CLIENTFIRST
TECHNOLOGY CONSULTING

OPTIMAL **TECHNOLOGY** GUIDANCE

INFORMATION TECHNOLOGY MASTER PLAN

REPORT

Presented to

CITY OF RIVIERA BEACH
PALM BEACH COUNTY, FL.

Client Locations
Coast-to-Coast

Practice Locations
Illinois
California
North Carolina
Minnesota

1.800.806.3080

June 30, 2015

TABLE OF CONTENTS

ENGAGEMENT PURPOSE AND BACKGROUND

STRATEGIC PLAN OBJECTIVE

The objective of the IT Master Plan included developing and articulating a vision for the effective use of technology to support the work of the City, identifying strategies for developing and implementing technology initiatives, and highlighting the cost benefits of doing so. This was accomplished by using a bottom-up, operational needs assessment with all City departments that determines the IT infrastructure necessary to support the required systems.

We created a well-documented plan to guide the City's Steering Committee over the next five years in planning, procuring, implementing, and managing current and future technology investments and resources related to Information Technology Services provided to the City. The plan is the result of a thorough analysis of the following:

- Interviews and workshops that involved all levels of the City's staff, by department, including the management team, end-users, and other stakeholders
- 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 projects that IT staff and departments should undertake over the next five years
- Identification of needs to accommodate current and future technology requirements, such as data storage and management, legal requirements, security requirements, etc.

EXPECTED DELIVERABLES

The Master Plan includes, but is not limited to:

- Project purpose and background
- Methodology for implementation and maintenance of Master Plan
- Current state of information technology
- IT vision and principles
- Strategies, goals, and objectives
- IT Initiatives (Projects) by priority
- Key issues
- Timelines
- Budgets (for CIP budget process)

METHODOLOGY AND APPROACH

We utilized a five-phase methodology on which we base our IT Master Planning projects. This served as the cornerstone of the project, allowing the collaborative process to shape and develop our recommendations and approach, enabling us to tailor each step to fit the City's unique specifications. We worked in partnership with the City to improve the IT environments so it can better meet the needs of staff and constituents.

CURRENT INFORMATION TECHNOLOGY ENVIRONMENT SUMMARY

SUMMARY IT ENVIRONMENT

IT Staff (FT Equivalent)	8
City Employees	497
User Log-Ins	1,296
PC's	392
Laptops	200
Tablets and Mobile Phones	237
Physical Servers	23
Virtual Servers	38
Total Servers	61
Network Devices	60
Platforms	Windows, Linux
Databases	SQL Server, MySQL XBase
Citywide software applications/modules	190±
Avg. Reported Help Desk Tickets per Week	50
Closed Weekly (7 days)	41
Average Open Tickets after 7 Days	15%
Monthly Average of Tickets Closed within One (1) Hour	30
Average Hours to Resolve a Ticket by Weeks	26

The IT Division has completed a reimplementation of their Track-It software to better manage, track, and measure performance in resolving support tickets. This should allow for more detailed measurement reporting for time periods, including:

- Tickets Closed in 24 Hours
- Tickets Closed in 72 Hours
- Other relevant measurement reports/coutcomes

KEY STATISTICS AND METRICS

The following analysis provides feedback on three key measurements regarding IT operations:

IT Budgeting/Expenditures	IT spending vs. Operating Fund budgets
IT Staffing Resources	Overall IT staffing vs. key equipment counts
IT Capital Replacement Schedules	Equipment replacement schedules for major IT items

These measurements provide indications of issues that may affect the organization's IT effectiveness as it relates to providing IT support of systems and application solutions.

IT spending versus operating fund budgets provides an overall indication of whether the IT function receives a sufficient level of organizational resources to provide the necessary services. Underfunding over time typically reduces IT's ability to respond to requests, reduces system availability, and negatively impacts organization-wide productivity.

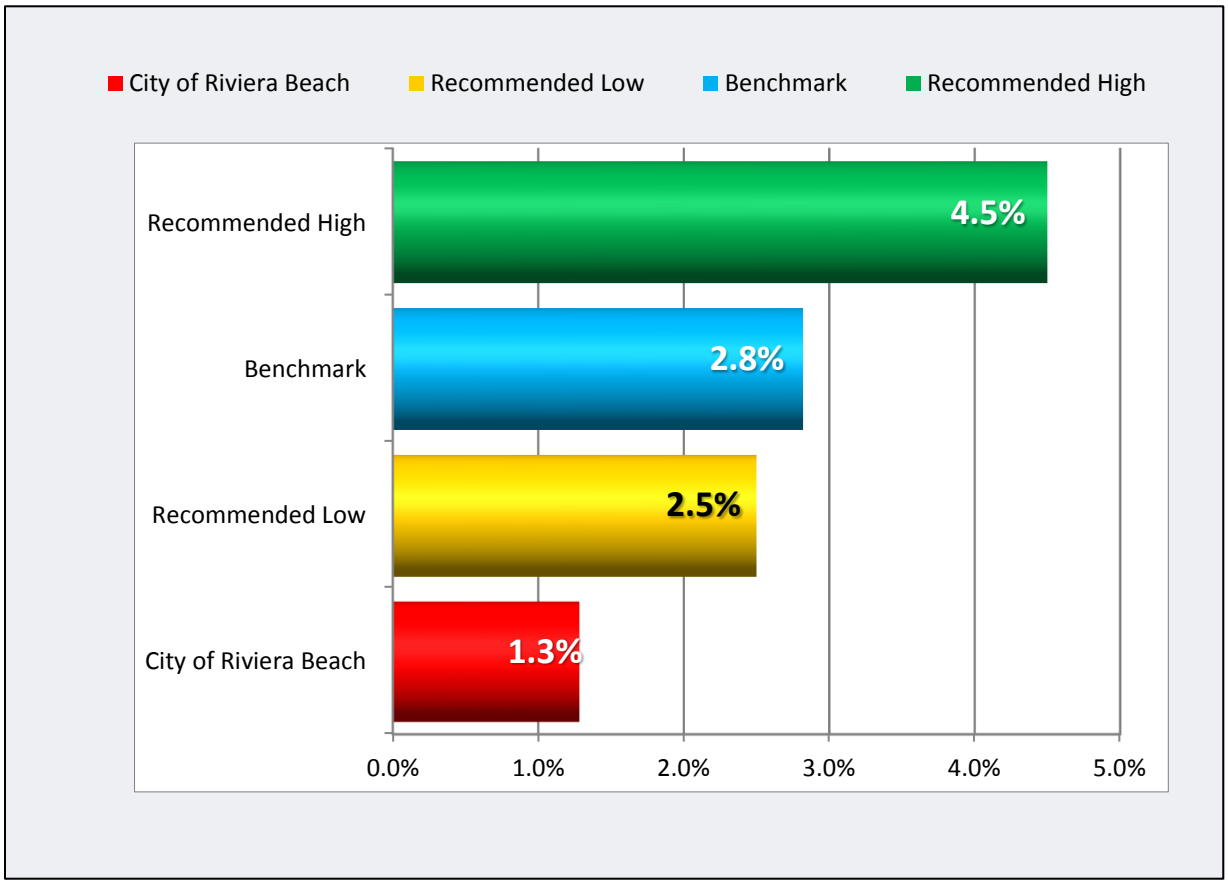
IT staffing levels versus servers, PCs, and the total number of logins are often a reflection of IT staff productivity. With the proper productivity tools, an individual IT staff member can support more users, reducing overall costs.

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

IT Spending versus Operating Fund Budgets

The following table depicts Riviera Beach's IT Spending versus Recommended Best Practices and a Municipal benchmark of 31 agencies.

Recommended Low	Municipal Benchmark	City of Riviera Beach	Recommended High
2.5%	2.8%	1.3%	4.5%



The 2014/2015 adopted budget for the general and enterprise funds is $79.8M, and the IT expenditure budgets total for the same period is $1,024,150. The municipal spending benchmark range from the survey was between 1% and 8%, with an average of 2.8%. The percentage of IT expenditures versus operating fund budgets at Riviera Beach is below the recommended low.

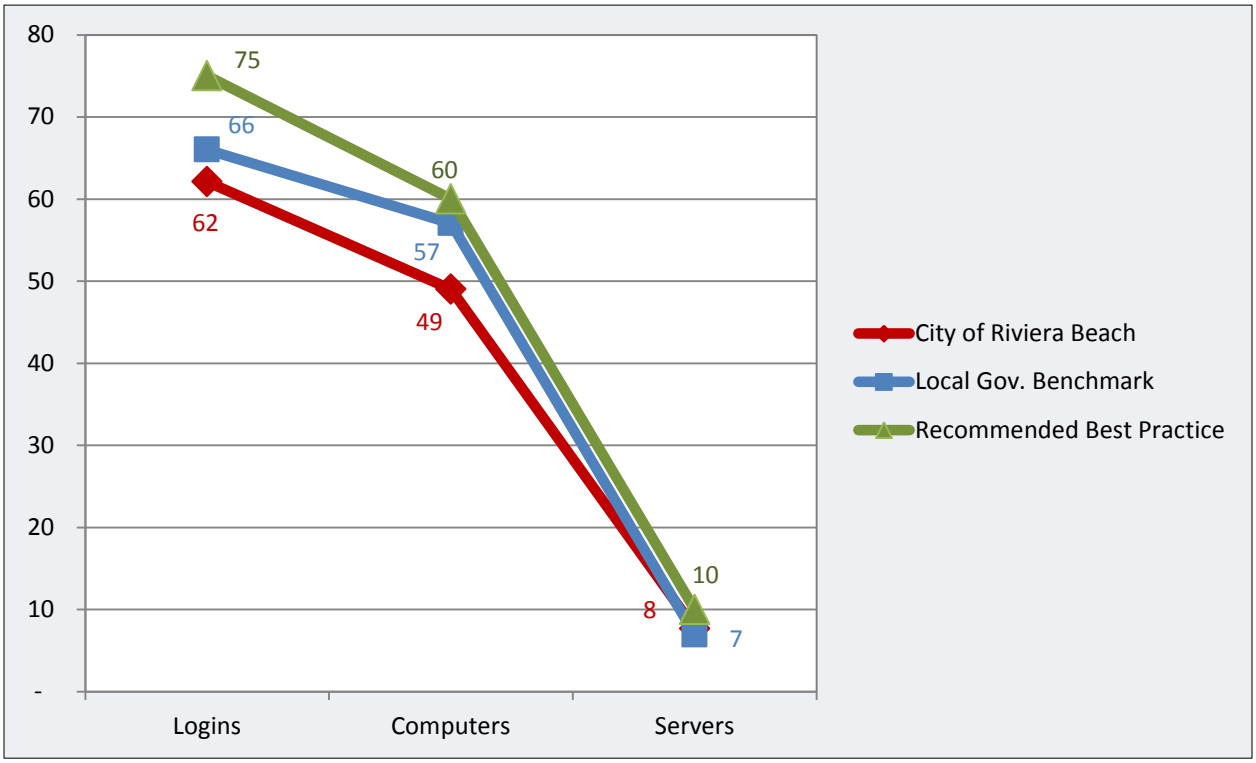
This represents a consistent under-spend compared to industry standards for IT infrastructure and overall information technology solutions and support. The result of this under-spend has been an IT infrastructure that needs upgrades, is aged, and has under-utilized departmental applications. Greater funding should result in increased productivity citywide and at the department level.

IT Staffing Ratios

The following table depicts Rivera Beach's IT Staffing Ratios versus a Municipality Benchmark of 44 similar agencies.

	City of Riviera Beach	Municipality Benchmark	Recommended Best Practice
Logins	62	67	75
Computers	49	57	60
Servers	8	7	10

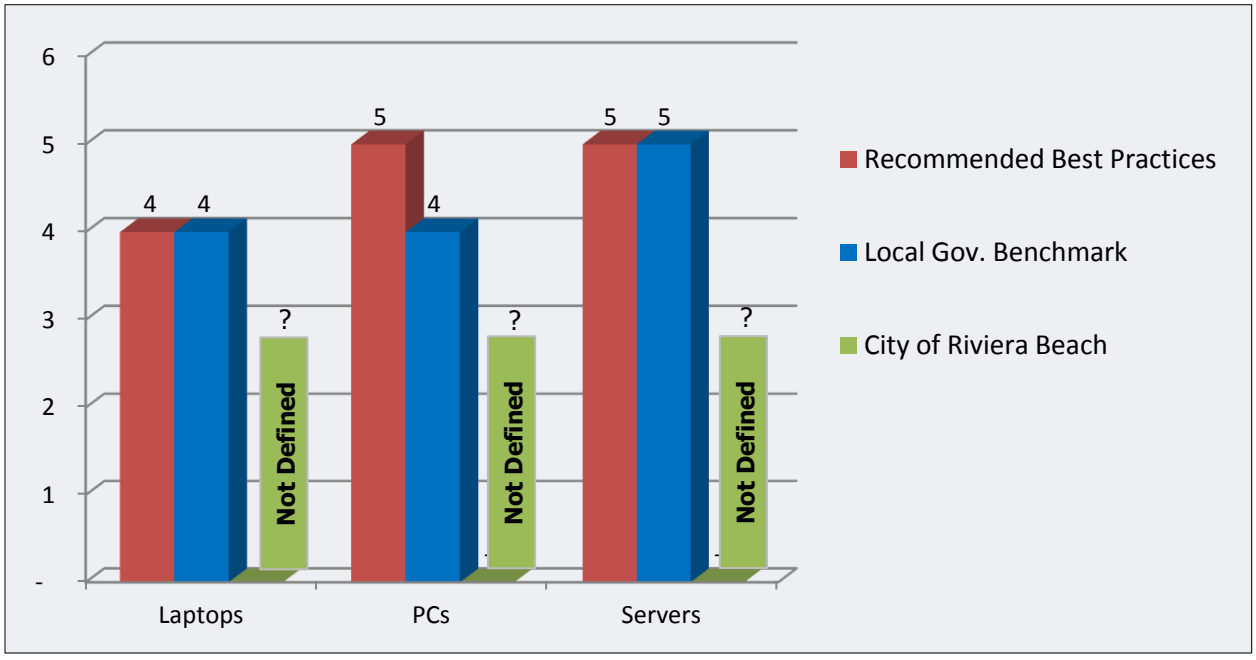
The ratios for this comparison is based on a fixed number of 8 IT Staff against 497 logins, 592 computers, and 61 servers. In this comparison, the City's IT staffing ratios for computers are lower than their peers or recommended best practices (i.e., supporting less users and devices per IT staff). This confirms the findings from the Ticket Tracking system (QAlert) for "Help Desk" support is overstaffed. In summary, all the IT staff roles and responsibilities could use more attention.



Equipment Replacement

The following table represents IT equipment replacement Recommended Best Practices and a Municipal benchmark of 37 agencies. The City has not defined, nor has the City historically operated with, a replacement policy. This leaves the City's results unrenderable at this time. However, the benchmark and best practices ratios shown below provide a good goal for the City to pursue in managing equipment life-cycles and replacement in the future.

	City of Riviera Beach	Municipal Benchmark	Recommended Best Practices
Laptops	Not Defined	4	4
PCs	Not Defined	4	5
Servers	Not Defined	5	5



IT STRATEGIES, GOALS, AND OBJECTIVES

The strategies for leveraging and maximizing information system utilization in delivering City services are listed below. Within each strategy, we have listed initial goals and objectives for the City. We have translated those goals and objectives into specific initiatives in the *Appendix* of the report. Additionally, the budgetary costs for each initiative, resource requirements, implementation timeframes, and the next steps toward implementation are outlined later in the report.

IMPROVE STAFF PRODUCTIVITY

Goals and Objectives

- Introduce application management best practices.
  - Improve departmental ownership of applications.
  - Identify key roles and responsibilities for core business applications.
  - Increase user application training.
  - Provide key departmental personnel with report writer training.
- Conduct process reviews and document application feature/function requirements to identify automation and opportunities to streamline processes and reduce duplication, including:
  - Finding areas for automating existing manual processes
  - Perform processes within core application systems and eliminate side-bar spreadsheet work and other shadow systems
  - Fully implement reporting capabilities to ensure output that supports better business decisions and measurement of performance goals (performance measures or KPIs)
- Utilizing return-on-investment (ROI) principles, identify areas for improvement, and use ROI principles to justify additional applications to improve productivity and service.
- When justified, move to next-generation mobile computing (tablets and laptops).
- Provide the public and citizen online information and self-service capabilities, reducing staff phone time and counter activity.
- Implement dual monitors for staff productivity gains.
- Use sustainability planning strategies to improve and maintain high network speed, network reliability, and full citywide access.

SELECT AND IMPLEMENT A NEW ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM

Goals and Objectives

- Follow a system selection best practices approach to select an ERP system to replace the ADG system and other City applications:
  - Assess and define needs
  - Develop an RFP based on the needs assessment and defined needs
  - Analyze and determine short-list
  - Conduct detailed tailored demonstrations
  - Perform reference checks
  - Conduct site visits
  - Select finalist
  - Conduct due diligence and contract review and negotiation
- Implement per best practices with Project Management Office and following PMI (project Management Institute) standards

MAXIMIZE UTILIZATION OF APPLICATION SYSTEMS

Goals and Objectives

- Utilize software selection best practices for all new application procurements.
- Follow implementation project management best practices.
- Maintain a complete Application and User License Inventory.
- Plan for and fund adequate user training and support.
- Train key users so they can fulfill their roles without extensive work-arounds and unnecessary reconciliations.
- Implement application management best practices, including:
  - Funding an application support specialist (business analyst) to support the applications and the associated application users in the business departments.
  - Create a culture of departmental enterprise application ownership for ERP system and any other core departmental applications.
- Commit all levels, from management to line staff, to taking responsibility for adapting and improving processes, and integrate them with core application software applications.

IMPROVE APPLICATION MANAGEMENT AND SUPPORT

Goals and Objectives

- Improve departmental ownership of applications
- Identify key roles and responsibilities for core business applications
  - Process Owners
  - Application Champions
  - Application/Business Process Analysis
  - Ad Hoc Report Writers
- Add Business Analyst (Application Support Specialist) skill sets
- Improve application analysis and reporting capabilities within the business departments and/or the IT department
- Perform process reviews and document specific feature/function requirements for inclusion in RFPs when procuring new applications
- Create and maintain Application and User License Inventory
- Follow software selection best practices for new software acquisitions
- Follow implementation project management best practices
- Create standard operating procedures
- Utilize industry subject-matter experts (SMEs) for large, complex projects

ENSURE IT GOVERNANCE AND IT BEST PRACTICES

Goals and Objectives

- Adopt a Best Practices approach to software selection and management
  - Improve application analysis and reporting capabilities within the departments
- Create and maintain project inventory
- Utilize project management principles for larger projects
  - Become date and project-schedule driven
- Finalize documentation
  - Create standard operating procedures
- Implement technology productivity tools, automate:
  - Security patch management
  - Desktop configuration and maintenance
  - Network management
  - Alert and alarm threshold management
  - Help Desk Support productivity and tracking software

IMPLEMENT IT GOVERNANCE BEST PRACTICES THROUGH IT STEERING COMMITTEE

Goals and Objectives

- Formalize an IT Steering Committee and Governance mechanism
  - Review Help Desk metrics and identify training needs
  - Monitor and review IT Initiatives
  - Develop and review standards and policies
  - Collaborate on projects and initiatives
  - Act as a sounding board for management and staff

STRENGTHEN INFRASTRUCTURE RESILIENCE AND DISASTER RECOVERY CAPABILITIES

Goals and Objectives

- Identify high-priority systems and recovery time frames
- Expand virtual servers to reduce server count and increase failover
- Consider implementation of redundant Internet connections with automatic failover
- Finalize disaster recovery capabilities and plan
- Exercise plan annually

EXPAND CITIZEN COMMUNICATION AND ONLINE CUSTOMER SERVICE

Goals and Objectives

- Increase online transaction capabilities
- Implement Online Citizen Request Management (CRM)
- Implement Online Permits
- Implement Online Permit Inspection Requests
- Implement Online Code Enforcement Complaints
- Implement Online Business Certificate Renewals
- Implement Online Park and Recreation Program Registration and Payment

MOVE TOWARDS A CITYWIDE GIS/GEOSPATIAL APPLICATION PERSPECTIVE

Goals and Objectives

- Move to a centralized GIS environment
  - Consolidate existing disparent/distributed GIS systems and staff
  - Provide to GIS/Mapping presentation to the public on the City's website
  - Include geospatial requirements as specifications for all future software application acquisitions

IMPROVE IT OPERATIONAL EFFICIENCIES

Goals and Objectives

- Develop metrics for the measure of IT service levels
  - Report on these metrics regularly
- Implement an IT Services Portfolio and Project Management capabilities
  - As a part of the IT Services Portfolio, work with the IT Steering Committee to reach agreement on reasonable service levels for Help Desk support
  - Review responsibilities for services provided by IT to validate their necessity
- Utilize these and other Operational Tools to report on the success of IT to the IT Steering Committee

IMPROVE IT CUSTOMER SERVICE

Goals and Objectives

- Foster a customer service attitude for all aspects of IT service delivery
- Create an IT Help Desk and implement Help Desk Support and Tracking software tools
- Document service levels for incident response and enhancements
- Develop customer service performance metrics and exceed those expectations, using Help Desk tracking and productivity tools
- Develop Mobile Device Management capabilities
- Implement "guest" and staff wireless throughout all City facilities
- Consider "Bring Your Own Device" and "Network Access Control" for some users

IMPROVE IT ACCOUNTABILITY

Goals and Objectives

- Implement Help Desk software to effectively log calls and track/measure service levels
- Develop IT performance metrics and track
- Analyze and track infrastructure performance and application response time

MODERNIZE IT INFRASTRUCTURE

Goals and Objectives

- Create a computer room that meets current standards
- Move from obsolete hardware and software to current generation infrastructure
  - Eliminate system processing inefficiencies created by incompatible software and disk space limits
  - Reduce wasted staff productivity time spent maintaining and resolving issues on aging technology
- Improve resiliency and uptime of infrastructure
  - Design infrastructure to include cost-effective redundancies to reduce downtime
  - Create and track uptime metrics

WIDE AREA NETWORK

Goals and Objectives

- Design and implement an industry standard Municipal Area Network to improve:
  - Network performance
  - Citywide application access and data sharing
  - Data integrity
  - Reduction in long-term telecommunications and equipment expenditures
  - IT support efficiency and productivity

IMPLEMENT BEST PRACTICES FOR PROCUREMENT AND PROJECT MANAGEMENT

Goals and Objectives

- Procure large or complex equipment and services through a competitive process
  - Conduct an initial design phase for use during competitive bidding
- Utilize best practices project management techniques for the implementation of larger, complex projects
  - Develop a project planning expertise and utilize project planning techniques to report on project progress to management and the IT Steering Committee
  - Integrate project management with management of the IT Services Portfolio and Project Inventory

ENABLE CITY WIDE APPLICATION USAGE

Goals and Objectives

- Connect all City facilities through an improved wide area network
- Expand remote access to improve staff productivity
- Improve reliability of access and reduce downtime

DEVELOP SUSTAINABILITY PLAN

Goals and Objectives

- Create an IT Capital Replacement Plan to forecast, fund hardware and software replacement costs
- Develop an application portfolio and understand the life cycle cost of all departmental and operational applications
- Plan for the sustainability of applications in addition to existing hardware capital replacement funding

PREPARE FOR A PORTABLE COMPUTING WORKPLACE

Goals and Objectives

- Implement mobile computing (tablets vs. laptops)
- Improve wireless integration within City IT infrastructure
- Track and implement mobile computing modules in application software
- Develop Mobile Device Management capabilities
- Consider "Network Access Control" for some users

IMPROVE SOFTWARE SELECTION METHODOLOGY

Goals and Objectives

- Assess the need for replacement versus upgrade before undertaking a selection
- Investigate current vendor systems for potential module additions first
- Perform a complete best practices requirements-based RFP selection process when procuring new applications
- Best practice equipment procurement

INFORMATION TECHNOLOGY (IT) PRINCIPLES

VISION / MISSION STATEMENT

The City of Riviera Beach is dedicated to providing the highest quality technology-based services in the most cost effective manner to deliver services effectively and efficiently on a sustained basis in a manner that reflects the organization's dedication to excellent customer service. The City will ensure that the information systems are maintained in a secure environment, capable of supporting technology advancements made by the City, and will exist in an integrated environment that fosters an open, collaborative, and unifying culture. Information Technology is committed to the values of:

1. **Reliability;**
2. **Professionalism and integrity;**
3. **Efficiency and effectiveness;**
4. **Innovation;**
5. **Excellence; and**
6. **Collaboration and teamwork.**

- Given **Limited IT Resources**, the City will focus these resources on the most productive and cost effective projects.
- City departments shall agree on a **Collaborative Long-term IT Vision and Strategies**, which requires active participation in setting IT priorities through an IT Steering Committee made up of department leadership.
- City will strive to **Maximize Utilization of Existing Systems** and prior investments in application software, as well as to expand functionality and seek enhancements to existing applications.
- City is committed to ensuring **Sufficient Staff Training and Application Software Knowledge** of existing vendor systems.
- **Department Ownership** is fundamental to achieving maximum return on investment of applications. Departments recognize the importance of assuming responsibility for managing and implementing their specific core business applications, with the support of IT staff. City departments are committed to taking responsibility for adapting and improving processes to best integrate them with the application software.
- The City will develop an **IT Services Portfolio** so that all interested parties and stakeholders understand the IT Division's roles and responsibilities in servicing the City overall.

IT INITIATIVE SUMMARIES

INTRODUCTION

IT Master Planning is a process to assess, research, prioritize, budget, and plan future information technology initiatives. Some of the following initiatives are ready for approval and implementation, while others require further assessment and research before the City can make a final determination as to priority, resource requirements, and cost-benefit.

Productivity Improvement – Many of the following initiatives will have a direct impact on overall productivity within the organization. Some of these initiatives will significantly impact specific processes, reducing staff time required to complete a certain process, while others will ease or speed delivery of services to City residents.

Cost Savings – Many of the initiatives outlined herein will have direct or indirect cost savings when implemented. Extensive Return-on-Investment (ROI) calculations are not within the scope of this report. An ROI Considerations discussion is included under the Key Strategies Section of the Report.

IT INITIATIVE CATEGORIES

The master planning process resulted in 94 initiatives. Combined, there are hundreds of findings and recommendations. *CLIENTFIRST* classified the major findings and recommendations into seven categories, including:

- BEST PRACTICES
- IT OPERATIONS
- DEPARTMENTAL APPLICATIONS AND SYSTEMS
- IT SECURITY
- GOV 2.0
- TELECOMMUNICATIONS
- IT INFRASTRUCTURE

BEST PRACTICES

A best practice is a method that consistently provides results greater than those achieved with other methods. *CLIENTFIRST* believes the following best practices will enhance the City's ability to select, procure, and maintain more effective technology solutions in the future, as well as improve the overall productivity of staff.

The IT Initiatives addressed within this category, which are explained in greater depth in the *Appendix*, include:

IT Initiative	Description
Return-on-Investment Considerations	Overview showing how to understand ROI opportunities in the City through various technology investments
IT Governance	Utilizing an ongoing IT Steering Committee to drive technology education, policies, and the implementation of the IT Master Plan over the next five years
COBIT	Technology framework to ensure alignment of IT with the environment through the adoption of best practices, metrics, and oversight
ITIL	Technology framework intended to assist organizations with IT service strategy and IT operations
Applications Management Best Practices	Establish roles and responsibilities for IT, departments, and users to improve overall utilization of software assets maintained by the City
Applications and User Licensing Inventory	Determine existing software resources in use by City staff
Enterprise Applications Support – Roles and Responsibilities	The City should consider adding application/business analyst position to IT in order to provide better support for department software programs that are the backbone of organization operations. The City should also develop an IT Services Portfolio documenting IT roles and responsibilities related to all the City's applications, and departmental staff should be provided with additional training in their respective application systems and report writing.
User Training and Support	Improve ongoing user training to maximize system utilization and gain productivity and efficiencies
Training Room	Need to establish and maintain a training room with dedicated PCs for application training and testing of applications that are being implemented or to improve business processes
Software Selection Best Practices	Follow best practices needs assessments, evaluation, and procurement when considering new or replacement software solutions
Project Planning and Implementation Best Practices	A best practices approach for project planning and management
Maintaining Software Updates	Maintaining software updates for all applications and operating systems for all users in a timely manner
IT Project and Services Portfolio	Develop portfolio of City applications and IT Department services and standards, and communicate to all management and staff; can be used to delineate roles and responsibilities between departments and IT, as well as set proper expectations through the introduction of Service Level Agreements (SLAs)

IT Initiative	Description
Computer Equipment Replacement Planning	Expand replacement/refreshment policies and related budgeting for all IT assets, including departmental applications
Sustainability Planning	Provide a more practical or realistic way to determine and plan for the ongoing operational system needs and expenses of major technology systems
IT Policies and Procedures	Develop new IT policies for remote access, encryption, data usage, new hire and termination procedures, back-up procedures, web filtering, social media, etc.
IT Procurement Practices	Using objective best practice procedures for procuring IT investments to ensure independent specifications and the most cost-effective solutions are obtained by the City
IT Cost Recovery (IT Budget Allocations)	Developing an IT cost recovery model to allocate IT costs fairly using holistic review and measurable to ensure use of services are charged proportionately
Cloud Computing	Significant benefits can be achieved, including security, disaster recovery, and cost savings, however, cloud-computing options for many systems are still not cost-effective or the most secure approach; Cloud-computing options should be considered for future projects and cost-benefit should be the overriding factor for most final decisions

DEPARTMENTAL APPLICATIONS AND SYSTEMS

The Applications/Systems category includes initiatives primarily related to department business applications identified during the needs assessment process. Many of these initiatives and recommendations can have a significant impact on overall productivity, enhanced communications, and information sharing, improved constituent service, improved transparency, and in some cases, cost efficiencies.

The IT Initiatives addressed within this category, which are explained in greater depth in the Appendix, include:

IT Initiative	Description
Enterprise Resource Planning (ERP) Replacement	Replacement of existing system and adoption of newer technologies to significantly improve City operations and customer service. It will also consolidate and reduce the number of duplicate software applications in use across the City. The following initiatives included in this IT Master Plan are offered as modules within a typical ERP suite: • Human Resources system improvements • Applicant Tracking • Time Entry System • Employee Self Service • Land Management System Replacement (community development) • Electronic Plan Reviews • Mobile Computing • Online payments, Transactions and Services • Scheduling System • Work Order /Maintenance and Asset Management • Fleet Management • Parking Ticket Management • Citizen Request Management (CRM)
Performance Evaluation Software Replacement	Software selection and implementation for an employee performance and evaluation management; this would replace the existing performance evaluation management tools and software
GIS Assessment and Master Plan	Citywide assessment and master plan for the future GIS data and resource needs
Centralized Land and Parcel Management	Consolidate Land/Parcel information for improved accuracy and data retrieval
CCTV Sewer Video Integration	Using Granite XP for sewer line (CCTV) inspections and this would integrate with GIS so that the Granite XP video would be available for viewing within GIS
Park & Recreation Software System	No software system exists today and most work is done manually; this would include the selection and implementation of a Parks and Recreation software system to automate registration, program management, cash and credit card receipts, and much more
Video Monitoring System	Standardization of video monitoring across the City with introduction of video monitoring for other departments, including monitoring for Parks and Recreation gyms and community center

IT Initiative	Description
Electronic Content Management System (ECMS) Improvements	Implementation of advanced document and content management technology to: manage records, manage record retention, document capture, storage and retrieval; provide workflow automation; manage FOIA requests; and provide electronic forms and application capabilities with routing and approvals; many ECMS systems also offer integrated Agenda and Legislative Management for Council meeting automation and managing resolutions and ordinances
Library Information Management System (LIMS) Replacement	This would include the replacement of the existing LIMS system with the COALA-Hosted (Cloud) Solution for COALA catalog compatibility and other beneficial customer benefits
City Attorney Case Management System	Case Management Systems (CMS) automate the case management process and also allow case work to be electronic and reduce the volumes of paper typically experienced in attorney offices
Fire Records Management (RMS) Replacement	Replacement of the existing VisionAire RMS system with the County hosted FDM system; implementation is currently in process
Police CAD/RMS Replacement	This would be the replacement of the existing VisionAir with a new CAD/RMS system that is more compatible with State of Florida requirements and would also contain more modules that will reduce the number of ancillary software application now required with the VisionAir solution; this system would also include and incorporate the *Internal Affairs Software* initiative
Police Technology Consolidation Plan	The Police Department (PD) currently has approximately 70 different application and technologies with many of them being duplicates; this engagement would analyze this environment and lay out a plan to consolidate and reduce the number of software and technology solutions to simplify and increase efficiencies
Citywide Fleet Automated Vehicle Locator (AVL)	Standardized AVL for all City departments including Police, Fire, Public Works, Utility District, Parks and Recreations, etc.
Other Application and Departmental Systems Initiatives	This includes a number of smaller initiatives, or initiatives on the drawing board for implementation, including: • Parks and Recreation Call Out Notification • Library Teen Cyber Bar • Library New Facility IT Master Plan • Fire Pre-Planning Management Software • Fire Medical Supply Inventory System • Public Works Fuel Management System • Facility/Room Reservations

GOV 2.0 (E-GOVERNMENT)

Gov 2.0 is a growing body of shared knowledge regarding the utilization of new technologies in combination with creativity, information sharing, and the collaborative process to better serve and interact with the public. The principles of Gov 2.0 include:

Principle 1 - Serve as the primary source of reliable, accurate, and timely City information, delivered to the customer on his/her platform of choice

Principle 2 - Maintain a real-time, interactive, and user-centered website that offers easy access to public information and online services

Principle 3 - Offer opportunities for online civic engagement and social collaboration

The possible benefits of developing such communication methods go beyond just simple release of information. Among the advantages are the following:

- Increased efficiency and cost reduction for public services offered electronically
- Allowance of greater government transparency
- Better informed and more involved public
- More collaborative efforts between the City and the public
- Faster and more convenient access promotes public approval

The IT Initiatives addressed within this category, which are explained in greater depth in the *Appendix*, include:

IT Initiative	Description
Kiosks	Placement and use of kiosks for self-service at City facilities, libraries, etc., where appropriate. Deployment should include, at minimum, any transactional capability offered on the City website.
Social Media Collaboration Strategy	Need a strategy for implementation and utilization of social media
Website Replacement with Content Management Tools	Replacement of existing website using a third-party software vendor specializing in Municipal Website Design tools and services; this would also include easy-to-use Content Management capabilities to more easily manage frequent changes to the City's website pages
City Intranet	The third-party Municipal website vendors mentioned in the initiative above also provide City Intranet tool for internal City management and employee use
Mass Outbound Communication	Simultaneously notify City residents and staff regarding information or status updates
Council Chambers Audiovisual Systems	Improve Council Chambers room Audiovisual maintenance capabilities (was completed during the conduct of this IT Master Plan engagement)
Conference Room Audiovisual Capabilities	Improve audiovisual capabilities of conference rooms
Video/Web Conferencing	More employees and departments need a user-friendly approach to teleconferencing today and this need is expected to increase in the future; web conferencing is being used more and more instead of face-to-face meetings and for group training

IT INFRASTRUCTURE

CLIENTFIRST conducted a detailed IT infrastructure assessment, including the network, servers, equipment, inside/outside cable plant, and other communication infrastructures.

