, staying informed about important updates, and even connecting with virtual community resources.

Sample vendors in the marketplace include:

- CivicPlus
- Engaged Citizens
- PrimeGov
- Revize

- Finalsite
- ProudCity
- Accela
- OpenGov

Findings and Observations

- The City uses Granicus as its website content software

  - There are no major updates planned for Granicus per the vendor
  - Granicus is not ADA accessible

- Staff would like the following information available on the website:

  - Restaurant guide
  - Transit information and options
  - Business-focused communications
  - Alternatives to newspapers and US-mailed public notices

- Staff would like training to understand better how to use and improve community communications, such as project status
- Staff want training to ensure they are using the full functionality

Recommendations

- We recommend that the City consider replacing the current website.
- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best system for the City's needs. Following best practices reduces risk and ensures a successful outcome.

- Conduct a citywide needs assessment for external communications that could be posted or stored on the City website.
- Identify user training requirements by specific users responsible for website content.

  ◆ Assimilate the training needs with the "User Training and Support" initiative.
  ◆ Offer regular training to keep staff skills fresh and to ensure they can keep website content current.

- Develop content management policies and procedures, which may vary by department.
- Implement standard practices and make website maintenance a component of the Technology Steering Committee's responsibilities as part of the content management policy to ensure the site is maintained regularly and remains relevant and up-to-date for the public.

Benefits

- Improved public records access
- Increased information-sharing capabilities
- 24/7 availability
- Improved customer experiences
- Increased customer interaction and transaction capabilities

39. Request Management Software

Background

Request Management solutions are used to receive, track, and manage all types of requests and complaints from customers, citizens, or employees. These solutions can categorize requests, prompt for specific information required, assign and route information to specific staff or departments, track status, and fulfill overall reporting requirements for more effective handling and response.

Their primary objective is to ensure all inquiries, requests, and complaints are captured when received, routed to the proper resource, and responded to or resolved promptly, ensuring that the loop is closed on every contact. Ideal functionality includes:

- Request responsiveness
- Prompt request routing
- History tracking
- Interdepartmental resource linking
- Managing resources
- Benchmarking and performance-based measurements
- Planning and budgeting
- GIS integration
- Online customer surveys

Sample vendors include:

- Accela Civic Platform
- GovPilot
- CivicPlus
- OpenGov
- RockSolid - Granicus

Findings and Observations

- Customer requests are processed manually.
  - ◆ They are currently tracked in Excel.
  - ◆ Staff receive an email with the requested information for processing.
- The City requires customer request tracking software.

Recommendations

- The City should consider acquiring a Request Management system.
- We recommend that the City conduct comprehensive business process reviews to determine detailed feature/function requirements for a replacement system.
  - ◆ Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies.
  - ◆ This process should also include:
    - ▪ Inventorying all reporting requirements
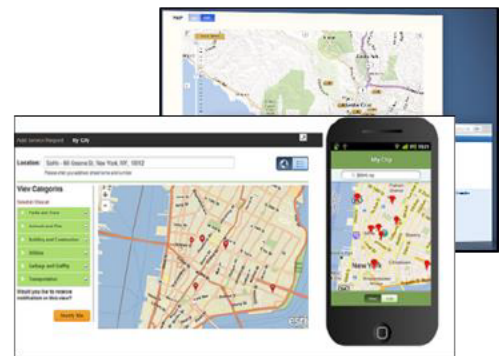
- Identifying all integration/interface requirements
- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall system for the City's needs. That system may consist of a single vendor's application modules or a combination of vendors so long as automated integrations between the applications can be established.
- Follow the guidelines in the "Applications Implementation Project Management Best Practices" initiative.

Benefits

- Increased customer satisfaction
- Centrally managed information
- Less time manually managing and monitoring
- Increased use of features
- Improved access to information
- Improved reporting and performance tracking

40. Public Records Request

Background

Public agencies have regulatory and legal requirements to provide public records upon request by external parties via the Public Records Act (PRA). Agencies have a growing need to manage PRA requests. Many agencies manage the process manually via paper or spreadsheets, resulting in backlogs and delays. Software vendors have developed standalone applications to help agencies automate the receipt, tracking, response, and payments for PRA requests in response to this need.

Alternatively, some Electronic Document Management Systems (EDMS) have this functionality. Some vendors in the public sector include:

- NextRequest
- JustFOIA
- Granicus
- FOIAXpress
- GovQA
- Hyland OnBase
- Laserfiche
- ████ Content Management
- ZyLAB

Findings and Observations

- The City uses Excel to manage public information requests.
  - There are many manual steps and reminders as part of the process.

Recommendations

- Follow the "Business Process Reviews Best Practices" initiative to determine detailed feature/function requirements for a new Public Records Request system.
  - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies
  - This process should also include:
    - Inventorying all reporting requirements
    - Identifying all integration/interface requirements with other applications
- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall, long-term system for the City's needs.
- Follow the guidelines of the "IT Project Planning and Implementation Best Practices" initiative.

41. Kiosks

Background

Kiosks are public-access computing devices placed in convenient places for citizens to access information and conduct transactions without having to call City staff members or wait in line at the office counter. This also provides a method for citizens without home computers to take advantage of electronic public portal business services available from the City. Potential uses include:

- Accessing various types of program information (perhaps from the City website)
- Accessing other community-oriented information or services
- Completing online forms or filings
- Completing various types of registrations or applications
- Making online payments

Findings and Observations

- The City is not currently using kiosks for citizens to use for certain self-service functions.
- Staff desire:
    - A lobby kiosk for the public to sign in
    - Public self-serve kiosks for class registration and water park ticket admissions. Ideally, two to three in the lobby and one by the basketball court.

- The City has the potential to utilize this technology for other business functions. Examples could include:
    - Accessing various types of program information (perhaps from the City websites)
    - Making online payments
    - Facilitating job applications and allowing for the completion of related forms online
    - Payment for City services without needing the assistance of staff

Recommendations

- Conduct a needs assessment to understand stakeholder needs and desired functionality.
- Consider using re-purposed desktop computers before spending additional funds on kiosks.
- Consider placement and use of kiosks for self-service at field locations or ancillary facilities.

42. GIS Assessment and Master Plan

Background

Geographic Information Systems provide the ability to inventory and track city geospatial assets. These assets can include any city asset or item that resides in a specific geographic location, including parcels of land, buildings, underground infrastructures, easements, streets, streetlights, signage, locations of crimes or public safety events, trees, and many more. Typical integrations between GIS and applications include:

- Land Management
- Work Orders and Asset Management
- CAD/RMS
- Document Management
- Planning and Economic Development

The City of Newark is a member of a GIS consortium with the cities of Fremont and Union City. This consortium provides Newark with parcel and ownership updates. The consortium does not provide additional resources for Newark-specific applications or requests. Newark has expressed a desire to expand GIS to include other geospatial applications and integrate GIS with City applications.

Additionally, the City of Newark is conducting an Information Technology Master Plan to identify and outline areas to improve upon and prepare for future Business System upgrades. The City of Newark, the City of Fremont, the Alameda County Water District (ACWD), and the Union Sanitary District (USD) are part of the Joint Powers Authority, "SACGISA". From sacgisa.org, "The Southern Alameda County GIS Authority was formed in April 2001 under a Joint Powers Agreement with the Cities of Fremont, Newark, Alameda County Water District, and Union Sanitary District. Its mission is to collectively develop, operate, and maintain a GIS system and data for its member agencies."

The Authority's service area is the Tri-City area, which generally includes the Cities of Fremont, Newark, Union City, and the areas within the boundaries of the Water District and Sanitary District. The consortium provides basic GIS mapping services. The City does not have dedicated GIS staff or a GIS database.

As the City plans for business system upgrades, an expansion of GIS services and applications from a centralized GIS database will be needed. A GIS Master Plan to identify GIS needs and prioritize steps to develop a GIS program to meet those needs is recommended.

Findings and Observations

- The City's GIS is not integrated into TRAKiT.
- All parcel, address, and base map data need to be updated and imported into TRAKiT.
- Additional data layers are needed.
- Training is needed in both eGIS and new ESRI-based software for selected users. Staff Feedback
- Staff do not have access to a GIS suite of products enabling the creation and updating of GIS datasets and expanded use of GIS data for Custom Maps, Analysis, and Citizen Engagement.
- The current GIS configuration limits the ability to integrate with Business Systems for increased efficiency. These systems might include Asset Management Systems, Document Management Systems, Customer Information Systems, Land Management Systems, Police Systems, and ERP Systems.

- The City lacks awareness of GIS capabilities and existing gaps in the current GIS configuration. Awareness of issues extends to:
  - ◆ Incomplete data
  - ◆ Data quality
  - ◆ Unresolved data issues
  - ◆ Unforeseen GIS service gaps
  - ◆ GIS best practices
  - ◆ GIS service and support expectations
  - ◆ Staffing limitations

Staff Feedback

Building Inspection

- Training with the GIS component of TRAKiT is desired

City Manager's Office

- Staff need liquefaction GIS data, flood zones, and basic mapping.

Community Development

- Staff need the following GIS layers:
  - ◆ Zoning
  - ◆ Land use
  - ◆ Planned development sites
  - ◆ Historic resources
  - ◆ Housing Element opportunity sites
  - ◆ Code enforcement cases
  - ◆ Elected/Appointed officials' conflict of interest maps
- Staff would like a citywide GIS master plan
- Staff would like links to Census/Dept. of Finance databases
- Staff would like links to property information databases
- Staff would like the GIS to integrate with other databases: TRAKiT, CoStar, Start-Up Space, HdLPrime
- Staff would like to see in-process project info online

Engineering

- GIS functionality in the City of Newark is basically non-existent
- Concrete repair requests, with email automatically generated and sent to identified Engineering staff
- Need ArcGIS training
- Need the ability for staff to send various data sets to the GIS Department to create new/update data layers:
  - ◆ Link StreetSaver PCI data - Pavement maintenance program
  - ◆ As-built record drawings of roadway improvement projects
  - ◆ Asset management: Street lights, Traffic Signals, Curb ramps (non-compliant vs compliant), City-owned sound walls, Trash Capture Devices, Stormwater treatment measures
  - ◆ Parcel Maps/Final Maps
  - ◆ AIDs

- ◆ L&L Districts
- ◆ Maintenance responsibilities (i.e., areas within Public ROW maintained by HOAs)
- ◆ Traffic accident data
- ◆ Sidewalk repair requests

- Need the ability to generate various maps on demand
- Other requests (e.g., graffiti, illegal dumping, traffic complaints, streetlight outages, etc.). Need to be able to accept with email automatically generated and sent to pre-determined appropriate staff and reminder notices if not resolved and status summaries
- Staff has continuously requested hiring a GIS Technician/Analyst/Manager for several years, but the City still lacks internal knowledge and expertise

Facilities

- Need maps of backflows

Recommendations

- Develop a GIS Master Plan to assess and prioritize projects related to GIS:

  - ◆ Architecture
  - ◆ Application Integration
  - ◆ Data Management
  - ◆ Departmental Needs

- Based on the GIS Master Plan, identify necessary GIS resources.

43. Mass Outbound Communications System

Background

Outbound communication systems, including Reverse 911, have significantly transformed in recent years. Public agencies have historically used enhanced mass notification systems to issue public notifications of severe weather warnings, traffic notifications, or other events such as street closures, interruptions in water service, major organization events, etc. The systems use delivery mechanisms like email, text messages, RSS feeds, and social media. Many systems can integrate with warning systems or GIS. Modern systems have even incorporated additional functionality to support advertising campaigns and public or legislative relations.

Example solutions include:

- AlertMedia
- Alertus
- OnSolve
- Everbridge
- RedFlag

Findings and Observations

- The City currently uses Everbridge Nixle for emergency alerts through a joint agency.
- The City Manager's office handles most outbound communications.
- Notification capabilities for group users of the Silliman Center and Senior Center regarding program closures, updates, and announcements are necessary but currently unavailable.

Recommendations

- Follow the "Business Process Reviews Best Practices" initiative to determine detailed feature/function requirements for a new mass outbound communication system.