The IT Initiatives addressed for this category, which are explained in greater depth in the Appendix, include:

IT Initiative	Description
Local Area Network (LAN) / Metropolitan Area Network (MAN)	Replacement of Network devices due to obsolescence
Internet Access/Bandwidth	Review of existing bandwidth needs and determine future rate of growth. Also utilize network management tools to baseline and monitor Internet bandwidth. Budget for additional Internet bandwidth, using a commercial-grade, dedicated broadband Ethernet service which will include an upgrade to a higher bandwidth of 100Mb or higher. Investigate adding in a second Internet connection to enable HA (High Availability).
Network Redesign	Performing inventory and audit of network equipment and determining end-of-life dates and developing a capital replacement plan. Review of switch, router, and firewall configurations equipment. Upgrade WAN equipment to support increased bandwidth needs and security. Develop new network design to fit into overall operating and to meet the needs of the Disaster Recovery Plan, which will include the development of an RFP for replacement of the Wide Area Network (WAN).
Create Best Practice Internet Connectivity	Develop security policy, including a section outlining external to internal connection security and create a DMZ using a small file server running virtualization to provide for growth
Core Switch Replacement	Upgrade core network switch to resilient Cisco 4500 Series model or higher and eliminate all non-managed switches; implement redundant core switching capabilities and institute maintenance policy and standards for switch, router, firewall, and various network devices
Wireless	Develop an integrated wireless design that incorporates guest and City staff needs and perform wireless survey to determine locations for wireless access points. Integrate mobility and wireless-usage section into existing IT policy and develop a wireless design model to implement citywide. Implement management platform and expand as the wireless network grows. Require "second wave" 802.11ac access points for deployment.
Wireless Mesh – Mot Mesh	Investigate upgrading existing wireless mesh equipment. Upgrade to higher bandwidth access points and add dedicated Internet connection for mesh network – do not share gateway. Budget for new technology implementation, which includes necessary consulting or contractor design and implementation services. Implement redundant wireless core routers for mesh network – multiple bottlenecks and single points of failure exists and train internal staff on wireless mesh technology.
Data Center Improvements	Enhance computer room to meet industry standard best practices

IT Initiative	Description
Data Center Relocation	Move of data center to proposed City Hall space. Alternatively, investigate data center space availability with other government agencies in the County. Design with proper power and HVAC requirement for newly proposed room. Implement closet and cabling standards.
Power Distribution Units	Add power distribution units (PDUs) for the ability to control and monitor power to particular network devices, such as servers and switches
Server Upgrades and Consolidation	Consolidation of the majority of physical servers to the current release of virtualization software improve application resources and user needs
Virtual Server Upgrade	Upgrade to the current version of VMware products, such as VMware vSphere Hypervisor (ESXi) 5.5 or higher
Storage Area Network (SAN) Upgrade	For procurement of an additional iSCSI-based SAN for failover and redundancy (replication); this will include instituting Storage Tiering to improve the performance of core data and applications and includes the necessary backup capacity as a part of the design process
Remote Access Upgrade	A needs assessment and requirements definition for remote access for the City that takes into account the diverse user needs of staff and long-term goals for the use of remote access to conduct City business
Computer Upgrades	Upgrade computers from Windows XP to Windows 7 or replace with new computer where necessary
Dual Monitors	Improve staff productivity by allowing an additional workstation monitor for certain users
Conference Room Audiovisual Capabilities	Improve audiovisual capabilities of conference rooms
Technology Support for the EOC	Upgrade outdated equipment and technology to support use of EOC in a large-scale emergency



IT OPERATIONS

IT operations are the daily support and maintenance of all IT infrastructure and user support. IT operations include the processes and procedures used by IT staff to maintain the network, applications, and workstations. Initiatives related to IT operations are often focused on productivity improvements and implementing IT best practices.

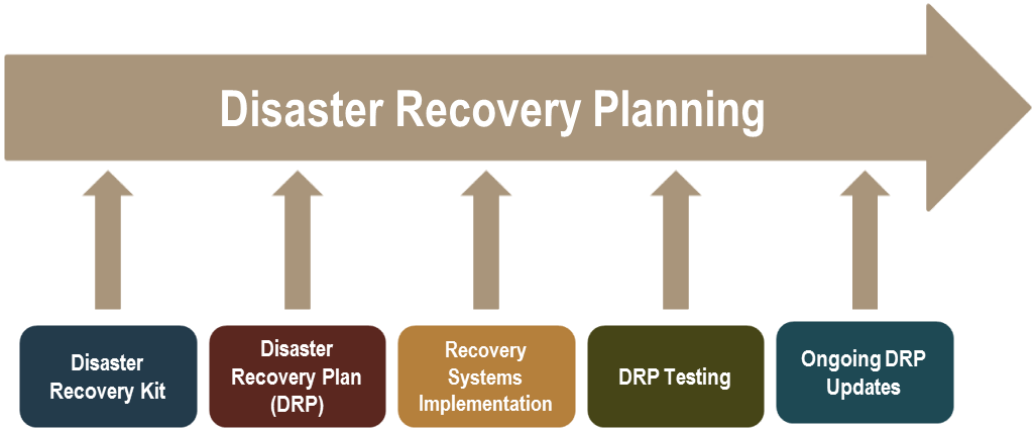
The IT Initiatives addressed for this category, which are explained in greater depth in the *Appendix*, include:

IT Initiative	Description
Help Desk Ticketing System	Utilize ticketing system to develop and report on Service Level Metrics
Desktop Management	Implement WSUS while evaluating and then implementing enterprise desktop management products
Print Management	Centralized management of printers to improve flexibility and reduce troubleshooting, move day-to-day copier management to the departments

IT SECURITY

IT Security refers to all security systems and practices, including Disaster Recovery to project City systems and data.

IT Initiative	Description
IT Security – General	Develop security policies and procedures, protect City systems and data
IT Security Review	Complete review of IT assets and the development of recommendations for improvements to security-related policies, security systems, physical security, servers, workstations, laptop security, and compliance with existing policies and procedures
Backups	Replacement of the Symantec with more robust enterprise backup software solution (e.g., CommVault, ArcServe, etc.). Plan for disk-to-disk replication to either a second site at the City or another organization in the County; move to cloud-based storage instead of tape for tertiary backup and encrypt backup data and move to a disk-disk-cloud topology
Disaster Recovery Planning	Develop capabilities to survive a major failure or catastrophic event involving IT resources and facilities
Windows Active Directory	Upgrade Active Directory (AD), and review AD services for resiliency
Two-Factor Authentication	Budget for and implement two-factor authentication for remote access and inclusion of two-factor authentication in the requirements for the purchase of a new remote access system
Firewall Filtering and Consolidation	Expand web content filtering to fire stations, replace firewalls before obsolescence in 2018
PCI Compliance	Standards and laws that govern credit card payment processing
Records and Data Retention	The completion of an inventory, including all forms of electronic records storage at the City and then work with the Clerk's office to develop procedures for electronic records retention for the various record types; implementation of procedures for records retention and subsequent destruction of electronic records



TELECOMMUNICATIONS

IT Initiative	Description
VoIP Telecommunications Situation	Perform a line utilization review to determine if three PRIs are really necessary, conduct a telecommunications operational assessment to determine if the current system is meeting the City's needs, and perform an alternative telecommunications system cost comparison to determine if the current system is providing the City with value versus other alternatives
Announcement System (Intercom)	Replacement of intercom capability that was lost with the move to the AT&T hosted solution now in operation

KEY ISSUES

RETURN-ON-INVESTMENT CONSIDERATIONS

IT Infrastructure, Operations, and Support

Following is a list of IT functional areas impacted when determining the number of applications required to support the City's core business solutions:

- **Hardware** – Servers required to house the applications
- **Software** – Additional software, such as database applications, required to support core applications
- **Licensing** – Increased licensing due to increased number of vendor applications
- **Business Continuity** – Increased Disaster Recovery Planning to support multiple-vendor applications
- **Support Costs** – IT support costs for hardware and software as vendor applications increase
- **Operation Costs** – The number of employees, training, and expertise requirements can increase as more vendor applications are introduced

Return on Investment (ROI) for Application Systems

Improved utilization of application systems can result in immediate and sustained savings in time spent performing specific tasks or processes. Although these individual improvements do not always equate to immediate, "hard" savings, they may result in intangible benefits to the organization or the residents or cumulative savings from reduced long-term personnel needs.

Departmental Labor Costs

Many organizations do not adequately understand the impact that improved automation (reduction in manual processes and shadow systems) will have when considering implementation of new systems, or conducting process improvement analysis. Most productivity analyses show that, over time, labor cost savings far exceed the cost of reasonable automation efforts.

The savings associated with the avoidance of one new hire or the elimination of a position, due to natural attrition, may be $40,000 to $70,000 or more per year (including total payroll, taxes, benefits, and other costs). The life of some new systems should be over ten years, making the savings from the avoidance of just one new-hire and/or elimination of vacant positions, the equivalent of $400,000 to $700,000 over ten years. Ten years should be the "minimum" expected life cycle for major/large application systems such as finance, community development, work orders/maintenance management, EDMS, etc. Some agencies use these systems for 15-20 years, if their vendors are keeping their solutions current with the latest software programming technologies.

User Training and Support

Most application software systems are continually evolving. Improvements and enhancements are made yearly. Maintaining staff efficiency and improving productivity over time requires ongoing training of all staff. Users are typically not trained on all aspects or capabilities of particular software applications during initial implementation. Therefore, it is important for the organization to develop methodologies to carry out functionality improvements, reporting, and training requirements in order to utilize the organization's important technology assets to their fullest potential over time.

Calculation Examples

Whenever possible, we recommend staff calculate tangible and intangible benefits when requesting approval for a project. The following calculations can be utilized in those efforts. We believe in being conservative and practical. Exhaustive ROI studies should not be necessary. Focusing on a limited number of reasonable examples should normally be sufficient to provide adequate justification for strategic projects.

Labor Efficiency Savings = **Labor Hours Saved x Gross Hourly Rate**

Tangible Labor Cost Savings = **New hire avoidance, elimination of position through attrition, consolidating work load and positions, etc.**

Hard Cost Savings

- Hardware
- Software
- Maintenance
- Inventory Reductions

Intangible Benefits

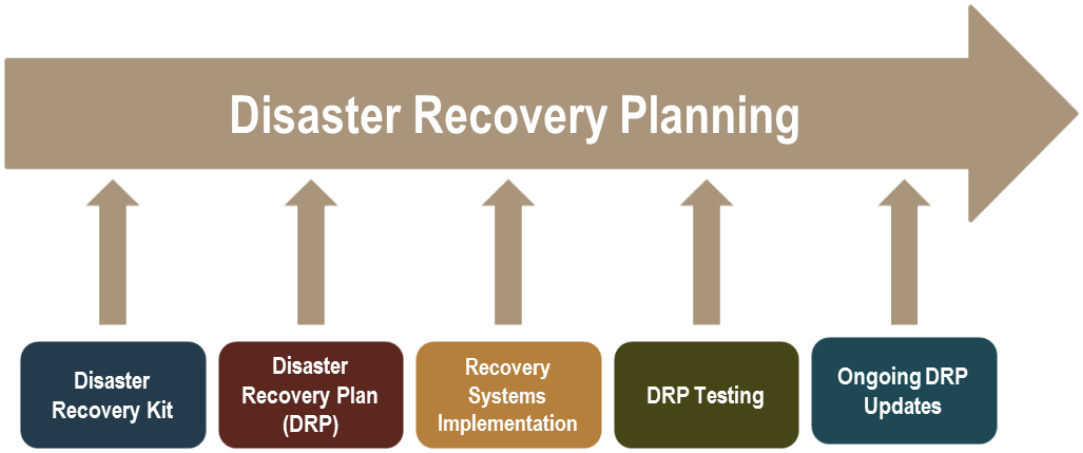
- Increasing Levels of Service
- Improved Constituent Service
- Safety
- Transparency
- Improved Community Communication
- Improved Employee Communication and Satisfaction
- IT Planning and Improvements

DISASTER RECOVERY PLANNING AND BACKUPS

The City does not have a fully complete IT Disaster Recovery plan that includes Service-Level Agreements (SLAs) for application recovery in the event of a disaster. A disaster recovery plan should be developed that includes:

- Developing a Disaster Recovery Plan and strategy.
- The consideration of three disaster recovery scenarios when developing strategies:
  1. Loss of data center at Police Department
  2. Major disaster eliminating all area communications and IT infrastructure
  3. Loss of City Hall data center
- Understanding that vendor-by-vendor or outsourced arrangements will be required for true recover of applications.
- Evaluating an application portfolio and determining SLA for restoration.
- Developing strategies for restoration of high-priority applications.
  - Begin to implement based on strategy and application priority.
  - Test portions of plan each year.
- Ensure local replication of data is in place between main data center and an alternative City location.
- Emergency Preparedness, which refers to steps taken to provide for the ongoing storage and recovery of valuable electronic information in the event of a disaster or system failure at the City. The potential need for the recovery of electronic data from off-site storage ranges from retrieval of files accidently deleted a month ago to recovery of information following a fire or flood in the main data center.

Emergency preparedness best practices include off-site backups, agreement on the priority and speed with which systems are to be restored, and a detailed, tested specific plan to restore those systems within the allotted timeframe. For systems requiring restoration in less than 72 hours, automated backup systems are usually required.



CAPITAL REPLACEMENT PLANNING

Replacement Planning is the best practice benchmark for the replacement of hardware. This is an important and ongoing process since it brings about continuous change and performance improvements. Replacement Planning allows the anticipation of expenditures, identification of hardware attributes, transition management planning, preventative system failures/ obsolescence, and foreseeable hardware maintenance.

Although there are cost benefits to retaining equipment, the extended use of such items will increase likelihood of failure.

- Set aside capital replacement funds each year to replace IT equipment.
- Develop a replacement plan for all IT equipment.

IT Equipment	Recommended Replacement Cycle (Years)
Switch Replacement	7
Phone System Upgrade	5
Audiovisual Equipment	5
Servers	5
PCs	5
Laptops	4
Mobile Devices	2
Wireless Devices:	
Point-to-Point	5
Wireless LAN	4

HELP DESK SERVICE LEVELS

QAlert is currently being used as the Help Desk ticketing system.

- Users are encouraged to report problems through the Help Desk.
  - Most problems are reported through the Help Desk.
  - Tickets are then allocated to the appropriate individual.
- QAlert does not provide data with enough granularities to produce any meaningful graphical representations. QAlert can only provide high-level weekly information. A review of one week's QAlert data (April 6 – 10, 2015) was only able to report that 36 new Help Desk tickets were entered and that 29 outstanding tickets were resolved/closed.
- IT has a Track-It Help Desk license and moved about a year ago to QAlert. The new IT Manager believes Track-It would serve them better and the reasons for their problems with Track-It were the result of poor setup and implementation.
- Help Desk ticket service-level agreements or goals have not been established and no metrics exist related to service levels.
- The City should consider instituting a Help Desk telephone answering function to provide troubleshooting as part of the initial Help Desk ticket resolution process, with an introductory target for a 40% initial call resolution rate.
- The City should also look closely at reimplementing and migrating back to Track-It as the City's help desk system. The IT Division should consider assistance from outside specialists to ensure the proper setup, configuration, and re-implementation of Track-It.
- The City has not established service-level agreements for the response and resolution of Help Desk tickets. The City should consider those defined in the table below:

Priority	Response Time	Resolution Time
Urgent (multiple staff members unable to function)	2 hours	90% resolved in less than 4 hours
High Priority (single system down or critical function unavailable)	4 business hours	90% resolved in less than 8 hours
Medium Priority (a single program or function does not work)	8 business hours	75% resolved in less than 16 business hours
Low Priority (Issue reduces productivity, but work around exists)	16 business hours	75% resolved in less than 1 week

PROCUREMENT AND PROJECT MANAGEMENT BEST PRACTICES

For large or complex systems, the City should consider utilizing a Best Practices Procurement methodology that includes an initial definition of scope and design phases. The resulting design can then be utilized in a competitive selection process. The City should consider including these components in any RFP: final design, installation, construction, testing, conversion, post-implementation support, and knowledge transfer.

For commodity systems where several vendors provide very similar products, if three quotes are required by ordinance, the City should consider creating an open RFP that does not specify a product manufacturer, but provides vendors with specifications that must be met. This methodology:

- Encourages increased vendor participation
- Increased vendor participation often results in lower pricing and better products

For oversight, before approval of purchase of a complex system or a system requiring three bids, Administration should require the following of IT:

- A diagram of the system
- High-level implementation plan (can be one page of bullet points)
- A bill of material that includes all components, list price, quantity, discounted price, ongoing maintenance
- Costs associated with final design, installation, any construction, testing, conversion, post-implementation support, and knowledge transfer
- A vendor cost matrix and assurances that all responses are truly comparable
- A written recommendation

APPLICATION UTILIZATION

The City utilizes different software applications or modules throughout all departments. These software applications have cost the City millions of dollars, and are a significant City asset. Major systems include:

Module	Vendor
Financial Management	Advanced Data Group (ADG)
Personnel Management	Advanced Data Group (ADG)
Land Management	Permits Plus
Maintenance Management	QAlert
ECMS	Alchemy, Docuware, and MS SharePoint
Geographic Information System (GIS)	Esri

Many City software applications, modules, and systems are underutilized, resulting in loss of productivity due to manual processes, inefficient workarounds, and inefficient or unnecessary reconciliations. Additional user training is needed for many software applications. The City does not have sufficient resources to document practices and procedures regarding developing needs for application systems, prioritizing, evaluating solutions, and identifying sufficient implementation, and ongoing management and support resources for these solutions. Additionally, the City has insufficient, effective IT resources to ensure quality applications utilization, increase department process improvements, and gain significant efficiencies in labor throughout the organization.

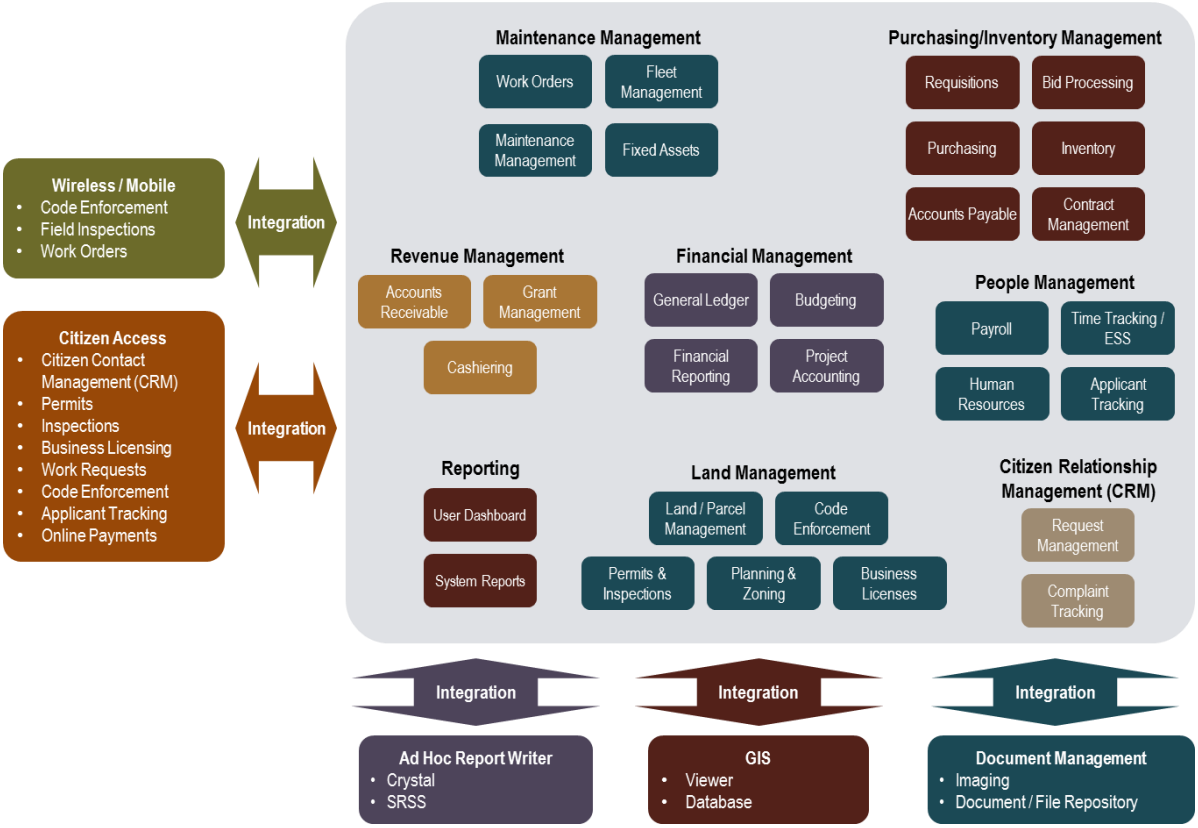
Gaining greater utilization of the existing application modules is vital to significant increase in productivity by staff throughout the City. The ability to accomplish this is difficult because of limited resources and the diversity of application providers in use.

In order for the City see achieve significant improvement in staff productivity and efficiency and constituent services and transparency, the City will need to gain improved utilization of its software/application assets.

ENTERPRISE RESOURCE PLANNING (ERP) REPLACEMENT

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 system of communication, data storage, and operations management. Improvements to ERP solutions bring about processes that multiple departments can benefit from. Common municipal-related ERP application modules include accounting, financial reporting, payroll, human resources, planning and permitting, and work orders. The following graphic shows a typical municipal ERP environment.

Example Enterprise Applications Overview



Currently, the City utilizes multiple software vendors including ADG to support its enterprise application requirements. Some of the current systems are outdated, lack adequate integration, reasonable reporting capabilities, commonly utilized functionality found in other municipalities, and require excessive manual workaround and reconciliations. All departments noted unmet reporting needs, feature/functional requirements deficiencies, and an overall need for systems improvements and additional software modules.

The City is missing opportunities for labor savings (thousands of labor hours per year), and improved customer service due to lack of integrated solutions with sufficient training and functionality to meet internal operational and customer needs.

Departments have a strong interest in newly available features and enhancements that a more modern ERP solution can provide. Gaining greater utilization in enterprise application software modules through installation of a new ERP system is key to significant increases in citywide productivity and efficiencies.

The City currently uses four different vendors to provide its ERP needs. The primary solution, ADG is aged and lacks key functionality available in more current technology. Additionally, QAlert is not a full Work Order and maintenance management system and alternatives should be considered.

The entire effort to select and implement a new ERP solution will require two to three years of effort.

SOFTWARE SELECTION BEST PRACTICES

Selecting the right system and technology is more critical today than ever before because the efficiency and effectiveness of the organization is directly dependent on its use of technology and information systems. Organizations are realizing they must take greater advantage of automation and technology to be in a better position to meet growing constituent demands. Additionally, many agencies must provide better service to their constituents while coping with less employees and greater budget constraints.

The City has several major application additions and/or replacement projects in the short and long-term that require utilization of best practices for needs assessment, procurement, implementation planning and readiness, and implementation project management.

Many of the City's past application utilization issues started with less than Best Practice approaches to software selection. Unfortunately, this is a common industry occurrence due to resource constraints. Consider these statistics:

In order for key software systems to be implemented properly, and for the organization to reap the full benefits, the organization should utilize a structured analysis and selection methodology. Additionally, for major software systems, such as financials, community development, maintenance management, utility billing, CAD/RMS, and other specialized application systems, it is highly recommended the City consider utilizing independent third-party experts to provide consulting and project management.

STARTLING STATISTICS:

- Only 32% of projects are on-time, on-budget, deliver all required features and functions, and achieve measurable business and stakeholder benefits[1]
- Approximately 44% of projects are "challenged" (late, over budget, and/or with less than the required features and functions)[2]
- 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[3]
- 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)[4]
- In a past study of local government enterprise implementation, published in *Government Finance Review*, it was found that the average project was 176% over budget and 243% over the planned implementation timeline

[1] Standish Group, CHAOS Summary, 2009.
[2] Standish Group, CHAOS Summary, 2009.
[3] KPMG survey of 252 organizations.
[4] Panorama Group, Based on a 2009 survey of more than 1,300 online respondents and focus group participants who had implemented ERP within the last three years.

GIS ASSESSMENT AND MASTER PLAN

The City does not have a centralized GIS function.

- Each department maintains their own GIS servers and GIS software, and these systems are not integrated and do not talk to one another. These departments include, but are not limited to:
  - Community Development
  - Public Works
  - Utility District
  - Police
  - Fire
- GIS data layers and GIS databases are not centrally located and maintained. GIS layers and databases are supported separately across the departments noted above.
- Palm Beach County is the source for base maps, but each department repeatedly downloads this data to their GIS systems independently and maintains this data separately.
- Those responsible for GIS within their respective departments attempt to meet on a monthly basis, but it is not as consistent as it should be. However, they are working to be more effective at communicating and sharing data.
- Not all needed layers are in place. For instance, Public Works described their GIS accomplishments as follows:
  - Street signs – None
  - Street lights – None
  - Storm sewer – Approximately 50%
- The City should consider organizing a centralized GIS function. This would provide consistency across the City and make more effective use of resources. Even though the function would be centralized, the individual GIS personnel could be assigned to specific departments to provide continuity. The focus would be to:
  - Consolidate GIS Resources
    - Staff
    - Software
    - Databases
    - Hardware
  - Establish common centralized GIS layers
  - Determine the best points of integration with key departmental systems
  - Integrate GIS with City's website
- The City should consider a long-term goal of combining the new centralized GIS function with the IT division. In the short-term, during the GIS consolidation effort, it is assumed best to keep the GIS and IT organizations separate to ensure each organization can focus on their short-term goals of their respective IT Master Plan initiatives and recommendations.
- The City should consider developing a GIS Strategic Plan. Although the City has extensive GIS data, it will benefit from a plan that will help leverage its investment in GIS. Details of this recommendation are included in the IT Master Plan document under the GIS initiative.
- Consider assistance from an independent, third-party, industry expert to develop the GIS Strategic Plan.

GOVERNANCE

The City requires cooperative technology to meet its goals. The IT Master Plan implementation provides a great opportunity for City departments to collaborate on future technology use and applications. In the past, the City had a Technology Advisory Committee, but it has been inactive since 2011.

Traditionally, key IT decisions are made by IT professionals and a select few organization managers. This does not always ensure the most effective benefit to all stakeholders (all departments and constituents). IT governance can provide a collaborative groundwork for major decisions, planning, internal communication, and department/staff training regarding such matters. IT governance is committed to the stewardship of IT resources on behalf of the stakeholders who demand a benefit and/or return on the investment.

The IT Steering Committee is a group of employees from a variety of departments and disciplines that provide long-term direction and oversight for an organization's IT systems. This committee can provide a stabilizing influence and focus for development of organizational concepts and planning. Some of the responsibilities the group may carry out include:

- Identification and development of technology initiatives
- Prioritization of initiatives
- Monitoring and reviewing initiatives
- Project managing implementation of this IT Master Plan
- Providing a forum for lessons learned during implementation of technology projects
- Provide an initial review process of technology-related projects by one department
- Review and providing feedback on long-term unresolved Help Desk issues
- Developing and reviewing standards and policies
- Updating standards and policies as changes occur in the organization and technology
- Helping to achieve support across the organization
- Review Help Desk statistics, issues, and long-term, unresolved needs
- Acting as a sounding board for management and staff

Implementation of IT Governance can be an effective forum for departments to become more knowledgeable about technology and how it can be used effectively to enhance customer service and create efficiencies throughout the City's business process environments.

IT MASTER PLAN – TOP 5 INITIATIVES

The following is a list of the Top 5 initiatives the City should note and keep in the forefront as part of the future implementation of this IT Master Plan.

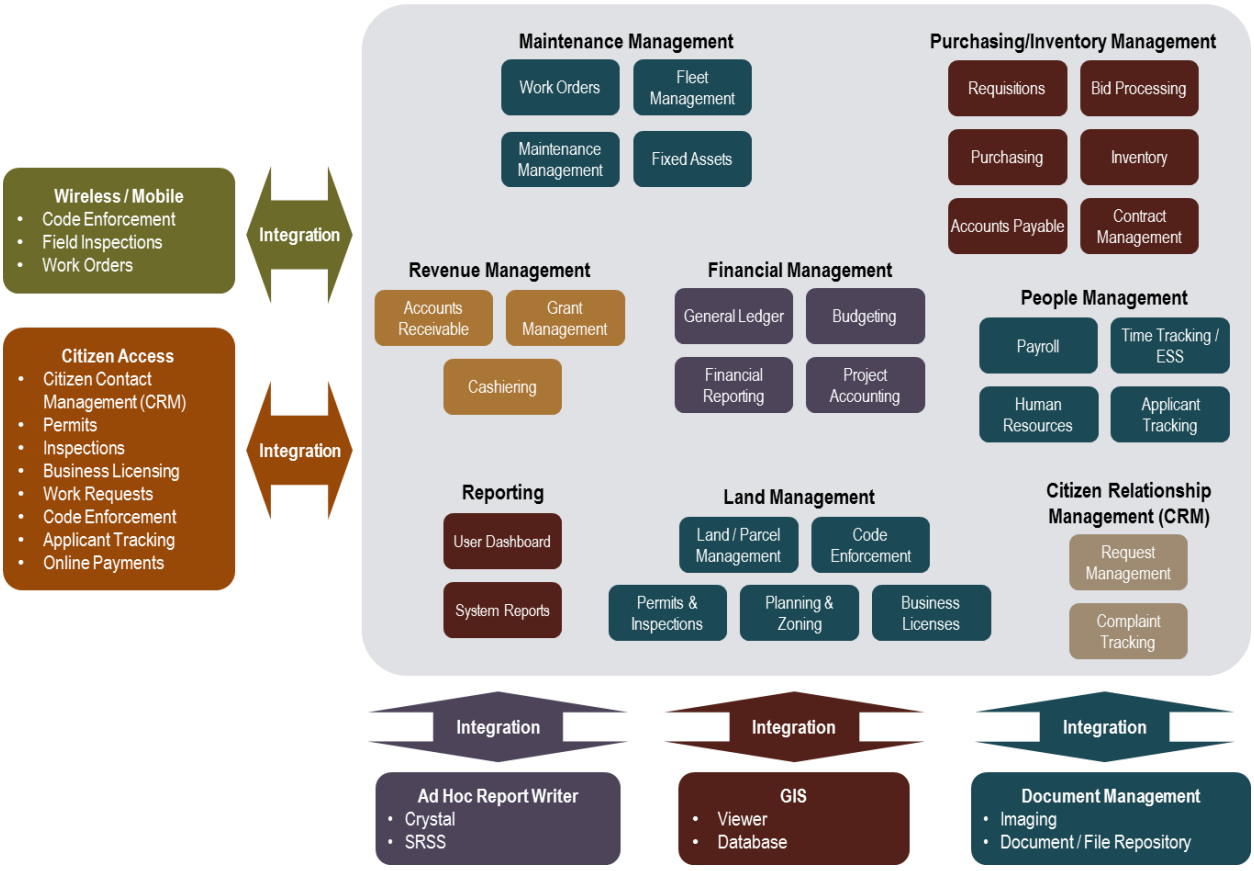
IT Initiative	Why in the Top 5?
ERP System Replacement	This is the core system for the entire City. The ADG system is aged and no longer meets the needs of the City. Other ancillary system and shadow systems have been acquired or developed that do not interface/integrate and would not be necessary with the implementation of a new ERP system.
Network Redesign	The City's network is the highway for communication and the infrastructure that all applications and tools ride upon. Without a solid network design for MAN/WAN/LANs the investment in application software tools will not be realized.
Sustainability Planning	A citywide technology environment is a continual support, improvement, and upgrade process. Maintaining this environment is critical and large spikes in capital expenditures can be avoided by proper planning for upgrades and replacements based on the lifecycles of various technologies. The City has let their environment lag and now is catching up, which is costly. A repeat of such a cycle can be prevented.
Application Management Best Practices	The City has not had any policies, processes, or best practices in place for the selection and implementation of application software. As a result, there is a significant amount of software duplication. There also is a gap in IT for the support of software applications. Best practices can manage your software acquisitions and Application Management talent (Business Analyst) can help ensure you have effective implementations and software is adequately managed to realize a return on investment.
GIS Consolidation and Master Plan	GIS and spatial maps are the future and will drive many of the City's operations moving forward. GIS and maps also provide a visual interface for your citizens to access services and information. Having a citywide approach to GIS will setup the City to meet these geospatial and mapping needs in the future.