  - Review applicable manual processes and shadow systems, such as spreadsheets, paper, and other databases, to determine which automation improvements will eliminate or reduce those processes and/or shadow systems and result in labor efficiencies.
  - This process should also include:
    - Inventorying all reporting requirements
    - Identifying all integration/interface requirements

- Follow the guidelines of the "Software Selection Best Practices" initiative to select the best overall, long-term system for the City's needs.
- Follow the guidelines in the "IT Project Planning and Implementation Project Management Best Practices" initiative.
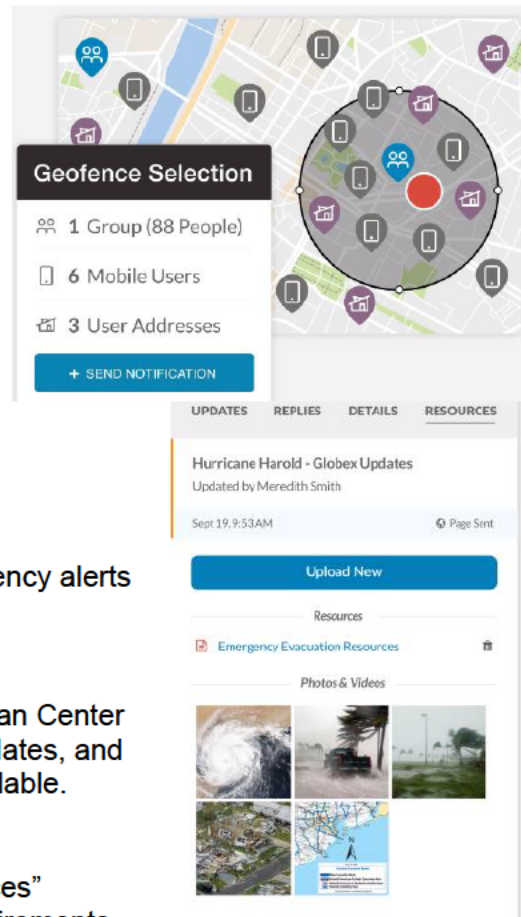
Benefits

- Increased community outreach
- Improved public relations
- A single standardized tool for use across the City

44.   Social Media Policy and Strategy

Background

A social media policy is a code of conduct that provides guidelines for departments and individual employees who create a social media presence and post content on that presence or the Internet, either as part of their responsibilities or as a private person. Setting clear expectations for departments and employees can positively affect the organization's image within the community, as well as avoid embarrassment and legal liabilities.

Findings and Observations

- The existing social media policy is eight years old. The City would like to review and update the policy.
- Recreation staff use Archive Social and Hootsuite to manage all social platforms.
- Staff use MailChimp to communicate with constituents.
- Staff would like to see more robust use of Twitter, NextDoor, Instagram, and LinkedIn.
- The City lacks multilingual communication.
- Newark News and the Restaurant Guide are distributed on paper.

Recommendations

- Software products that automatically update several social media outlets from the webpage are readily available and should be used to realize efficiencies.
- Consider potential social media integration opportunities with the organization's websites.
- Develop and implement a social media policy that outlines staff responsibilities for city social media accounts and employee responsibilities for personal posts related to city business.
- Provide approval to employ a limited number of named social media sites subject to review by the Technology Governance Committee and management approval.
- Provide tutorials for employees who use social media to promote organization events and information.
- Procure a software application to track and archive social media posts and updates in compliance with the Public Records Act (PRA).
    - CivicPlus and Archive Social are two examples of applications for PRA compliance.

Benefits

- Increased community involvement
- Improved public records access
- Enhanced communication
- Improved public relations
- Fulfillment of public expectations
- Increased promotion of business growth
- Mitigation of risk through education of staff on policy and practices

45. Artificial Intelligence

Background

In recent years, rapid advancements in artificial intelligence (AI) have opened up new possibilities for enhancing public services and improving governance. Local governments are crucial in addressing their community's unique needs and challenges. By embracing AI technologies, local governments can harness the power of data-driven decision-making, automate routine tasks, and deliver more efficient and citizen-centric services.

In its simplest form, artificial intelligence is a technical model/program that learns from past data models used to solve a specific problem or provide a particular service. AI uses large amounts of data to perform specific tasks designed by the developer. Its two limiting factors are the task(s) the program was built to do and the data used to train the AI program. When correctly trained, AI can increase efficiency across many facets of local government.

Findings and Observations

Over the past few years, there has been a significant push for greater utilization of AI in local government. Based on recent developments, there are currently many use cases and examples for AI:

- Similar to ChatGPT, generative AI programs designed specifically for local governments can use data from budget records to provide first drafts for various components of budget reports.
- Generative AI can transcribe meeting minutes and summarize key takeaways and action items from meetings.
- AI can also be implemented to improve constituent support systems. AI-driven chatbots on websites are becoming increasingly common to direct constituents to the information they need.
- Replacing existing website search engines with improved AI-based systems can tremendously benefit constituents.
- AI is also used for various infrastructure assessment types (city mapping, property assessment, pavement assessments, trash monitoring, and more).
- Instead of manually inspecting city spaces, AI can scan large areas and provide 3D maps that agency staff can use.
- AI can be trained to recognize and note abnormalities in digital video data for further review or action.
- Newark has joined the San Jose-led GovAI coalition to participate in local government information sharing related to Artificial Intelligence.

It is important to note that AI is only as good as the data it is trained on (and that it continually learns from). As such, it is important to ensure data quality and identify areas of potential bias when implementing AI in agency operations.

Recommendations

- Education - Before undertaking any significant AI initiatives, it is important to develop awareness and understanding amongst agency staff of the benefits of AI initiatives.

    - Education
    - Training
    - Example use cases

- Policy – develop a policy that outlines potential uses for AI, the types of data that may be input into an AI model, and requirements for citing the use of AI and validating results, among other specific needs.

- Build consensus throughout the organization (and the community) before undertaking AI initiatives.
- Once there is buy-in from both city staff and constituents, identify priority areas. Conduct a comprehensive assessment of local government operations to identify areas where AI can bring the most significant benefits, such as citizen services, public safety, administrative processes, or resource allocation.
- Collect and maintain historical data for areas that may benefit from AI to assist in training AI and improving results.
- Upon identifying priority areas, pilot AI initiatives. Start with small-scale pilot projects in collaboration with technology partners to evaluate the feasibility and effectiveness of AI applications in real-world local government scenarios. Monitor and evaluate the outcomes to refine the implementation process.
- Based on the pilot initiatives' results, develop larger-scale initiatives similar to, but not limited to, the programs discussed in the Findings and Observations section above.
- Adopt an iterative improvement model in which Agency staff constantly monitors AI programs and identifies areas for improvement.

46. Smart Cities Technology Strategies

Background

The concept of a smart city has been evolving over the last few years to encompass a collection of applications that typically are external to City facilities but within the boundaries of the jurisdiction. These applications rely on high-speed connectivity and many external devices or sensors to gather significant amounts of data for analysis. Automated analysis of large amounts of data makes these applications "smart". The key components of a smart city are included below:

Components	Aspect of City Life
Smart Economy	Industry
Smart People	Education
Smart Governance	E-Government
Smart Mobility	Logistics & Infrastructure
Smart Environment	Sustainability
Smart Living	Security & Quality

Smart city initiatives generally include technologies and networks that are external to City facilities. This externality, by necessity, expands City infrastructure throughout the City.

The International Data Corporations Maturity Model can be used better to understand the City's smart city adoption level to aid the self-assessment process. The table below provides a high-level overview of the Maturity Model.

	Level 1: Ad Hoc	Level 2: Opportunistic	Level 3: Purposeful and Repeatable	Level 4: Operationalized	Level 5: Optimized
City Management Status	Siloed	System Collaboration	System Integration	Managed System	Sustainable and Open' System of Systems'
Smart City Status *Digital Technologies as an Enable	Operation-focused digital and data-driven Service Improvement	Holistic system thinking and emergent sharing of data	Strategy-led and outcome-driven. Enabled by system-wide technology investment	Technology and data-enabled dynamic sense and response systems	Continuously adaptive citywide 'smart' deployment
Effect on Outcomes	Capturing evidence and building a business case	Cross-boundary partnerships emerging to focus on shared outcomes	Shared accountability for outcomes and joint system-wide investment program	Improved prediction, prevention, and real-time response delivers improved outcomes	Citywide open system of systems' approach drives innovation that enhances City competitiveness

Findings and Observations

- An initial Smart City assessment has been included in the Broadband Master Plan under the title Connected Communities. This plan is under development.
- The smart city label has been co-opted by many vendors who have adopted the "smart" idea to a myriad of different marketing and sales concepts.
- Smart city initiatives are not all specific to IT. For example, many smart city initiatives align with Engineering.

    - Regardless of alignment, smart city initiatives require excellent procurement, business analysis, and project-management skillsets.

- Many communities currently utilize apps defined as smart city technologies (such as License Plate Readers).
- Sustainability should be the goal of every smart city initiative. Initiatives that require significant ongoing resources to achieve the desired result should be viewed skeptically.
- Many smart city initiatives leverage the IT infrastructure and stretch IT's boundaries beyond City facilities.

    - It is important to address internal IT infrastructure or operational issues before undertaking any significant smart city initiatives.

- Siloed or standalone smart city initiatives will be less effective over time than initiatives that are fully integrated into City systems.

Recommendations

- Develop smart city goals and objectives. As an example, one California city has identified the following goals in its smart city strategic plan:

    - Connected – Included in the Broadband Master Plan
    - Responsive
    - Transparent
    - Innovative

- Before undertaking any significant smart city initiatives, identify and, as much as possible, quantify expected benefits. Benefits could include energy efficiency, cost savings, improved resident service, and/or improved public safety.
- Build consensus throughout the organization (and, if necessary, in the community) before undertaking significant smart city initiatives.
- Utilize application management, procurement, and implementation project management best practices for smart city initiatives.
- Develop cybersecurity capabilities that support the Internet of Things (IoT).
- Research and procure a cybersecurity tool that does not require installation on individual devices.

47.   Broadband Master Plan

Findings and Observations

Studies show that the availability and use of high-speed Internet access in a community has significant economic and quality-of-life benefits. These include better health outcomes, improved job-seeking capabilities, more rapid re-employment, and community transparency. The existing Internet and fiber-optic provider infrastructure in the City is limited. In addition, community development would be enhanced by increased availability of wireless in the downtown area.

Finally, broadband or high-speed wireless Internet is a key infrastructure component of a smart city strategy. A strong wireless infrastructure can be an enabler for Smart meters (water or parking), the Internet of Things (IoT), automatic license plate readers, some low-resolution video applications, and many more smart city tools.

The City has set aside American Recovery Act funding to provide funding for initial fiber interconnects to City facilities. Further, California has set aside $2 billion for last-mile broadband infrastructure, $3.25 billion for a statewide open-access middle-mile network, and $750 million to help local governments obtain better borrowing terms for broadband deployment projects. The Infrastructure Investment and Jobs Act (IIJA) created the Broadband Equity, Access, and Deployment (BEAD) program, which will fund $1.86 billion to California for deployment of high-speed broadband infrastructure and to improve adoption in underserved locations.

Findings and Observations

- The City leases wide area network services (MLPS) for remote sites to connect back to the Civic Center campus.
- The implementation of a city-owned fiber network could reduce or eliminate the monthly lease costs.
- Additional fiber connectivity to traffic signals, parks, and high-crime areas would provide for the deployment of additional public safety tools.

Recommendations

- Review and adopt the Broadband Master Plan.
- Implement initial connectivity as recommended by the plan.

Benefits

- Improved staff productivity return on investment
- Timely access to information for serving residents/public
- Reliability, dependability, and consistency of network communication

IT Infrastructure refers to networks, servers, equipment, inside or outside cable plants, and other communications infrastructure.

48. Computer Equipment Replacement Planning

49. Computer Room, IT Closets, and Power Distribution Improvements

50. Council Chambers Audiovisual

51. Conference Room Audiovisual Refresh

52. Internet Bandwidth

53. Network Upgrade

54. Server Upgrades

55. Structured Connectivity System

56. Public Safety Video System

57. Door Access Control Improvements

58. Wireless Network Improvements (Wi-Fi)

IT Infrastructure

48. Computer Equipment Replacement Planning

Findings and Observations

- The City does not have a formal replacement schedule for technology equipment, including servers, storage, switches, or firewalls.
- IT has begun to replace desktop PCs and laptops on a regular basis
- Many infrastructure replacements and upgrades are overdue.
- Other technology systems, such as audiovisual systems, camera systems, door access control systems, and video surveillance systems, do not have a formal replacement schedule.

Recommendations

- Create and maintain an inventory of all technology-related equipment, year purchased, warranty duration, and other useful information.
  - ◆ Expand the inventory to all technology with a standard life expectancy.
- Develop a ten-year, rolling computer equipment replacement plan and budget accordingly.
- Allow customized length of time for replacement of any technology that may have a unique end-of-life.
- Continue to purchase discounted extended warranties at the time of purchase that will cover the equipment throughout its useful life (e.g., five years for computers and servers).