BENEFITS OF MODERN ERP SOFTWARE

An Enterprise Resource Planning (ERP) System automates and integrates many core, citywide functions into a single solution, while automating manual processes and providing a central location of information and reporting. An enterprise system allows collaboration and sharing of information between divisions, departments, and citizens to provide a transparent and efficient government operation. The benefits of an enterprise system are numerous and include:

- Built-in integrations between Land, Work, Financial, and People Management application suites
- Newer technology platform (processing, capacity advantages)
- Real-time notifications/queues
- Task tracking
- Real-time access to information
- Elimination of duplicate data entry
- Improved data integrity
- Centralized location and customer account maintenance
- Reliable information
- Workflow capabilities
- Centralized cash receipt capabilities
- Efficient revenue collection
- Reduced operating costs
- Improved internal communication
- Foundation for future improvement
- Potential reduction in annual maintenance and support fees
- Improved online information for citizens to access

Example Enterprise Applications Overview



Financial and People Management

The financial management suite is another suite of an enterprise system that encompasses the financial 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:

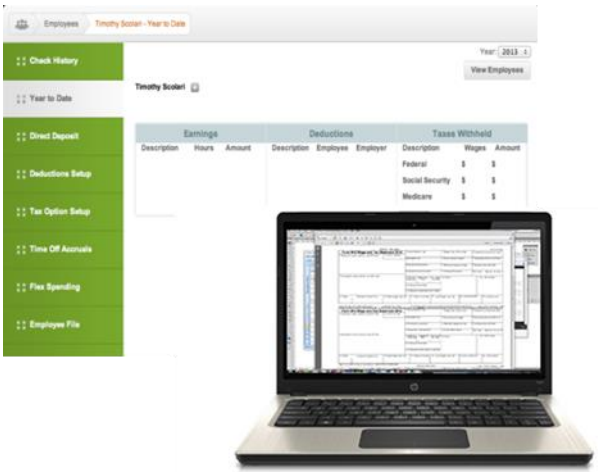
- Quick generation of financial reports
- More efficient budgeting processes
- Real-time access to available budget and funding
- Better spending controls for departments and projects
- Management of grants and funding sources
- Real-time inquiries into capital improvement project progress

The People Management suite manages the organization's workforce and provides automation to the human resources, payroll, time keeping, and applicant tracking functions. Employee self-service is also available to allow employees the flexibility in retrieving their information at their convenience. Benefits of a People Management suite include:

- Paperless personnel forms
- One-time data entry
- Tracking or misplacement of employee paper files
- Incorporation of Employee Self-Service (ESS)
- Integration between time keeping, payroll, HR, and financial management
- Quick and 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) empowers employees to provide, change, and retrieve their personal information through an online employee portal, therefore reducing the manual interaction required with the Human Resources Department. Employee Self-Service offers an online option for employees to access and manage information for themselves:



- Address changes
- Tax allowances changes
- Open enrollment benefits
- Dependent changes
- Leave/vacation accrual balances
- Electronic paystub copies
- Year-end W2's
- Populating and retrieving time sheets
- Time requests
- Tax forms
- Many other forms and applications

Reporting

The number one problem that is commonly seen when utilizing disjointed applications is the extensive time users dedicate to the consolidation of information for reporting purposes. Enterprise systems allow information to be quickly retrieved from a single source with numerous readily available reports. Users are also able to create their own reports without requiring them to be technical experts. This allows staff to spend more time studying analytics, rather than manually assembling reports. Benefits of improved reporting include:

- Aggregated data across divisions, departments, and organization
- Improved data accuracy and reduced human error
- Intuitive report creation capabilities
- Board-ready reports
- Sharing of created reports
- Elimination of labor-intensive report creation

Dashboards

Dashboards form part of a user's home page and display reports, key indicators, and other metrics regarding day-to-day operations, activities, and historical trends. 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
- Transformation of data into visual information
- Easy-to-understand graphics
- Real-time analysis
- Drill-down access to activity detail

Mobile Computing

Mobile computing provides the flexibility to operate a more mobile and productive workforce. An enterprise system can allow staff to utilize applications while in the field in order perform their job functions while away from their office. Common benefits of mobile computing include:

- Completion of work while in the field
- Real-time access to information
- Inspection results in the field
- Receipt of notifications and job assignments
- Reduced travel to and from office locations
- Map routing based on location of activities
- Retrieval of mapping information
- Management of Code Enforcement cases in field

Online Citizen Access

Online citizen access enables a more transparent government by providing the public with 24/7 access to real-time information for inquiries and payment processing. This empowers residents to retrieve online information that is pertinent to each individual, and for them to take further actions, which improves customer relations by eliminating the need to be physically present at City Hall. The following are examples of online citizen access transactions:

- Online permit applications
- Submit and access plan review comments
- License renewals (business, animal, etc.)
- Utility, permitting, planning, licensing, and tax payments
- Submit code enforcement complaints
- Submit citizen requests
- Submit inspection requests
- Access to inspections results
- GIS maps (zoning, voting districts, etc.)

Citizen Request Management

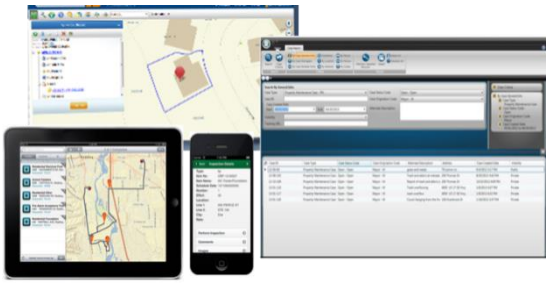
A Citizen Request Management system is used to track, manage, and resolve citizen concerns and requests in a timely manner by automatically routing citizen requests to the appropriate department. It also provides the citizen with the flexibility to submit and track their complaints through the Web or a mobile phone application. Common benefits of a Citizen Request Management system include:

- Ability for citizens to submit requests 24/7 through a phone application or the website
- Automatic assignment and routing of requests, by type, to appropriate department(s) or staff
- Ability for citizens to view current request status
- Conversion of requests to work orders
- Ability to include photos and geolocation of a request
- More effective and efficient processes
- Improved transparency and citizen relationships

Land Management (Development Services)

The Land Management system is one of the suites that are offered by enterprise application systems and manages the creation, issuance, and tracking of community development activities related to planning and zoning, permitting, building inspections, licensing, and code enforcement. Benefits associated with the utilization of the application include:

- More automated permit processing from application through permit issuance
- Automatic routing for permits requiring reviews and approvals
- Single electronic file for all permit applications and documents
- More automated tracking of reviews, inspections, and fees by permit and development projects
- Tracking of timelines, tasks, and required group reviews
- Viewing all project and permit information at a glance
- Readily accessible planning and zoning records
- Automatic generation of case documentation
- Centralized current and historical parcel information



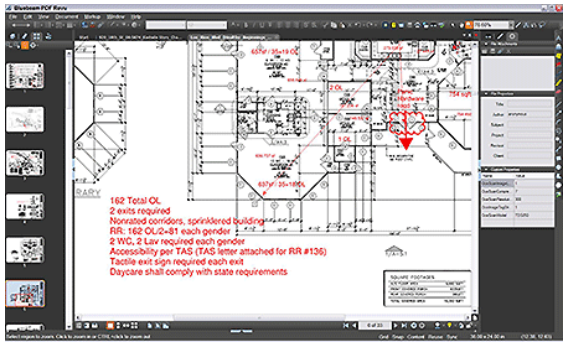
GIS Integration

Enterprise systems offer real-time integration to geographic information systems (GIS) in order to display land-use, zoning, and infrastructure layers on a map, as well as parcel, permit, inspection, code enforcement, and work order activity that resides within the enterprise system. Benefits of GIS integration include:

- Viewing system activity on a map (e.g., active planning projects, permits, code cases, etc.)
- Map routing of work orders, service request, and daily inspections
- Displaying locations of infrastructure assets
- Generating asset condition analysis
- Ability to overlay multiple map layers
- Integration to website for resident inquiries

Electronic Plan Submittals and Reviews

Electronic plan submittals are architectural/developmental plans that are in an electronic format. These plans can be submitted by the public through the City's permitting and planning processes. In addition to the electronic receipt of plans, electronic plan reviews allow City staff to review plans and electronically mark up and track plan comments. The following are benefits associated with electronic plan submittals and reviews:

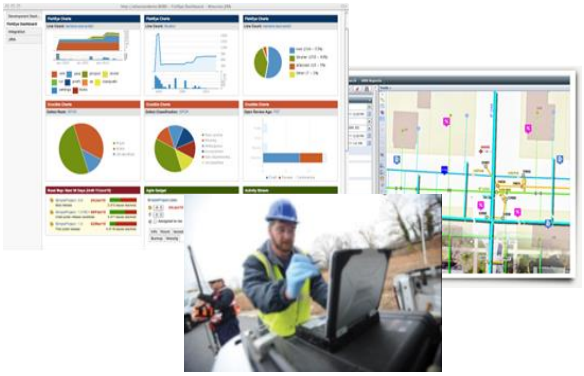


- Increased productivity through quicker processing
- Elimination of physical plan routing
- Submittal, review, and tracking of electronic plans
- Centralized storage and retrieval of electronic plans
- Performance of activities in parallel
- Concurrent review of plans by multiple staff
- Electronic collection of plan review comments
- Reduced number of and shorter resubmission cycle(s)

Maintenance/Work Order Management

Another suite of an enterprise system is the Maintenance/Work Order Management system, which provides automation in managing the maintenance and day-to-day operations related to infrastructure assets, buildings, facilities, and fleet vehicles, while being able to capture and report on the labor, equipment usage, and material costs associated with a work order and preventative maintenance. System benefits include:

- Electronic routing of citizen requests
- Centralized task and maintenance management
- Completion of work orders from the field
- Streamlined public works operations
- Retrieval of historical work order information and costs
- Quicker work order completion times
- Improved decision making through access to real-time information
- Viewing of asset and activity trends visually through GIS mapping capabilities
- Better replacement planning and forecasting
- Enhancement of staff productivity
- Improved compliance with regulatory standards
- Improved safety and risk management



CONCLUSION

MOVING FORWARD

Moving forward, the focus of Information Technology should be on continual infrastructure and service-delivery improvements, sustainability planning, and major software system utilization improvements and replacements. IT must work to position itself in the following ways:

Infrastructure – Follow best practices infrastructure equipment replacement recommendations to reduce risk. Expand City and Library wireless after new wireless standards based products are introduced later this year.

Customer Service – Implement Help Desk metrics to measure and track service levels. Change the Help Desk service delivery model to better match the urgency of the Help Desk request with the response. Create an IT Service and Project Portfolio to provide Departments with accurate information related to project inventories and timelines.

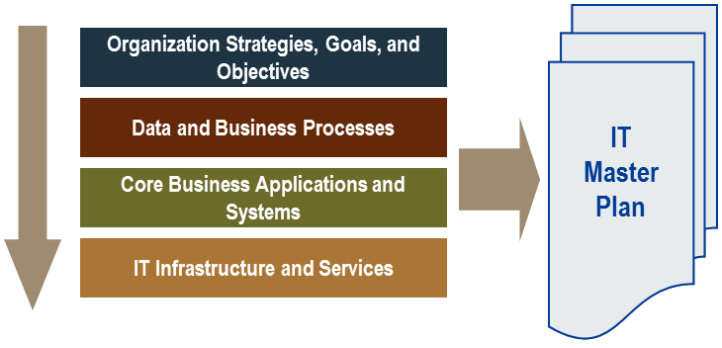
Application Utilization – Historically, IT has limited capacity to manage business department core business applications. Some City departments want to improve their business processes and fully utilize their application software while other departments have depended on IT for assistance. The City should work to encourage a sense of application and business process ownership and continuous improvement by the departments. Improved application utilization is one of the most effective ways to increase staff productivity and customer service.

ERP Replacement - The entire effort to select and implement a new ERP solution to replace Pentamation and Permits Plus will require two to three years. The City needs to ensure that all its applications needs have been identified, and that appropriate funding has been budgeted for a replacement ERP by conducting a comprehensive needs assessment and developing a Request for Proposal (RFP). Additionally, because *the City has not conducted this type and complexity of project with these specific business analysis, documentation, and negotiation requirements, the City should obtain assistance from a municipal ERP Applications Subject-Matter Expert (SME).*

Governance – The formation of the Technology Advisory Committee (TAC) will foster cooperation and collaboration in setting priorities and executing multi-department initiatives. Over the long run, the TAC will oversee and maintain the execution and occasional modification of this plan.

We expect the projects outlined in this report to result in improved productivity and customer service, as well as improved sustainability.

Third-party Subject-Matter Expertise (SME) will be helpful for projects that are (1) high priorities, (2) beyond the scope of City skill sets, and/or (3) lacking internal resource availability.



Additionally, we recommend that action plans be developed by the departments and IT for all active, short-term initiatives. The action plans should include all identified needs, recommended resolutions, responsible individuals, target due dates, and comments. These action plans can ensure that all needs are being addressed and/or a decision has been made not to pursue a resolution. These action plans will also prove beneficial to annual resource and budget planning requirements.

The City should review and update the plan annually, using an abbreviated version of the master planning methodology. In this way, the plan will be a vehicle to guide the information technology activities of the City continuously. The annual IT Master Plan update should be synchronized with the City's annual budget process, so the City's IT Plan initiative costs can be properly represented in the City's annual budget.

BENEFITS

The completed plan should not be viewed as static, but rather as a dynamic tool that is revised and updated as business conditions and requirements change. If the planning function is not an ongoing process, certain objectives and benefits will not be realized, because the objectives themselves may change as the organization and its environment evolves.

Major benefits that are, or should be, realized through the implementation of this IT Master Plan include:

- Increased collaboration and communication between the departments and IT
- Transformation of the organization's overall understanding, knowledge, and stewardship of information technology
- Clear direction for IT operations and IT projects for the next five years, focused on meeting the organization's needs
- Citywide department consensus and understanding of all IT Initiatives and their priorities
- Foundational process and methodology for evaluation of project investments and analyzing business case justification

IMMEDIATE NEXT STEPS

We recommend the IT Steering Committee begin work by reviewing the plan and priorities. Next, assign lead and participatory resources to each high-priority IT initiative and finalize target due dates for immediate next steps of those initiatives. Initiative leaders should then report status updates for active initiatives to the TAC as part of each agenda.

Major issues for each initiative should be discussed among the Committee and/or sub-committees for general feedback, collaboration, and lessons learned, as most of the IT/application initiatives cross-departmental boundaries.

In order to improve the culture of application utilization, management, and support, it is also recommended that a series of training seminars be developed for all key department stakeholders and all enterprise business application users throughout the organization. This is an effective way to maintain momentum and kick off the tremendous change that is to occur in improving operations and constituent services.

IT MASTER PLAN CAPITAL BUDGET

The IT Master Plan budget on the following pages is not entirely new spending requirements. The plan encapsulates all information technology issues and needs of all departments in the City. For some projects, the initiatives are normally funded by departments themselves, some initiatives already have capital reserves set aside, and others are part of normally annual IT budgeting.

CLIENTFIRST TECHNOLOGY CONSULTING

IT Master Plan Report

Project / Initiative Budget Estimates

City of Riviera Beach

H **High** - Initiative is mission critical to the City or user department(s), it mitigates risk, and/or it has significant cost benefit or return on investment. Also provides significant level of service to constituents and the community. These are typically funded beginning in year 1.

M **Medium** - Is important to the City or user department(s), has measureable cost benefit or return on investment. These are typically funded in years 2 & 3. Can also be a High priority initiative that is dependent on another High priority initiative that is a prerequisite.

L **Low** - Provides value but with minimal cost benefit or return on investment. Can also me a Medium priority initiative that is dependent on another Medium priority initiative that is a prerequisite. These are typically funded in years 3 - 5.

Initiative #	IT Initiative	Comments	Priority	Budget Range		Dept(s)	Funding Source(s)	Current 2015 Fiscal Year	FYE 2016	FYE 2017	FYE 2018	FYE 2019	FYE 2020
				Low	High								
Best Practices													
1	Return-on-Investment Considerations	Providing tools and staff training, including working on several project examples.	H	$ 5,000	$ 10,000	All Departments			$ 5,000				
2	IT Governance	Assist in establishing a Steering Committee with roles and responsibilities. Educational Seminar for Steering Committee Members and providing tools and next steps. Possibly facilitating first several months of Steering Committee meetings.	H	$ 5,000	$ 15,000	All Departments			$ 10,000				
3	COBIT	Standards	H	n/a	n/a	All Departments			n/a	n/a	n/a	n/a	n/a
4	ITIL	Standards	H	n/a	n/a	All Departments			n/a	n/a	n/a	n/a	n/a
5	Applications Management Best Practices	Providing tools and staff training. Establishing roles and responsibilities for enterprise applications.	H	$ 7,500	$ 15,000	All Departments			$ 10,000				
6	Applications and User Licensing Inventory	Providing tools and staff training	H	$ 1,000	$ 5,000	All Departments			$ 5,000				
7	Enterprise Applications Support - Roles and Responsibilities	Tools to assist with identifying & tracking	H	n/a	n/a	All Departments			n/a	n/a	n/a	n/a	n/a
8	User Training and Support	Annual Recurring	H	$ 25,000	$ 75,000	All Departments			$ 25,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000
9	Training Room	To increase the number of PCs and bring environment up-to-date. PCs are on hand.	H	$ 10,000	$ 15,000	All Departments			$ 12,000				
10	Software Selection Best Practices		H	n/a	n/a	All Departments			n/a	n/a	n/a	n/a	n/a
11	Project Planning and Implementation Best Practices	Providing tools and staff training	H	$ 1,000	$ 5,000	All Departments		$ 5,000					
12	Maintaining Software Updates		H	n/a	n/a	All Departments			n/a	n/a	n/a	n/a	n/a
13	IT Project and Services Portfolio	Documenting IT Department roles and responsibilities for all services including SLA for business application support	H	$ 1,000	$ 25,000	IT, Finance			$ 15,000				
14	Computer Equipment Replacement Plan	Lifecycle Planning/Replacement	H	n/a	n/a	All Departments			n/a	n/a	n/a	n/a	n/a
15	Sustainability Planning	Providing tools and staff training	H	$ 5,000	$ 15,000	All Departments			$ 10,000				
16	IT Policies and Procedures	Standards	H	n/a	n/a	IT			n/a	n/a	n/a	n/a	n/a
17	IT Procurement Practices	Standards	H	n/a	n/a	IT, Finance			n/a	n/a	n/a	n/a	n/a
18	IT Cost Recovery (IT Budget Allocations)	Development of Processes and Calculations for IT Cost Allocation	H	$ 1,000	$ 15,000	IT, Finance & All Departments		$ 10,000					
19	Cloud Computing	Standards	H	n/a	n/a	All Departments			n/a	n/a	n/a	n/a	n/a
Applications & Departmental Systems													
20	Enterprise Resource Planning (ERP) Replacement	Replacement of ADG & More	H	$ 1,000,000	$ 2,000,000	All Departments			$ 80,000	$ 1,000,000	$ 500,000	$ 250,000	
21	Human Resources System Improvements		H	Included with ERP		All Departments							
22	Applicant Tracking		H	Included with ERP		All Departments							
23	Time Entry System		H	Included with ERP		All Departments							
24	Employee Self-Service		H	Included with ERP		All Departments							
25	Land Management System Replacement		H	Included with ERP		Community Development, Public Works, Fire, Finance							
26	Electronic Plan Reviews		H	Included with ERP		Community Development, Public Works, Fire, Finance							
27	Mobile Computing	Field Activities & Field Productivity Improvement	H	Included with ERP		Community Development, Public Works, Fire, Utility District							
28	Online Payments, Transactions, and Services	Group Above with ERP	H	Primarily Included with ERP		All Departments							
29	Scheduling System		H	Potentially Included with		Police, Fire							
30	Work Orders/Maintenance and Asset Management System		H	Potentially Included with ERP		Public Works, Park & Rec, Fire, Utility District							
31	Fleet Management		H	Potentially Included with		All Departments							
32	Parking Ticket Management		H	Potentially Included with		Park & Rec, Finance							
33	Citizen Request Management (CRM) Review and Evaluation	Group Above with ERP	H	Potentially Included with ERP		All Departments							

Initiative #	IT Initiative	Comments	Priority	Budget Range Low	Budget Range High	Dept(s)	Funding Source(s)	Current 2015 Fiscal Year	FYE 2016	FYE 2017	FYE 2018	FYE 2019	FYE 2020
34	Performance Evaluation Software Replacement		M	$ 5,000	$ 30,000	All Departments			$ 5,000	$ 15,000			
35	GIS Centralization and Master Plan (GIS)	Master Plan Study and migration to a centralized GIS environment	H	$ 75,000	$ 175,000	All Departments			$ 90,000	$ 60,000			
36	Centralized Land and Parcel Management (GIS)	See GIS Centralization and Master Plan.	H	Included with GIS Centralization		All Departments			n/a	n/a	n/a	n/a	n/a
37	CCTV Sewer Video Integration (GIS)	Additional Camera Equipment and Integration with GIS.	M	$ 2,500	$ 5,000	Public Works, Utility District				$ 3,000			
38	Parks and Recreation Software System	Complete PR System	M	$ 50,000	$ 250,000	Park & Rec, Finance			$ 70,000	$ 150,000	$ 50,000		
39	Video Monitoring system		L	$ 250,000	$ 300,000	Park & Rec, Police, Fire, Public Works, Utility District				$ 25,000	$ 100,000	$ 50,000	$ 50,000
40	Electronic Content Management System (ECMS) Replacement	Citywide Document & Content Management System	H	$ 250,000	$ 1,000,000	All Departments			$ 75,000	$ 100,000	$ 50,000	$ 50,000	$ 50,000
41	Library Information Management System Replacement	Replacement of System for COALA Hosted Cooperative Compatibility (SirsiDynix)	M	$ 40,000	$ 60,000	Library				$ 30,000	$ 6,000	$ 5,000	$ 5,000
42	City Attorney Case Management System	System Selection Process & New System Acquisition	L	$ 30,000	$ 75,000	City Attorney				$ 50,000			
43	Fire RMS Replacement	Implementation is in progress. County Multi-Agency Environment. No cost to City except for the cost of tablets and T-Mobile field connectivity.	H	n/a	n/a	Fire			n/a	n/a	n/a	n/a	n/a
44	Police CAD/RMS Replacement		H	$ 750,000	$ 1,250,000	Police			$ 70,000	$ 500,000	$ 250,000	$ 250,000	
45	Internal Affairs Software		H	Included with new CAD/RMS Replacement System		Police							
46	Police Department Technology Consolidation Plan	Some of this will be accomplished with the new CAD/RMS System but other non-CAD/RMS technology can also be consolidated	H	$ 30,000	$ 60,000	Police, IT		$ 10,000	$ 30,000				
47	Citywide Fleet Automated Vehicle Locator (AVL)		L	$ 70,000	$ 100,000	Police, Fire, Public Works, Utility District, Park & Rec						$ 90,000	
	Other Application and Departmental Systems Initiatives	Includes Initiatives 49-55 below		n/a	n/a	n/a			n/a	n/a	n/a	n/a	n/a
48	Park & Rec – Call Out Notification	Annual Recurring (nixle, code red?)	L	$ 15,000	$ 25,000	Park & Rec			$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000
49	Library Teen Cyber Bar	Implementation is in progress	M	$ 10,000	$ 20,000	Library		$ 12,500	$ 5,000				
50	Library New Facility IT Master Plan		L	$ 10,000	$ 30,000	Library						$ 20,000	
51	Fire Pre-Planning Management Software	Budget shown is for an on-premis solution. City should consider Cloud based options that are based on an annual subscription fee. Additional costs will be incurred for tablets and carrier services for field connectivity	M	$ 10,000	$ 30,000	Fire				$ 15,000	$ 5,000	$ 1,500	$ 1,500
52	Fire Medical Supply Inventory System	includes costs for Integration with ERP Inventory and Fixed Assets	H	$ 10,000	$ 25,000	Fire			$ 12,500	$ 4,500	$ 1,000	$ 1,000	$ 1,000
53	Public Works Fuel Management	Implementation is in progress and being completed. Integration with ERP Fleet and Financials.	H	$ 15,000	$ 40,000	Public Works		$ 25,000	$ 5,000				
54	Facility/Room Reservations	Ability to schedule, track, and manage Facilities and Rooms.	M	Included with Recreation System		All Departments							
Gov 2.0													
55	Kiosks	Allow walk-in citizens online access capabilities similar to the access they would normally have from their home PC. Cost per Kiosk is approximately $3,000, and budget is for Qty 4 Kiosks	M	$ 3,000	$ 15,000	All Departments					$ 12,000		
56	Social Media Collaboration Strategy	Outside Resource to assist with Strategy, Policy & Procedures	L	$ 2,500	$ 7,500	All Departments			$ 5,000				
57	Website Replacement with Content Management Tools	Several Municipal Based Website Tool providers	L	$ 70,000	$ 100,000	All Departments			$ 20,000	$ 60,000			
58	City Intranet	Include with website development	L	$ 20,000	$ 30,000	All Departments				$ 25,000			
59	Mass Outbound Communications	Systems like Everbridge, AT&T/Rave, Avaya, Voicent, etc.	H	$ 20,000	$ 50,000	All Departments			$ 10,000	$ 30,000			
60	Council Chambers Audiovisual Systems	Completed	H	$ 15,000	$ 30,000	City Manager, City Council, Departments		$ 20,000					
61	Conference Room Audiovisual	Linked and Dependent on 65. Cost for each Conference Room is $5,000 - $7,500.	L	$ 25,000	$ 40,000	All Departments					$ 15,000	$ 15,000	
62	Video/Web conferencing	Linked and Dependent on 64. Annual Subscription for video/web conferencing from City conference rooms	L	Annual Subscription Based		All Departments			$ 1,800	$ 3,600	$ 6,000	$ 6,000	$ 6,000
IT Infrastructure													
63	Metropolitan Area Network (MAN)	Build out First Year	H	$ 75,000	$ 150,000	All Departments		$ 8,000	$ 100,000				
64	Local Area Network (LAN) Upgrade	Standardization	H	$ 60,000	$ 120,000	All Departments		$ 6,000	$ 80,000				
65	Internet Bandwidth	Upgrade	H	$ 80,000	$ 130,000	All Departments			$ 100,000				
66	Network Redesign	Network Foundation	H	$ 10,000	$ 20,000	All Departments		$ 15,000					
67	Create Best Practice Internet Connectivity (DMZ)	DMZ Build Out	L	$ 2,500	$ 7,500	All Departments				$ 6,000			

Initiative #	IT Initiative	Comments	Priority	Budget Range Low	Budget Range High	Dept(s)	Funding Source(s)	Current 2015 Fiscal Year	FYE 2016	FYE 2017	FYE 2018	FYE 2019	FYE 2020
68	Core Switch Replacement	Core Routing Upgrade	M	$ 100,000	$ 150,000	All Departments			$ 125,000				
69	Wireless	Build Out	M	$ 175,000	$ 250,000	All Departments				$ 85,000	$ 45,000	$ 35,000	$ 25,000
70	Wireless Mesh - Moto Mesh	Replace HW	L	$ 350,000	$ 650,000	All Departments		$ 15,000	$ 45,000	$ 50,000	$ 50,000	$ 150,000	$ 250,000
71	Data Center Improvements	Build Out	L	$ 20,000	$ 30,000	IT			$ 25,000				
72	Data Center Relocation	Move to new site	M	$ 175,000	$ 250,000	IT					$ 150,000	$ 50,000	
73	Power Distribution Units	Add in and Battery Refresh	H	$ 80,000	$ 120,000	IT		$ 25,000	$ 10,000	$ 5,000	$ 5,000	$ 10,000	$ 50,000
74	Server Upgrades and Consolidation	HW Refresh	L	$ 75,000	$ 100,000	All Departments				$ 50,000	$ 25,000	$ 10,000	
75	Virtual Server Upgrade	Expansion to Cloud	L	$ 40,000	$ 60,000	All Departments				$ 50,000			
76	Storage Area Network (SAN) Upgrade	Add in more Storage	M	$ 125,000	$ 175,000	All Departments			$ 25,000	$ 10,000	$ 5,000	$ 15,000	$ 100,000
77	Remote Access Upgrade	Increase Licensing	L	$ 40,000	$ 60,000	All Departments			$ 25,000	$ 25,000			
78	Computer Upgrades	Reoccurring	L	$ 125,000	$ 175,000	All Departments		$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000
79	Dual Monitors	Add in second unit	L	$ 20,000	$ 30,000	All Departments			$ 10,000	$ 10,000	$ 5,000		
80	Technology Support for the EOC	Part time Tech	M	$ 80,000	$ 120,000	IT, EOC			$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000
IT Operations													
81	Help Desk Ticketing System	Track-It with third-party assistance in setup	M	$ 2,000	$ 4,000	All Departments		$ 3,000					
82	Desktop Management	Patch Management	L	$ 25,000	$ 50,000	All Departments				$ 35,000			
83	Print Management	Print Control Sys	L	$ 20,000	$ 30,000	All Departments					$ 25,000		
IT Security													
84	IT Security - General	Assessment	H	$ 4,000	$ 6,000	All Departments		$ 5,000					
85	IT Security Review	Review then Audit	H	$ 30,000	$ 50,000	All Departments				$ 15,000		$ 25,000	
86	Backups	Consolidation Plan	L	$ 10,000	$ 15,000	IT			$ 12,000				
87	Disaster Recovery Planning	DR Plan	M	$ 175,000	$ 20,000	All Departments				$ 20,000	$ 10,000	$ 150,000	$ 5,000
88	Windows Active Directory	AD Cleanup	L	$ 10,000	$ 20,000	All Departments			$ 12,000				
89	Two-Factor Authentication	Enhance Security	L	$ 20,000	$ 30,000	All Departments				$ 15,000	$ 10,000		
90	Firewall Filtering and Consolidation	Upgrade	H	$ 80,000	$ 120,000	All Departments					$ 100,000		
91	PCI Compliance	Software Compliance	L	$ 20,000	$ 30,000	All Departments				$ 15,000	$ 10,000		
92	Records and Data Retention	Data Retention Planning	L	$ 15,000	$ 30,000	All Departments			$ 20,000				
Telecommunications													
93	Current Telecommunication Situation	VOIP Upgrade	H	$ 275,000	$ 350,000	All Departments			$ 25,000	$ 300,000			
94	Announcement System (Intercom)	To bring back Intercom capability that was lost with move to AT&T-hosted phone system.	H	Included as part of Telecommunication Initiative		Police							
								$ 184,500	**$ 1,245,300**	**$ 2,872,100**	**$ 1,545,000**	**$ 1,293,500**	**$ 653,500**

***Other Funding Sources** (Funded, Planned and/or Estimated)													
								$ -	$ -	$ -	$ -	$ -	$ -

IT Dept. Allocation	**$ 184,500**	**$ 1,245,300**	**$ 2,872,100**	**$ 1,545,000**	**$ 1,293,500**	**$ 653,500**

APPENDIX – IT MASTER PLAN INITIATIVES

The following section contains the IT Master Plan Initiatives Workshop documentation in its entirety.

CLIENTFIRST
TECHNOLOGY CONSULTING

OPTIMAL TECHNOLOGY GUIDANCE

APPENDIX

INFORMATION TECHNOLOGY MASTER PLAN PROJECT

IT INITIATIVES

Presented to

CITY OF RIVIERA BEACH
PALM BEACH COUNTY, FL.

Client Locations
Coast-to-Coast

Practice Locations
Illinois
California
Minnesota
North Carolina

1.800.806.3080

June 30, 2015

TABLE OF CONTENTS

BEST PRACTICES

A best practice is a method that consistently provides results greater than those achieved with other methods. We believe that the following best practices will enhance the City's ability to select, procure, maintain and sustain solutions that are more effective in the future, as well as improve overall productivity of staff.

1. RETURN-ON-INVESTMENT CONSIDERATIONS

IT Infrastructure, Operations, and Support

Limiting the number of software vendors supporting City functions will decrease IT infrastructure, operational costs, and support costs in the medium to long term. Following is a list of IT functional areas impacted when determining the number of applications required for the support a municipality's core business solutions:

- **Hardware** – Servers required to house the applications
- **Software** – Additional software, such as database applications, required to support core applications
- **Licensing** – Increased licensing due to increased number of vendor applications
- **Business Continuity** – Increased Disaster Recovery Planning to support multiple-vendor applications
- **Support Costs** – IT support costs for hardware and software as vendor applications increase
- **Operation Costs** – The number of employees, training, and expertise requirements as more vendor applications are introduced

Further analysis outside of the scope of this project would be required to determine specific potential cost savings.

Departmental Labor Costs

Many organizations do not adequately understand the impact that improved automation (reduction in manual processes and shadow systems) will have when considering implementation of new systems or conducting process improvement analysis. Most productivity analyses show that, over a period of time, labor cost savings far exceed the cost of reasonable automation efforts. The savings associated with the avoidance of one new-hire or the elimination of a position due to natural attrition may be $40,000 to $70,000 or more per year (including total payroll, taxes, benefits, and other costs). The life of most new municipal-wide or core departmental systems should be over ten years, making the savings from the avoidance of just one new-hire and/or elimination of vacant positions the equivalent of $400,000 to $700,000 over ten years. Ten years should be the minimum expected life cycle for major/large application systems.

Return-on-Investment (ROI) for Application Systems

Improved utilization of application systems can result in immediate and sustained savings in time spent performing specific tasks or processes. These individual improvements do not

always equate to immediate, "hard" savings. They may result in intangible benefits to the City or the residents, or cumulative savings from reduced long-term personnel needs.

User Training and Support

Application software is continually evolving. Improvements and enhancements are made yearly. Maintaining staff efficiency and improving productivity over time requires ongoing training of all staff. Users are typically not trained on all aspects or capabilities of particular software applications during initial implementation. Therefore, it is important for the organization to develop methodologies to carryout functionality, reporting, and training requirements in order to utilize the City's important technological assets to their fullest potential over time.

Calculation Examples

Whenever possible, we recommend staff calculate tangible and intangible benefits when requesting approval for a project. The following calculations can be utilized in those efforts. We believe in being conservative and practical. Exhaustive ROI studies should not be necessary. Focusing on a limited number of reasonable examples, as outlined herein, should normally be sufficient to provide adequate justification for strategic projects.

Labor Efficiency Savings = **Labor Hours Saved x Gross Hourly Rate**

Tangible Labor Cost Savings = **New hire avoidance, elimination of positions through attrition, consolidation of work load and positions, etc.**

Hard Cost Savings

- Hardware
- Software
- Maintenance
- Inventory Reductions
- Supplies

Intangible Benefits

- Increasing Levels of Service
- Improved Constituent Service
- Safety
- Transparency
- Improved Community Communication
- Improved Employee Communication and Satisfaction
- IT Planning and Improvements

Return-on-Investment (ROI) Consideration

- A study conducted by Macquarie University[1] discovered the following:
  - **Overall ROI in IT projects is around 30%**
  - **The projects that deliver at least some benefits should be about 52.5%**
  - **Successful IT projects can have an ROI of around 400%**

[1] Macquarie University, 2006.

2. IT GOVERNANCE

Findings and Observations

The City requires cooperative technology to meet its goals. The IT Master Plan implementation provides a great opportunity for City departments to collaborate on future technology use and applications. It is understood that the City does not currently have an IT Steering Committee but that there have been recent discussions and strong consideration to form and implement such a committee.

IT Governance

Traditionally, key IT decisions are made by IT professionals and a select few organization managers. This does not always ensure the most effective benefit to all stakeholders (all departments and constituents). IT governance can provide a collaborative groundwork for major decisions, planning, internal communication, and department/staff training regarding such matters. IT governance is committed to the stewardship of IT resources on behalf of the stakeholders who demand a benefit and/or return on the investment.

IT Steering Committee

The IT Steering Committee is a group of employees from a variety of departments and disciplines that provide long-term direction and oversight for an organization's IT systems. This committee can provide a stabilizing influence and focus for development of organizational concepts and planning. Some of the responsibilities the group may carry out include:

- Identification and development of technology initiatives
- Prioritization of initiatives
- Monitoring and reviewing initiatives
- Project managing implementation of the IT Master Plan
- Providing a forum for lessons learned during implementation of technology projects
- Providing an initial review process of technology-related projects by one department
- Taking into consideration sharing, compatibility, and potential integration between applications
- Reviewing and providing feedback on long-term unresolved Help Desk issues
- Developing and reviewing standards and policies
- Updating standards and policies as changes occur in the organization and technology
- Helping to achieve support across the organization
- Reviewing Help Desk statistics, issues, and long-term unresolved needs
- Acting as a sounding board for management and staff

Implementation of IT Governance can be an effective forum for departments to become more knowledgeable about technology and how it can be used effectively to enhance customer service and create efficiencies throughout the City's business process environments.

Recommendations

- Assemble and formally implement an IT Steering Committee to discuss and recommend priorities, assist in policy development, communicate with department staff, and manage and **oversee implementation of the IT Master Plan**.
- This recommendation was communicated to the City early on in the project. As a result, the IT Department has taken the initiative to establish a Steering Committee with the first draft of a Charter. The first initial meeting was conducted in March 2015.
- It is recommended that you engage *CLIENTFIRST* to review the Charter to make specific recommendations regarding make-up of Steering Committee structure and review Steering Committee roles and responsibilities. As part of the same engagement, *CLIENTFIRST* would also conduct a workshop to cover and educate on Steering Committee best practices.
- Utilize the IT Steering Committee as the initial forum for IT and other Departments to propose/present new technology-related projects to ensure best practices are followed and applied to the review, selection, approval, procurement and implementation (project management) and ongoing maintenance.

Benefits

- More transparency, responsibility, and accountability
- Prioritization of initiatives
- Improved compliance
- Improved compatibility and integration between software applications and technologies
- Enhanced communication and collaboration
- Higher degree of business and technology alignment
- Widespread personal and professional growth

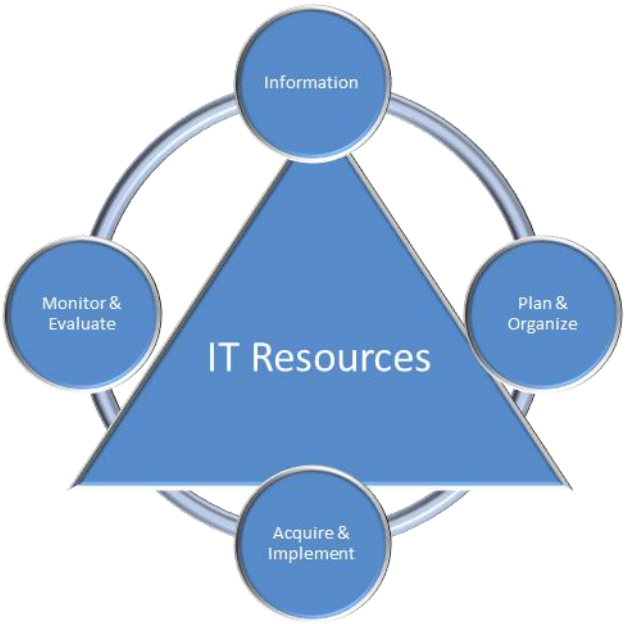
Next Steps

- Determine potential Steering Committee members who are:
  - Process-oriented, well organized, good communicators, results-minded, and well respected within the organization
  - Interested in positive technology outcomes and interested in Steering Committee participation
  - Able to speak for Department Head
- Assemble, organize (structure), and implement the Steering Committee focused on:
  - Determining the Committee's organizational structure and assign roles & responsibilities for members
  - Determining priorities based on limited IT resources
  - Annual IT budget review and prioritization
  - IT policy reviews
  - New project reviews and feedback
  - Lessons learned from ongoing projects
- Involve all departments in the Steering Committee for IT communication, education, and collaboration.
- Assign a lead and/or subcommittee for all IT Master Plan initiatives.
- Monitor and discuss active initiatives at each committee meeting.
- Form subcommittees, as appropriate for various projects or critical operational tasks.

3. COBIT

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 executives and the Board of Directors, and consists of the leadership and organizational structures and processes that ensure that the enterprise's IT sustains and extends the organization's strategies and objectives. For IT to be successful in delivering, management should put an internal control system or framework in place. The COBIT control framework contributes to these needs by:

- Making a link 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[2]. *CLIENTFIRST* utilizes the concepts from COBIT throughout its IT Planning process.

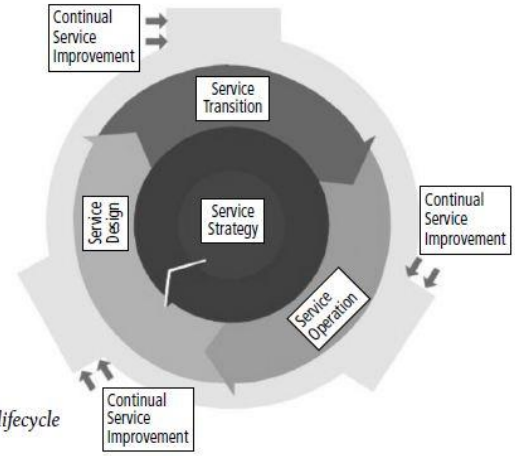
[2] www.isaca.org – COBIT, 2009.

Benefits

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

4. ITIL

This lifecycle approach to IT organization results in strategies that align service management with business strategy, structures IT services to meet the real business environment, and builds a support model for the day-to-day procedures needed to support business objectives. Through an understanding of 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[3]. Information Technology Infrastructure Library (ITIL) is a framework intended to assist organizations with the alignment of IT operations and the business through an IT service strategy that continually realigns IT operations with the business. 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.

Benefits

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

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

5. Applications Management Best Practices

Findings and Observations

The City utilizes almost 190 different software applications or modules throughout all departments. Major systems include:

Module	Vendor
Financial Management	American Data Group (ADG)
Personnel/People Management (Payroll and Personnel Management	American Data Group (ADG) and other miscellaneous
CIS/Utility Billing	American Data Group (ADG)
Land Management	Permit MD – Project 1
Work Orders/Maintenance and Asset Management	QAlert
ECMS	Assortment, including Docuware, Alchemy, and MS SharePoint
Geographic Information System (GIS)	Esri – various licenses, servers, and databases
Parks and Recreation	Manual, with ancillary applications for various functions (e.g., "LeagueOne Scheduling")
Public Safety (Police, Fire)	VisionAIR

A more comprehensive example listing of City applications is included below.

Note: This is not an official inventory:

- Acroprint
- Active Screening
- Adobe PDF
- Agent Verso
- AirWatch
- Alchemy
- American Data Group (ADG)
  - Fund Management
  - Requisitions
  - Fixed Assets
  - Licensing
  - Open Enrollment
  - Timekeeping
  - Payroll
  - Personnel Action Requests
  - Special Assessments
  - Utility Billing
  - Utility Billing (Web)
  - Backflow
- Applicant Pro
- AQUA
- Arbitrator
  - Back-end Administrator
  - Back-end Client
  - Front-end Client
- AT&T
- AutoCAD
- Bank of America Lockbox
- Barracuda
- BidSync
- CADD
- Cascade
- City Hall DVR Cameras
- CLEAR
- Command Central
- Communicator NXT
- Communicator Quick Activation
- Comply
- Concentra
- Conduits
- Costal Radar
- CrimeReports.com
- Cry Wolf
- Crystal Reports
- DAVID
- Dockmaster
- Docuware
- Emergency Pro
- EMS PRO
- Equature - Voice Logging Recorder
- Equinox
- ESP
- ESRI GIS
  - ArcEditor
  - ArcGIS Engine
  - ArcGIS Explorer
  - ArcInfo
  - ArcReader
  - ArcView

- Everify
- Evidence Warehouse Cameras
- Facebook
- FACES
- FCIC/NCIC
- Fleet Complete AVL
- Foxit PDF
- Fusion Center
- GeoCast Web
- Granite XP
- Hoopla
- HyperTAC II SCADA Software
- IC RealTime
- ILS
- Intellicheck
- Intellitech
- Intuit QuickBooks Enterprise
- iyeTek
  - Crash and Ticket (in-car)
  - Online
  - Voice Response Software
  - Citation
  - Crash Diagramming
- Microsoft
  - Access
  - Excel
  - Outlook
  - Outlook (Web)
  - PowerPoint
  - Publisher
  - SharePoint
  - SQL Server 2008
  - Server 2003
  - Server 2008
  - Visio
  - Word
- Millennium Expert
- MyRBPD
- Neat
- Neptune
- Net Motion
- NetApp
- NETCLAIM
- New Hire Report
- Nextop
- Noodle
- Novus Agenda
- Occularis
- OneDrive
- OverDrive
- Palm Beach County Dispatch System
- Palm Beach County Property Appraiser (PAPA)
- PALMS
- Path Solution
- PBC LEX
- PC Reservation
- PDF Converter Professional
- Penn Credit
- PEP
- Performance Now
- PermitMD (Project One)
- Point & Pay
- PowerDetails
- PowerDMS
- Project 1
- ProQA
- HiperWeb (PSD)
  - Asset Management
  - Customer Complaints
  - Inventory System
  - Vehicle Maintenance
  - Work Orders
- QAlert
- Qcontent
- Quartermaster
- RAPID
- Rhodium
- Risk-fax
- Riviera Beach Intranet
- RUM System
- Scribble
  - Map Designer
  - Marina Office
  - PureFuel POS
- Security Camera Registration Program
- Security Explorer
- ShotSpotter
  - Alert Console
  - Investigator
  - Siren
- Skyline
- SnapComms
- StacWeb
- SwagIt
- Symantec
  - Enpoint Protection
  - Premium AntiSpam
  - Backup Executive
- Target Solutions
- The Communicator
- The Eye
- TLO
- TrackIt
- Training Trak
- TrainU
- Trak
- Twitter
- USA Software
- Vacant Registry
- Vault360
- VirtualPartner
  - PocketCitation
  - QuickCrash
  - QuickTicket
  - QuickVoice
  - SkyView AVL
- Vision
  - CAD
  - CAD Reports
  - Mobile
  - RMS
  - CAD Monitor
  - Field-Based Reporting
- VisTrak
- vSphere
- WebEOC
- Webex
- WordPress
- Wygant Encore
- Zinio

The City has a large number of applications that were acquired independently by departments to meet their respective needs. In most cases, these new software applications were acquired without consulting related departments, resulting in multiple applications from different vendors that perform the same function but do not communicate.

In addition, software applications were acquired without consideration of the need for interfaces or integration including integration, to the Finance system's General Ledger.

Many City software applications, modules, and systems are also underutilized, resulting in loss of productivity due to manual processes, inefficient workarounds, and inefficient or unnecessary reconciliations. Additional user training is needed for many software applications (see the *User Training and Support* initiative). The City does not have sufficient resources to document practices and procedures regarding developing needs for application systems; prioritizing and evaluating solutions; and identifying sufficient implementation and ongoing management and support resources for these solutions. Additionally, the City has insufficient IT resources to ensure quality applications utilization, increase department process improvements, and gain significant efficiencies in labor throughout the organization.

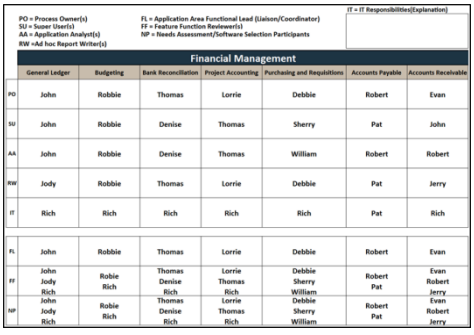
Gaining greater utilization of the existing application modules, elimination of duplicate applications – including compatibility and interface/integration capabilities – is vital to significant increases in productivity by staff throughout the City. The ability to accomplish this is difficult because of limited resources and the diversity of application providers in use.

Future Application Management Best Practices

The City can benefit greatly by changing traditional application management practices. Use of the following recommendations can lead to improved functionality, use, and increased overall productivity.

Future Application Roles and Responsibilities

Application support and management roles and responsibilities will have to be identified and assigned to departments' operational applications and modules. We recommend focus on the following major system groups:



PO = Process Owner(s)
SU = Super User(s)
AA = Application Analyst(s)
RW =Ad hoc Report Writer(s)

FL = Application Area Functional Lead (Liaison/Coordinator)
FF = Feature Function Reviewer(s)
NP = Needs Assessment/Software Selection Participants

IT = IT Responsibilities(Explanation)

	Financial Management						
	General Ledger	Budgeting	Bank Reconciliation	Project Accounting	Purchasing and Requisitions	Accounts Payable	Accounts Receivable
PO	John	Robbie	Thomas	Lorrie	Debbie	Robert	Evan
SU	John	Robbie	Denise	Thomas	Sherry	Pat	John
AA	John	Robbie	Denise	Thomas	William	Robert	Robert
RW	Jody	Robbie	Thomas	Lorrie	Debbie	Pat	Jerry
IT	Rich	Rich	Rich	Rich	Rich	Pat	Rich
FL	John	Robbie	Thomas	Lorrie	Debbie	Robert	Evan
FF	John Jody Rich	Robie Rich	Thomas Denise Rich	Lorrie Thomas Rich	Debbie Sherry William	Robert Pat	Evan Robert Jerry
NP	John Jody Rich	Robie Rich	Thomas Denise Rich	Lorrie Thomas Rich	Debbie Sherry William	Robert Pat	Evan Robert Jerry

- ERP to potentially include:
  - Financials
  - People Management
  - CIS/Utility Billing
  - Land Management (planning, permits, inspections, licensing, code enforcement)
- Work Order/Maintenance Management (potentially part of ERP)
- Public Safety (Police and Fire)
- Recreation Software
- Library Information Management System
- Integrations Citywide GIS (Geographic Information System)
- EDMS (Enterprise Document/Content Management)

Identification and assignment will help the City spot capable resources to fulfill the roles and responsibilities for *Applications Management Best Practices* in the future.

- Process Owner
  - Staff "resident expert" who is responsible for a given departmental process or function
  - May also be responsible for oversight and delivery of the daily, weekly, monthly, and annual processes that the application or module is utilized to fulfill
  - Primarily makes final decisions on process policies, procedures, and deliverables for their area of expertise
  - Stays current with the applicable industry best practices, technology, and application capabilities
  - Stays current with existing application vendors' capabilities, offerings, and enhancements
- Application Champion
  - An expert on a specific application or module
  - Possesses greatest knowledge of application or module
  - Lead trainer or support person for other staff that utilizes application or module
  - Usually has formal training and is responsible for application configuration setup and changes on an ongoing basis
  - Often trained to provide ad hoc report writing capabilities for the application or module
  - Stays current with the applicable industry best practices, technology, and application capabilities
  - Stays current with existing application vendors' capabilities, offerings, and enhancements
- Business Process and Application Analyst Skills
  - Assigned to work with process owners, application champions, report writers, and users
  - Reviews business processes, current utilization of application, manual processes, and shadow systems (e.g., spreadsheets and other databases) in an effort to increase automation, improve efficiencies, and increase utilization of the core business application
  - Assists in the development of user, application, and process requirements
  - Assists in developing and documenting standard operating procedures (SOPs)

  Note: An Application Analyst may be a person already fulfilling one or more of the above roles.
- Ad Hoc Report Writers
  - Aptitude to develop ad hoc reports using vendors' report writing tools, which may include third-party tools such as Crystal Reports, Cognos, or Microsoft SQL Server Reporting Services (SRSS)
  - Assigned as the "go-to person" for ad hoc reports that other users cannot quickly generate on their own
- Define IT Roles and Responsibilities by Application Module
  - Identify role of IT for a given application or module (primarily server and network support)
  - Departments are to take as much responsibility as possible for application management of modules utilized by their primary business-process functions, as the IT Department does not currently and will never have all the resources to fulfill all application management support and maintenance roles for the entire organization

Please note that the organization may not have an identified resource in some instances, and that some applications may not require certain roles. It is also likely that, in some instances, the same person(s) will fulfill more than one role for a given application/module.

Business Department Application Training

As application software changes and grows in complexity, training staff to use software properly becomes more critical. We believe that a renewed emphasis on targeted staff training on the City's application software will pay off significantly in increased staff effectiveness and productivity. An inventory of high-priority training is essential to achieve expected productivity. The City can identify and assess future training needs for all applications and users upon completion of an application/user matrix (see *Applications and Licensing Inventory* initiative).

Recommendations

- Departments should be encouraged to become more responsible for changes to application setup and configurations with assistance from IT. If department personnel are unable to make these changes, training should be provided.
- Training department personnel performing their own simple report writing (basic listings and extracts in tabular form) is challenging, but beneficial. More complex reporting often requires specific understanding of database structures in the application. There is currently limited capacity to provide such support from IT.
- Consider adding more specialized application/business analyst personnel to the IT Department to provide increased and improved application support to departmental users for departmental business applications (e.g., ERP, Planning and Permitting, Maintenance Management, etc.)
- When selecting new software in the future, the City should consider efforts to limit the total number of software vendors, databases, and instances of hardware requirements whenever possible, thereby reducing or limiting the growth of different software vendors. This can also potentially limit overall cost of ownership, support requirements, training and reporting needs, and improving overall integration capabilities.
- Over time, we believe that application utilization by departments will improve if application sponsors take a more active role in monitoring upcoming functionality improvements from new software releases that will benefit the City. In addition, it would be helpful if application sponsors and sponsoring departments monitored and discussed application usage with other municipalities to gather information and potential productivity improvements that could be incorporated into the City's systems.
- It can also be helpful if departments monitored and discussed application usage with other municipalities to gather information and potential productivity improvements that could be incorporated into the organization's systems.
- Specifically assign a process owner, application champions, primary business analysts, application administrators (set-up and configuration responsibility), and ad hoc report writers for each application or module.
- Key assignments should encompass responsibility for understanding industry best practices and solutions or processes available, and taking the lead in continually assessing and inventorying needs.
- The IT Governance strategy and implementation of an IT Steering Committee can be an effective forum for departments to become more knowledgeable about technology and how technology can be used effectively to enhance customer service and create efficiencies throughout the City's business-process environments.

- Conduct a complete inventory of software applications and/or key technology systems currently utilized and needed in the future, at the department level.
- Inventory specific users by software application.
- Inventory current and future feature/function, reporting, training, and support gaps.

Benefits

- Increased use of application features resulting in higher return on software investment
- Higher degree of user independence and less reliability and cost for vendor assistance
- Identification of application user roles and responsibilities
- Improved efficiencies and productivity
- Improved customer service

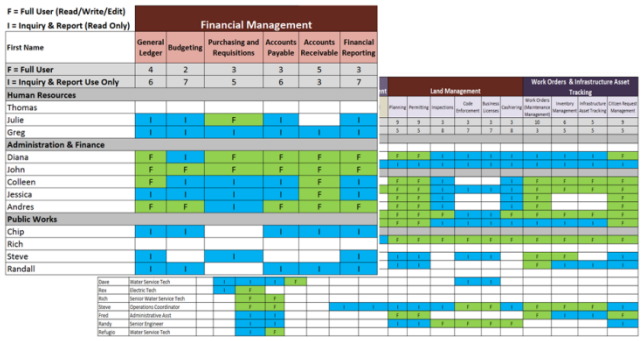
Next Steps

- Each department and the IT Steering Committee should review an Application/User Matrix for current and future application usage and application management roles.
- Identify process owner(s) for each module, or insert "N/A" if not applicable.
- Identify application champion(s) for each module.
- Identify application analyst(s) for each module, or insert "N/A" if not applicable.
- Identify ad hoc report writers, or insert "N/A" if not applicable.
- Differentiate (e.g., by color-shading, annotations, etc.) if individuals are expected to assume roles in future with additional training.
- Define IT Department roles and responsibilities for all applications or modules.
- Identify user roles as "F" (Full), "I" (Inquiry), or "R" (Reporting Only).
- Recommend differentiating between current/licensed and non-current/non-licensed users, so that budgeting can be addressed for additional user license requirements.

6. APPLICATIONS AND USER LICENSING INVENTORY

Findings and Observations

A citywide applications inventory can be helpful in understanding/confirming licensing compliance, over/under seat license requirements, and identifying training and user roles mentioned in the *Applications Management Best Practices* initiative.



F = Full User (Read/Write/Edit)
I = Inquiry & Report (Read Only)

First Name	Financial Management					
	General Ledger	Budgeting	Purchasing and Requisitions	Accounts Payable	Accounts Receivable	Financial Reporting
F = Full User	4	2	3	3	5	3
I = Inquiry & Report Use Only	6	7	5	6	3	7
Human Resources						
Thomas						
Julie	I	I	F	I		I
Greg	I	I	I	I	I	I
Administration & Finance						
Diana	F	I	F	F	F	F
John	F	F	F	F	F	F
Colleen	F	I	I	I	F	I
Jessica	I	I	I	I	F	I
Andres	F	F	I	F	F	F
Public Works						
Chip	I	I		I	I	I
Rich						
Steve	I		I			I
Randall	I	I		I	I	I

Recommendations

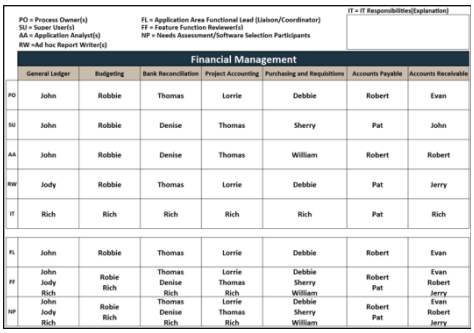
- Create an inventory of all organization software applications/modules currently in use, as needed.
- Identify all current user license holders, as well as those that need additional licenses.
- Determine which users can transfer their licenses to others users, if applicable.
- Determine software applications that can be run centrally from a server or shared computer for infrequent users.
- Obtain ongoing sustainability cost estimates.
- Consider development of IT application support portfolio to document departmental ownership and IT Department service-level agreements (SLAs).

Benefits

- Assurance that investment in licenses are matched to users truly in need
- Assurance that investment of licenses match the organization's software needs
- Better ability to identify potential integration requirements
- Ability to obtain proper support and reference information for licensed software
- Ability to better schedule and conduct training for staff, based on software usage
- Better, well-informed decision making for application acquisitions or maintenance cancellations
- Potential reduction in application license and maintenance fees by cancelling applications no longer in use
- Mitigation of legal risk from use of non-licensed software

7. Enterprise Applications Support - Roles and Responsibilities

Findings and Observations



PO = Process Owner(s)
SU = Super User(s)
AA = Application Analyst(s)
RW =Ad hoc Report Writer(s)

FL = Application Area Functional Lead (Liaison/Coordinator)
FF = Feature Function Reviewer(s)
NP = Needs Assessment/Software Selection Participants

IT = IT Responsibilities(Explanation)

	Financial Management						
	General Ledger	Budgeting	Bank Reconciliation	Project Accounting	Purchasing and Requisitions	Accounts Payable	Accounts Receivable
PO	John	Robbie	Thomas	Lorrie	Debbie	Robert	Evan
SU	John	Robbie	Denise	Thomas	Sherry	Pat	John
AA	John	Robbie	Denise	Thomas	William	Robert	Robert
RW	Jody	Robbie	Thomas	Lorrie	Debbie	Pat	Jerry
IT	Rich	Rich	Rich	Rich	Rich	Pat	Rich
FL	John	Robbie	Thomas	Lorrie	Debbie	Robert	Evan
FF	John Jody Rich	Robie Rich	Thomas Denise Rich	Lorrie Thomas Rich	Debbie Sherry William	Robert Pat	Evan Robert Jerry
NP	John Jody Rich	Robie Rich	Thomas Denise Rich	Lorrie Thomas Rich	Debbie Sherry William	Robert Pat	Evan Robert Jerry

More and more local government agencies are understanding the **direct correlation** of 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 organizations, through retirements and other employment separations, due to many processes and procedures being inadequately automated. 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/business analyst skillsets within the business departments and the IT department. However, we have encountered few mid-sized agencies with adequate resources to meet the organization's enterprise applications user support needs.

In order to meet these needs, IT departments are beginning to transform their overall department structures (over time) to take on more responsibility of hiring, training, retaining, and managing application support services. This trend is being made possible, to some measure, by the streamlining of typical IT Department operations through various productivity and monitoring tools.

Typical enterprise application support staff proactively manages: Help Desk needs related to business department applications, business process analysis, application training, application setup and configurations, ad hoc report writing, and database administration.

It is not unusual to designate application support staff for the following major application systems, including, but not limited to:

- ERP Systems
- Land Management Systems
- Maintenance Management Systems
- Library Information Systems
- Recreation Systems
- ECMS (Document Management Systems)
- GIS (Geographic Information System)

Staff Feedback

- Legal – Are doing a lot more work and projects on behalf of the departments than before (e.g., transition to Florida Pension System)
- Legal – Departments have difficulty controlling their work and the process of their work
- Legal – The responsibility of maintaining and monitoring documents (e.g., contracts , insurance requirements, etc.) is at the department level, but departments frequently ask the City Attorney for documents
- Marina – Support and maintenance of department application software is being done by the department

- Parks – Thorough more (hands-on) training on newly installed systems (not a quick overview)
- PD – Nobody seems to be managing their applications (CAD address tables need to be accurate and current, etc.)
- PD – When outside contractors install applications and systems, IT tends to lack the ability to support it after the vendor leaves.
- PW – Support and maintenance of department application software is not very good

Recommendations

- In the future, the organization should consider adding application/business analyst positions to IT or City Departments to provide better support for department software programs that are the backbone of organization operations.
- Develop an IT Services Portfolio documenting IT roles and responsibilities related to all organization applications.
- Departmental staff should be provided with additional training in applications systems and report writing.

8. User Training and Support

Software systems are tools utilized to conduct business operations. Like other tools (e.g., phones, audiovisual equipment, backhoes, plotters, equipment, etc.), gaining greater utilization of these tools through sufficient training and installation of other available software modules (tools) is key to significant increases in productivity and greater efficiency, as well as achieving costs savings in many areas.

Findings and Observations

- The City has discussed the establishing and implementing an Education Initiative Program. This User Training and Support initiative could form the basis for the discussed training program.
- Software applications that are underutilized should be reviewed to determine if the potential exists for increases in staff productivity if more training were provided.
- A complete inventory of all applications and/or modules by department and user does not exist.
- This list can be helpful in understanding and confirming licensing compliance, over/under seat license requirements, and identifying training needs and user-responsibility roles, as discussed in the *Application Management Best Practices* initiative.
- Examples of requested training are included below.

Staff Feedback

- City Clerk – Need more frequent training on applications other than just the initial training because you may not use the application on a daily basis
- City Clerk – Users should receive training on newer software versions (Word, Excel, etc.) when they get a new computer
- City Clerk – Training is needed for utilizing Alchemy Software to its fullest potential
- CMO – Need training on all Microsoft products to maximize feature utilization

- CMO – Need training on software to create and publish professional media or specialized documents
- CMO – Need additional training on NovusAgenda
- CMO – Need Microsoft Office product training standards for City staff
- Comm Dev – Need Excel user training
- Comm Dev – Historically, the City has implemented new software with minimal training or the software has bugs that were unresolved at the time of implementation
- Comm Dev – Need training on phone systems functions and features
- Fin – Need training on Novus
- Fin – Need training on QAlert
- Fin – Need training on MS Excel
- Fin – Need training on MS Access
- Fin – Need training on MS Publisher
- Fin – Need training on Accounting Applications
- Fin – Need training on Utility Applications
- Fin – Need training on Business License Applications
- Fin – Need training on Fixed Asset application
- Fire – Are manually managing a training calendar
- Fire – Need training on MS Outlook
- Fire – Need training on MS Excel
- Fire – Need training on MS Word
- Fire – Upcoming project to implement Online training through Target Solutions
- HR – Need training on MS Excel
- HR – Need training on Microsoft 13
- Library – Need training on library databases
- Library – Need training on using day to day functions of our integrated library system
- Library – Need training on the Microsoft Office suite
- Library – Need new staff to receive more training on the telephone system
- Marina – Need training on MS Excel
- Marina – Need training on MS Word
- Parks - Additional training is needed on Access, QAlert, QScend, Recreation Databases, Applicant Pro, Excel, Novus Agenda
- PD – Need to automate Field Training Program (FTO)
- PD – There doesn't seem to be anyone responsible for teaching employees how to use applications properly
- PW – The City needs to be retrained on the applications they use
- PW – The City needs to be trained on GIS and QAlert.