IT Equipment	Recommended Replacement Cycle (Years)
Network Switches	7
Phone System Upgrade	5
Phone System Replacement	10
Audiovisual Equipment	5
Servers	5
Disk Storage	5
PCs	5
Laptops	4
Mobile Devices	2
Wireless Devices:	
Point-to-Point	5
Wireless LAN	4
Windows Software	+/- 5
MS Office	+/- 5
Printers, Scanners	5
Plotters	5

Benefits

- Better forecasting of purchases
- Managed process that flattens capital expenditures over time
- Improved computer performance
- Improved available features
- Improved portability through the use of a single device
- Ability to keep spare equipment around to be reissued, eliminating employee downtime
- Increased employee performance by eliminating the use of old, slow, and post-life cycle technology
- Reduced total cost of ownership

49. Computer Room, IT Closets, and Power Distribution Improvements

Findings and Observations

- **Corporation Yard, Senior Center, Community Center Tele/Data Closets**
  - Some Corporation Yard network locations are out in the open on shelves (photo below)
  - Not all network equipment is attached to UPS systems
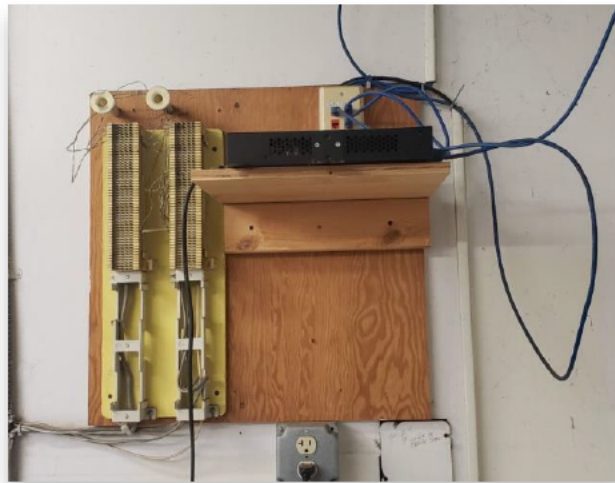
- **Silliman Center**
  - Network cabling in the original building is Category 5 and may not be capable of operating at current network speeds
  - The network equipment is located in two rooms, which are connected by conduit
  - Cable terminations are sub-standard in the janitor closet network installation

Recommendations

- Corporation Yard, Senior Center, Community Center
  - Review existing equipment locations:
    - Add UPS systems as necessary
    - Implement enclosed wall-mount cabinets
    - Consider industrial cabinets in work areas
- Silliman Center
  - Plan for IT cable upgrade to Category 6 or greater in the original building
  - Consider re-terminating cabling in the janitor closet installation near the pool

Benefits

- Improved support for server and network equipment
- Improved management and monitoring capabilities
- Longer-lasting equipment and extended runtime
- Reduced cost in replacement of failed hardware
- Reduced downtime for network and services for citizens
- Addressed structural integrity issues with a building
- Reduced risk of significant loss of equipment and power systems

50.   Council Chambers Audiovisual

Background

Council Chambers audiovisual (AV) tools are used to record and stream public meetings to the Internet. The resulting recording can be matched with the agenda items through software to allow interested parties to select an agenda item and click directly to the related video.

Findings and Observations

- Council Chambers A/V upgrades were approved in December 2023.
  - PEG funds were utilized for the upgrades in early 2024.

Recommendations

- Conduct a Council Chambers meeting walk-through with staff as a part of system acceptance.
- Add Council Chambers A/V to the Computer Equipment Replacement Plan.

Benefits

- Improved production quality of public meetings held in the Council Chambers

51. Conference Room Audiovisual Refresh

Background

Conference room audiovisual (AV) tools are used to enhance meetings and special events. We expect the demand for AV systems for virtual meetings and long-distance gatherings will decrease somewhat but not significantly after COVID. AV systems have improved dramatically recently and also integrate collaboration features, mobile devices, and sound-sensing cameras.

Findings and Observations

- A/V systems in conference rooms are consistently unreliable.
- Conference room audiovisual equipment is not consistent across the City.
- Conference room audiovisual systems are not integrated with Teams or Zoom capabilities.
- Upgrades to Civic Center conference rooms and Police Training Room were completed in January and February of 2024.

Recommendations

- As a part of implementation, train staff to use the new equipment.
  - Develop laminated self-help guides for each conference room.
- Inventory all other conference rooms and upgrade as appropriate.
  - Consider room size and two-way audio and visual needs when specifying equipment for each room.
- Budget for audiovisual system replacements as a part of the recommended computer equipment replacement fund.
- Procure audiovisual systems through a Best Practice procurement methodology.

Benefits

- Improved production quality of meetings and other public uses of the space
- Improved overall use and traffic at the facilities

52. Internet Bandwidth

Background

Increased Internet bandwidth and high availability are becoming increasingly important to organizations for daily productivity. Multiple Internet connections are critical to building resilient access to cloud services. Additional bandwidth for peak usage periods and provides for resiliency when disasters that affect primary Internet connections occur.

Findings and Observations

- The City's primary Internet connection is 800Mbps.
- The secondary Internet connection is 250Mbps.
- Moving from the primary to the secondary connection is a manual process.
- Future increased use of cloud services will increase the bandwidth utilization.
- Most peer agencies are moving toward two diverse, high-speed Internet connections.

  - Often, a satellite-based Internet connection is implemented to provide some connectivity should fiber-based services fail.

Recommendations

- Expand the secondary Internet connection to a speed equivalent to the primary connection.
- Implement automated fail-over from primary to secondary or load balancing.
- Additional Internet will be required as the City increases the use of cloud-based systems and provides connectivity for redundancy and disaster recovery.
- Add satellite-based Internet at the City Hall/Police Department/Library campus to provide limited service in the event of a fiber cut.
- Increased Internet costs have been included in the recommended *Five-Year Budget*.

Benefits

- Improved performance
- Increased Internet uptime
- Increased resiliency, providing increased cloud-based applications and services uptime
- Reduced risk and liability
- Disaster recovery safeguard

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53. Network Upgrade

Background

A *Local Area Network* (LAN) is a group of interconnected computers that span a building using copper, fiber cabling, or wireless technology as a means of communication. Typically, access to a LAN is controlled by authentication software integrated with Active Directory. Authorized users access the network and can then use resources and applications assigned to them. LANs are very common due to their small size, low maintenance, fast speeds, and ease of use.

Findings and Observations

- The City primarily uses Cisco switches.
  - The core networks at City Hall and Police were reviewed and enhanced recently.
  - Some network equipment at other City facilities is leased from the City's telecommunications provider.
  - Some Silliman Center switches are older.

- Micro-segmentation is a cybersecurity trend, and virtual networking is a network management trend.
- A limited number of Virtual LANs (VLANs) are in place in some parts of the organization.
- Port-level security is not in use.
- The City does not have a network management tool.

Recommendations

- Improve network documentation and diagrams.
- Inventory and replace all older or leased equipment prior to the implementation of a new telephone system.
- Expand VLANs to separate critical applications (micro-segmentation) further.
- Develop a comprehensive network design to correspond with a planned network upgrade.
  - Expand the use of VLANs to increase prioritization and security.
  - Consider routing at regional aggregation points to facilitate local communications and services.
  - Determine the best method of implementation of port-level security.

- Include network equipment in the capital replacement plan.

Benefits

- Improved network performance and reliability
- Increased security on network and resources
- Reduced costs associated with replacements and failures.
- Ability to establish an internal network uptime Service Level Agreement (99.9% would be standard for local government)
- Improved budget and project planning
- Increased network resiliency and performance
- Reduced IT staff support effort

54.   Server Upgrades

Background

- Newark utilizes a hyper-converged system to host the majority of City servers.

  - Hyperconverged Infrastructure (HCI) is a software-defined IT infrastructure that virtualizes all the elements of conventional "hardware-defined" systems. HCI includes, at a minimum, virtualized computing (a hypervisor), software-defined storage, and virtualized networking (software-defined networking)
  - Hyperconverged systems are designed to be highly resilient.
  - Failure of any single component does not affect capabilities
  - HCI reduces administration and support
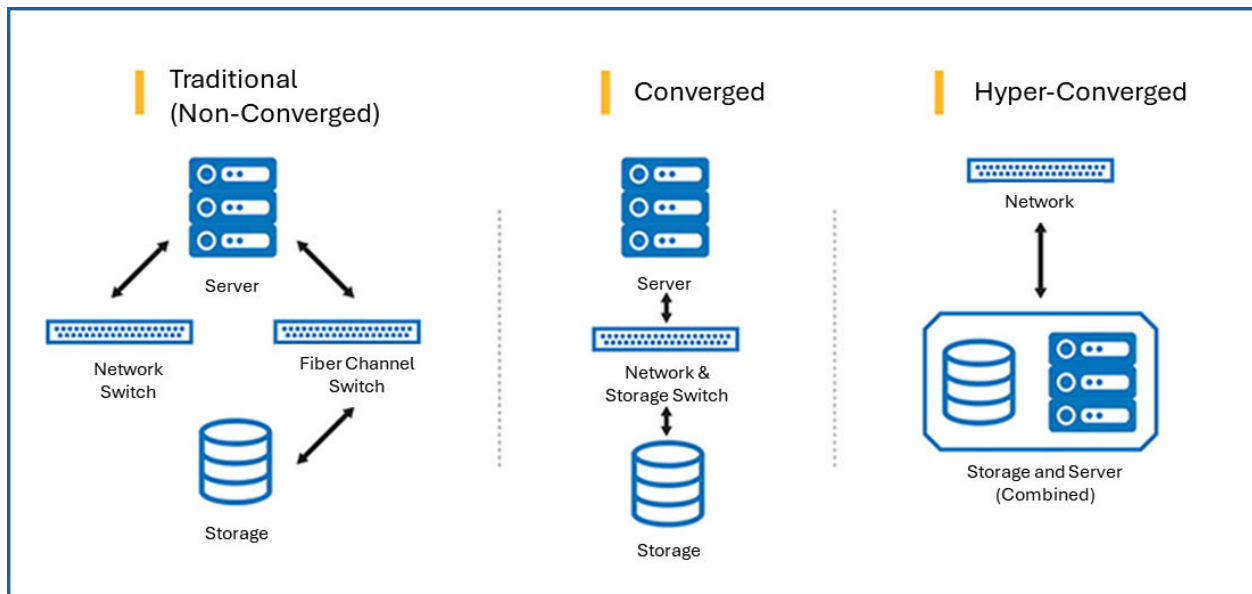
Findings and Observations

- The City's hyper-converged system is six years old and requires replacement.

  - The City uses the native "hypervisor" for virtualization and server management.

    - Most of our clients with this system continue to utilize VMware for virtualization.

- The City has three Microsoft 2012 servers.

  - 2022 is the current version.

- Windows 2012 is end-of-life and no longer supported.

Recommendations

- Conduct a Best Practices procurement to replace the existing hyper-converged server/disk infrastructure.

  - Consider utilizing VMware for virtualization and server management.

- Upgrade to standard Windows Server 2022 when possible.

55. Structured Connectivity System

Background

A *structured connectivity system* is a complete set of cabling and connectivity products that integrate voice, data, wireless, video, and other technology systems into a comprehensive infrastructure.

Current approved cabling standards are Category 5e, Category 6, Category 6A and Category 8. The majority of new installations are Category 6 or Category 6A. Category 6A is capable of transmitting multi-gigabits of data in support of current-generation wireless access points.
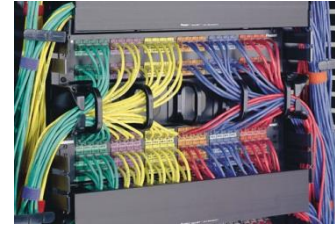
Findings and Observations

- The original structure at Silliman Center has Category 5 cable installed.
- Silliman Center addition (poolside) cabling terminations are split between the boiler room and a closet next to the boiler room.
- Senior Center, Corporation Yard, and Community Center all have older cabling with minimal cable management and environmental control.

Recommendations

- Assess cabling installations for quality and completeness.
    - Improve cabling in conjunction with projects to improve tele/data closets to provide additional security and environmental protection.
- Install two Cat 6A cables to each new Wireless Access Point (WAP) location.
- Develop Structured Cabling Systems (SCS) standards as a basis for any upcoming re-cabling efforts.
    - This document will be used to support the ongoing needs of the City as it relates to maintaining the existing SCS and can be provided to architects and/or contractors as part of the construction specification for future projects. The SCS Standards Document should have the following as its goals:
        - Implement a non-proprietary cable infrastructure system supporting multi-vendor equipment and services.
        - Provide reduced costs for future cable installation, support, and management.
        - Maintain consistency by providing reduced training requirements for employees.
        - Improve troubleshooting and support for ongoing management/maintenance.
        - Create a system based on recognized industry standards (ANSI, TIA/EIA, IEEE, and BICSI).
- Provide a suitable patch cord management system at equipment racks and/or cabinets.
    - Improve patch cord management by reducing patch cord lengths and improving "dressing."
- Utilize the SCS standards to bid and hire a contractor to perform small cabling jobs as required.