Return-on-Investment (ROI) Consideration

- In a study conducted by Nucleus Research, an organization drove productivity gains of up to 50% through ongoing successful user trainings.[4]

Recommendations

- Consider using this initiative to establish and implement the City's previously considered Education Initiative Program.

[4] Nucleus Research, 2010.

- Complete the application inventory matrices by department and user.
- Identify all current user license holders, as well as those that need additional licenses.
  - Conduct a survey, by user, to determine what training would be helpful and to determine actual need and planned attendees (should be driven by department managers to elicit participation when training is made available).
- Determine strategies for accomplishing training needs:
  - Self-learning aids
  - Internal classes (internal or external trainers)
  - On-site vendor training
  - Lunch-and-learns
  - Go-to Application Champions
- Create a repository of basic "how to" training aids and other training information (e.g., videos, past class information, etc.)
- Current and future needs can be evaluated and prioritized through a combination of mechanisms, including the IT governance function.
- Consider class attendance as a factor in performance evaluations. This can be accomplished by having department management involved and agreeing to which 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, training and reporting needs, and improve overall integration capabilities.

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 application software releases
- Increased information sharing
- Better identification of training needs
- Increase training alternatives
- Improved software administration (fewer staff required to service user community)

9. TRAINING ROOM

Findings and Observations

A training room serves as a great opportunity for staff to become familiar with applications or expand on their current skills. It serves as a best practice to promote professional growth and continue improvement through increased utilization of existing or future organization applications to be released to staff. A dedicated training room is also a requirement for all major software implementation projects.

Staff feedback

- Library – Have a Training lab which 12 computers which are dedicated to training and teaching basics (i.e., Microsoft Word)

Recommendations

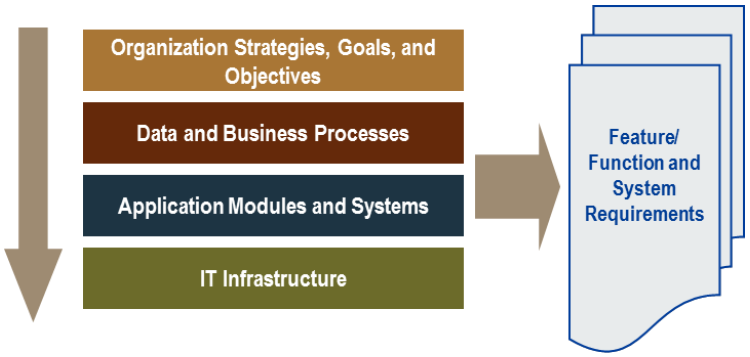
- The organization should maintain a training room for testing applications that are being implemented or for staff to improve upon existing competencies.
- With so many applications in use, a permanent training room will be needed if the organization implements User Training and Support best practices.
- A minimum of 12 computers should be maintained (during the conduct of this project the IT Department has begun the implementation of a training room with 12 workstation, loaded with the City standard internal software environment, and with a project for the instructor).
- Virtual Desktop (VDI) technology is often used for training room computers.
- Computers can also be used for staff experiencing extensive computer difficulties or those waiting for a computer replacement.

10. Software Selection Best Practices

Findings and Observations

Selecting the right system and technology is more critical today than ever before because the efficiency and effectiveness of the organization is directly dependent on its use of technology and information systems.

Organizations are realizing they must take greater advantage of automation and technology to ensure a better position to meet growing constituent demands. Additionally, many agencies must provide better service to their constituents while coping with greater budget constraints.



Return-on-Investment Consideration

While new software solutions can transform certain operations, processes, and constituent services, consider these statistics:

- Only 32% of projects are on-time, on-budget, deliver all required features and functions, and achieve measurable business and stakeholder benefits.[5]
- Approximately 44% of projects are "challenged" (late, over budget, and/or with 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.[7]
- Nearly 40% of those surveyed said that a "*lack of employee buy-in and executive support*" was the biggest challenge facing a successful implementation.
- A Recent Customer Survey shows that Enterprise Implementation Projects have only a *7% chance of on-time implementation.*
- The project will likely cost more than estimated.
- The project 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% over the planned implementation timeline.

Without proper preparation, planning, and a methodology for selection and implementation, organizations face many problems and risks, including:

- Spending hundreds of thousands and, potentially, millions of dollars more than necessary in total cost of ownership

[5] Standish Group, CHAOS Summary, 2009.
[6] Standish Group, CHAOS Summary, 2009.
[7] KPMG survey of 252 organizations.
[8] Panorama Group, based on a 2009 survey of more than 1,300 online respondents and focus group participants who had implemented ERP within the last three years.

- Failed or prolonged implementation
- Implementation of systems that still do not meet the organization's functional needs
- Low productivity
- Poor contract negotiation position
- Lack of and/or reduced integration between other software systems

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

- Insufficient definition of system objectives and requirements
- Failure to adequately involve both management and users
- Underestimating the costs and effort required
- Failing to adequately plan for expansion
- Failing to properly evaluate software

In order for key software systems to be implemented properly and for the organization to reap the full benefits, the organization should utilize a structured analysis and selection methodology. A structured approach to ERP 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
- An education process for the organization
- Selection of technology that meets the organization's short- and long-term objectives and requirements
- Effective contract negotiation through well-prepared and documented needs
- Overall project time savings
- Improved implementation readiness

Recommendations

- Utilize best practice selection methodology when evaluating new software solutions (see methodology below).
- Consider third-party consults when selecting or improving complex or highly specialized solutions.
- Ensure process reviews are completed and detailed feature/function specifications are documented as part of the RFP (see example below).
- Ensure detailed feature/function specifications are utilized with test scripts before going live on new application implementations.
- Include all stakeholders in each software evaluation and implementation project.
- Ensure detailed feature/function specifications are utilized in post-implementation reviews and ongoing training. See example page below.

Benefits

- Reduction in hardware/software requirements
- Reduction in preparation time for deployments
- Better identification of integration requirements
- Reduced license fees
- Increased utilization of application systems
- More effective due diligence

- Increased staff buy-in, consensus, and morale
- Improved decision making (selecting software that is the best fit for your needs)
- Improved implementation results (time, costs, and results)

Feature Number	Feature / Function / Capability	Standard - Current	Standard - Next	Report Writer	3rd-Party Application	Custom Modification	Not Available	No Response	Comments
	Requisitions / Purchasing								
4.000	**VENDOR MAINTENANCE GENERAL FEATURES**								
4.020	**VENDOR – ADDRESSES** - Provide for multiple addresses per vendor (must support non-USA addresses) with a minimum of four addresses and five lines each.						1		
4.028	**VENDOR APPROVAL** - Ability for departments to setup a temporary vendor with only purchasing to approve new vendors.						1		
4.035	**ON-LINE REQUISITION/PO APPROVAL** - Provide functionality online to route requisitions or purchase orders to appropriate users (or their backup user) with notifications for their approval or disapproval. Allow entry of disapproval notes and ability to restart the approval process if required.	1							
4.036	**ON-LINE TRACKING OF APPROVED REQUISITIONS** - Ability to use online query for all purchase requisitions that are awaiting the user's approval.	1							
4.041	**ENCUMBRANCE ACCOUNTING**								
4.042	**ENCUMBRANCE ACCOUNTING** - Provide all procedural functions of an encumbrance system including verification of budget availability before accepting invoice, requisition and purchase order transactions.	1							
4.046	**PURCHASE REQUISITIONS**								
4.047	**FORMAL BID FUNCTIONALLY** - Provide formal bidding functionality and process, which ties with both purchased requisitions and purchase order functions.		1						Future release
4.050	**BUDGET / PURCHASE LIMIT CONTROLS** - Provide security controls to either allow or disallow amounts to be entered that exceed budget amounts.	1							System either start workflow process, or not route items that exceed budget amount
4.052	**RECURRING REQUISITIONS** - Allow recording, reporting, retrieval, and editing of recurring requisitions.						1		
4.054	**ELECTRONIC REQUISITIONING** - Provide the ability to generate electronic requisitions by multiple end-users.	1							
4.099	**DEPRECIABLE ASSET** - Ability to code items as depreciable assets.	1							This is available at the PO level
4.107	**PURCHASE ORDER PROCESSING**								
4.109	**PURCHASE ORDER GENERATION** - Allow items to be split from requisitions to multiple purchase orders.					1			
4.140	**PURCHASE ORDER – THRESHOLD AMOUNT** - Ability to set a limit (cumulative) for a single vendor in a year for purchases.	1							yearly limit tracked via misc user defined field
4.158	**CONTRACT EXPIRATION ALERT** - The system should provide a warning or block payments if a contracts insurance has expired.	1							Information is available via drill down
4.160	**APPROVALS** - Ability for an approval to be routed to multiple approvers, via workflow rules, where either approver, but not both, is not required.	1							
4.194	**PURCHASE ORDER COMMITMENT REPORTING** - Generate a purchase order commitment report reflecting the dollar amount of anticipated deliveries by vendor.	1							
4.196	**INTEGRATION**								
4.198	**INTEGRATION - ACCOUNTS PAYABLE** - Provide for automatic transfer of purchasing information to Accounts Payable (e.g., vendor, address, amount, purchase order number, etc.)	1							
4.199	**INTEGRATION - BUDGET** - Provide capability to validate funds availability for Requisition and Purchase Order transactions. Allow override capability.	1							
4.202	**INTEGRATION - GENERAL LEDGER** - Ability to download purchasing card transaction file (.txt) to post transaction detail to General Ledger by general ledger account code. Note: each transaction is associated with a specific general ledger account number in the text file.								standard P-Card integration is available via import into Accounts Payable
4.203	**INTEGRATION - PROJECT ACCOUNTING** - Purchase Order transactions coded to Projects must integrate with Project Accounting and/or Work Order Management systems.								

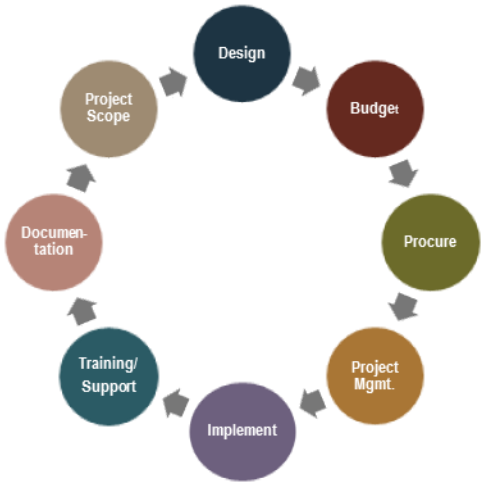
Step	Software System Selection Work Plan
Phase 1 – Needs Assessment and Recommendations	
1	**Kick-Off and Project Team Development** – Hold a formal Kick-Off Meeting, and then work with the Project Manager to finalize the makeup of the selection Project Team and document required roles and responsibilities. Include representatives from all key stakeholder groups.
	IT Infrastructure and Staffing Readiness Review
2	**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 organization, and to 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
	IT Security
	Disaster Recovery
	Desktop Environment
	Printers
3	**Documentation** – Document information and summarize the required preparation initiatives, findings, and recommendations
4	**IT Assessment Memo** – Prepare a memo assessing gap and readiness of IT infrastructure to support the organization's general needs and to support the introduction of the new software system. The memo is to include the following:
	General readiness of IT to support the organization's needs and support the introduction of a new software
	IT Initiatives with findings and recommendations, including the following scope:
	IT Environment and Infrastructure
	IT Application Support Staffing Structure
	Business Department Needs Assessment Interviews
5	**Business Process Review and Feature/Function Analysis** – Meet with the identified personnel by functional area and software modules to review existing manual and automated systems and operations, including any custom developed work-around systems/processes. Include a cross-section of all user types in each needs assessment workshop.
6	**System Requirements Documentation** – Document information gathered during interview process, and develop feature/function requirement specifications specific to your organization.
Phase 2 – RFP Development	
7	**Preliminary Vendor Research, Communication, and Coordination** – Research vendor community to identify qualified vendors meeting the organization's system and services requirements, and communicate with potential vendors. Vendors do not respond to all RFPs, so pre-communication is helpful to obtain proposals that are in the organization's best interest to consider.
8	**Develop Request for Proposal (RFP) w/Electronic Response Forms** – Prepare a Request for Proposal (RFP) document and work with the organization to make adjustments and revisions, as well as ensure it complies with the organization's purchasing guidelines and is distributed per policy (assumes development of a single RFP document). RFP should include, but will not necessarily be limited to, the following:
	Comprehensive list of functions/requirements with prioritization
	Cost including purchase or other financial payment plan options
	Required technical specifications
	Installation costs
	Migration from existing to new system (cost and timeline)
	Training cost and training schedule
	New system hardware/network/system software requirements

Step	Software System Selection Work Plan
Phase 3 – Vendor Evaluation and Demonstration Management	
9	**Facilitate RFP Response Activities** – Facilitate pre-proposal activities, including:
	Manage vendor questions and answers during established proposal response timelines.
10	**Proposal Evaluation** – Analyze and evaluate proposal responses. Provide an initial Summary Vendor Comparison Worksheet that provides side-by-side comparison of key system evaluation requirements including feature/function compliance statistics.
11	**Analysis Results Workshop to Determine Vendor Finalists (Short List)** – Conduct a collaborative review workshop with a key stakeholder committee and determine which vendors are to be short-listed.
12	**Develop Demonstration Documents** – Prepare an agenda and sample demonstration scripts for vendor demonstrations to be sent to vendor finalists for their advance preparation. Also prepare vendor demonstration evaluation forms for use by selection committee members during demonstration sessions.
13	**Reference Check Form Preparation** – Prepare form to be used by project team members during finalist reference checks/calls.
14	**Schedule and Facilitate Vendor Demonstrations** – Schedule demonstration dates and facilitate initial vendor demonstrations to ensure that pertinent requirements are addressed (estimate three vendors at X days each).
15	**Develop Site-Visit Documents** – Prepare an agenda for each vendor site visit and a site visit evaluation form for organization selection committee members to complete during each visit.
16	**Post Demonstration/Visit/Reference Check Due Diligence and Follow-Up** – Track follow-up issues and conduct comprehensive due diligence. This may include additional demonstrations, Q&A facilitation, reference checking, and site-visit assistance, etc.
17	**Finalist Selection** – Conduct a meeting with the organization selection committee to facilitate discussion and finalize the vendor selection.
18	**Review Selected Vendor's IT Requirements** – Review the IT (server, workstation, network, etc.) requirements provided in the selected vendor's proposal, and prepare a memo outlining observations and recommendations for IT.
Phase 4 – Contract Review and Negotiation Assistance	
19	**Implementation Plan Review** – Review implementation plans, project management office, resource requirements, and timelines.
20	**Implementation Team Organization** – Establish Implementation Project Team, based upon PMI and COBIT Project Management Office (PMO) principles and Application Management Best Practices.
21	**Contract Review and Negotiation Assistance** – Conduct contract reviews and negotiations with an SME and legal representation.

11. Project Planning and Implementation Best Practices

Findings and Observations

A best practices approach should be followed for all projects. The complexity and risk determine the actual level of due diligence that is completed. The following is an outline of project planning and implementation best practices:



Determine Scope of Work – Work with all stakeholders to determine what needs to be accomplished.

Design – For larger, more complex projects, the design effort may become a separate project. For smaller projects, design is integrated into budgeting.

Specifications – Make sure an appropriate level of vendor-agnostic specifications is included with procurement requests that reduces ambiguity and provides better comparisons between vendors.

Collaborate – Include input and requirements of all stakeholder groups to ensure all requirements are included in specifications and all stakeholders buy-in to the final solution.

Develop Budget – Project budgets include hardware, software, and consulting/SME costs. Consulting costs are estimated by outlining the various work steps and estimating the hours required to complete them.

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.

Create Project Plan – Based on all stakeholder needs, delivery dates, and the tasks to be completed, 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. These plans are developed on an as-needed basis.

Configure and Implement – Utilizing planning methodologies and technical expertise, configure the necessary system components, and implement the solution with the least possible impact to staff and productivity.

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 for all IT and software-related projects.
- Follow planning and implementation best practices.
- Review all major active projects during IT Steering Committee meetings (track progress).
- Obtain services of third-party project managers/subject matter experts, 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/outcomes

12. Maintaining Software Updates

Findings and Observations

- Best practice for the maintenance of application software is to maintain a minimum of N-1 (current major release or the one prior).
  - Software vendors often only support the current release and the one prior.
  - Falling further behind often creates upgrade scenarios with several intermediate steps, risking additional problems, and potentially makes upgrades more expensive and time-consuming.

Staff Feedback

- Comm Dev – Need Office Suite and basic applications to be uniform
- Library – There needs to be consistency in software across all staff computers
- Library – There are currently many different versions of Windows, Microsoft Office, etc. throughout the building, which is cumbersome and inefficient when we exchange files that we work on collaboratively
- Parks – Installation of a standard set of PC software for all departments for consistency

Recommendations

- Maintain consistent updates across all users.
  - Utilize the inventory created in the *Application and Licensing Inventory* initiative to understand version issues.
  - The IT Department is planning to implement a SUS Server to provide softward updates across the City for Windows updates. This should be completed and will provide consistency and helpful automation.
- Include software updates in sustainability and replacement planning.
- Provide appropriate user training with each release.

13. IT Project and Services Portfolio

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 agreements 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, partially addressed in the *Application Management Best Practices* initiative, is only one aspect of the complete portfolio. Other IT services include projects, Help Desk, data network, telephone systems, IT security, etc.

Recommendations

- The City's IT division should 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.
- Utilize results of IT Master Plan as the basis for a five-year project portfolio and budget.
- Utilize the *Application Management Best Practices*, *Application Inventory,* and *User Training and Support* initiatives as a basis to complete the services portfolio.

14. Computer Equipment Replacement Plan

Findings and Observations

- A computer equipment refresh plan is not currently in place.
- The City has many older servers, switches, and other computer equipment that are past their expected end-of-life.
- IT does not maintain a complete inventory of computer equipment, including when purchased and expected end-of-life.

Recommendations

- Develop a five-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.
- Purchase discounted extended warranties at the time of purchase that will cover the equipment throughout its useful life (i.e., five years for computers and servers, etc.)
- As a result of the project preliminary recommendations, the City has begun developing a five-year rollout plan for devices, with a management system to identify life cycles to determine when devices are due for replacement. The City's plan is to provide this information for use at the start of each budget cycle.

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

Benefits

- Better forecasting of purchases
- Managed process that flattens capital expenditures over time
- Improved computer performance
- Improved available features
- Reduction in trouble tickets to support failing or faulty hardware
- Ability to keep spare equipment around to be reissued – eliminate employee downtime
- Reduction in total cost of ownership

15. SUSTAINABILITY PLANNING

Findings and Observations

Sustainability Planning is the process of mapping the acquisition, maintenance, upgrade, improvements, training, and eventual replacement for major application systems over a long-term period (i.e., five to ten years). Sustainability Planning helps in two significant ways:

1. It reduces the significant periodic spikes in capital expenditures of large software solutions, and
2. It schedules upgrades and replacements of departmental business application systems in a convenient and timely manner.

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

Because software applications are the primary technology tools of the business departments, in order to increase productivity and efficiencies, improve customer service and transparency, and take advantage of technology improvements, the City can benefit from the implementation of Sustainability Planning versus the more limited practice of Replacement Planning.

Return-on-Investment (ROI) Consideration

- 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:[9]
  - Reducing cost of ownership related to IT assets by determining licenses for which an organization is overspending and reducing Help Desk costs
  - Managing technology change by developing software procurement models that map current and future needs with technology migration and upgrade planning
  - Minimize 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 were the cost savings that occurred after incorporating a Sustainability Plan:[10]

- 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 8%
- Transportation and logistics costs were reduced by up to 5%

Recommendations

- Develop a sustainability plan for IT software applications.
  - Microsoft licenses should be replaced N-1 (i.e., every other version).
  - Larger core applications (e.g., Financials, Land Management, Work Order Management, Recreation, etc.) benefit most from Sustainability Planning, because these should only be replaced every 10-15 years, if procured and managed properly.

[9] Express Metrix.

[10] Aberdeen Group, 2009.

- Investigate and track annual maintenance and 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
- Reduction in total cost of ownership
- Avoidance of unforeseen upgrades
- Informed purchase timing
- Software lifecycle evaluation

16. IT POLICIES AND PROCEDURES

Findings and Observations

A reasonable number of additional IT policies should be developed to protect the organization.

Recommendations

- Revise and create a limited number of IT policies and procedures, including the following:
  - Encryption Policy
  - Data Usage
  - Security Awareness Training Policy
  - Web Filter Exceptions
  - Social Media Policy
  - Electronic Information and Email Retention Policy (currently in draft form)
  - Computer Security Incident Response Policy
- Utilize the Technology Advisory Committee to review policies and procedures and facilitate communication throughout the organization.

17. IT Procurement Practices

Findings and Observations

- For complex systems, the City should consider procuring installation from the vendor supplying hardware and software, or other third-party implementers.
  - Reduces chance of finger-pointing for poor design, damaged product, or poor installation
- For commodity systems where several vendors provide very similar products, if three quotes are required by ordinance, the City should consider creating an open RFP that does not specify a product manufacturer, but provides vendors with specifications that must be met.
  - Encourages increased vendor participation
  - Increased vendor participation often results in lower pricing and better products
- For complex or expensive systems, the City should consider including all components in the RFP: final design, installation, construction, testing, conversion, post-implementation support, and knowledge transfer.
  - Includes procurement of complex systems that may cross budget years because of cost considerations
  - All components should be practically considered and integrated
- For oversight, before approval of purchase of a complex system or a system requiring three bids, Finance should require the following of IT:
  - A diagram of the system
  - High-level implementation plan (can be one page of bullet points)
  - A bill of material that includes all components, list price, quantity, discounted price, ongoing maintenance
  - Costs associated with final design, installation, any construction, testing, conversion, post-implementation support, and knowledge transfer
  - A vendor cost matrix and assurances that all responses are truly comparable
  - A written recommendation

Recommendations

- City should follow best practices for IT hardware and software replacement and procurements.

18. IT Cost Recovery (IT Budget Allocations)

The IT Department best practice is that of an internal support function to all departments and users of the City and, in some instances, the City's constituents. The departments, users, and constituents are the customers of the IT Department.

IT Cost Recovery is the concept of funding the IT Department budget from all other departments based upon various metrics utilization and services provided. Examples could include number of users, computers, servers, network devices, phones, and time estimates for supporting specialized systems and applications.

In this way, IT Department costs can be spread fairly among departments, and the organization can gain a true understanding of the costs to support the IT infrastructure and support services in order to make better management decisions.

Recommendations

- Consider developing an IT cost recovery model to allocate IT costs fairly.
- Conduct a holistic review.
  - Assure that departments using services are charged proportionately.
  - Assure that all project costs are attributed to the projects.
- Explore potential ways to track actual time spent at some levels.

19. CLOUD COMPUTING

Cloud computing can be described as IT services or equipment that are not internal, but available through the Internet. Examples of this include having a server hosted in an organization or facility other than your own, accessing information from a portable device, processing requests from the field, subscribing to an Internet-based software solution, etc. The benefits of cloud computing allow individuals to collaborate and remain centralized, regardless of location.

Cloud computing is one 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 are still not cost-effective or the most secure approach.

Findings and Observations

- The organization has already utilized some forms of cloud computing.
- Several infrastructure improvements will be required for the organization to be able to fully utilize cloud-based systems.

Recommendations

- Before moving any significant applications to the cloud, the City should:
  - Upgrade the metropolitan area network (MAN)
  - Improve the computer room to meet best practices
  - Upgrade core network switching to provide resiliency
  - Geographically separate Internet provider services
  - Move to Active Directory 2012 or higher
- Cloud-computing options should be considered for future projects.
- Cost/benefit should be the overriding factor for most final decisions.

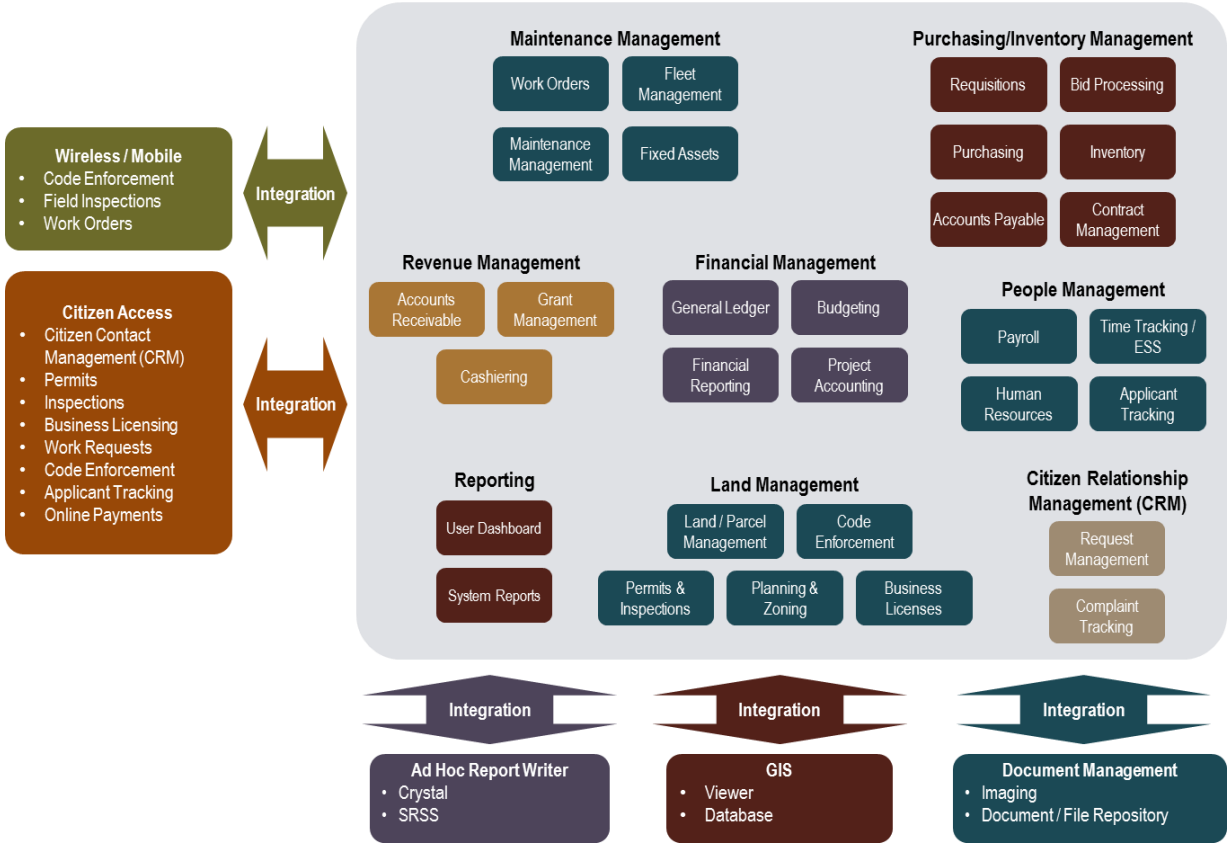
APPLICATIONS AND DEPARTMENTAL SYSTEMS

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

20. ENTERPRISE RESOURCE PLANNING (ERP) REPLACEMENT

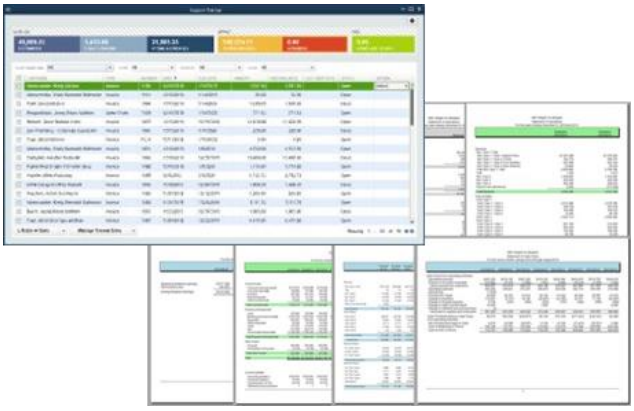
Enterprise Resource Planning (ERP) is an organization-wide software solution that allows integration among various departments and their respective functions. The result is a centralized system of communication, data storage, and operations management. Improvements to ERP solutions bring about processes that multiple departments can benefit from. Common municipal-related ERP application modules include accounting, financial reporting, payroll, human resources, planning and permitting, and work orders. The following graphic shows a typical municipal ERP environment.

Example Enterprise Applications Overview



Findings and Observations

Currently, the City utilizes multiple software vendors to support its enterprise application requirements, including ADG-American Data Group for core financials, payroll, limited HR operations, and utility billing. ADG and many of the other existing systems are outdated, lack adequate integration, reasonable reporting capabilities, commonly utilized functionality found in other municipalities, and require excessive manual workaround and reconciliations. All departments noted unmet reporting needs, feature/functional requirements deficiencies, and an overall need for systems improvements and additional software modules.



The City is missing opportunities for labor savings (thousands of labor hours per year), improved customer service due to lack of integrated solutions with sufficient training, and functionality to meet internal operational and customer needs.

Departments have a strong interest in newly available features and enhancements that a more modern ERP solution can provide. Gaining greater utilization in enterprise application software modules through installation of a new ERP system is key to significant increases in citywide productivity and efficiencies. The table below represents current and potential future ERP applications.

The City currently uses five different vendors to provide its ERP needs. The primary solutions, ADG (financials, Payroll, limited HR, and Utility Billing), PermitMD (community development services), QAlert and PSD (work order, maintenance management, and fleet), and Comply-CL (code enforcement) are older-generation systems that lack key functionality available in more current technology. The Community Development Systems, including PermitMD and Comply-CL are end-of-life and must be replaced. Additional improvements or replacement should also be considered for the work order systems (QAlert and PSD).

The following is a table that shows the City's major suites that are usually included in an ERP system. The table also depicts what prominent municipal ERP systems typically offer.