56. Public Safety Video System

Background

Security camera systems can be an effective security tool and criminal deterrent. One study by the Urban Institute determined that the savings and benefits of fewer incidents and crimes outweighed the cost of video systems. The study also found that Police, policymakers, and others involved in facility or property oversight largely viewed security, surveillance, or monitoring cameras as useful tools for managing behavior, preventing crimes, aiding in response, assisting in arrests, and supporting investigations and prosecutions.

Video systems can be integrated with door access control systems to improve visibility into door-related alarms, such as focusing a camera on a door that has been propped open too long.

Recently, police departments have found that a mix of video options is required to provide optimal public safety capabilities. These include static video cameras, pan-tilt-zoom cameras, and fixed and mobile automated license plate readers (ALPRs).

Findings and Observations

- The City has a limited number of public safety video cameras.
- Additional cameras and storage are necessary to meet legal requirements for evidence processing.
- Cameras are necessary to monitor Police Department evidence stored at the Corporation Yard.
- Additional video camera coverage would be helpful at Silliman Center to monitor the exterior of the building and art installations.
- The Police Department needs access to the software and to real-time feeds for response efforts.
- The Police Department cannot use existing cameras because the DOJ requires 365-day video retention for property and evidence.
- A Public Project bid to procure the additional video cameras has been issued, and bids have been received.

Recommendations

- Complete the Public Project bid process and procure additional video cameras for City facilities.

57. Door Access Control Improvements

Background

Door Access Control, sometimes referred to as keyless entry, is an effective way for the City to manage security and control access to various buildings, facilities, and secure spaces. The system limits security risks and allows for the management of access by employees, customers, and the public. Many municipalities are moving to a single, organization-wide system to manage security and access to facilities. Some systems in the marketplace allow for integration with video security systems to allow the City to associate keyless entry devices with video or photographic imagery to ensure users comply with contractual or rental agreements.

Findings and Observations

- The City implemented proximity card-based door access control at the Civic Center campus.
  - The system installed at the Civic Center is an industry leader and can be expanded to meet additional requirements.
- A recent incident caused an assessment of door access control citywide.
- Additional Door Access control needs have been identified throughout the City.
- Some high-priority door and gate access control enhancements are underway.
- A bid document is being prepared to expand door access control at all City facilities.
  - Requirements have been gathered from the departments for recommended improvements.
- There are no automated locks in any department. Facilities and Janitorial contractors manually lock/unlock doors in various facilities.
- Staff find the system hard to use and would like more training.
- Key cards and fob numbers overlap.
- The City issued a public bid for it and is in the process of awarding it.

Recommendations

- Follow the guidelines of the *"IT Project Planning and Implementation Best Practices"* initiative.

Benefits

- Improved maintenance and labor efficiencies
- Mechanical locks and keys replaced with electronic locks, badges, or cards and readers
- Eliminate the expense of re-keying or changing locks for employee separations.
- Employees and others are less likely to set off false alarms
- Automatic regulation of access reduces the need for on-site security personnel
- Allows for more efficient temporary access by outside personnel, like visitors or vendors
- Decreases liability and risk from greater access control

58.   Wireless Network Improvements (Wi-Fi)

Background

High-speed wireless Internet is a key infrastructure component of a Smart City strategy. A strong wireless infrastructure for staff and public wireless access at City facilities is now expected. A public wireless infrastructure deployed throughout the City can enable many Smart City applications, including smart meters (water or parking), the Internet of Things (IoT), automatic license plate readers, traffic monitors, some video surveillance applications, and many more Smart City tools.

Findings and Observations

- The City has installed Wi-Fi network technology within each facility to provide employees and the public with wireless Internet access.
- Demand for Wi-Fi will continue to increase.
  - Staff demand for Wi-Fi in outdoor spaces will increase as they become more mobile.
  - Public demand for wireless at City parks will increase.

Recommendations

- Expand wireless to all City facilities' outdoor spaces.
  - Plan for wireless access through the Corporation Yard.
- Provide wireless in City parks.
  - Program wireless availability to correspond with hours of operation.
  - Some agencies time public wireless usage to limit long-term streaming.

Benefits

- Improved wireless speeds
- Reduced complexity
- Increased security
- Expanded coverage

The *IT Operations* section addresses daily support and maintenance of all IT infrastructure and user support.

59. Help/Service Desk Ticketing System

60. IT Asset Management Automation

61. IT Automation Tools (Patch Management)

62. Identity and Access Management

63. IT Policies and Procedures

64. Mobile Device Management

65. Network Management Tools (Configuration Management)

IT Operations

59.   Help/Service Desk Ticketing System

Background

Service Desk systems make it easy for users to submit requests. IT staff members can assign and track tickets. The automated electronic, email-based communications included in Service Desk systems can allow users to track the progress of their tickets as IT staff members update the status. Service Desk systems prevent items from "falling through the cracks" by logging all requests. Another key benefit of Service Desk ticketing systems is the collection and analysis of metric data related to the number of requests submitted, resolved, and remaining open.

Sample vendors include:

- ManageEngine ServiceDesk Plus
- Rezolve
- iSupport
- ServiceTonic
- Deskpro

Findings and Observations

- The City uses ConnectWise for Help Desk/Service Desk ticketing.
- Staff are unhappy with ConnectWise and the system's cost/benefit.
  - A project to replace the system with a more cost-effective solution is underway.

Recommendations

- Follow Software Selection Best Practices in the selection of a new Help Desk ticketing system.
  - When implementing a new Help Desk system, develop a marketing campaign to encourage users to utilize the ticketing system.
- Revise Service Desk data capture to a more hierarchical data collection model. Collect data based on:
  - User department
  - Issues vs. requests for service
  - Application
- Metrics related to meeting Service Desk service levels should be developed and tracked on a weekly and monthly basis.
  - Staff should be encouraged to report all time spent on Service Desk tickets in the system.
- Key metrics may include:
  - Tickets submitted by department
  - Tickets closed during the month
  - Average number of tickets open during the month
  - Staff time spent per ticket and overall on problem resolution and service
  - Thirteen-month rolling graphs of the above metrics
  - Ticket aging reports, such as tickets open more than seven days
- Develop Help Desk ticket response-time and resolution-time goals based on urgency.

- Track the number of tickets assigned, priority, response time, and resolution time by team members.

- Summaries of Service Desk tickets opened and closed should be presented to management each month as part of IT's key performance indicators.

Benefits

- Central ticketing system
- Availability to many users
- Increased resolution rates
- Support for all devices
- Improved user communication, experiences, and satisfaction
- Better diagnostics and problem identification

60. IT Asset Management Automation

Background

IT Asset Management automation is a computer-aided system for asset maintenance and management functions, which include asset management, inventory, deployment, and security-patch management. The automation features allow the reduction of manual processes, enabling more efficient processing and monitoring of activities.

Sample vendors include:

- ConnectWise
- ManageEngine
- Microsoft Intune

Findings

- ConnectWise is also used for IT Asset Management.

  - Implementation of ConnectWise as an Asset Management system is not complete.
  - Staff inventory of workstations and printers manually.

- IT Asset Management systems automate network and desktop inventory tasks.
- IT Asset Management systems are often integrated with Help Desk or Desktop Management systems.

Recommendations

- When selecting the Help Desk system, include requirements for IT Asset Management.

  - Include real-time asset detection for new or rouge devices in the requirements (CIS Controls).
  - Include software inventory in the asset management requirements (CIS Controls).

61. IT Automation Tools (Patch Management)

Findings and Observations

- Patches and security updates for non-Microsoft products are performed manually by IT staff.
- The City IT staff is using WSUS to patch Microsoft products.
  - WSUS will patch Windows software but will not patch common desktop applications such as Adobe or Java.
- Patches are not pushed to a "sandbox", including pilot PCs from various departments.

Recommendations

- IT should replace WSUS with an enterprise patch management solution to cover all software within the organization.
- Many agencies are moving to Microsoft InTune to provide patch management capabilities for desktops, laptops, and other mobile devices.
  - InTune now includes notification of critical vulnerabilities and out-of-date software.
  - A somewhat limited feature set is available through a Microsoft G3 subscription.
    - Recommend moving to Microsoft G5 to have all Microsoft security and desktop management tools available.
- Create a best practices patch deployment methodology that includes a small subset of desktop deployments to verify patch performance before full deployment.
  - Using a managed deployment methodology is important for Dispatch and other critical workstations.

62.   Identity and Access Management

Background

Identity and Access Management includes Multi-factor Authentication (MFA), Single Sign-On (SSO), Privileged Access Management (PAM), and user onboarding/offboarding. It is meant to help secure an organization's resources and data, with access only given to authorized accounts.

Identity and Access Management (IAM) is the organizational and technical process for first registering and authorizing access rights in the configuration phase and then in the operation phase for identifying, authenticating, and controlling individual or group access rights. Identity Management (IdM) is the task of controlling information about users on computers. Such information includes information that authenticates the identity of a user and information that describes data and actions they are authorized to access and/or perform. It also includes the management of descriptive information about the user and how and by whom that information can be accessed and modified. In addition to users, managed entities typically include hardware and network resources and business applications.
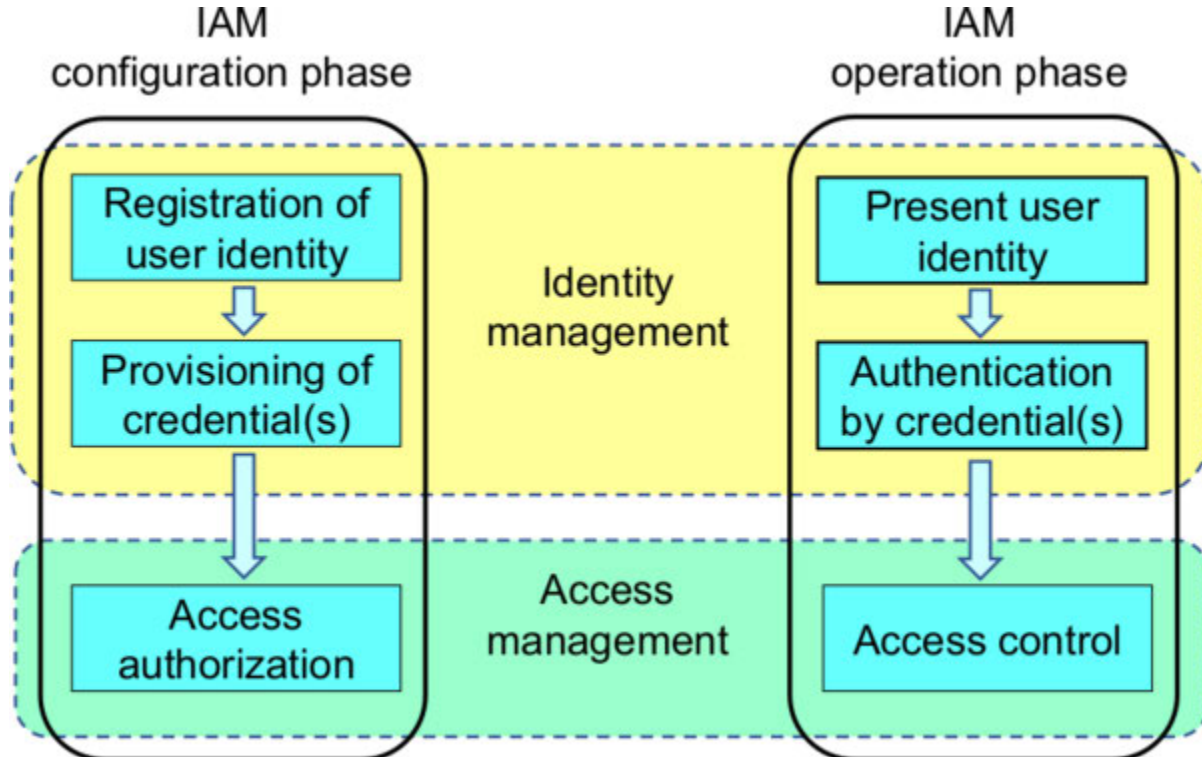
Identity and Access Management applies to enterprise or departmental applications systems. These are often set up using role-based security to allow people to access specific information within a system, including what capabilities they might have for approval or whether they can view, add, change, or delete information. These system roles are very critical, and if not set up properly, they can allow unauthorized personnel to see restricted information or even deny access or capability for those who need access and should be authorized to perform critical tasks.