ERP Applications and Vendors	Currently Owned	Implemented	Potential Modules in Single Vendor Solution
Financial Management			
American Data Group (ADG)			
Fund Management, including: • General Ledger • Budgeting • Accounts Payable • Accounts Receivable • Cash Receipts	Yes	Yes	Yes
Requisitions and Purchasing	Yes	Yes	Yes
Fixed Assets	Yes	Yes	Yes
Special Assessments	Yes	Yes	Most
Financial Reporting	Limited	Yes	Yes
Not Currently Available			
Project/Grant Accounting			Yes
Contract Management			Some
Investment/Cash Management			Some
Vendor Self-Service			Some
CIS / Utility Billing			
Customer Information Management	Yes	Yes	Yes
Utility Billing	Yes	Yes	Yes
Service Orders	Yes	Yes	Yes
Meter/Backflow Management	Yes	Yes	Yes
Not Currently Available			
e-Account Access and Payment			Yes
People Management			
American Data Group (ADG)			
Payroll	Yes	Yes	Yes
Timekeeping	Yes	Yes	Yes
Human Resources, including: • Personal Action Request • Open Enrollment • Occupational Licensing	Yes	Yes	Yes
Not Currently Available			
Employee Self-Service			Yes
Applicant Tracking			Yes
Online Applicant Tracking			Yes
Employee Benefits Tracking			Yes
Personnel Budgeting			Yes
Work Orders / Asset Management / Fleet Management			
QScend's QAlert			

ERP Applications and Vendors	Currently Owned	Implemented	Potential Modules in Single Vendor Solution
Work Requests	Yes	Yes	Yes
Citizen Request Mgmt (CRM)	Yes	Yes	Yes
PSD Software			
Fleet Management	Yes	Yes	Yes
Not Currently Available			
Asset and Maintenance Mgmt			Yes
Preventative Maintenance			Yes
Inventory Management			Yes
Land Management (Development Services)			
Mark Dykes Computer Consulting – PermitMD			
Permits	Yes	Yes	Yes
Inspections	Yes	Yes	Yes
Diversified Software Systems – Comply-CL			
Code Enforcement	Yes	Yes	Yes
Not Currently Available			
Parcel/Address Management			Yes
Planning Development and Zoning			Yes
Recurring Revenue (Business Licenses)			Yes
Alarm Billing			Some
Central Receipting			Yes
Mobile Inspections			Yes
e-Permitting (online)			Yes
e-Inspections Scheduling (online)			Yes
e-Business Licensing (online)			Yes
GIS Viewer			Yes

Staff Feedback

- CMO – Need to improve interdepartmental sharing of centralized data
- CMO – Using MS Outlook for task tracking
- CMO – Need improved workflow utilization
- CMO – Need to use Dashboards for a glance of critical organizational functions
- CMO – Uses Excel for developing budgets
- CMO – Microsoft Access used on an individualized and minimal basis
- Fin – Using Excel for grant tracking and capital projects
- Fin – Need the ability to automatically calculate interest and liens
- Fin – Need the ability to issue payments to vendors
- Fin – Need the ability to automate check requests and check processing
- Fin – Need the ability to automatically generate employee electronic payments
- Fin – Currently are manually creating financial statements
- Fin – Currently are manually maintaining vendor 1099's and W-9's
- Fin – Need the ability to automatically integrate fixed assets with the financial management system
- Fin – Currently are manually creating pension reports

- Fin – Currently are manually creating pension reports
- Fin – Need the ability to automate the bank reconciliation process
- Fin – Need the ability to provide electronic signature approval
- Fin – Currently are manually creating Budget reports (CAFR)
- Fin – Need the ability to run profit and loss reports
- Fin – Would be helpful to use an online P-Card System
- Fin – Need a flexible and dynamic budgeting module
- Fin – Need the ability to run management-level financial reports
- Fin – Need the ability to track and report on the status of capital projects
- Fin – Need the ability to attach files to records
- Fin – Need a financial transparency portal to provide access to invoices and payments, which would save internal time with auditors and retrieval of documents
- Fin – Need one enterprise system to include multiple entities (e.g., zoning, building code, fire, police, marina, etc.)
- Fin – Need to have invoices automatically paid
- Fin – Need dashboard notifications when budget balance per line item is low
- Fin – Need to receive approvals electronically and through notifications
- Fin – Have problems rolling up government-wide financials
- Fin – Need improved inventory reporting
- Fin – Need a fixed-asset system
- Fin – Need a way to retrieve meter readings while customer is on the phone
- Fin – Need the ability to calculate changes to consumption
- Fin – Need the ability to run utility billing reports
- Fin – Wants daily meter readings
- Fin – Will be moving to Southwest Direct for e-Bills
- Fin – A budgetary module is required before October 1st
- HR – The financial system needs to be upgraded with a stronger server
- HR – ADG does not have an interface to payroll that works well
- HR – Need ability to track special event costs
- Legal – Interested in using a software that could also interact with the departments
- Legal – Contract administration tools are needed to ensure contract agreement expiration dates are communicated, as well as notification of actions that are triggered by an agreement (such as release of performance bond or a payment that is required)
- Legal – Would be ideal to have a master contracts listing that could be accessed by the departments
- Library – Using Excel as a backup to the financial management system
- Library – Use Excel to track in-progress purchases
- Library – Need a dedicated grant writer for technology-related grants (e.g., E-Rate for Library)
- Marina – Using MS Excel for some accounting functions
- Marina – Using MS Access for project and budget tracking
- Marina – Using Intuit QuickBooks Enterprise for billing management
- Marina – Are currently submitting a daily journal entry batch to Finance that takes two hours each day to complete
- PD – Budget Reporting and Personnel Reporting are not in sync
- PW – Need to automate inventory charge backs
- PW – Need to replace the City's current financial system (ADG)
- PW – Need to automate fuel charge backs
- Utilities – No backflow prevention software is being used
- Utilities – Would like to know when backflow inspections are required
- Utilities – Would like an electronic service requests process

- Utilities – Using Neptune for accepting meter reads through RFID
- Utilities – Neptune has not been fully implemented and are still reading some meters manually
- Purch – Managing the RFP process is done through a spreadsheet
- Purch – Would like a scheduling process and are looking at BidSync
- Purch – Would like automated templates for RFP development
- Purch – There are two buyers that are split among the 13 departments
- Purch – Would like to use procurement card purchases in the future
- Purch – Want a custom field report on small business or minority-owned business purchasing
- Purch – A Contract Administrator has been hired
- Purch – Contract document version management is needed (especially interaction with City Attorney)
- Purch – Could utilize a contract management system
- Purch – Would like to leverage SIC codes for spend analysis
- Purch – Need a workflow for budgeting and fund allocation
- Purch – Need a budget reporting tool
- Parks – Need to budget for things like gas and vehicle maintenance
- Parks – Want to see the detail related to vehicle, fuel, water, and electric bills
- Parks – Would like to have some sort of alerts for all budgetary changes or notices sent to key staff, line item in the negative, changes in line items, another department uses line item

Recommendations

- Replacing the current outdated, multi-vendor software application environment with a modern, fully integrated ERP solution.
- Ensure that the City has identified all its applications needs, and that appropriate funding has been budgeted for a replacement ERP by conducting a comprehensive needs assessment and developing a Request for Proposal (RFP).
- The needs assessment process should provide an inventory of current and future functionality requirements by application and department. The process can also be used to inventory all reporting requirements, as well as integration/interface requirements between other applications, such as CRM, ECMS, website, GIS, etc.
- The needs assessment should also include a business process review for each module, including reviewing manual processes and shadow systems, such as spreadsheets, to determine automation improvements that will result in labor efficiencies.
- Through the RFP process, potential ERP software vendors will be asked to respond with their capabilities and compliance with City-specific requirements.
- Select new ERP software vendor according to the *Software Selection Best Practices* initiative.
- Follow implementation project management best practices according to the *Project Planning and Implementation Best Practices* initiative.

Note: City IT staff have not conducted this type of project with these specific business process analysis, documentation, and negotiation requirements. It is highly recommended that the City consider obtaining consulting services from a municipal ERP Applications Subject Matter Expert (SME) to perform the business process reviews, needs assessment, RFP development process, and contract negotiations process.

Benefits

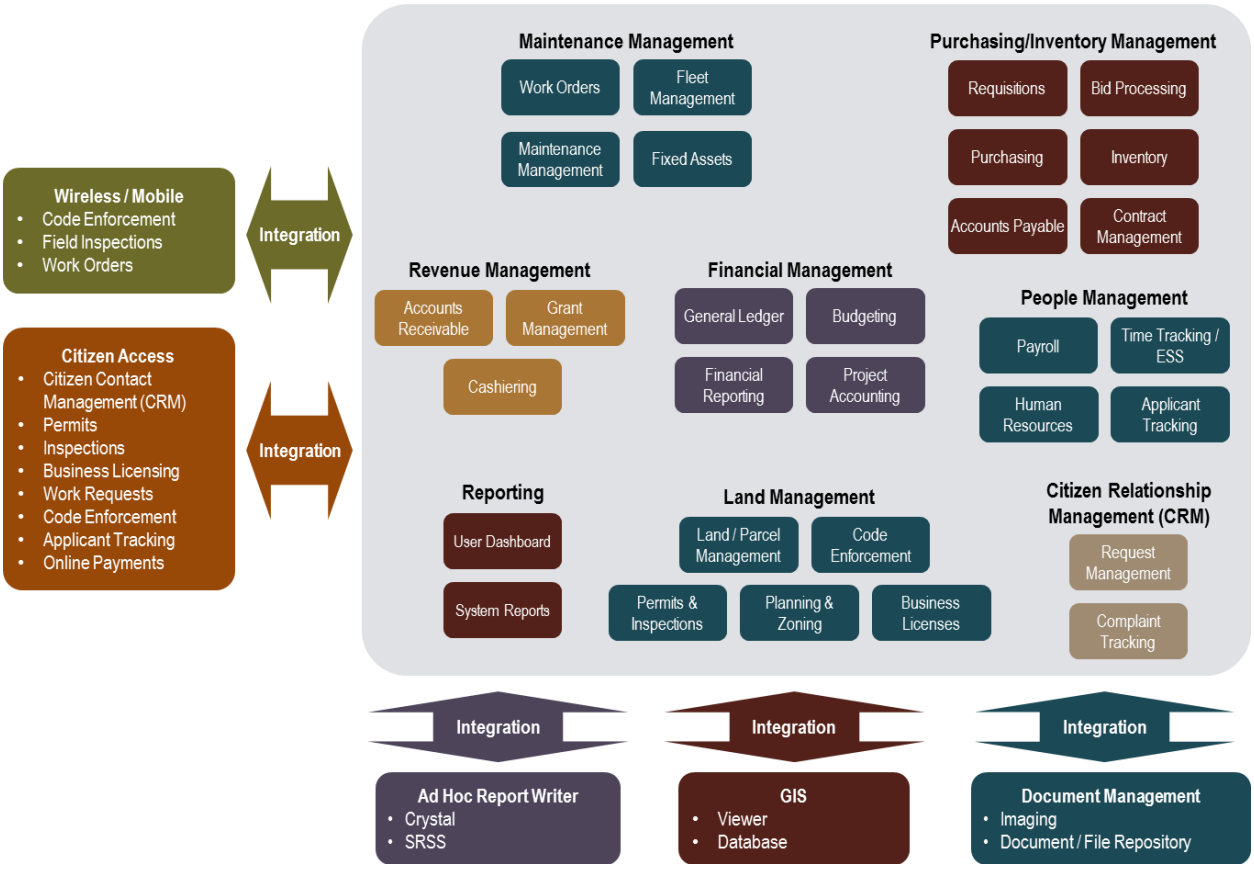
- Free up thousands of labor hours per year
- Faster invoicing and purchasing
- Identification of integration requirements
- Centralized access to information
- Elimination of information silos
- Improved streamlined processes
- Improved operational consistency, efficiency, and accuracy
- Improved online access to information
- Improved financial reporting
- Improved utilization and realization of ERP investment
- Potential reduction in ERP annual maintenance and support fees

Benefits of Modern ERP Software

An Enterprise Resource Planning (ERP) System automates and integrates many core, citywide functions into a single solution, while automating manual processes and providing a central location of information and reporting. An enterprise system allows collaboration and sharing of information between divisions, departments, and citizens to provide a transparent and efficient government operation. The benefits of an enterprise system are numerous and include:

- Built-in integrations between Land, Work, Financial, and People Management application suites
- Newer technology platform (processing and capacity advantages)
- Real-time notifications/queues
- Task tracking
- Real-time access to information
- Elimination of duplicate data entry
- Improved data integrity
- Centralized location and customer account maintenance
- Reliable information
- Workflow capabilities
- Centralized cash receipt capabilities
- Efficient revenue collection
- Reduced operating costs
- Improved internal communication
- Foundation for future improvement
- Potential reduction in annual maintenance and support fees
- Improved online information for citizens to access

Example Enterprise Applications Overview



Financial and People Management

The financial management suite is another suite of an enterprise system that encompasses the financial 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:

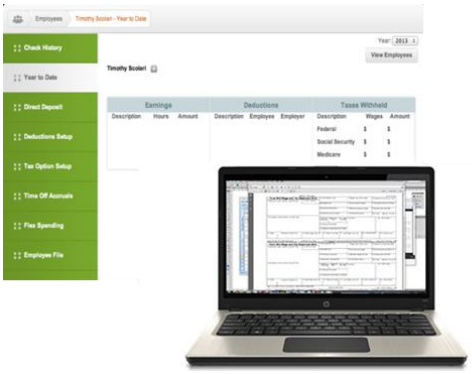
- Quick generation of financial reports
- More efficient budgeting processes
- Real-time access to available budget and funding
- Better spending controls for departments and projects
- Management of grants and funding sources
- Real-time inquiries into capital improvement project progress

The People Management suite manages the organization's workforce and provides automation to the human resources, payroll, timekeeping, and applicant tracking functions. Employee self-service is also available to allow employees flexibility in retrieving their information at their convenience. Benefits of a People Management suite include:

- Paperless personnel forms
- One-time data entry
- Tracking or misplacement of employee paper files
- Incorporation of Employee Self-Service (ESS)
- Integration between timekeeping, payroll, HR and financial management
- Quick and 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) empowers employees to provide, change, and retrieve their personal information through an online employee portal, therefore reducing the manual interaction required with the Human Resources Department. Employee Self-Service offers an online option for employees to access and manage information for themselves:



- Address changes
- Tax allowances changes
- Open enrollment benefits
- Dependent changes

- Leave/vacation accrual balances
- Electronic paystub copies
- Year-end W-2's
- Populating and retrieving time sheets
- Time requests
- Tax forms
- Many other forms and applications

Reporting

The number one problem that is commonly seen when utilizing disjointed applications is the extensive time users dedicate to the consolidation of information for reporting purposes. Enterprise systems allow information to be quickly retrieved from a single source with numerous readily available reports. Users are also able to create their own reports without requiring them to be technical experts. This allows staff to spend more time studying analytics rather than manually assembling reports. Benefits of improved reporting include:

- Aggregated data across divisions, departments, and organization
- Improved data accuracy and reduced human error
- Intuitive report creation capabilities
- Board-ready reports
- Sharing of created reports
- Elimination of labor-intensive report creation

Dashboards

Dashboards form part of a user's home page and display reports, key indicators, and other metrics regarding day-to-day operations, activities, and historical trends. 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
- Transformation of data into visual information
- Easy-to-understand graphics
- Real-time analysis
- Drill-down access to activity detail

Mobile Computing

Mobile computing provides the flexibility to operate a more mobile and productive workforce. An enterprise system can allow staff to utilize applications while in the field in order perform their job functions while away from their office. Common benefits of mobile computing include:

- Completion of work while in the field
- Real-time access to information
- Inspection results in the field
- Receipt of notifications and job assignments
- Reduced travel to and from office locations
- Map routing based on location of activities
- Retrieval of mapping information
- Management of Code Enforcement cases in field

Online Citizen Access

Online citizen access enables a more transparent government by providing the public with 24/7 access to real-time information for inquiries and payment processing. This empowers residents to retrieve online information that is pertinent to each individual, and for them to take further actions, which improves customer relations by eliminating the need to be physically present at City Hall. The following are examples of online citizen access transactions:

- Online permit applications
- Submit and access plan review comments
- License renewals (business, animal, etc.)
- Utility, permitting, planning, licensing, and tax payments
- Submit code enforcement complaints
- Submit citizen requests
- Submit inspection requests
- Access to inspections results
- GIS maps (zoning, voting districts, etc.)

Citizen Request Management

A Citizen Request Management system is used to track, manage, and resolve citizen concerns and requests in a timely manner by automatically routing requests to the appropriate department. It also provides constituents with the flexibility to submit and track their issues through the Web or a mobile phone application. Common benefits of a Citizen Request Management system include:

- Ability for citizens to submit requests 24/7 through a phone application or the website
- Automatic assignment and routing of requests, by type, to appropriate department(s) or staff
- Ability for citizens to view current request status
- Conversion of requests to work orders
- Ability to include photos and geolocation of a request
- More effective and efficient processes
- Improved transparency and citizen relationships

Land Management (Development Services)

The Land Management system is one of the suites that are offered by enterprise application systems and manages the creation, issuance, and tracking of community development activities related to planning and zoning, permitting, building inspections, licensing, and code enforcement. Benefits associated with the utilization of the application include:

- More automated permit processing from application through permit issuance
- Automatic routing for permits requiring reviews and approvals
- Single electronic file for all permit applications and documents
- More automated tracking of reviews, inspections, and fees by permit and development projects
- Tracking of timelines, tasks, and required group reviews
- Viewing all project and permit information at a glance
- Readily accessible planning and zoning records
- Automatic generation of case documentation
- Centralized current and historical parcel information

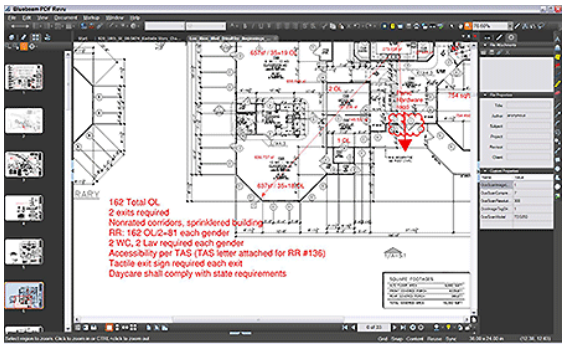
GIS Integration

Enterprise systems offer real-time integration to geographic information systems (GIS) in order to display land-use, zoning, and infrastructure layers on a map, as well as parcel, permit, inspection, code enforcement, and work order activity that resides within the enterprise system. Benefits of GIS integration include:

- Viewing system activity on a map
  - e.g., active planning projects, permits, code cases, etc.)
- Map routing of work orders, service request, and daily inspections
- Displaying locations of infrastructure assets
- Generating asset condition analysis
- Ability to overlay multiple map layers
- Integration to website for resident inquiries

Electronic Plan Submittals and Reviews

Electronic plan submittals are architectural/developmental plans that are in an electronic format. These plans can be submitted by the public through the City's permitting and planning processes. In addition to the electronic receipt of plans, electronic plan reviews allow City staff to review plans and electronically mark up and track plan comments. The following are benefits associated with electronic plan submittals and reviews:

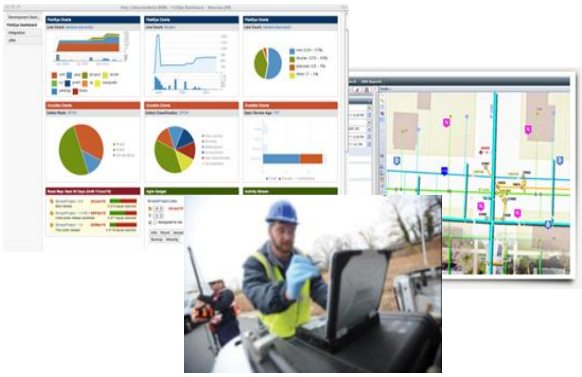


- Increased productivity through quicker processing
- Elimination of physical plan routing
- Submittal, review, and tracking of electronic plans
- Centralized storage and retrieval of electronic plans
- Performance of activities in parallel
- Concurrent review of plans by multiple staff
- Electronic collection of plan review comments
- Reduced number of and shorter resubmission cycle(s)

Maintenance/Work Order Management

Another suite of an enterprise system is the Maintenance/Work Order Management system, which provides automation in managing the maintenance and day-to-day operations related to infrastructure assets, buildings, facilities, and fleet vehicles, while being able to capture and report on the labor, equipment usage, and materials costs associated with a work order and preventative maintenance. System benefits include:

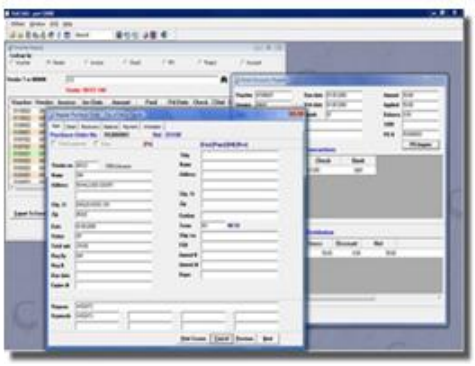
- Electronic routing of citizen requests
- Centralized task and maintenance management
- Completion of work orders from the field
- Streamlined public works operations
- Retrieval of historical work order information and costs
- Quicker work order completion times
- Improved decision making through access to real-time information
- Viewing of asset and activity trends visually through GIS mapping capabilities
- Better replacement planning and forecasting
- Enhancement of staff productivity
- Improved compliance with regulatory standards
- Improved safety and risk management



21. HUMAN RESOURCES SYSTEM IMPROVEMENTS

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. A Human Resource system typically includes the following capabilities:

- Employee internal/external training
- Professional development
- Certifications and licenses
- EEO reporting
- OSHA reporting
- HIPAA reporting
- Insurance & 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



These solutions also have integration with payroll processing and Employee Self-Service (ESS) portals to provide employees the ability to retrieve their information in real time 24/7.

The City currently has basic HRIS functionality in its current ADG ERP system. ADG's HRIS system is still operating on a Progress database and was not migrated to a SQL Server database environment as were the rest of the ADG modules. This dual-database environment limits HRIS integration with Payroll and Timekeeping. Due to the limited functionality of ADG's HRIS, the Human Resources Department has turned to other third-party applications like PEP (Performance Evaluations) and ApplicantPro (Applicant Tracking). It should be noted that a number of ERP solution providers can provide more thorough HRIS functionality with increased levels of integration with Payroll and other ERP modules.

Staff Feedback

- City Clerk – Using Excel to store poll worker payroll information
- Comm Dev – Manually complete and process HR forms
- Fin – Need an interface between payroll and employee travel reimbursements
- Fin – Currently are manually processing retirees billing
- Fire – Are manually managing the personnel database
- Fire – Are manually managing a vacation day calendar
- Fire – Need an automated discipline tracking system
- Fire – Need a dashboard to track overtime
- Fire – Need a dashboard to track overtime costs
- Fire – Need a dashboard to track sick time and identify abusers based upon set criteria
- HR – Would like applicant tracking integration with HRIS
- HR – Need new employees to enroll themselves into insurance plans, saving staff time in reviewing enrollment forms
- HR – Automation of accident and injury reports can save days in processing and elimination of late fees
- HR – Need a monthly report that includes new hires, promotions, demotions, terminations, etc., by staff name, department, effective date of action, and classification of employee
- HR – Need the ability to view a quick glance of present and past employee file history (typically there are four or more personnel file requests per week)
- HR – Need an automated minor liability claim system to avoid having to track this in Excel
- HR – Need all employee files to be electronic (currently each employee's files are approximately five to six inches thick.)
- HR – Need electronic unemployment compensation payments pay directly to the state without having to process a request for check to pay invoice
- HR – Looking at NEOGOV for consideration as a Human Resource System
- HR – Having employee information readily available would result in not having to retrieve an employee's entire personnel file
- HR – Using Applicant Pro for online employment applications and email notifications
- HR – Using Risx-Facs to report on employee injuries and liability cases
- HR – Using NetClaim as an initial accident reporting system
- HR – ADG does not have an interface to a time-off request system
- HR – Have online safety training and print out certificates when earned
- HR – Records are kept at Iron Mountain facility, where retention is managed
- HR – Job descriptions are maintained locally in a Microsoft Word document
- Legal – The City Attorney has predetermination hearings with the City Manager to determine whether the City has grounds for employee disciplinary actions, such as suspensions and terminations

- PD – There is duplication of personnel document files
- PD – Need self-service reporting capabilities
- PW – Need to automate leave forms
- PW – Need better reporting of Continued Education Units (CEUs)

Recommendations

- Conduct a comprehensive process review and develop feature/function requirements for a new HRIS or improving the utilization of the existing system.
- Consider implementation of an HRIS as part of the new ERP purchase and implementation.
- Follow best practices according to the *Software Selection Best Practices* initiative.
- Coordinate the purchase and selection of an HRIS and/or ERP with the *Time Entry System* initiative.

22. APPLICANT TRACKING

Most Human Resource Departments are busy managing a constant stream of employment applications. Due to this volume of activity and the importance of a controlled process to acquire important human resources, it is beneficial to automate the hiring process from the arrival of an application, all the way through the hiring and onboarding process.

Applicant Tracking applications allows customization of online applications, so that applicants provide needed information. When applicants apply, they can also attach resumes and transcripts that are immediately accessible by the HR Department. Thereafter, the software allows you to mass activate/inactivate applicants, view or report individual or group applications, and build personnel records, once an applicant has been hired. Often, additional workflow capabilities are offered to include the departments needing candidates so that they can be engaged in the process. Online website capabilities for applicants are also an integral part of the process within these Application Tracking systems.

Findings and Observations

- The City has a hybrid environment, including manual processes and the use of ApplicantPro software for applicant tracking and notification.
- ApplicantPro was obtained to meet the applicant tracking needs that the ADG HRIS module did not provide.
- The ApplicantPro software is not integrated with ADG HR or Payroll, and the lack of integration results in many additional manual processes.

Staff Feedback

- HR – Need automation of job applicant exams so that they are readily available, eliminating scheduling, and providing instant results (on average there are 20 applicants tested per month)
- HR – Would be helpful to use ApplicantPro to respond quickly with applicants.
- HR – Would like to test applications as they apply for positions
- HR – There is no workflow for tracking application process
- HR – Would like applicant tracking integration with HRIS
- HR – Manually process 7-14 new employees per month
- Parks – Automate most highly utilized forms (i.e., AOP's request for leave forms, incident forms, accident forms, etc.), Applicant Pro Software to generate a letter to applicant if

disqualified and via email and setup to have a detailed default system for different job descriptions
- PD – Need an applicant processing systems that tracks employee from application to hiring

Recommendations

- Review applicable manual processes and shadow systems, such as spreadsheets, to determine automation improvements that will result in efficiencies.
- Select new software vendor according to the *Software Selection Best Practices* initiative.
- The City is considering a replacement to their ADG ERP system (Enterprise software solution for Finance and other organization operations). As a component of this initiative, the City should consider the Application Tracking module capabilities offered by the ERP vendor that the City eventually selects. Having a full enterprise environment will allow for integration between Applicant Processing/Tracking and the City's ERP-centric HR and Payroll modules. If the capabilities of the reviewed ERP solutions are determined not to effectively meet HR's Application Processing needs, the option of considering other third-party offerings could be considered (see the ERP initiatives included in this report).

Benefits

- Automated process that track candidates and maintain necessary documentation
- A system that provides a smooth interface for candidates to apply and determine status
- Increased efficiencies through workflow and automation with elimination of manual process and shadow systems
- Time savings and elimination of duplicate entry from integration with HR and Payroll systems

23. TIME ENTRY SYSTEM

Findings and Observations

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
- 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-based and server-based options
- Integration with other functions, such as accounting and/or payroll
- Automated calculations 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

The City is currently using the ADG Time Keeping module, but not all employees are using the system, resulting in significant loss of productivity, and manual processing and reconciliations throughout the organization.

- Time data is often entered on forms that are printed out, approved, and then entered by administrative staff.
- Staff scheduling and request-for-leave processes are also manual.
- Reporting capabilities at the department level are limited or non-existent.

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 their initial investment.[11]

Staff Feedback

- City Clerk – Using the financial management system to input time and attendance
- CMO – ADG is used for Time and Attendance, but not all City staff are entering their time directly into ADG
- CMO – Would like all staff to enter time into ADG to relieve payroll clerks and other admin staff of the task and to eliminate double entry
- Fin – Need the ability to automate time attendance
- Fin – Need the ability to automatically tie approved leave time into payroll

[11] "ROI Case Study: Kronos Workforce Timekeeper Anonymous Healthcare Organization", Nucleus Research 2003.

- Fin – Need the ability to use time clocks to capture time and attendance
- Parks – Would like biometric timecard access
- Parks – Have tried Biometric clocks, but did not work well…need a bio metric system that works
- Parks – Need central timekeeping system for all departments

Recommendations

- Conduct a comprehensive process review and develop feature/function requirements for all time, attendance, and reporting.
- Follow best practices according to the *Software Selection Best Practices* initiative.
- Consider the time tracking/timekeeping capabilities offered by the new ERP system as part of the City's plan to replace the ADG ERP system.

Benefits

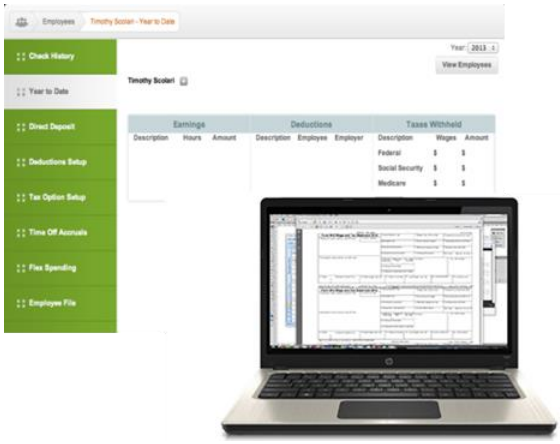
- Consistent and standardized organization-wide time-sheet system
- Reduced manual processes
- Increased processing volume
- Reduced data entry errors
- Reduced payroll processing time (from improved processes, policies, and practices)
- Single, automated interface to ERP system

24. EMPLOYEE SELF-SERVICE

Findings and Observations

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

- Address changes
- Tax allowances changes
- Open enrollment benefits
- Dependent changes
- Leave and vacation accrual balances
- Electronic paystub copies
- Year-end W2's
- Populating and retrieving time sheets
- Time requests
- Tax forms
- Many other forms and applications



Staff Feedback

- City Clerk – Using the financial management system to input time and attendance
- CMO – ADG is used for time and attendance, but not all City staff are entering their time directly into ADG
- CMO – Would like all staff to enter time into ADG to relieve payroll clerks and other admin staff of the task and to eliminate double entry
- Fin – Need an employee self-service portal for them to change their information (e.g., bank add/delete)
- Fin – Need the ability to automate time attendance
- Fin – Need the ability to automatically tie approved leave time into payroll
- PD – Currently performing excessive biweekly payroll data entry for 189 employees
- Parks – Need central timekeeping system for all departments

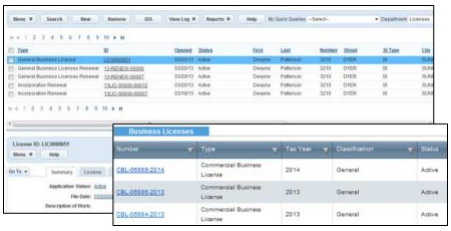
Recommendations

- Review and document City ESS feature/function requirements.
- Explore best option for ESS between future time and attendance system or ERP Solution.
- Follow *Software Selection Best Practices* initiative in selecting the best option.

25. LAND MANAGEMENT SYSTEM REPLACEMENT

Findings and Observations

A typical land management suite of applications includes:

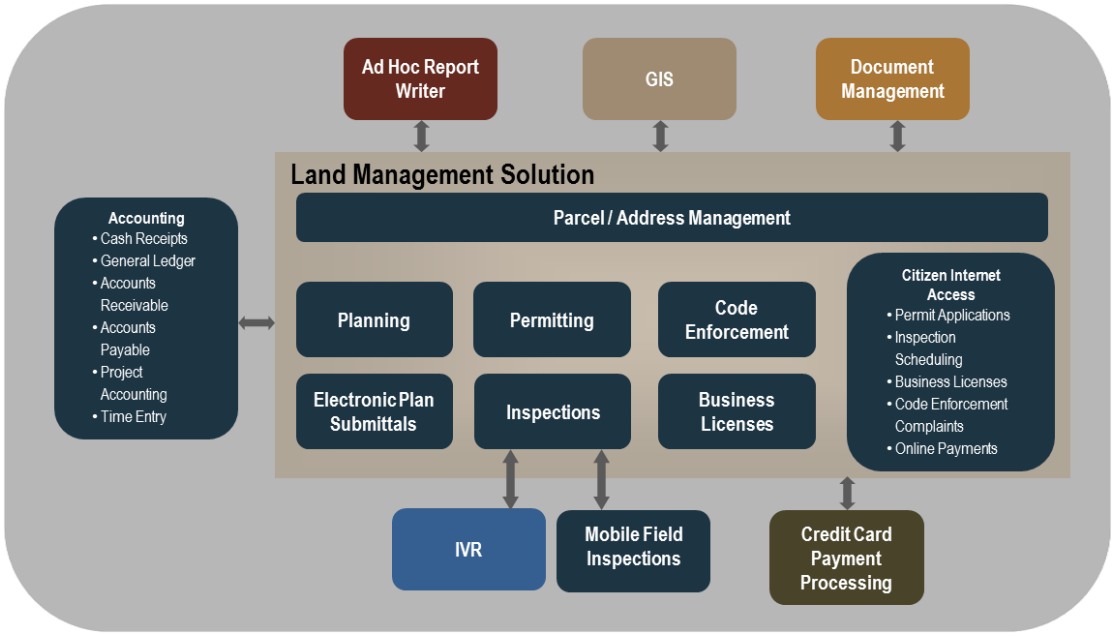


- Development Planning and Zoning
- Permitting
- Inspections
- Code Enforcement
- Recurring Revenue and Business Tax
- Parcel/Address Management

The City should expect significant productivity gains with a fully implemented, integrated land management application solution.

Business licensing (business tax) and recurring billing/revenue is typically included in a land management suite due to the connection to a common address and parcel database as well integration to permitting and code enforcement. Automation of licensing/tax applications reduces paperwork, staff processing time, and increases citizen satisfaction by providing them the ability to submit, renew, pay, and print business licenses online at their convenience.

The following illustration and table shows typical modules available in land management systems.