Identity and Access Management includes onboarding staff, identifying and applying the proper security rights for the job function, and offboarding staff when they leave the organization. When staff are offboarded, emails and files are typically transferred to another staff member until they are no longer needed. Then, records retention policies and procedures apply to email and file retention or disposal.

Identity management can help protect users from password fatigue, where a user accustomed to frequent password prompts can sometimes enter a password to a malicious prompt out of familiarity. Single Sign-On can also help increase productivity for users who need to remember passwords to multiple applications.

Findings and Observations

- MFA is in place for most staff computer access.

  - New Criminal Justice Information System requirements expand the scope of MFA deployment.
  - Additional MFA deployment is needed within the IT function for certain activities.

- Departments are responsible for informing IT that new staff have been hired, along with their roles and responsibilities.
- The IT process for onboarding staff and providing appropriate computer equipment appears to be timely and efficient.
- Departments are responsible for informing IT that staff have left the organization or have changed roles.
- IT reports that prompt notification of staff leaving the organization does not always occur.

  - This can be a significant cybersecurity issue.
  - It is important to notify IT of the departure of any contractors that may have access to City systems.

- The system used for email archiving has some small gaps in capabilities that should be addressed.

  - Exchange Online Archiving is used for email archiving and Public Records requests.

- An agency-wide onboarding/offboarding policy does not exist.

Recommendations

- Utilize an applications/user inventory to determine user access needs that are not currently provided.
- Continue to utilize integration with Windows Active Directory (AD) to facilitate user access management and reduce the number of system logins when enterprise application systems support AD.
- Continue to expand the use of the single sign-on (SSO) application to ease access to authorized information further.

  - Require Active Directory integration capabilities in future cloud-based applications.
  - Inventory existing cloud-based applications to determine which systems have AD capabilities and which do not.

    - Consider implementing MFA for any cloud-based applications that cannot be integrated with Active Directory.

- Determine if any confidential information is available in requested modules (e.g., social security numbers, driver's license numbers, credit card numbers, etc.) If not, grant inquiry-only access to staff members who require it to improve productivity, increase efficiency, and enhance responsiveness.
- Management and application process owners should work with the IT Department to properly set up roles and security for all enterprise—or department-level application systems. This should include setting up roles and security for new employees and disabling user roles and security for departing employees.
- Ensure that workflow is documented and configured for onboarding and offboarding employees in accordance with City policies to ensure that access permissions are provided only to those requiring such access.
- Implement a records retention policy and associated procedures for the retention of data as appropriate.
- Implement an email archiving system to minimize dependence on shared mailboxes.
- Expand the use of MFA.
  - Upgrade to Microsoft 365 G5 to enhance Identity and Access Management.

63. IT Policies and Procedures

Findings and Observations

- The City has a minimal number of approved IT policies.
- The City expressed the desire to develop and tighten policies to improve compliance. They also wish to enact policies to ensure that the organization is protected.
- Security-related policies and operational procedures for the network appear to be limited.
- Limited documentation and Help Desk knowledgebase limitations make cross-training difficult.
- CJIS recently included requirements for policies in the regulations.

  - Policies must be developed by October 2024.

Recommendations

- **Acceptable Use Policy** (AUP) – Purpose: Defines acceptable performance and expectation of behavior and activity
- **Data Classification** – Purpose: Identifies the value of the data to the organization; identifies how data owners can determine the proper classification and how personnel should protect data based on the classification

  - NIST (low impact, moderate impact, high impact); Public, Business Confidential, Sensitive
  - Government or Non-government and Potential Adverse Impact of a Data Breach
  - Criminal, HIPPA, PCI, Business confidential, Legal requirements

- **Social Media** – Purpose: Defines how the City of Newark employees should conduct themselves via the web

  - Employee access
  - Use of official accounts
  - Conduct, oversight, and enforcement
  - Security
  - Disclaimers
  - Engagement

- **Exfiltration** – Purpose: The theft or unauthorized removal or movement of data from a device; Confidential data movement (must be encrypted)
- **Identity Access Management/Password Security** – Purpose: Provisioning of accounts and assignment of necessary privileges and access; SSO, MFA, and related standards

  - Password Security
  - Password Creation and Management

- **Secure Configuration Procedure (SecCM)** – (NIST 800-128; SecCM) Purpose: Management and control of secure configurations for systems

  - Four Phases: Planning, Identifying and Implementing Configurations, Controlling Configuration Changes, and Monitoring
  - Note: This can include a Configuration Management Plan Creation (Large Effort)

- **Risk Management** – Purpose: Risk reduction to an acceptable level based on the value of assets, budget size, and others. Based on known threats or incidents that have already happened. (Internal Annual assessment)

- **Security Awareness Training** – Purpose: Define required alterations in normal work activities to comply with the standards, guidelines, and procedures mandated by the security policies
- **Incident Response** – Purpose: Security Policy required for Incident Response Plan (Appendix for PD specific requirements)
- **Security Audits and Logging** – Purpose: Leverage Security Assessments that Control Objectives guide for Information and Related Technologies (COBIT). Also, security audits and logging leverage NIST SP 800-53A for assessing security and privacy controls as a best practice
- **Network Security** - Purpose: Policy covering network components to assess and implement secure design principles in network architectures and secure network components within the Infrastructure
- **Portable Media** – Purpose: Define policies to leverage tools for Full Disk Encryption (FDE) and usage of Trusted Platform Modules (TPMs)
- **Vendor Management** – Purpose: Policies to keep communications and contracts confidential require encrypted and authenticated transactions. Consideration of vendor management systems (VMS) as part of a security solution that assists with managing and procuring staffing services, hardware, software, and other needed products and services
- **Artificial Intelligence** – Purpose: Define City guidelines for the use of Artificial Intelligence tools
- **Remote Access** – Purpose: Define remote access users' (staff or contractors) responsibilities and requirements
- **Asset Management** – Purpose: Outline the need for complete hardware and software inventories. Document asset disposal requirements

64. Mobile Device Management

Background

Mobile device management (MDM) software is a collection of applications that allows the management, distribution, usage, and maintenance of laptops, tablets, and smartphones. Additional features allow configurations to be done on devices to discourage wrongful use and reduce individual device maintenance.

Findings and Observations

- MDM provides the ability to see and control all mobile devices owned or controlled by the enterprise.
- A key feature of MDM products is the ability to "wipe" a partition on the device if it is lost or stolen.
- The City uses a mobile device management tool provided by a cellular vendor.

    - This tool provides limited functionality.

Recommendations

- Research, pilot, and select a full-featured MDM software product.

    - Consider using Microsoft InTune because it is a component of Microsoft 365.
    - Products that integrate with the Help Desk system or inventory system should be given top priority in any evaluation.
    - Other leading products include AirWatch, MAS 360, and Meraki.

Benefits

- Improved staff efficiency and mobility
- Support for all devices
- Less time manually managing and monitoring
- Increased use of remote access
- Simplified distribution of software

65. Network Management Tools (Configuration Management)

Background

Network management is the general term for the activities, procedures, and tools related to the operation, administration, provisioning, and maintenance of computer network systems. It effectively keeps the network up and running smoothly while also monitoring the system to identify potential problems quickly.

Findings and Observations

- The City uses a network management tool.
  - The toolset is limited, providing only basic alerting and monitoring.
- Network management tools can provide early alerts to upcoming issues, trend data, and alerts to failures.
  - Network management tools are a key component of moving from reactive to proactive management.
  - Network management tools can simplify configuration updates by automatically storing configuration files and tracking revision levels.

Network Management
- ✓ Network Device Monitoring
- ✓ Performance Monitoring
- ✓ Bandwidth Monitoring
- ✓ Firewall Management
- ✓ Router/Switch Management
- ✓ Proactive Monitoring
- ✓ Threshold Customizations
- ✓ Altering
- ✓ Network Interface Stats

Recommendations

- Select and implement a new network management tool.
  - Select mid-market tools such as What's Up Gold or PRTG.
  - Avoid enterprise network management products, as implementation and ongoing maintenance can be time-consuming.
- Utilize third-party assistance for initial configuration and tuning.

Benefits

- Less time manually managing and monitoring
- Increased utilization
- Increased resource access
- Centralized access to multiple applications and platforms

Cybersecurity addresses all security systems and practices, including disaster recovery, to protect systems and data.

66. Audit Logs and Log Management

67. Backups and Testing

68. Disaster Recovery/Business Continuity Planning

69. Firewall Filtering and Consolidation

70. Cybersecurity – General

71. Multi-Factor Authentication (MFA)

Cybersecurity

Disaster Recovery Planning

Disaster Recovery Kit	Disaster Recovery Plan (DRP)	Recovery Systems Implementation	DRP Testing	Ongoing DRP Updates

66. Audit Logs and Log Management

Background

The *audit log and log management software* are used to monitor the status and health of Active Directory, servers, and all network devices, respectively. This software also allows the ability to create audit trails of changes made to the Active Directory and other applications and systems. With log management and alerting software, IT staff members can be notified immediately of any issues or potential threats to the Active Directory domain. Audit logs are important tools for managing the environment. In addition, should an incident occur, audit logs can provide valuable forensic information related to the incident and any potential perpetrators.

Findings and Observations

- The City uses ▮▮▮▮▮▮▮ for log management and 24 x 7 alert/alarm management related to issues from logs.
- ▮▮▮▮▮▮▮ is a System Information and Event Management (SIEM) tool. This is one of the cornerstones of cybersecurity risk management.
- ▮▮▮▮▮▮▮ meets the City's cyber security needs for SIEM management.

Recommendations

- Upon contract renewal, investigate other products that may be more cost-effective.

Benefits

- Centralized log management system
- Improved automation of routine tasks
- Increased investigation visibility using audit trails
- Improved security
- Improved reporting and metrics
- Better diagnostics and problem identification
- Availability of forensics log
- Alerts to bad logon attempts
- Increased staff productivity

67. Backups and Testing

Findings and Observations

- The City utilizes ▮▮▮▮▮▮▮▮▮ backup solutions.

  - ▮▮▮▮ provides cloud-based backup for Office 365 and is considered the City's email archive platform.
  - ▮▮▮▮ provides on-premise and cloud-based backup for City servers and data.

- A full inventory of all data and potential backup needs has not been completed.
- Cloud-based service restoration from backup has not been completed.

Recommendations

- Inventory all City data stores and identify any gaps in backups.
- Upon contract termination, consider consolidation to a single backup solution.

  - Implement a cloud solution that allows for on-premise and off-site backups with the ability to restore systems and services locally and in the cloud.

- Consider a purpose-built cloud-based email archiving solution.
- Test individual file backups frequently.
- Test disaster recovery plans annually.
- Test and confirm successful restore of full system backups and ability to restore virtual machine at the host level.
- Test file server restores every six months.

  - Conduct bare-metal restoration exercises periodically.

- Consider Barracuda, Datto, or Thinkguard as potential solutions to reduce the complexity and staff time required to manage backups.
- Implement immutable backups to separate backup systems from the production environment fully.

  - Verify that backup systems utilize different passwords than all other systems.

68. Disaster Recovery/Business Continuity Planning

Background

Disaster recovery planning is a critical component of cyber security readiness. A disaster recovery plan outlines expected timeframes and work steps to restore computer systems should a significant incident cause a long-term (usually expected to be greater than 24 hours) outage. Expected recovery timeframes should be considered service level agreements between the IT function and the Departments for recovery of systems and maximum data loss.

A disaster recovery plan should contain the detailed work steps required for recovery. The City cannot assume that primary IT staff will be available in the event of a disaster.

Findings and Observations

- The City does not have Disaster Recovery, Business Continuity, or Cybersecurity Emergency Response plans.
- Service-level agreements (SLAs) are not in place for application recovery in the event of a disaster.
  - Service-level agreements outline the expected time from the declaration of a disaster to the availability of application systems and the maximum expected loss of data.
    - Typical restoration timeframes for critical systems are less than 24 hours with less than 24 hours of data loss.
    - Lower-priority systems may not be restored for days in the event of a disaster.
    - We always try to avoid data loss greater than seven days.
- Cloud-based virtual server recovery has not been implemented.

Recommendations

- Implement a backup solution that provides virtual server recovery in "The Cloud".
  - Best practice for cloud-based backup is a system that protects against malware attacks through additional separation from production systems (immutable backups)
  - Test virtual server recovery on a regular basis
  - Develop a Disaster Recovery Plan/Business Continuity Plan
- Work with the departments to understand desired service restoration time frames
- Review and test comprehensive restores of critical systems
- Develop strategies for the restoration of high-priority applications
  - Begin to implement based on strategy and application priority
  - Test portions of plans every six (6) months
  - Develop plans for continued staff access to applications in the event a major City facility is no longer available

Disaster Recovery Planning

| Disaster Recovery Kit | Disaster Recovery Plan (DRP) | Recovery Systems Implementation | DRP Testing | Ongoing DRP Updates |

Benefits

- Emergency preparedness compliance
- Improved communication
- Awareness of procedures
- Better diagnostics and problem identification
- Reduced risk and liability
- Faster, well-informed decision-making
- Identification of business-critical functions
- Decreased recovery times and exposure to system failures
- Awareness of immediate actions

69. Firewall Filtering and Consolidation

Findings and Observations

- City firewalls are due for replacement based on the Computer Equipment Replacement plan.
- Staff plans to investigate various firewall alternatives.