ERP Applications and Vendors	Currently Owned	Implemented	Potential Modules in Single Vendor Solution
Land Management (Development Services)			
Mark Dykes Computer Consulting – Permit MD			
Permits	Yes	Yes	Yes
Inspections	Yes	Yes	Yes
Diversified Software Systems – Comply-CL			
Code Enforcement	Yes	Yes	Yes
Not Currently Available			
Parcel/Address Management			Yes
Planning Development and Zoning			Yes
Recurring Revenue (Business Licenses)			Yes
Central Receipting			Yes
Mobile Inspections			Yes
e-Permitting (online)			Yes
e-Inspections Scheduling (online)			Yes
e-Business Licensing (online)			Yes
GIS Viewer			Yes

Staff Feedback

- City Clerk – Need the ability to automatically see all the liens due on a property
- City Clerk – Using Excel and Access to store and retrieve lien information
- Comm Dev – No field-based applications are being used for building permits or inspections
- Comm Dev – Manually process and track building permits
- Comm Dev – Need the ability to incorporate Fire, Police, Parks and Rec, Utility Dist, Public Works, etc., for plan review as part of the planning application process and plan review
- Comm Dev – Tracking of site plan submittals and reviews/approvals is all done manually
- Comm Dev – Need to replace the building permits and inspections program
- Comm Dev – Need business tax receipt and certificates of use software
- Comm Dev – Need digital signatures for approval of permits and plans
- Comm Dev – Need an online map that would provide all basic information on an address
- Comm Dev – Need an integrated GIS database that can show zoning, FLU, open code violations, status of business tax receipt, open permits (building/planning), open code enforcement cases, water bill status, increase/decrease of property values, etc.
- Comm Dev – Would be helpful to have the public submit inspection requests online
- Comm Dev – Permit application forms are available online and must be printed, filled out, and brought in
- Comm Dev – Need better tools for managing the code enforcement process
- Comm Dev – PD initiates the code enforcement process, but Community Development sometimes does not know what the issue is
- Comm Dev – Community Development has 2 divisions, with 13 total staff (6-Planning/Zoning, 7- Building)
- Comm Dev – Development begins with the Planning and Zoning division and is finalized with City Council's approval
- Comm Dev – Business licenses are being handled by Finance Department
- Comm Dev – Managing business licenses through Outlook

- Comm Dev – Project One is the name of permitting application that is being used by Building Division
- Comm Dev – Inspectors are scheduled using the scheduling application
- Comm Dev – County Property Appraiser is the database that is used for zoning (PAPA)
- Comm Dev – Building official issues new addresses and communicates them to the County
- Comm Dev – Coordination of plan reviews are being done through Outlook
- Comm Dev – Thinking about using online capabilities to ensure contractors are licensed
- Comm Dev – Have about 10 new developments a year
- Comm Dev – Building Division will ask the City Clerk for approval to put a lien on property (e.g., for building demolition)
- Comm Dev – ADG has the Licensing module, but cannot access the type of business from it
- Fin – Currently are manually reconciling building permit payments with the financial system
- Fin – Need to automate the business tax receipt license renewals
- Fin – Need ability for business tax receipt to be paid online
- Fin – Need ability for field agents to upload attachments to accounts
- Fin – Need for field agents to apply code for illegal tampering
- Fin – Need to have a single, centralized land management system
- Fire – Need a program to track building inspections
- Fire – Need a program to assist in creating, storing, and making readily available information on building construction and fire pre-planning
- Fire – Need to track annual fire inspections for business licenses
- Legal – Attorney provides legal advice to the Planning and Zoning Board
- PD – Code Enforcement software must be replaced with a product that serves all our needs (field reporting, case tracking, fines/lien tracking, magistrate docket, GIS, etc.)
- PD – Business licenses are manually reviewed by all departments
- PD – Businesses should apply online and approvals by departments should be done as part of an automated workflow
- PD – Payments should be collected online
- PW – Need to automate permitting process
- PW – Need to automate inspection scheduling
- PW – Need better reporting of licensing (e.g., contractors, businesses, etc.)
- PW – Need to replace the current Permitting software
- PW – Want to tie-back GIS information (e.g., resolutions, ordinances, etc.) to an address
- Utilities – Need community development data for parcels
- Utilities – Need community development data for planning and zoning status
- Utilities – Need community development data for hazardous materials
- Utilities – Utilities seems to be out of sync with the plan review workflow
- Comm Dev – Currently using MS Outlook to review and approve certificates of use and business tax receipts
- Comm Dev – Certificates of use and business tax receipts total over $1 million in revenue
- Code – Using a DOS-based system that is 28 years old and no longer supported by the vendor (out of business)
- Code – Need ability to send out notices using a template
- Code – Proactively look for code violations in three districts
- Code – 2,500 code violations, citations, and notices per year
- Code – Violators have 30 days to meet or correct violations before the next inspection takes place
- Code – Capture photo evidence from inspections
- Code – Notice of violation and re-inspections are done in a Word document (not in Comply)
- Code – Use PAPA to determine ownership to then input data into Comply
- Code – Printing out daily inspection sheets, then taking them on field inspections

- Code – Need code cases to tie into the property/parcel number
- Code – Currently are verifying the PCN by accessing the County's PAPA System
- Code – Will soon expand from five inspectors to six

Recommendations

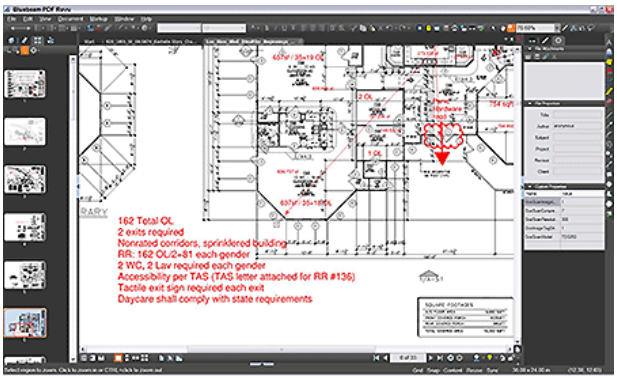
- Conduct a Land Management system needs assessment. Identify additional functionality requirements, additional modules needed, and GIS integration requirements.
- Review applicable manual processes and shadow systems, such as spreadsheets, to determine automation improvements that will result in labor efficiencies.
- Consider implementation of a Land Management system as part of the new ERP purchase and implementation.
- Consider adding a Development Services Technology Fee to permits that require inspections. Many cities utilize this strategy to improve customer service through technology improvements.
- Select new software vendor according to the *Software Selection Best Practices* initiative.

Benefits

- Significantly greater workflow efficiencies
- Reduced stressors and workload due to improved automation and reduction in manual processes
- Reduced risk of institutional knowledge, leaving the City due to staff turnover or retirement
- Improved project and permit tracking and reporting
- Ability to result inspections and code violation in the field with mobile computing
- Automated time tracking and workload tracking of billable and non-billable hours
- Online citizen access capabilities
    - Improve community relations through 24-hour citizen access
    - Ability to automate inspection scheduling online
    - Eliminate time-consuming "status check" phone calls
    - Ability to apply and pay for permits online
    - Instant inspection result retrievals by contractors and applicants

26. ELECTRONIC PLAN REVIEWS

Electronic plan reviews for development and architectural plans related to City permitting and planning processes can be submitted, reviewed, and marked-up electronically. Electronic plans can result in a reduction of lost plans and physical storage requirements while enhancing sharing, collecting, storing, and retrieving of plans during the process and through retention periods.



Findings and Observations

- Community Development would like to utilize electronic plan submittal and review processing.
- Multiple solutions are available, including purchased and online hosted solutions.
- Online solutions may be purchased in a traditional manner or paid on a per page/project/permit basis.

Staff Feedback

- Comm Dev – Need the ability to incorporate Fire, Police, Parks and Rec, Utility Dist, Public Works, etc., for plan review as part of the planning application process and plan review.

Recommendations

- Explore solution options and capabilities.
- Consider cost-benefit of available solutions.
- Consider the selection and implementation of Electronic Plan Review software along with the Land Management system or as part of the new ERP purchase and implementation.
- Select new software vendor according to the *Software Selection Best Practices* initiative.

27. MOBILE COMPUTING

Findings and Observations

The 21st century has brought an increasing demand for time and resources. Because of the need for maintenance supervisors, building and planning inspectors, and other employees to work off-site, bottlenecks in obtaining the information and producing the reports necessary for building safety, code enforcement, permitting, and project management can occur. By providing field workers with the necessary equipment and software, they are able to:

- Interact with necessary applications and databases in real time
- View, change, or request inspection and maintenance scheduling
- Create new cases "on the go"
- Remotely submit inspection and maintenance reports
- Respond quickly to requests and questions from the public
- Reduce carbon emissions and transportation costs

Such off-site capabilities offer:

- Increased productivity and improved time management
- Centralized data that can be monitored in real time
- Improved accuracy and reporting
- Reduced paperwork

This is primarily a hardware and secure wireless networking issue, as software applications that use browser technology require no additional software. Software programs that are not browser-based may require a remote access software solution, such as Microsoft Remote Desktop Services.

- Demand for remote access will continue to grow as staff becomes more portable.
  - Access to mobile applications for smart phones and tablets will be a portion of remote-access demand.
  - The other major demand segment will continue to be remote access from laptops and desktops.
  - Demand for remote access will continue to grow as staff becomes more portable.

Some software solutions that are designed for specific field operations, such as maintenance work, code enforcement, and building inspections, may have smart applications (download from a play or app store) or natively written mobile-device modules. These software modules generally have less functionality than the full applications that are accessible from laptops or Toughbooks in the field. One major advantage of these type modules is store-n-go technology, which allows a user to continue working on a record even if they are disconnected from a cellular or Wi-Fi connection.

Return-on-Investment (ROI) Consideration

- The Center for Digital Government (CDG) reports that one city's wireless laptop-based inspection solution helped its Code Enforcement Division increase the number of daily inspections. Another municipality used laptops and electronic ticketing to increase building inspector efficiency by 30 percent, saving the agency approximately $500,000.
- A pilot mobility program in San Diego County helped the Land Use and Environment Group (LUEG) save $130,000. Inspectors that participated in the project used mobile devices connected via a mobile VPN and were 31 percent more productive than before. They completed more inspections each day, and the agency was able to use less office space and fewer landlines.

Staff Feedback

- City Clerk – Ability to access, edit, and save documents through the iPads File Browser and Quickoffice
- CMO – Need to communicate in the field or while away from the office through a mobile device.
- CMO – Need telephone features to communicate in the field or while away from the office through a mobile device.
- Fin – Have problems with Finance staff communicating while working in the fields
- Fire – Are considering the use of Mobile data as an upcoming project
- Fire – AirWatch MDM is used for Android SafetyPad software
- Fire – Moving to mobile version of FDM (Fire Records)
- Fire – Use T-Mobile wireless air cards at the moment, but it does not have the best coverage and would like to investigate dropping the T-Mobile service for an alternative service carrier
- Fire – Would like to investigate dropping T-Mobile service
- Library – Some patrons bring in their own devices or use the library's
- Library – Will be adding library tablets for early literacy program (ages 2-8)
- Library – Evaluate and implement best practices for mobile computing connectivity on City mobile service vehicles, as long as there is a vehicle to operate to deliver mobile library services, we will; when it does go out we must provide the best connections we can afford
- PD – Would like all police officers to be able to have voicemail-to-email option so Dispatchers can transfer calls to the officers
- PW – All essential employees should have laptops primarily for hurricane season
- PW – Need better cell phone coverage

Recommendations

- Determine and inventory mobile/field computer needs by specific staff, departments and applications needed, based upon productivity and customer service benefits (also see *Remote Access Upgrade* initiative).
- Follow recommendations for mobile hardware recommended and supported by core business department applications, such as Building Inspections, Code Enforcement, and Work Orders/Maintenance Management and the Library's Cybermobile library vehicle.

Benefits

- Improved operations management
- Secure sharing of information
- Enhanced communication
- A more mobile and productive workforce
- Faster well-informed decision making
- Real-time access to information from the field
- Increased ability for team members to communicate/collaborate from separate locations

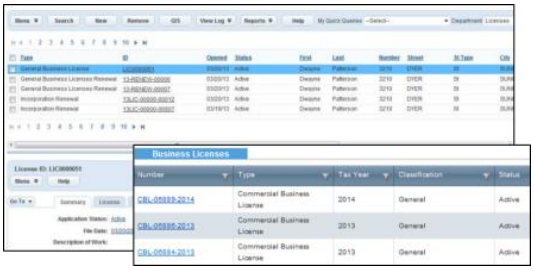
28. Online Payments, Transactions, and Services

A variety of online payments can be accepted through numerous alternatives, one being the City's website. The result will be increased efficiencies due to reduced labor and easy, digital retrieval of information for both customers and organization staff. Online payments also provide citizens with 24/7 transaction capabilities and the convenience of not having to involve staff or go to City Hall.

The City currently accepts a limited number of online services and online payments. For example, utility payments and online citizen requests/complaints.

Other types of Municipal Online Payments, transactions, and services include:

- Permit applications and fees
- Accounts Receivable
- Donations
- Police reports
- Code enforcement complaints
- Alarm billing
- Official online records (agendas, minutes, documents, etc.)
- Recreation activity registrations
- Event registrations
- Facilities reservations
- Parking tickets
- Licenses (business licenses and others)
- Library fines
- Inspection scheduling



Staff Feedback

- City Clerk – Have online payments available for the public to pay their utility bill
- Comm Dev – Community Development does not utilize online applications or Web payments
- Comm Dev – Would be helpful to have the public submit inspection requests online
- Fin – Need a simpler online payments process
- Fin - City accepts online utility bill payments via checks and credit cards
- Fin – Need the ability for citizens to pay their water bills through text messaging
- PD – Need a single solution that allows for payments online, and payments to be processed at any department window or kiosk

- PD – We would like a public portal for the registration of bicycles, extra patrol requests, vacation checks, etc. QAlert falls short and lacks security for sensitive police information.

Recommendations

- To eliminate requirement to integrate other applications, consider future ERP provider solution options before new third-party payment solutions.
- Conduct a citywide needs assessment to determine all useful payment types that could be implemented to improve constituent service.
- Conduct cost/benefit and prioritization analysis.
- Select other software payment vendors according to the *Software Selection Best Practices* initiative.
- Consider existing core business application options, such as ERP, Parks and Recreation software, Land Management, among others, before new third-party solutions, in order to eliminate requirements to integrate new solutions with backend operational systems.
- Manage improvements according to the *Project Planning and Implementation Best Practices* initiative.

Benefits

- More accurate and consistent information
- Timely and reduced reconciliation
- Increased awareness of citizen self-service
- Increased processing volume
- Reduced over-the-counter time for transactions
- Increased staff and citizen satisfaction

29. SCHEDULING SYSTEM

Findings and Observations

Various departments within the City have identified a need for scheduling employees, such as Police, Fire, Library, and Parks and Recreation. The Police and Fire Departments discussed the need for additional scheduling and tracking capabilities beyond what is offered through traditional timekeeping systems. The expanded need for this scheduling, accrual, and tracking capability is based on the particular requirement outcomes of the bargaining-group process, including shift scheduling, minimum roster requirements, etc.

Staff Feedback

- Fire – Need to automate daily personnel rosters
- Fire – Are using MS products (Excel, Word, etc.) to develop personnel rosters
- Fire – Have one person during every shift that manages schedules
- Fire – Need an overtime tracking and selection system
- Parks – Staff currently does scheduling manually for all FT, PT, and seasonal staff
- PD – Currently performing excessive shift scheduling and biweekly payroll data entry for 189 employees
- PD – Need to automate scheduling and payroll approvals (Currently signing)

Recommendations

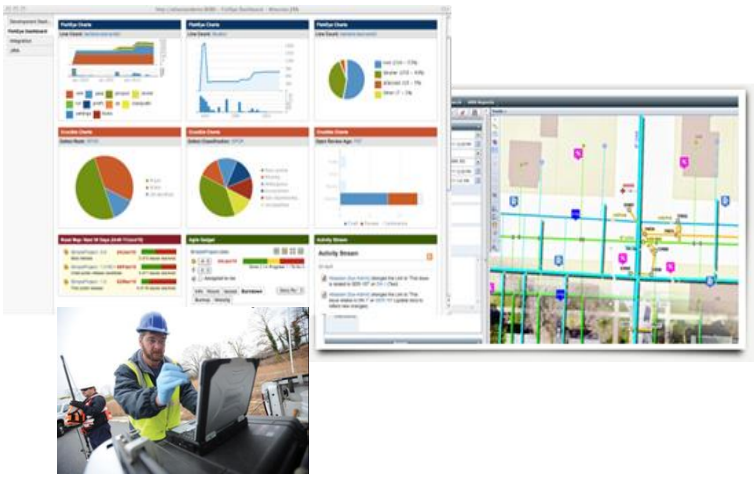
- Conduct a comprehensive process review and develop feature/function requirements for all roster development, shift scheduling, and accrual calculations.
- Follow best practices according to the *Software Selection Best Practices* initiative.
- Since the City is considering replacement of its ERP system, it may be prudent to investigate what potential ERP vendors offer for scheduling. If the selected ERP vendor does not have this capability or the necessary level of desired functionality, it should be determined which scheduling software vendors the ERP vendor may already integrate with.
- Select new software vendor according to the *Software Selection Best Practices* initiative.

Benefits

- Reduction of overlapping shifts
- Reduction of overtime
- Elimination of paper forms
- Accurate personnel deployment
- Better management/supervisory reporting on staff hours, shifts, etc.
- Potential integration with Timekeeping/Attendance

30. Work Orders/Maintenance and Asset Management System

Public Works, Utility District, and Parks & Recreation recently migrated from PSD HiperWeb to QScend's QAlert. The use of QAlert includes basic work request capabilities with a link to Citizen Request Management (CRM). However, the departments using QAlert have expressed their concerns about the limitations of QAlert and the need to have the capabilities of a fully featured CMMS (Computerized Maintenance Management System), including the following capabilities operating in a single integrated fashion:

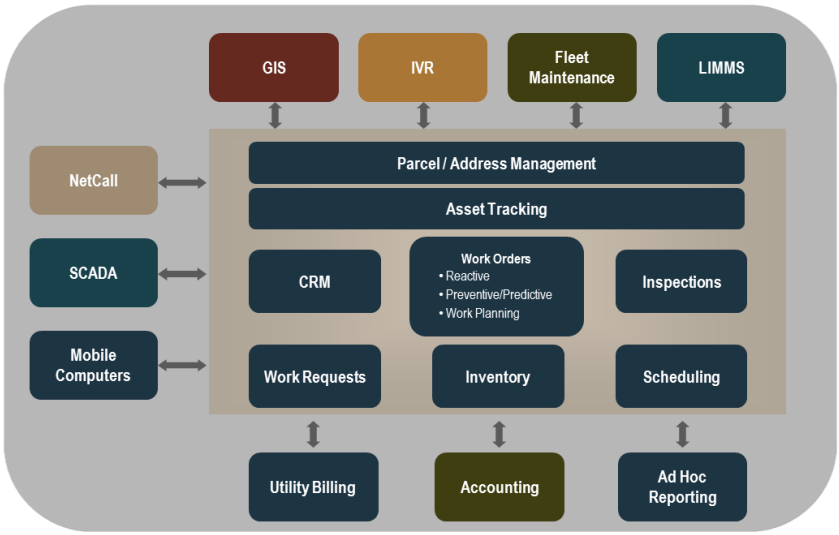


- Comprehensive Work Order Tracking
- Preventative and Predictive Maintenance
- Facilities Maintenance
- Condition Assessment
- Asset Management
- Asset Tracking
- Built-In Maintenance Procedure Libraries
- Maintenance Scheduling
- Warehouse/Stores Inventory
- Costing and Budget Forecasting
- Report Writing
- Integration to CRM/Service Requests, Purchasing and GIS

Maintenance and Asset Management Functionalities

The following illustration shows typical modules available in typical Work Order/Maintenance and Asset Management software system.

Example Maintenance and Asset Management System



Staff Feedback

- Fin – Need a fixed asset system
- Fin – Need the ability for field agents to open and close work orders using their laptops
- Fin – Currently are manually creating fuel reports
- Fin – Need improved inventory reporting
- Fire – Need to automate the fleet management system
- HR – Need ability to track vehicle damage estimates on City-owned vehicles
- PD – Need improved fleet reporting (fuel, repairs, etc.) for our 130 assets
- PW – Will be implementing a fuel management software (replace the existing Trak system with OPW system)
- PW – Need to automate incident reports
- PW – Need to automate accident reports
- PW – Need to automate facility management
- PW – Need to automate fleet management that is Web-based and can flag for maintenance intervals, charge-back accounting, integrated with labor costs and inventory of materials
- PW – Outsource vehicle transmission and body work
- PW – Need to track labor time on fleet repairs
- PW – Need to replace the current Work Orders system (HiperWeb)
- PW – HiperWeb is not working well
- PW – Need a facility management solution
- PW – Need a fleet management solution
- PW – PSD HiperWeb is not working well for fleet
- PW – Use QAlert for work orders/work requests
- PW – Need to update the QAlert workflows
- PW – There is no inventory management of vehicle equipment (tires, batteries, etc.) in HiperWeb
- Utilities – There is no inventory control software being used
- Utilities – Need scheduled preventative maintenance
- Utilities – Work is being done using physical paper
- Utilities – QAlert needs workflow capabilities for work orders
- Utilities – Road construction and curb cuts are coordinated with Public Works
- Utilities – There is no water treatment preventative maintenance system
- Utilities – Using Outlook to manage water treatment preventative maintenance
- Utilities – Need a system to manage and trigger regulatory requirements
- Utilities – Using Granite XP for sewer line (CCTV) inspections
- Utilities – Would like to see Granite XP video in GIS
- Utilities – Granite XP video data is on DVDs now
- Utilities – Would update SCADA for alarms and alerts
- Utilities – Need regulatory schedule and reports for water treatment
- Parks – Need a vehicle work order and expense reporting system to document, monitor, and inform staff of all related vehicle related expenses
- Parks – Using QAlert for work orders
- Parks – Printed out work orders and given them to the field workers

Recommendations

- Select new software vendor according to the *Software Selection Best Practices* initiative
  - We recommend conducting a process review and feature/function needs assessment. The needs assessment process inventories current and future functionality requirements by application module and functional area. The software vendor is then asked to respond as to its capabilities and compliance with the organization's specific requirements.
  - Review applicable manual processes and shadow systems, such as spreadsheets, to determine automation improvements that will result in labor efficiencies.
  - The City is considering a replacement to their ADG ERP system (enterprise software solution for Finance and other organization operations). As a component of this initiative, the City should consider the Work Order/Maintenance Management capabilities offered by the ERP vendor that the City eventually selects. Having a full enterprise environment will allow for full integration with financial, purchasing, etc. If the capabilities of the reviewed ERP solutions are determined not to effectively meet the City's Work Order/Maintenance Management needs, the option of considering other third-party offerings could be considered (see the ERP initiatives included in this report).

Benefits

- Significantly greater workflow efficiencies within Maintenance Management, Work Orders, and Infrastructure Asset Tracking
- Reduced time and effort to provision services
- Improved tracking of asset condition
- Increased staff and citizen satisfaction
- Improved performance tracking, reporting, and measurement
- Reduced stressors and workload due to improved automation and reduction in manual processes
- Reduced risk of institutional knowledge reliant on highly manual processes leaving the organization due to staff turnover or retirement
- Improved project management and reporting

31. FLEET MANAGEMENT

Fleet management software (FMS) enables people to accomplish a series of specific tasks in the management of any or all aspects relating to the City's vehicle fleet. Fleet management, at a high level, encompasses all vehicle maintenance operations, from vehicle acquisition, through maintenance, to disposal.

Findings and Observations

- The City is using PSD-HiperWeb for Fleet maintenance.
- Fleet did not move to QAlert when the rest of the PSD HiperWeb users made the software transition.

Staff Feedback

- Fin – Currently are manually creating fuel reports
- Fin – Need improved inventory reporting
- Fire – Need to automate the fleet management system
- PW – There is no inventory management of vehicle equipment (tires, batteries, etc.) in HiperWeb
- PW – Outsource vehicle transmission and body work
- PW – need to track labor time on fleet repairs
- PW – Need a fleet management solution
- PW – PSD HiperWeb is not working well for fleet
- Need ability to track vehicle damage estimates on City-owned vehicles
- PD – Need improved fleet reporting (fuel, repairs, etc.) for our 130 assets
- PW – Will be implementing a fuel management software (replace the existing Trak system with OPW system)

Recommendations

- Review applicable manual processes and shadow systems, such as spreadsheets, to determine automation improvements that will result in efficiencies.
- Select new software vendor according to the *Software Selection Best Practices* initiative.
- The City is considering a replacement to their ADG ERP system (enterprise software solution for Finance and other organization operations). As a component of this initiative, the City should consider the Fleet Management capabilities offered by the ERP vendor that the City eventually selects. If the capabilities of the reviewed ERP solutions are determined not to effectively meet the City's Fleet Management needs, the option of considering other third-party offerings could be considered (see the ERP initiatives included in this report).
- Because many Work Order Maintenance Management solutions also incorporate Fleet Management, the City should consider combining these efforts (see Work Order/Maintenance Management initiative)

32. PARKING TICKET MANAGEMENT

Findings and Observations

Many cities struggle with parking management in heavy traffic areas such as downtown districts, event locations, and other complexes. A network-enabled parking management system provides centralized monitoring and control. A wireless parking meter solution can alleviate parking-related issues by increasing operational efficiencies, improving traffic flow, and increasing revenue capture for the City.

Staff Feedback

- Fin – Currently are manually processing parking tickets
- Parks – Would like to have a parking system to charge for parking via machines or meters at a minimum for Municipal Beach and special events

Recommendations

- Research potential vendors and costs.
- Determine if there is a hard ROI versus primarily intangible benefits.
- Follow the guidelines of the *Software Selection Best Practices* initiative.

Benefits

Key benefits of Automated Parking Meters include:

- Flexibility to impose different parking fees at different times of day
- Remote monitoring on the functional status of parking meters, decreasing down-time and minimizing revenue loss
- Real-time information accessible to parking enforcement personnel on expired meters improves efficiencies and revenue capture
- Convenient payment options: cash, credit cards, debit cards, cell phones, payment over the Internet, and prepaid parking cards

33. Citizen Request Management (CRM) Review and Evaluation

Findings and Observations

Citizen request management solutions are used to receive, track, and manage all types of requests and complaints. These solutions can categorize requests, prompt for typical information required, assign and route information to specific staff or departments, track the status, and fulfill overall reporting requirements for more effective handling.

The City is now using QScend Technologies' QAlert in a limited fashion.

Ideal CRM functionality includes:

- Citizen responsiveness (requests captured and completed and responses provided to citizens, including when and how resolved)
- Prompt request routing (departments/persons)
- History (complaints, requests, timeliness of responses, who completed, how resolved, cost analysis, etc.)
- Inter-departmental resource linking
- Integration with, but not limited to:
  - Utility Billing Service Orders
  - Citywide Work Order and Maintenance Management Systems
  - City Land Management (Planning, Permitting, Inspections and Code Enforcement)
  - City's website
  - GIS (Geographic Information Systems)

- Managing resources
- Benchmarking and performance-based measurements
- Planning and budgeting
- Online customer surveys

Staff Feedback

- City Clerk – Use QAlert to address customer inquiries, post information to the City's website, and authorize employee travel requests
- City Clerk – Public Records Requests are forwarded to the departments
- City Clerk – Standard for responding to public records request is 24 hours
- CMO – QAlert is not working well as a tool for document workflow
- Comm Dev – Use of QAlert for tracking and responding to public inquiries is underutilized
- IT – Using QContent (from QScend) CRM module
- Fin – Need a Riviera Beach Citizen App (hot spots, payments, etc.)
- Fire – Need to automate the customer service/review tracking system
- Marina – Need to increase thhe automation for tracking complaints
- Marina – Would be helpful to have the public submit customer complaints through the website
- PD – Need to automate processing citizen complaints

- PD – The City needs an enterprise version of a CRM/workflow software; QAlert falls short of filling that need
- PW – Would be helpful to have live chat available to the public during business hours
- PW – Need to update the QAlert workflows
- Utilities – Have moved to QAlert, but it is not working yet
- Utilities – QAlert needs workflow capabilities for work orders

Recommendations

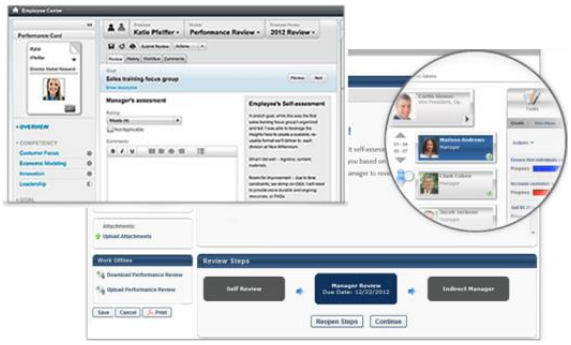
- Review and evaluate the existing QAlert system to determine if it is the best long term CRM solution for the City. The City should use the needs assessment steps in the *Software Selection Best Practices* initiative to perform this review and evaluation. Some other considerations that should be included:
  - Are there more capability rich alternatives offered by an ERP provider that often have standard built-in integration with (see *ERP Replacement* initiative, *Work Order/Maintenance* and *Asset Management System* initiative, and *Land Management System* initiatives):
    - Utility Billing Service Orders
    - Citywide Work Order and Maintenance Management Systems
    - City Land Management (planning, permitting, inspections, and code enforcement)
    - City's website
  - If the new ERP replacement system's CRM is offering is not at the desired capability level, the City can also consider CRM modules from other back-end operational systems, such as Land Management, or Works Orders/Maintenance Management that already have standard built-in integration, eliminating the need for third-party integration with these operational systems.
  - Lastly, if the review and evaluation leads to the conclusion to keep the QAlert system, QAlert appears to have a great deal of integration tools that can be applied to construct integration with the various operational systems discussed in the above bullets.

Benefits

- Increase resident satisfaction
- Centrally managed information
- Less time manually managing and monitoring citizen requests
- Less time managing and maintaining integration points with operational systems
- Increased use of features
- Improved access to information

34. Performance Evaluation Software Replacement

Performance evaluation software automates staff reviews based on individual and departmental performance. This allows the ability to measure the skill sets of the workforce and plan expenditures accordingly with available internal resources, build succession plans for continuity, reduce numerous manually intensive reviews, and identify areas for improvement.



Common performance evaluation software functionality may include:

- Tracking measurable employee goals
- Tracking of upcoming and pending evaluations
- Automated email notifications
- Customized workflows by departments and divisions
- Appropriate routing of reviews between managers and supervisors
- Online performance evaluations
- Tailored assessment templates
- Customized evaluation cycle periods
- Use of preconfigured comments
- Calculated review scores
- Document attachments
- Automated reminders

Findings and Observations

- Currently, the City uses forms and Excel for performance evaluation, along with a standalone third-party performance evaluation software system called PEP.
- There is no integration between PEP and the ADG HRIS module to include this information in the HR/Personnel files.

Staff Feedback

- City Clerk – Use PEP for employee evaluations
- HR – performance evaluation system (PEP) has issues with managing dates
- HR – Although PEP is electronic, it still requires a lot of manipulation
- HR – performance evaluations are digital, but hard copy evaluation forms are printed
- Parks – Replace the PEP system

Recommendations

- Review current PEP and spreadsheet-based process to determine if automation improvements will result in labor efficiencies.
- Define feature/function and workflow requirements in as much detail as possible, including input from all departments.
- All software solutions (e.g., Performance Evaluation Systems) that can provide integrated functionality with an HRIS (see *Human Resources System Improvements* initiative) should be considered.

- Since the City is considering replacement of its ERP system, it may be prudent to investigate what potential ERP vendors offer for performance evaluations. If the selected ERP vendor does not have this capability or the necessary level of desired functionality, it should be determined which performance evaluation software vendors the ERP vendor may already integrate with.
- Select new software vendor according to the *Software Selection Best Practices* initiative.

Benefits

- Improved access to employee information
- Scheduling and maintaining employee evaluations
- Tracking employee job feedback
- Staff incentives and rewards
- Facilitate improves employee-to-supervisor communication
- Recognizing and rewarding good performance
- Consistent formula for establishing, tracking, and measuring performance for evaluation reviews

35. GIS Centralization and Master Plan

GIS systems are an integral component of the business of managing municipal assets and activities. In addition to tracking all parcels within the community, many municipalities inventory land management planning hazards, infrastructure assets, such as street signs, street lights, storm sewers, fire hydrants, trees, and other fixed items through the GIS system. GIS systems are often integrated with work order systems to improve the accuracy of work order location information and reduce the amount of time spent locating these assets. Additional benefits of a GIS system include reduced field observations, more informed decision making, improved parcel management, centrally-managed information, and better analysis of infrastructure.

Findings and Observations

- The City does not have a centralized GIS division or GIS group.
- Each department maintains their own GIS servers and GIS software (multiple/duplicate copies of Esri software and servers), and these systems are not integrated and do not talk to one another. These departments include but are limited to:
  - Community Development
  - Public Works
  - Utility District
  - Police
  - Fire
- GIS data layers are not centrally located and maintained. GIS layers and databases are supported separately across the departments noted above.
- Palm Beach County is the source for base maps, but each department maintains their GIS system and data separately.
- Those responsible for GIS within their respective departments attempt to meet on a monthly basis, but it is not as consistent as it should be. However, they are working to be more effective at communicating and sharing data.
- Not all needed layers are in place. For instance, Public Works described their GIS environment as follows:
  - Street signs – None
  - Street lights – None
  - Storm sewer – Approximately 50%
- Public Works has a Trimble device (model and description was not provided) with an integrated GNSS (global navigation satellite system) receiver, but not to its fullest capability and benefit.