Recommendations

- Utilize Best Practices Procurement methodology to select the appropriate installation vendor
- Procure and install the website content filter service on all firewalls
- Move to a single firewall vendor to simplify management

Benefits

- Improved security and reduced risk of viruses
- Reduced risks related to inappropriate staff use of the Internet
- Reduced staff time spent managing firewalls through centralized security logs and management

70. Cybersecurity – General

Background

The number and sophistication of cybersecurity incidents continue to increase. Risks related to cybersecurity attacks have become more significant recently. It is forecasted that in 2021, a new organization will fall victim to ransomware every 11 seconds. Costs of breaches have escalated and include loss of reputation, reduction in the ability to serve residents, costs associated with notifying those affected by the breach, reduced staff productivity, and financial loss.

Local government agencies are all struggling to improve cybersecurity preparedness and expand cybersecurity defense. One of our clients has deployed over fifty (50) different cybersecurity programs and tools to reduce the risk of breach and, should a breach occur, limit the damage.

For the last two years, ClientFirst has been recommending significant increases in cybersecurity spending as a part of IT planning engagements. The increased complexity of cybersecurity defense has caused us to advocate for a cyber-security focal point to manage agency efforts. Since 98% of cyber-attacks rely on social engineering, cybersecurity defense begins with programs to reduce the risk of staff failure to recognize a cybersecurity risk.

According to the 2019 Deloitte Cybersecurity Survey, cybersecurity managers split their time between eleven different functional areas, as outlined below:

Legend:
- Identity and access management
- Cyber monitoring and operations
- Cybersecurity governance
- Cyber resilience
- Application and data protection
- Endpoint and network security
- Third-party/supply chain security management
- Regulatory and compliance matters
- Enterprise cyber reporting
- Enterprise stakeholder awareness and communications
- Strategy and program transformation

Source: The Future of Cyber Development, Deloitte Development LLC

Many of the above cybersecurity functional areas can be easily outsourced. Others are specific to the City and require continuous visible advocacy to be successful. As an example, compared

to benchmarks, City Security Awareness Training attendance has been low, with training completion rates below that of peer agencies. Security Awareness training is critical because, as noted above, the vast majority of attacks rely on social engineering to gain initial entry into an organization.

Findings and Observations

- The City has implemented a layered approach to network security.
    - Next generation antivirus
    - Managed Detection and Response (MDR)
    - Security Information and Event Management (SIEM)
    - Firewalls with the most advanced security features
        - Email and website filtering
        - Intrusion Protection/Intrusion Detection
    - Security Awareness Training
- Planned cybersecurity projects include:
    - Network monitoring and event logging
    - MDM upgrade
    - Policy & procedures
    - Disaster Recovery Planning
    - And many more.
- There are some issues with the current Virtual Private Network (VPN) connectivity solution.
- Cybersecurity is multi-faceted, requiring a significant number of technical tools, operational skills, and managerial capabilities to keep staff attentive to continually evolving threats and methods of attack.
- The Criminal Justice Information System policy was recently updated, significantly expanding cybersecurity requirements for Police.

Recommendations

- Continue to upgrade cybersecurity threat mitigation capabilities
- Continue to build additional resiliency into existing systems to reduce the chances of catastrophic failure
- Utilize services provided by MS-ISAC and CISA to reduce costs where possible
- Review CJIS requirements and begin an implementation project
- Develop cybersecurity policies and procedures to formalize City guidelines

71. Multi-Factor Authentication (MFA)

Background

The need for increased information sharing and remote access to data networks, as well as increased security threats, creates new identity validation requirements. To meet these requirements, many agencies at all levels of government are using a strategy known as advanced authentication or *multi-factor authentication*. This approach supplements traditional username and password authentication with alternative forms of verification based on a user's physical characteristics (such as a fingerprint) or an object in the user's possession (such as a smart card or a token).

Findings and Observations

- Multi-factor authentication is a security strategy based on the principle of defense-in-depth.
- The National Institute of Standards strongly recommends multi-factor authentication for all systems.
    - CJIS recently expanded MFA requirements for Police.
- Multi-factor authentication is a best practice for HVAC/building control systems and IT system administration.
- It is best practice for **ALL** remote access authentication to be based on multi-factor technology.

Recommendations

- Budget for and implement multi-factor authentication for remote access to City systems, including Police, applications system remote access, and IT staff remote network access.
    - Utilize a third party to assist with expanded implementation.
- For management staff who would benefit from remote access to applications, consider a soft-token multi-factor authentication to reduce complexity.
- Consider IT's use of a password manager that incorporates MFA into any access.

Benefits

- Enhanced security and compliance

IT Staffing

IT staffing can be one of the most important areas of business management, especially in view of the impact IT decisions can have on the organization's productivity, budget, morale, and overall success.

72.   IT Staff Training

73.   IT Staffing

74.   GIS Staffing

75.   Enterprise Applications Support

76.   Staff Security Awareness Training

72. IT Staff Training

Findings and Observations

- Staff members are doing a good job of providing day-to-day support and essential maintenance for IT systems.
- Staff training has been limited recently due to the current workload.
- Staff has defaulted to a learning-on-the-job methodology.

  - This methodology can add significant time to project schedules as staff members learn as they go.
  - From time to time, this methodology can also result in less-than-optimal implementations.

Recommendations

- Develop training plans for all Technical Services staff.
- Opportunities for uninterrupted training provide for the highest retention and most productive use of training time.
- We recommend that the City develop a relationship with a third party who has strong expertise in infrastructure-related projects.

  - Third-party assistance with the fine-tuning of IT operations and security tools may be required.
  - Utilize a third party for knowledge transfer and best practices.

- Attend user conferences in key functional areas as appropriate.

  - Utilize the Municipal Information Systems Association of California (MISAC) training, where possible, to introduce staff to peer individuals at other agencies.

Benefits

- Increased institutional knowledge
- More completed projects
- More effective projects
- Increased anticipation and management of technology upgrades
- Improved ROI on implementation and support

73. IT Staffing

Background

As a part of the technology master planning process, ClientFirst conducts a review of available technology resources versus the level of resources required to implement the recommendations included in the plan.

Findings and Observations

- City IT Staff include:

    - An IT Director
    - Two full-time Help Desk technicians
    - A part-time Help Desk technician providing support for Police systems
    - Three IT Analysts:

        - Two dedicated to Infrastructure
        - One dedicated to applications and project management

- Current staffing levels are insufficient to implement the recommendations of the plan.

    - Twenty-six (26) unique application initiatives are included in the plan
    - Ongoing cybersecurity improvements are required and will require expanded operational support
    - Continued system upgrades to meet municipal government IT Best Practices are necessary

- Project budgets provided in the plan include third-party subject-matter expertise where recommended.
- Improving IT operations through the implementation of IT management and productivity tools will require increased resources over the near term. Over the longer term, IT capabilities will be improved.

Recommendations

- Additional IT Analyst and project management skills will be required to implement the plan successfully.

    - IT management will need to assist in coordinating business application implementations and third-party resources.
    - Provide appropriate project management training to IT Staff.

- Third-party subject-matter expertise is being utilized for:

    - Telecommunications and phone system upgrade
    - Wide Area Network (WAN) upgrade
    - Public Safety Video and Security improvements
    - Broadband Master Planning
    - Initial GIS assistance

- Third-party subject-matter expertise is recommended to assist the City in the following areas:

    - Business application software selection and implementation project management oversight
    - Cybersecurity assessments and penetration tests
    - Office 365 and Microsoft Azure design, implementation, and staff training

- Citywide Broadband Master Plan implementation
- IT operational software implementations
- Future complex design, procurement, and/or implementation projects

- Consider third-party project management for complex IT infrastructure or cybersecurity projects.
- Consider contract services for:

  - The City GIS program
  - Cybersecurity oversight and project management

74. GIS Staffing

Background

GIS is a key "Smart City" initiative. GIS provides a database to store geospatial assets and related historical knowledge. GIS is a baseline tool for Land Use Planning, Permitting, Code Enforcement, Police, and Public Works. Tasks to support a GIS system include System Design and Architecture, Data Management, Documentation, Maintaining Standards, Data Conversion and Maintenance, Mapping, Project Management, System Integration, Application Development, and Customer Service.

Findings and Observations

- The City participates in the Southern Alameda County GIS Authority Joint Powers Authority (JPA), which provides some GIS services and data sharing.
- The JPA is implementing ArcGIS Online as a repository for GIS data.
- Without additional GIS resources, the City will continue experiencing issues, including:

  - Delayed responses to information requests due to manual research methods requiring multiple sources
  - Slow GIS adoption rate
  - Continued use of paper for tracking information
  - Continued disconnects between Deeds, Easements, and Memorandum of Understandings (MOUs) to GIS Roadways and Parcels
  - Inability to interface GIS to new Business Systems for increased Return on Investment (ROI)

Recommendations

- Increase the amount of contract GIS services.

  - Review the accuracy of existing GIS layers
  - Expand the number of GIS layers

- Improve GIS integration to:

  - Police Computer Aided Dispatch
  - Land Management System (Central Square Community Development)
  - Enterprise Asset Management (PubWorks or replacement system)
  - Electronic Content Management (Laserfiche)

- Conduct a GIS Master Plan to determine appropriate long-term resource needs.

75. Enterprise Applications Support

Background

Local government agencies increasingly understand the direct correlation between effective application utilization, organizational efficiency, and productivity gains. As described throughout this document, increasing application utilization is key for the organization to do more with the same labor resources. Additionally, institutional knowledge too often leaves the organization through retirements and other employment separations because many processes and procedures are inadequately automated in enterprise systems. Typically, agency goals of improved transparency and constituent services are also accomplished through various software programs that automate and streamline processes.

Most organizations have a blend of application and business analyst skills within their business departments and their IT department. However, we have yet to encounter a small- or mid-sized agency with adequate resources to meet the organization's needs.

To meet these needs, IT departments are beginning to transform their overall department structures to take on more responsibility in managing applications support services. This trend is being made possible by streamlining typical IT department operations through productivity and monitoring tools.

Typical applications support staff proactively handle Help Desk needs relating to business department applications, business process analysis, applications training, applications setup and configurations, ad hoc report writing, and database administration. The goal of applications support staff is to increase efficiencies in the agency by facilitating the automation or simplification of business processes through the use of enterprise technologies.

It is not unusual to designate application support staff for the following major application systems:

- ERP (Accounting, Finance, and People Management)
- Work Orders/Asset Management
- Community Development
- Personnel Management
- CAD/RMS

Findings and Observations

- A single IT staff member is designated to support the Departments and assist them with business application improvements.
  - Business analysis skills are completely different from the technical skills City IT staff possess.
- Departments described the need for additional application support in surveys and interviews.
  - This report includes 26 unique business application improvement initiatives.
- The City's ERP system is sunsetted and must be replaced in the next five years.
- ERP system replacement is a two-to-three-year project and requires a minimum of .5 FTE for internal project coordination.
- This report identifies opportunities for improvement in several major application systems.
  - The operational effectiveness capabilities of the City will be enhanced if the utilization of application systems is improved.

Recommendations

- Consider adding business systems analysts to the IT staff.

  - Over the long term, this position can increase IT's ability to assist departments in improving application utilization and efficiency and improving business processes.

- Develop a Digital Innovation function that can assist with the following:

  - Assist department subject-matter experts (SMEs) in the resolution of enterprise application software-related issues.
  - Work closely with department managers, division leads, and application users to document and/or design/redesign effective business processes and associated business applications, including projects that require effective implementation or reimplementation.
  - Make recommendations on improvements to business processes and applications, with the goal of delivering enhanced service and outcomes (e.g., faster permit processing times, automating current manual or inefficient processes, etc.)
  - Provide project coordination and oversight of multiple applications system projects.
  - Assist with research of applications software products and services, and coordinate feasibility studies for applications, software, and system products under consideration for purchase and provide findings.
  - Develop and deploy standards, methodologies, and best practices for application deployment, business process improvement, application interfaces, and report writing.
  - Document procedures, application interfaces, service-level agreements, and other methodologies related to application systems.
  - Collaborate in the testing of applications and communicate with network and server administrators, vendors, and software developers to ensure quality assurance and fulfillment of contractual obligations.
  - Compile and maintain an inventory of all applications software and system assets and their corresponding contracts and agreements, documenting system configurations and change management.
  - Coordinate training, including oversight of training materials, user procedures, and training curriculum; facilitate training sessions as necessary. Develop and maintain user documentation, implementation, and maintenance plans.
  - Oversee the maintenance, support, and upgrade of existing software applications and systems; coordinate and communicate upgrades, enhancements, and changes with vendors and internal customers.
  - Participate in integration, initialization, and interfacing between multiple systems, either through in-house or outsourced development, when required.

Business Systems Analyst Job Description (SAMPLE)

Description

Under general supervision, coordinate and manage activities related to the support, deployment, configuration, and usage of departmental application systems. This includes assistance with application system selection, implementation, project coordination, interface management, application setup and configurations, business process reviews, and custom reporting.

This individual will apply technical, communication, analytical, and problem-solving skills to the analysis of business processes for business applications software systems to improve productivity and efficiency in the organization's departments.

The position will be responsible for providing expert troubleshooting, resolution, and reporting on business application issues and supervising additional application support specialist staff.

Other related duties may be required as assigned.

Duties

- Assist department subject-matter experts (SMEs) in the resolution of enterprise applications software-related Help Desk tickets.
- Work closely with department managers, division leads, and application users to document and/or design/redesign effective business processes and associated business applications, including projects that require effective implementation or reimplementation.
- Make recommendations on improvements to business processes and applications, with the goal of delivering enhanced service and outcomes (e.g., faster permit processing times, automating current manual or inefficient processes, etc.)
- Manage software improvements for various departments. These activities include procurement recommendations (e.g., cost-benefit analyses, software configuration, implementation/reimplementation, etc.); collaboration in testing configurations with personnel of affected departments; and communication with internal customers, network and server administrators, and vendors to ensure that application systems are being utilized to their full potential.
- Provide project coordination and oversight of multiple applications system projects.
- Assist with research of applications, software products, and services. Coordinate feasibility studies for applications, software, and system products under consideration for purchase and provide findings.
- Develop and deploy standards, methodologies, and best practices for application deployment, business process improvement, application interfaces, and report writing.
- Document procedures, application interfaces, service-level agreements, and other methodologies related to application systems.
- Collaborate in the testing of applications and communicate with network and server administrators, vendors, and software developers to ensure quality assurance and fulfillment of contractual obligations.
- Develop, implement, and disseminate information on best practices for information technology and applications support.
- Compile and maintain an inventory of all applications software and system assets and their corresponding contracts and agreements, documenting system configurations and change management.
- Coordinate training, including oversight of training materials, user procedures, and training curriculum; facilitate training sessions as necessary. Develop and maintain user documentation, implementation, and maintenance plans.

- Oversee the maintenance, support, and upgrade of existing software applications and systems. Coordinate and communicate upgrades, enhancements, and changes with vendors and internal customers.
- Maintain a secure information technology environment for software applications. Oversee applications' security administration and update processes and schedules, notifying users of any potential service interruptions.
- Participate in integration, initialization, and interfacing between multiple systems, either through in-house or outsourced development, when required.
- Analyze technical literature for systems and provide explanations that are understandable to end-users, often in the form of user manuals or training materials.
- Perform related duties as assigned.

Qualifications

The following generally describes the knowledge, ability, and education required to perform the job duties successfully.

Knowledge

- Windows operating systems and applications, including MS Office, MS SQL, Outlook, and other applications software
- Government business processes and the systems that support them. Agency business systems may include Financials, timekeeping, utility billing, human resources, payroll, asset control systems, inventory, work orders, land management, building permits, utility billing, and citizen request management, among others
- Current technology goals, objectives, and technological trends
- Database knowledge, including a working understanding of MS SQL, SQL queries, report writing, applications interfaces, and data import/export methodologies
- Principles of project management, including training and vendor management
- Office procedures, methods, and equipment, including computers and applicable software applications such as word processing, spreadsheets, and databases
- Principles and practices of applications system development, evolution, and product life cycles, including sustainability planning for applications systems
- Applications system security principles and best practices for ongoing system security, including related concepts of user applications roles/passwords, single sign-on, and Active Directory

Abilities

- Understand, plan, and coordinate business applications systems implementations and upgrades
- Review and assist in evaluating the work of professional and support staff
- Gather and document business requirements and processes
- Communicate ideas, directions, and requirements clearly and concisely, both orally and in writing
- Understand and communicate ideas in a technical but user-friendly language
- Perform duties appropriate to classified system privileges. Maintain professional handling and protection of confidential and secure information
- Commit to the highest standards of moral and business ethics, including organizational values
- Work in a team environment, understanding the customer service and supplier model and how it is used in an internal support environment

- Prepare clear and concise reports, including metrics, service-level agreement summaries, test plans, cases, and test scripts
- Interpret and explain agency policies and procedures
- Manage projects in a timely manner
- Work with information system users under challenging conditions and short deadlines.
- Set priorities based on value to the organization
- Operate office equipment, including computers and related word processing, presentation, spreadsheet, and database applications
- Foster communications between the user community, project management, contractors, and all levels of management

Education and Experience

Any combination of education and experience that provides the required knowledge and abilities qualifies a candidate for the position. Typical education, training, and experience may include:

Education/Training

- Bachelor's degree from an accredited college or university, with major coursework in computer science, information technology, business administration, etc.

Experience

- Five years as a business or systems analyst, supporting a broad range of departmental applications systems, including business process improvement, applications administration, implementation, and upgrades
- Five years of general IT support or IT analysis (or similar) for a medium-sized organization supporting Microsoft applications
- One to three years in coordination and/or project management of applications implementation or upgrades
- One to three years of supervisory experience

76. Staff Security Awareness Training

Background

Security Awareness Training is a formal process for educating employees about computer security. A good security awareness program should educate employees about corporate policies and procedures for working with information technology. Employees should receive information about whom to contact if they discover a security threat and be taught that data is a valuable corporate asset.

Regular training is necessary to provide staff with knowledge to help protect the organization's network from viruses and malware. Users are the frontline defense against virus and malware attacks.

Confirming how well the awareness program is working can take time and effort. The simplest metric is measuring the number of incidents over time, which should be decreasing. The best practice method of measurement involves a multi-phased approach of baseline testing, then training, and then testing using an automated phishing approach. Follow-up with additional training as needed.

Online training provides multiple benefits, including:

- Staff members can work at their own pace, on their schedule.
- Staff members can be enrolled in multiple online training courses.
- An administration control panel can be used to monitor users' progress and set up phishing campaigns to test the users.
- Reports can then be generated to compare users' scores to previous phishing campaign scores to measure improvement.
- Organizations should encourage users to complete training on a regular basis as part of compliance requirements.

Findings and Observations

- Security awareness training is a best practice targeted at improved security readiness.

Recommendations

- Develop a Citywide security awareness training policy
- Track security awareness training and test results as a part of employee evaluations
- Continue regular online security awareness compliance training

  - This training should be mandatory for all users
  - Incorporate training plans into the annual review process
  - Select a proactive training solution that allows periodic deployment of simulated phishing attacks to test user awareness

The *telecommunications system* is a critical tool for local government entities. It enables effective communication with constituents and high-standard service delivery. Telecommunication is also a key element in teamwork, allowing employees to collaborate easily from wherever they are located.

77. VoIP Phone and Telecommunications Replacement

77. VoIP Phone and Telecommunications Replacement

Voice-over-IP (VoIP) technology uses an Internet connection to accommodate calls. It is highly reliable and fast when compared to conventional telephone systems and is an accepted communication standard. Benefits include reduced costs, the ability to change numbers as needed easily, and increased features and support. VoIP hardware upgrades can occur automatically and seamlessly.

Findings and Observations

- The City uses Utility Telecom as its phone system provider.
- Several departments identified improvements to the phone system that would benefit their business operations.
- Based on our initial review of telecommunications expenses, the ROI on a VoIP phone system should be in the five—to eight-year range.
- City staff wish to transition to softphones and eliminate desk phones.
- The call routing flow needs revision for improved routing customer service.
- The City needs caller ID/tracking for callers using the phone tree for Dispatch.
- The Public Address system at the Sillman Center failed eight years ago and has never been fixed.
- The City is in the process of selecting a VoIP system.

Recommendations

- Select a VoIP system according to the "Software Selection Best Practices" initiative, utilizing an independent telecommunications consultant/Subject Matter Expert (SME)
- Incorporate sufficient training during the implementation of an improved system
- Provide periodic training on the VoIP system to interested staff

Benefits

- Reduced implementation, support, and maintenance costs
- Increased long-term ROI
- Enhanced communications
- Increased use of features
- Improved user experiences
- Reduction in total cost of ownership

Initiative	IT Initiative	Comments	Priority	Low	High	Current FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029
				Project Range			**Biennial Budget**				
Best Practices											
1	**Technology Governance**	Assistance in developing Governance model and associated policies/procedures	H	$0	$10,000		$10,000				
2	**Application Management Best Practices**	Identify application owners and champions within the Departments to lead improvement efforts.	H								
3	**User Training and Support**	Ongoing user training - general IT skills - Planet Technologies (Evolve365)	H	$15,000	$35,000	$12,900	$20,000	$20,000	$20,000	$15,000	$15,000
4	**Software Needs Assessment Best Practices**	Utilize software needs assessment methodology to identify gaps in application functionality for improvement.	H								
5	**Business Process Reviews**	Business process reviews are key to understanding existing processes and identifying ways to improve or make them more efficient.	M								
6	**Software Selection Best Practices**	Best Practice focused on reducing risk and improving software selection outcomes while maximizing value through a competitive selection process.	H								
7	**Applications Implementation Project Management Best Practices**	Follow PMI based project management principles for all larger or complex projects	H								
8	**Enterprise Reporting Best Practices**	Best practices approach and methods to utilizing different reporting and business intelligence tools with enterprise application systems	M								
9	**IT Project Planning and Implementation Best Practices**	Follow PMI based project management principles for smaller, less-complex projects	H								
10	**Enterprise Applications Support Best Practices**	Best practice approach to developing business analysis skillsets among staff	M								
11	**Cloud Computing**	Continue to move enterprise applications to the cloud. Consider moving Laserfiche to the cloud.	M								
12	**COBIT (Control Objectives for Information and Related Technologies)**	Utilize COBIT Best Practices to improve IT services planning and life cycle management	M								
13	**IT Project and Services Portfolio**	Develop and maintain a IT project portfolio and Service Level Agreements for IT systems and services	M	$0	$10,000				$10,000		
14	**ITIL (Information Technology Infrastructure Library)**	ITIL Best Practice - Third party assistance budgeted if needed.	H	$10,000	$15,000		$5,000	$5,000	$5,000		
15	**Sustainability Planning**	Document all IT costs, develop Equipment Replacement or Internal Service Fund, and develop long-range cost model.	H	$0	$25,000		$15,000				
16	**Training Room**	Using Police training room and laptops	L	$0	$25,000				$15,000		
Departmental Applications and Systems											
17	**Enterprise Resource Planning (ERP) Improvements**	From original IT budget 3/22	L						$85,000	$750,000	$500,000
18	**Budget Software Improvements**	Interim solution already budgeted	H			Included with New ERP Solution					
19	**Expense Reimbursement Software**	Streamline and automate submission and approval of employee expense reimbursements	H			Included with New ERP Solution					
20	**Time and Attendance System Improvements**	Assessment and selection of a Time and Attendance solution	H			Included with New ERP Solution					
21	**Human Resources System Improvements**	Close functional gaps, implement new modules, integrations, and end-user training.	L			Included with New ERP Solution					

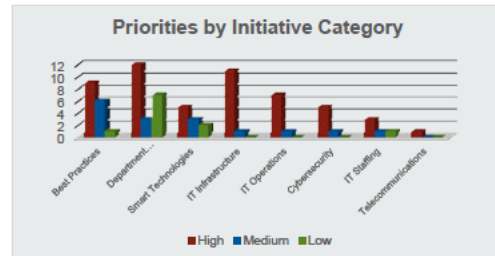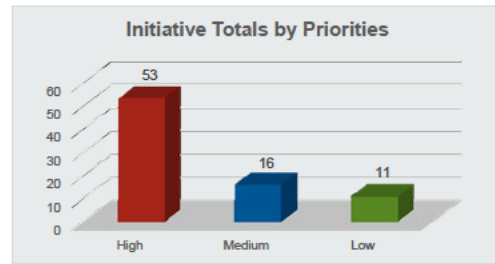| Initiative	IT Initiative	Comments	Priority	Project Range		Current FYE 2024	Biennial Budget		FYE 2027	FYE 2028	FYE 2029
				Low	High		FYE 2025	FYE 2026			
22	**Trakstar**	Trakstar improvements and expansion	H	$25,000	$50,000	$24,000	$24,000	$26,000	$28,000	$30,000	$33,000
23	**Risk Management Software**	Assessment and selection of a risk management system.	L	Included with New ERP Solution							
24	**Scholarship Management Software**	Assessment and selection of a scholarship management system.	M	$18,000	$30,000			$4,000	$4,000	$4,000	$4,000
25	**Electronic Content Management System (ECMS) Improvement**	Laserfiche Cloud	M	$150,000	$350,000	$23,500	$25,000	$27,500	$29,000	$31,000	$33,000
26	**Agenda Management Improvements**	AgendaQuick	L	$20,000	$40,000	$7,280	$7,644	$8,026	$8,428	$8,849	$20,000
27	**Public Safety Scheduling Software**	InTime - PD Funds	H	$50,000	$100,000	$17,424	$36,424	$36,424	$11,424	$11,424	$11,424
28	**Law Enforcement Training and Standards (LETS) Software**	Assessment and selection of Law Enforcement Standards Software.	H	$20,000	$30,000				$30,000	$10,000	$10,000
29	**Electronic Ticketing and Citation System**	PD Funds	H			$15,000	$75,000	$20,000	$20,000	$20,000	$20,000
30	**Land Management System Improvements**	Close functional gaps, implement new modules, integrations, and end-user training.	H	$300,000	$600,000		$75,000	$150,000	$150,000		
31	**Enterprise Asset Management (EAM) Replacement**	From original IT budget 3/22	H	$300,000	$600,000		$75,000	$500,000	$80,000	$84,000	$88,200
32	**Recreation System Improvements**	Close functional gaps, implement new modules, integrations, and end-user training.	L						$10,000		
33	**Pool Management and Recreational Staff Scheduling**	Digiquatrics - Rec Funds	H			$10,000	$10,000	$3,000	$3,000	$3,000	$3,000
34	**Volunteer Management System**	Assessment and standardization of the volunteer management system.	L	$15,000	$30,000						$20,000
35	**Microsoft Office 365 and Teams**	Microsoft EA - Expand to G3, P1 for additional cybersecurity features. Then Expand to G5	H	$140,000	$200,000	$177,272	$131,830	$230,000	$230,000	$230,000	$275,000
36	**Digital Signatures**	DocuSign	M	$20,000	$50,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
37	**Dashboard Preparation and Automation**	Review, assessment, and selection of performance dashboard needs.	L	$15,000	$30,000						$20,000
38	Intranet	Axero	H			$29,354	$21,356	$22,691	$25,800	$27,400	$29,000
Smart Technologies											
39	Website	Granicus with $2500 migration to ca.gov	M	$50,000	$175,000	$13,877	$16,820	$14,786	$150,000		
40	**Request Management Software**	Citizen Request Management software	L	$25,000	$50,000				$35,000	$15,000	
41	**Public Records Request**	Assessment and selection of public records request software.	M	$5,000	$25,000			$15,000	$15,000		
42	Kiosks	Estimate up to 6 kiosks	M	$60,000	$120,000				$40,000	$40,000	$40,000
43	**GIS Assessment and Plan**	Esri SGEA.Create a GIS Plan to determine requirements. Expect cloud based GIS and some contractor services to follow.	H	$30,000	$50,000	$39,700	$39,700	$100,000	$50,000	$50,000	$50,000

Initiative	IT Initiative	Comments	Priority	Project Range		Current FYE 2024	Biennial Budget		FYE 2027	FYE 2028	FYE 2029
				Low	High		FYE 2025	FYE 2026			
44	Mass Outbound Communications System	Assessment and selection of mass outbound communications software.	L	$15,000	$30,000						$20,000
45	Social Media Policy and Strategy	Internal project.	H								
46	Artificial Intelligence	Best practice for getting started	H								
47	Smart Cities Technology Strategy	Smart Cities implementation strategy discussion	H	$0	$50,000			$50,000			
48	Broadband Master Plan Implementation	Connecting city facilities	H	$3,000,000	$3,000,000		$1,500,000	$1,500,000			
IT Infrastructure											
49	Computer Equipment Replacement Planning	Four year rotation. Added contingency	H	$400,000	$400,000		$100,000	$100,000	$100,000	$100,000	$100,000
50	Computer Room, IT Closets, and Power Distribution Improvements	UPS for all switches, small cabinets where possible.	H	$25,000	$50,000		$25,000	$25,000			
51	Council Chambers Audiovisual	Council chambers upgrades	H	$150,000	$200,000	$175,000					
52	Conference Room Audiovisual Refresh	Included with Council Chambers A/V	H	Included Above	Included Above						
53	Internet Bandwidth	Redundant internet with satellite for tertiary	H	$100,000	$100,000		$10,500	$21,000	$21,000	$21,000	$21,000
54	Network Upgrade	Replace leased end-of-life switches (Est 7)	H	$35,000	$40,000		$212,500		$150,000		
55	Server Upgrades	CH & PD server replacement separate years	H	$600,000	$1,000,000		$500,000	$50,000	$50,000	$50,000	$50,000
56	Structured Connectivity System	Replace old cabling were applicable	H	$25,000	$25,000		$25,000				
57	Public Safety Video System	Procurement for additional video cameras for City facilities	H								
58	Door Access Control Improvements	Expect Capital Project in FYE24. Some continued spending expected.	H	$1,500,000	$2,000,000		$2,000,000	$100,000	$100,000	$100,000	$100,000
59	Wireless Network Improvements (Wi-Fi)	Complete parks coverage, mostly Silliman.	M	$50,000	$50,000			$50,000			
	Remote Access VPN	Remote access improvements (possible ███ implementation)	H	$15,000	$20,000		$55,000	$47,000	$47,000	$50,000	$52,000
IT Operations											
60	Help Desk Ticketing System	Connectwise installed.	H			$28,000	$25,000	$25,000	$35,000	$35,000	$35,000
61	IT Asset Management Automation	Included with Help Desk	H								
62	IT Automation Tools (Patch Management)	Need to consolidate to single solution. Assume LanSweeper or InTune using G5 license - third party assistance for implementation	H	$25,000	$30,000			$25,000			
63	Identity and Access Management	Implement complete onboarding/offboarding procedures. Active Directory Audit Tool for auditing and management.	H				$15,350	$10,100	$10,100	$10,100	$10,100
64	IT Policies and Procedures	Incident Response Plan followed by policy library.	H	$12,500	$20,000		$15,000				
65	Mobile Device Management	███ MDM - Assume InTune - can use 3rd party assistance.	H	$10,000	$10,000	$5,000	$20,000				
66	Network Management Tools (Configuration Management)	What's Up Gold, PRTG or similar.	H	$25,000	$30,000		$25,000				
	Desktop Management	Assume ███ - can use 3rd party assistance included above.	M	N/A	N/A						
Cybersecurity											
67	Audit Logs and Log Management	Log Management tool - separate from SIEM - ███	H	$125,000	$175,000	$63,904	$67,100	$70,455	$73,978	$77,677	$81,560
68	Backups and Testing	Consolidate cloud and on-premise backups to ███	M	$100,000	$125,000			$150,000			
69	Disaster Recovery/Business Continuity Planning	Do after backup consolidation.	H	$15,000	$25,000			$15,000			
70	Firewall Filtering and Consolidation	High Availability pairs for each Internet Connection. Separate firewall CH <-> PD. Three year agreement	H	$175,000	$200,000		$175,000		$175,000		
71	IT Security - General	Barracuda or M365 G5 for email archival	H				$18,000	$36,000	$36,000	$36,000	$36,000

Initiative	IT Initiative	Comments	Priority	Project Range		Current FYE 2024	Biennial Budget		FYE 2027	FYE 2028	FYE 2029
				Low	High		FYE 2025	FYE 2026			
72	**Multi-Factor Authentication**	City staff to complete.	H				$12,000	$12,000	$12,000	$12,000	$12,000
IT Staffing											
73	**IT Staff Training**	Training plan development	H	$165,000	$185,000		$25,000	$30,000	$36,000	$42,000	$45,500
74	**IT Staffing**		L								
75	**GIS Staffing**	Contract to start.	H	$450,000	$500,000		$60,000	$60,000	$60,000	$162,750	$170,888
76	**Enterprise Applications Support**	Add two business analysts. One to start with EAM, second to start with ERP.	M	$133,000	$173,000				$155,000	$162,750	$170,888
77	**Staff Security Awareness Training**	In progress	H				$15,000		$15,000		
Telecommunications											
78	**VoIP Phone and Telecommunications Replacement**	Expect funding to be committed in FYE24	H	$150,000	$200,000		$177,000	$177,000	$177,000	$200,000	$200,000
						$652,211	$5,675,224	$3,745,982	$1,962,730	$2,753,950	$2,286,559

*Other Funding Sources (Grants, Reserves, Funded, Planned and/or Estimated)				Current FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029
ARPA Funds	Utilizing for Broadband Master Plan				$1,200,000				
State Grants	Utilizing for Broadband Master Plan				$300,000	$1,500,000			
Expected Telecommunications Savings	Offset to VoIP & Telecommunications Initiatives				$53,000	$53,000	$53,000	$53,000	$53,000
GIS Fund for CIP 1331 Second Phase Setup					$50,000	$100,000			
IT Technology Reserve Fund					$1,500,000	$500,000			
Public Safety State Organized Retail Theft (ORT) Grant					$166,667	$166,667	$166,667		
PEG Fund for CIP 1298 City Council Chambers A/V				$175,000					
Retirement of XXX									
Operational Funds (FYE 2024) & expected (FYE 2025-6)				$477,211	$1,219,874	$393,668			
Subtotal - Other Funding Sources				652,211	4,489,541	2,713,335	219,667	53,000	53,000
Net new Funding				$0	$1,185,683	$1,032,647	$1,743,063	$2,700,950	$2,233,559
Total Plan Budgets									$8,895,902

Categories	Priority			Total	
	High	Medium	Low		
Best Practices	9	6	1	16	20%
Department Applications and Systems	12	3	7	22	28%
Smart Technologies	5	3	2	10	13%
IT Infrastructure	11	1	0	12	15%
IT Operations	7	1	0	8	10%
Cybersecurity	5	1	0	6	8%
IT Staffing	3	1	1	5	6%
Telecommunications	1	0	0	1	1%
Total	53	16	11	80	100%

Initiative Totals by Priorities

Priorities by Initiative Category

From original IT budget 3/22

Categories	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	Totals	
Best Practices	$ 12,900	$ 50,000	$ 25,000	$ 35,000	$ 30,000	$ 15,000	$ 167,900	1%
Department Applications and Systems	$ 313,830	$ 491,254	$ 1,037,641	$ 724,652	$ 1,219,673	$ 1,076,624	$ 4,863,674	28%
Smart Technologies	$ 53,577	$ 1,556,520	$ 1,679,786	$ 290,000	$ 105,000	$ 110,000	$ 3,794,883	22%
IT Infrastructure	$ 175,000	$ 2,928,000	$ 393,000	$ 318,000	$ 471,000	$ 323,000	$ 4,608,000	27%
IT Operations	$ 33,000	$ 100,350	$ 60,100	$ 45,100	$ 45,100	$ 45,100	$ 328,750	2%
Cybersecurity	$ 63,904	$ 272,100	$ 283,455	$ 121,978	$ 300,677	$ 129,560	$ 1,171,674	7%
IT Staffing	$ -	$ 100,000	$ 90,000	$ 251,000	$ 382,500	$ 387,275	$ 1,210,775	7%
Telecommunications	$ -	$ 177,000	$ 177,000	$ 177,000	$ 200,000	$ 200,000	$ 931,000	5%
Totals	$ 652,211	$ 5,675,224	$ 3,745,982	$ 1,962,730	$ 2,753,950	$ 2,286,559	$ 17,076,656	100%

Recommended 6 Year Plan

Categories	FYE 2024	FYE 2025	FYE 2026	FYE 2027	FYE 2028	FYE 2029	Totals	
High Priority	$ 597,554	$ 5,615,760	$ 3,466,670	$ 1,411,302	$ 1,717,351	$ 1,448,672	$ 14,257,308	83%
Medium Priority	$ 47,377	$ 51,820	$ 271,286	$ 413,000	$ 247,750	$ 257,888	$ 1,289,121	8%
Low Priority	$ 7,280	$ 7,644	$ 8,026	$ 138,428	$ 788,849	$ 580,000	$ 1,530,227	9%
Totals	$ 652,211	$ 5,675,224	$ 3,745,982	$ 1,962,730	$ 2,753,950	$ 2,286,559	$ 17,076,656	

Budgets by Priority and Fiscal Year