Staff Feedback

- City Clerk – Would be nice to have an interactive map of the City on the website for visitors
- City Clerk – Ability for a map on the website to include the polling locations and districts for elected officials

- CMO – Need master address database so all City location-based activities can be standardized on common address DB
- Comm Dev – Need handheld ArcGIS app or GPS device to record information while out in the field
- Comm Dev – Need an online map that would provide all basic information on an address
- Comm Dev – Need an integrated GIS database that can show zoning, FLU, open code violations, status of business tax receipt, open permits (building/planning), open code enforcement cases, water bill status, increase/decrease of property values, etc.
- Comm Dev – Need a GIS admin that would be responsible for maintenance, updates, and troubleshooting of GIS
- Comm Dev – Departments need the ability to see all relevant data tied to an address (Comm Dev, PD, Code, Licensing, etc.)
- Comm Dev – Only zoning and voting district maps are in ArcGIS
- Comm Dev – Need simple zoning and land use look-up in GIS
- Fin – Need GIS maps for more efficient meter reading
- Fin – Would be helpful to use GPS
- Fin – Would be helpful to use GIS to display delinquencies, meter issues, vacancies, and foreclosures
- Library – Using Mapquest to plan routes for off-site-related travel
- Library – Would be helpful to use Mapquest to plan routes for off-site meetings
- Library – The voting district map is not available on the City's website, so we consistently get questions regarding which voting district people live in
- Marina – Would be helpful to have boat and sea charts of the water and the surrounding areas
- Parks – Need a system that will assist in visualizing where a registrant or customer live to help in identifying underserved areas or communities for future outreach and marketing needs
- Parks – Need interactive map to locate of all City parks, beach, recreation facilities, community centers, amphitheater, ball fields, etc.
- Parks – GIS system needs to be used for asset maintenance and management, park planning, etc.
- Parks – Need aerial shots or virtual tours of all amenities (P&R has virtual tours now for its facilities)
- PD – Need improved GIS mapping capabilities
- PD – Need GIS to be integrated with code enforcement and PD information
- PD – Need to share GIS information with the public in near real-time
- PD – Improve reliability of CAD GIS reporting
- PD – No ability to view City GIS data
- PW – Need other departments' data access to GIS data
- PW – As much data as possible should be geo-referenced
- PW – Want to tie-back GIS information (e.g., resolutions, ordinances, etc.) to an address
- PW – Do not have street signs or lights in GIS
- PW – Have half of storm water assets in GIS
- PW – Want sharing of GIS data with other utilities
- Utilities – GIS is not being centralized at Riviera Beach
- Utilities – Each department separately maintains GIS data
- Utilities – GIS meetings are held once a month with City GIS staff
- Utilities – There are no centrally located GIS data layers
- Utilities – Palm Beach County is source of base map data comes from
- Utilities – Need community development data for parcels
- Utilities – Need community development data for planning and zoning status

- Utilities – Need community development data for hazardous materials
- Utilities – Need the Public Works infrastructure to be in GIS
- Utilities – Need PDF hot links to scanned as-built drawings
- Utilities – Would like to see Granite XP video in GIS
- Utilities – Granite XP video data is now on DVDs

Recommendations

- Due to the City's decentralized GIS use, resources, and structure, the City should consider organizing a centralized GIS function. This would provide consistency across the City and make more effective use of resources. Even though this would be a centralized function, the individual GIS personnel could be assigned to specific departments to provide continuity. The focus would be to:
  - Consolidate GIS Resources
    - Staff
    - Software
    - Databases
    - Hardware
  - Establish common centralized GIS layers
  - Determine the best points of integration with key departmental systems
  - Integration with City's website
- The City should consider a long-term goal of combining the new centralized GIS function with the IT division. In the short-term, during the GIS consolidation effort, it is assumed best to keep the GIS and IT organizations separate to ensure each organization can focus on their short-term goals of their respective IT Master Plan initiatives and recommendations.
- The City should consider developing a GIS Master Plan. Although the City has extensive GIS data, it will benefit from a plan that will help leverage its investment in GIS. The GIS Master Plan should include:
  - Creation of a citywide base map based on the Florida State Coordinate System
  - Identification of City data maintenance update processes
  - GIS applications and hardware needs and server consolidation
  - Esri software licensing consolidation and standardization
  - Personnel organization and structure
  - Integration with key software applications in Community Development, Parks and Recreation, Utility District, etc.
  - Prioritized backlog of GIS layers and expected work effort to create those layers
  - GIS views for City personnel and for the public on the City's website.
  - GIS as the master address/parcel data source for all other address- or parcel-centric software systems
  - Five-year budget, with prioritized initiatives
- Consider assistance from an independent, third-party industry expert to develop the GIS Strategic Plan.
- Make GIS integration a requirement for all new geo-based software application procurements.
- Formalize the current interdepartmental GIS meetings into a committee. Task the committee with:
  - Centralizing GIS hardware/software and information
  - Determining if on-premise or cloud-based GIS is the most advantageous for the City
  - Prioritizing future GIS work efforts based on a citywide view of requirements

Benefits

- Centrally-managed information
- Improved continuity and consistency
- Improved accuracy of GIS information
- Easier creation and storage of digital maps
- Better analysis of infrastructure
- Improved land/parcel management
- Improved customer service through the ability to publish GIS information for public access
- Improved cost management

36. CENTRALIZED LAND AND PARCEL MANAGEMENT

Centralized Parcel data is important for consistent organization-wide parcel and address data for all departments to utilize. The updating and sharing of a central database is essential in allowing departments to operate more efficiently moving forward and in retrieving historical records.

Findings and Observations

- The City uses multiple geo-based applications, such as Utility Billing, Work Orders, Permits, Code Enforcement, Planning (future), Business Licenses, GIS, etc.
- The address/parcel information is not synchronized; no formal process is in place to update parcel and address information from the County.
- The City could realize significant productivity gains and improved accuracy by using a common, centralized parcel/address database to populate any new or changed information.
- Although City staff have access to GIS software (Esri ArcGIS for Desktop), and sometimes access to basic GIS layers, the City does not have a citywide GIS system that provides a base level of functionality to support the land and parcel management process.

Staff Feedback

- CMO – Need master address database so all City location-based activities can be standardized on common address DB
- Comm Dev – Need an online map that would provide all basic information on an address
- Comm Dev – Need an integrated GIS database that can show zoning, FLU, open code violations, status of business tax receipt, open permits (building/planning), open code enforcement cases, water bill status, increase/decrease of property values, etc.
- Comm Dev – Departments need the ability to see all relevant data tied to an address (Comm. Dev, PD, Code, Licensing, etc.)
- PD – Improve reliability of CAD address data
- PW – Want to tie back GIS information (e.g., resolutions, ordinances, etc.) to an address
- Utilities – GIS is not being centralized at Riviera Beach
- Utilities – Each department separately maintains GIS data
- Utilities – Need community development data for parcels

Recommendations

- Utilize the GIS database for master address/parcel records (see *GIS* initiative).
- Select a future software system that offers both a master address/location and parcel management database (if applicable).

  - System should allow for regular updates and synchronization with the GIS.
  - Master addresses/locations should be shared across all geo-based applications.
- All updates of information from external and internal sources should first be done through the GIS. Then, updates to other systems would be done using the GIS master information.
- Strict control of who is authorized to make updates of this information should be enforced, and typically limited only to GIS data editors.
- Geo-based applications should be configured so that users select valid addresses, not type in free-form addresses, for each transaction.

Benefits

- Improved data integrity; consistent organization-wide parcel and address data.
- Connectivity with city/county parcel systems.
- Improved review and planning.
- Better GIS layer reporting.
- Increased staff efficiency by reducing data entry into multiple land-based systems.
- Ability to allow access to this information, via the web to the public.
- Utilize integration with Windows Active Directory (AD) to facilitate user-access management and reduce the amount of system logins.
- Utilize an applications/user inventory to determine user access needs that are currently not provided.
- Determine if any citizen 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 City staff members that require it, in order to improve productivity, increase efficiency, and enhance responsiveness.

37. CCTV Sewer Video Integration

Staff Feedback

- Utilities – Using Granite XP for sewer line (CCTV) inspections
- Utilities – Would like to see Granite XP video in GIS

Recommendations

- This should be included as an item to consider for integration and an outcome of the *GIS Master Plan* initiative.

38. Parks and Recreation Software Replacement

Findings and Observations

The City currently does not use a Parks and Recreation system. The City has looked at RecTrak from Vermont Systems, Inc. (VSI), because a number of communities in Florida use VSI. As a result of the large amount of manual operations in the department, there are tremendous potential labor efficiencies to be gained through a comprehensive new system. Depending on the vendor, a Parks and Recreation enterprise solution may include:

- Activity Registration
- Facility Reservation
- Membership Management
- League Management
- Marketing
- Child Care Management
- Pass Management
- Point of Sale
- Equipment/Site Rentals
- Court Reservations
- Locker Rentals
- Trip Booking
- Incident Processing
- Personal Trainer Scheduling
- Golf Course Management
- Maintenance Inspections and Results
- Job/Task Maintenance Scheduling
- Planning, Budgeting, and Depreciation
- General Ledger
- Accounts Payable
- Purchase Orders
- Time Management/Scheduling
- Payroll Accounting
- Annual Registrations
- Program Management
- Facility and Hourly Care Reservations
- Coach and Provider Lending
- Touch-Tone Tee-Time Reservations
- Touch-Tone Area/Equipment Rentals
- Golf Membership Database
- Point-of-Sale Cash Register
- Food and Beverage Sales
- Tee-Time Reservations
- Tournament Management
- Donor Management
- Volunteer Management

Staff Feedback

- Parks – Need a parks and rec software system
- Parks – Maintain facility rentals in Microsoft Outlook
- Parks – Have mobile cash register for concessions
- Parks – Would like to have a membership card

Recommendations

- Select a software vendor according to the *Software Selection Best Practices* initiative.
- Pricing and functionality vary by hundreds of percent.
- Keep in mind that a more expensive system with more automation can save significant manual labor, thereby potentially saving more than the system's entire cost over a few years. Proper evaluation and due diligence is necessary to determine total cost of ownership over a ten-year period and to maximize automation, cost accounting, online services, implementation success and customer service improvements.

Benefits

- Improved customer service
- Improved software application utilization
- Improved reporting, resulting in better management decision making
- Improved online registration and facility reservation capabilities
- Improved online payment capabilities

39. VIDEO MONITORING SYSTEM

Findings and Observations

If actively monitored, security camera surveillance 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 surveillance systems. The study also found that police, Park & Recreation, Code Enforcement, policymakers, and others involved in facility/property oversight largely viewed security/surveillance/monitoring cameras as a useful tool for managing behavior, preventing crimes, aiding in response, assisting in arrests, and supporting investigations and also prosecutions.

Staff Feedback

- Fire – Need Station Hardening Security
- PD – Would like access to homeowners association cameras
- PD – Would like access as necessary to other sites throughout the City with installed cameras
- Parks – Need camera inside weight room
- Parks – Already have cameras in three parks and want access to the video recording system to review recorded history, including video from the cameras as necessary
- Parks – Need to add video system into all gyms and the community center

Recommendations

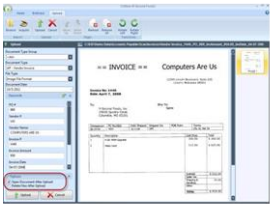
- Conduct needs assessment study on the potential use of video surveillance at all required facilities.
- Develop an RFP from the completed needs assessment and issue an RFP to create a design specification and separate RFP for the actual system procurement and installation.
- Utilize a single, centralized monitoring solution for all cameras.

40. ELECTRONIC CONTENT MANAGEMENT SYSTEM (ECMS) REPLACEMENT

ECMS, also referred to as Electronic Document Management Systems (EDMS), can be utilized for much more than document scanning, document storage, and records retention management.

Additional uses include:

- Enterprise records management, including retention management
- Integrated document/process workflow management, including internal request management, and routing and distribution (A/P, A/R, HR, Project Tracking, etc.)
- Forms management
- Project/process collaboration
- Minutes management
- Agenda management
- Media management, including synchronized meeting video streaming
- Web publication/posting for all above items, if desired
- Web access to EDMS/ECMS, locally and remotely



Findings and Observations

- The City is now using a variety of ECMS systems including, Alchemy, Docuware, and MS SharePoint.
- The City does not have a centralized citywide ECMS solution.
- The City is currently using the Novus Agenda Management System, which can be integrated with many of the prominent ECMS/EDMS systems

Although the City has made limited investments in ECMS, implementing more advanced functionality will provide additional benefits, including:

Compliance – Improved and more efficient ability to comply with increasing volume and complexity of regulations and retention requirements

Security – Improved physical abilities and accessibility security

Workflow Capabilities – Electronic capture, routing, and approvals of manual paper processes

Improved Efficiency – Increased productivity through automation of manual processes and time reduction in retrieving and sharing information

Reduced Costs – Reduced costs of printing, paper, storage space, and labor

Reduced Carbon Footprint – Minimized paper waste (see *Green IT* initiative)

Improved Transparency – Increased accessibility to information via the Web, including fully automating some types of documents immediately upon creation without additional processing or labor

Disaster Recovery – Protection of vital records through storage redundancy

Return-on-Investment (ROI) Considerations

- A study conducted by Coopers and Lybrand found the following:
  - The average document gets copied 19 times in its life.
  - 90% of documents that are handled in an office are merely passed along or shuffled through.
  - The costs to manage a single document are below:
    - $20 to file a document
    - $120 to find a misplaced document
    - $220 to replace a lost document
  - 7.5% of all documents get lost.
    - An office that generates 200 documents a week will lose 15 of them, costing a total $3,300.
  - 3% of all documents get misfiled.
    - An office generating 200 documents a week will misfile six of them, costing the company $720.
- A feasibility study by the North Dakota Information Technology Department regarding ECMS technology found the following:
  - An organization that scans 600 documents per day can have the following benefits upon implementing an ECMS:
    - An ROI payback period of 15 months
    - Gained productivity of almost $114,375
    - Subsequent annual savings of $110,295
    - An overall three-year benefit impact of $531,990
    - Save $36,556 in annual costs when compared to manually storing and managing documents
- A study conducted by Prescient Digital Media found that an ECMS saves employees between 50-60% of time searching for documents.

Staff Feedback

- City Clerk – The City Clerk has currently depleted its storage space for permanent documents.
- City Clerk – All permanent and documents with a five-or-more-year retention policy will be scanned and made available via Alchemy and City's website
- City Clerk – Would like the ability to charge the public for printing of documents that are already available online
- City Clerk – Need the ability to input a keyword and retrieve all resolutions, ordinances, minutes, etc., especially when assisting customers
- City Clerk – Retention process consists of departments reviewing a list of documents that are/have been proposed for destruction
- City Clerk – Minutes of City Council meetings are translated verbatim
- City Clerk – Use Swagit for Web video streaming and the City Manager AV technician indexes to NovusAgenda
- City Clerk – Some, but not all, departments have been putting their documents in Alchemy
- CMO – Some City forms have been converted to Adobe forms
- Comm Dev – Manually complete and process HR forms

- Fin – Need a financial transparency portal to provide access to invoices and payments, which would save internal time with auditors and retrieval of documents
- Fin – Need online fillable forms
- Fin – Need a document management system
- HR – Records are kept at Iron Mountain facility, where retention is managed
- HR – Do redactions on hard file copy
- Legal – City Attorney reviews 80-90% of public records requests that relate to a subpoena
- Legal – City Attorney is responsible for all discovery requests and coordinates with the departments that are involved
- Legal – Would like to move away from physical to electronic files
- Legal – Would like to automate the retention policy for electronic files
- Legal – Need retention policy for not only email, but all documents
- Legal – Current electronic files are stored on disks
- Legal – Currently email public records request documents
- Legal – Every record in the City needs to have a retention scheme
- Legal – State Division of Library maintains retention schedule for the City, but City does not always follow it
- Legal – There is a conflict between the State of Florida and State Bar Association on document retention policies
- Legal – Need a custom retention schedule that is separate from the states retention policy
- Legal – A contractor was recently hired to upload all contracts into the content management system
- Legal – Would be ideal to have a master contracts listing that could be accessed by the departments
- PD – Need to automate the processing training requests
- PD – Manually processing overtime forms
- PD – Need to automate K-9 Usage forms and updating K-9 Records
- PD – 4,000 dispatch cards a year (for stolen cars, guns, etc.) are physically transported to Records Management
- PD – Need electronic filing of Traffic Citations (5,000/year) to the County Clerk
- PD – Need a document management system to store Case Status Closures
- PD – Need a document management system to store Subpoenas Storage
- PD – Officers are physically transporting Case file document copies to Records Management
- PD – There is duplication of personnel document files
- PD – Need to automate processing Use of Force forms
- PD – DocuWare is the ECMS that has been partially implemented
- Utilities – Need PDF hot links to scanned, as-built drawings

Recommendations

- Consider conducting a needs assessment and process review with *all* departments to gain an understanding of how the system should work and what configurations, training, etc., would improve staff's ability to utilize an EDMS system to its fullest, provide more transparency to citizens, and what other departmental application integration would help improve the departments' business processes.
- Follow a *Software Selection Best Practices* approach to build an RFP, applying the needs assessment results, and determine a vendor to meet the citywide needs.
- EDMS implementations on an organization-wide basis are commonly under-scoped and under-funded, leaving municipalities with limited benefits.
- EDMS implementations on a citywide basis are commonly spread over several fiscal years

- Review EDMS implementation in other local/regional municipalities that use it in a similar manner as intended by the City.
- Any solution considered should include the integration of the existing Novus Agenda Management System.

Benefits

- Automated workflow and routing
- Reduction in paperwork and related costs
- Online document retention and archiving
- Improved version and authorization control
- Improved public records access
- Increased information-sharing capabilities
- Ability to provide Web-posting and public access to residents
- Integration with Agenda Management/Media Management

41. Library Information Management System Replacement

A Library Information Management System (LIMS) is a system that is able to serve your library patrons. LIMS systems provide streamlined check-in and check-out, media scheduling, and advanced materials booking. Many LIMS systems also offer patrons self-service support, e-mail and SMS notice capabilities.

Findings and Observations

- The City currently operates an LIMS called VERSO from Auto-Graphics.
- The City is part of a County-Wide Cooperative Authority for Library Automation (COALA) that allows patrons to access and use all the libraries in the County as a single resource. There are 27 libraries/locations in the COALA cooperative system.
- COALA and nearly all of the Libraries in the cooperative use a LIMS system called SirsiDynix.
- Riviera Beach is only one of three Libraries in COALA that do not operate on SirsiDynix. The Riviera Beach system is not compatible with SirsiDynix and this is inconvenient for patrons because catalogs look different than those from other libraries in COALA which makes searching difficult for patrons.
- The existing VERSO LIMS system has run its course, and the next step is to move to a next-generation solution which will require a full reimplementation.

Staff Feedback

- Library – Manually creating monthly Library statistics
- Library – The library plans to install a book self-check-out system. It will be a 3M brand and link-up with our integrated library system.
- Library – There is a possibility that our library system will be replaced by our municipal consortium in Palm Beach County, called COALA (Cooperative Authority for Library Automation), that uses SirsiDynix
- Library – Use of the COALA system could be worth investigating, as it may ultimately save us money and allow for consistency for our patrons who may use these other libraries, as well
- Library – Use of the COALA system could allow us to easily see collections available at other libraries nearby, while maintaining our own autonomy for our collection
- Library – Have 26 computers for public library patrons and 15 total for staff
- Library – Use WorldShare for sharing data between local ILS and SirsiDynix
- Library – PC Reservations hasn't been upgraded in a while
- Library – Need a special search of Riviera Beach library resources
- Library – Patrons often mention that Riviera Beach's catalog is different than other libraries and that searches are inconvenient

Recommendations

- Select replacement software vendor according to the *Software Selection Best Practices* initiative.
- Consider the Library's suggestion of exploring all options, including open source software and standalone integrated operating systems.
- The City should consider SirsiDynix to achieve the desired compatibility with the other participants in the COALA cooperative.

Benefits

- More stability with existing software applications and systems
- Better customer service for patrons
- Compatibility with the COALA Cooperative
- Increased efficiency and productivity

42. CITY ATTORNEY CASE MANAGEMENT SYSTEM

Findings and Observations

There are a number of Case/Legal Management systems (CMS). Case management software provides attorneys with a convenient method of effectively managing client and case information, including contacts, calendaring, documents, and other specifics by facilitating automation in the office. It can be used to share information within the organization and prevent having to enter duplicate data in conjunction with operations. Many programs link with mobile smart devices so that calendars and schedules are always handy. Most case management systems are Web-based, allowing anytime access to all features. A number of software companies are now offering integrated electronic discovery modules.

Case management programs vary in their compatibility for your organization based on time and type of workload and caseload. There are also a number of software companies that specialize in government-based legal organizations, including County State's Attorneys, City Attorneys, etc. STAC is a system that is in use at both the City and State Attorneys office in Florida and is provided by a company called Computer Information and Planning in Jacksonville, FL.

Staff Feedback

- Legal – Works directly for the City Council
- Legal – The City Attorney does not perform prosecution work, but is indirectly involved with the outside police persecution agency (excessive force, driving accident, code cases, etc.)
- Legal – Handles cases in the County Court when people sue the city for less than $15,000
- Legal – Cases that exceed $15,000 are brought to the Circuit Court and handled by an outsourced party
- Legal – The City Attorney represents the City in court cases with code liens, mortgage foreclosures, garnishments, water/sewer liens, equal employment opportunity accusations, employee disciplinary actions (beyond a written discipline), accusations/law suites directed to the City Council, etc.
- Legal – The City Attorney has predetermination hearings with the City Manager to determine whether the City has grounds for employee disciplinary such as suspensions, terminations, etc.
- Legal – The City Attorney serves as co-council for cases that impact City Council
- Legal – Desperately need legal software
- Legal – Need to streamline quarterly case reporting
- Legal – Need software that can generate a case synopsis
- Legal – There are always between 30 and 40 active cases
- Legal – Are maintaining a calendar of individual activities to ensure they are tracked and controlled
- Legal – Calendar of activities is not necessarily being kept up
- Legal – Case management tools are needed for managing day-to-day tasks/cases
- Legal – A single calendar is being used for the legal department
- Legal – Only use Microsoft Word (not Excel)
- Legal – Need a system that can generate productivity reports
- Legal – Interesting in using a software that could also interact with the departments
- Legal – Using Word templates for communication (e.g., subpoenas)

- Legal – Could use more Word templates in the future
- Legal – City Attorney reviews 80-90% of public records requests that relate to a subpoena
- Legal – City Attorney is responsible for all discovery requests and coordinates with the departments that are involved
- Legal – Would like to move from physical to electronic files
- Legal – Do not email case documents

Return-on-Investment (ROI) Consideration

There are a number of areas that can be measured for return on investment related to Case Management software. These include:


FLORIDA MUNICIPAL LAW REPORTER

- Data Sharing and Collaboration
- Document Automation
- Electronic Document Storage, Retrieval and Sharing
- eFiling and Web access
- Electronic Document Bar Coding or RFI tagging
- Statistical and Management Reporting
- Time and Expense Tracking
- Scheduling and Workflow

Recommendations

- Select replacement software vendor according to the *Software Selection Best Practices* initiative.
- When selecting a case management program, determine case management needs first. Pick a program that enhances the practice seamlessly and effortlessly, which is not necessarily a program with every available function to implement. If assistance is needed in assessing organizational needs, consider tapping into an external subject-matter expert.
- FMAA (Florida Municipal Attorney Association) and IMLA (International Municipal Lawyers Association) may also be two organizations that could be a resource on municipal-based case management system options for the City Attorney office's size and operational mix.

Benefits

- Centrally-managed information
- Ability to track hours and expenses to a particular project or case
- Elimination of paper and ability to access project and casework electronically
- Ability to track physical files
- Better management of schedules
- Automated creation of document and filing documents
- Electronic discovery
- Ability to view cases and work product remotely while consulting with another member of the organization who may also be remote

43. FIRE RMS REPLACEMENT

Common functionality for Fire RMS software packages include:

- Incident and investigation reporting
- Emergency Medical Services (EMS) / Search and Rescue reporting
- Occupancy, permits, and inspections
- Staff members, activities, and training
- Equipment inventory, maintenance, and usage
- Hydrant management
- Staff scheduling

Findings and Observations

- The Fire Department is currently using VisionAIR fire records management system (RMS) which is the relative of the VisionAIR police records management system also being used by the Police Department.
- Palm Beach County Dispatch performs dispatch services for Riviera Beach Fire Department.
- Palm Beach County is hosting other City fire departments using FDM Fire RMS, which is also integrated with the FDM Fire CAD (computer-aided dispatch) that Palm Beach County is using for dispatch operations.
- FDM also has a system called SafetyPAD from FDM that the County is also hosting for Fire Department EMS operations (electronic patient care reporting "ePCR"). The County also hosts this environment.
- The County is also helping its dispatch members track training and training content using software called Target Solutions, also hosted and offered by Palm Beach County.

Staff Feedback

- Fire – Using Palm Beach County Dispatch System for dispatch response units and tracking of resources
- Fire – Palm Beach County is planning to move to FDM for Fire Records and NFIRS reporting
- Fire – Need a program to evaluate CAD dispatches to assist in adjusting response territories (e.g., Deccan CAD analyst)
- Fire – Need a program to evaluate CAD dispatches in order to have the information to improve/adjust response assignments
- Fire – Need a dashboard to track response times by station/shift/officer
- Fire – Are manually reporting and billing 6,000 cases a year
- Fire – Using VisionAIR software for NFIRS Reporting (National Fire Incident Reporting System)
- Fire – Emergency management is currently paper-based system
- Fire – Manually enter PCRs into EMS
- Fire – Manually enter run number and call-out times into VisionAIR
- Fire – Would like reports of turnout times by Fire Department staff members

Recommendations

- Select new software vendor according to the *Software Selection Best Practices* initiative (Fire is moving to Safetypad).

- Seriously consider moving to the Palm Beach County-hosted system for integration with CAD and the advantages in both operations and compatibility. Include the review and potential implementation of the following from Palm Beach County:
  - FDM CAD
  - FDM RMS
  - FD Stats for Conversion and Data Management
  - SafteyPAD
  - Target Solutions

Benefits

- Centrally-managed information
- Compatibility with County's Existing CAD system
- Compatibility and ability to share data with peers sharing the County System
- Ability to move off of VisionAIR which may no longer be advantageous if the Police Department also leaves VisionAir (See *CAD/RMS Replacement* initiative)

44. POLICE CAD/RMS REPLACEMENT

An integrated Computer Aided Dispatch (CAD) and Police Records Management System (RMS) enables public safety and law enforcement to centralize public safety incident information, preserve data integrity, and enhance operational efficiency. The City's Police Department within this integrated environment are afforded the ability to quickly capture, record, update, share, and access critical incident and public safety data.

Findings and Observations

- The City is currently using VisionAIR CAD and RMS. The City Police Department has been operating the VisionAIR system for nearly 20 years.
- VisionAIR has been relatively affective in assisting the Police Department in their operations but VisionAIR's presence in the State of Florida continues to decline and their number of Florida customer is now down to five (5) users in the State. This is affecting VisionAIR's focus on Florida, and the Police Department is beginning to experience VisionAIR's inability to address the unique needs and issues in the State.
- In response to VisionAIR's inability to address a number of the Police Department's needs, they have had to turn to third-party applications. A number of these third-party applications would typically be standard in core CAD/RMS vendor with a stronger presence in Florida. This would mean less integration or entry of data into multiple systems. The goal is to enter data once and use it many times.
- The Police Department has expressed interest in SunGard's CAD/RMS system due to their prominent number of installations in the State of Florida for police departments similar to the Riviera Beach Police Department.

Staff Feedback

- Fire – Using Palm Beach County Dispatch System for dispatch response units and tracking of resources
- Fire – Palm Beach County is planning to move to FDM for Fire Records and NFIRS reporting
- Fire – Need a program to evaluate CAD dispatches to assist in adjusting response territories (e.g., Deccan CAD analyst)
- Fire – Need a dashboard to track response times by station/shift/officer
- Fire – Are manually reporting and billing 6,000 cases a year
- Fire – Using VisionAIR software for NFIRS Reporting (National Fire Incident Reporting System)
- Fire – Emergency management is currently Paper based system
- Fire – Manually enter PCRs into EMS
- Fire – Manually enter run number and call out times into VisionAIR
- Fire – Would like reports of turnout times by Fire Dept staff member
- PD – Need electronic filing of Traffic Citations (5,000/year) to the County Clerk
- PD – Officers are physically transporting case file document copies to Records Management
- PD – Officers are manually processing 3,000 Arrest Filing Packets a year, and then providing each packet to Records Management
- PD – CAD/RMS relate reporting consists of querying 10+ systems, instead of using one (10,000 reports generated a year)
- PD – Need improved crime mapping capabilities
- PD – Need improved Predictive Policing reporting
- PD – VisionAIR was never implemented correctly and current staff lack the expertise to correct implementation issues

- PD – VisionAIR has been in use for more than 20 years
- PD – Biggest customer of remaining three in Florida and doesn't address unique Florida requirements
- PD – CAD/RMS is failing the Department
- PD – Vision/TriTech is down to five customers in FL and seems to have stopped developing.
- PD – System lacks essential modules to support our operations (e.g., crash, citation, crime mapping, quartermaster, evidence, training, reporting, AVL, intelligence, case management, etc.)
- PD – CAD/RMS Replacement must occur prior to the move to the new Police Facility
- PD – Have requested a replacement of the CAD/RMS for three years now and have not been able to get a capital item funded
- PD – Our CAD/RMS situation gets worse every year, and we fall further behind in the industry
- PD – It has been difficult to implement CompStat model in Riviera Beach due current CAD/RMS vendor
- PD – There is a strong emphasis on CAD/RMS data sharing in Palm Beach County
- PD – All agencies surrounding Riviera Beach use SunGard and they can share data amongst each other
- PD – SunGard's OSSI is in use by the majority of agencies in our county
- PD – It is imperative that the Police Department replace its CAD/RMS as soon as possible

Recommendations

- Select new software vendor according to the *Software Selection Best Practices* initiative
- Considering SunGard in the list of vendors is a good idea. But, the City should follow software selection best practices, as noted above, to ensure SunGard is the best overall solution (not exclude other quality contenders from consideration) and the agency is adequately prepared through proper due diligence and implementation readiness.

Benefits

- Centrally-managed information
- Ability to move off of VisionAIR, which may no longer be advantageous if the Fire Department also leaves VisionAIR (See *Fire RMS Replacement* initiative)
- A better operating environment, with modules that work as required in the State of Florida and properly supported by the software vendor
- Improvements in productivity due to the reduction of ancillary third-party and shadow systems required to manage the lack of functionality to address the unique needs in the State of Florida

45. Internal Affairs Software

Staff Feedback

- PD – Need to automate the processing of Internal Affairs investigation cases (200 per year)

Recommendations

- A number of Police RMS systems include Intelligence modules or Internal Affairs modules that allow for investigation of Internal Affairs cases.
- These modules should be reviewed when the Police Department proceeds with the replacement of the existing CAD/RMS System (see the *CAD/RMS Replacement* initiative).
- If these modules are determined not to meet your Internal Affairs needs, there are a number of third-party providers of Internal Affairs Investigation applications, and those could be considered. The *Software Selection Best Practices* initiative should be followed.

46. Police Department Technology Consolidation Plan

The IT environments within Police Departments have seen a tremendous amount of transformation with the introduction of new technology and new policing techniques and processes. This has also been a rapid transformation due to the innovation and application of technologies in public safety. Due to this rapidly changing technology environment and the associated costs/resources required for such technology, it is more important than ever to have strategies and a plan for technology needs, along with costs and implementation requirements.

Some of the existing and new technologies that need to be reviewed may include:

- Crime Lights (illumination for crime or accident scenes)
- Squad cameras and in-car camera systems
- Body cameras
- K-9 Cameras
- Photo and video surveillance and enforcement systems
- Graffiti cameras
- Thermal imaging for:
  - Searching for individuals
  - Locating marijuana growing sites
  - Locating vehicles
  - etc.

- Criminal investigations records systems
- Electronic white boards
- Radios
- Lasers
- Language translators
- Less-lethal technology
- Laser scanning-based diagramming systems (3D for crime and accident scenes)
- Reducing police pursuits with GPS tagging
- Automatic license plate recognition

- Next-generation software for:
  - CAD
  - RMS
  - Mobile
  - Mobile field reporting
  - Crime mapping software integrated with GIS
  - etc.

Police Departments also need to address the ability to interface/integrate all these technologies and connect or interface with State and Federal systems that dictate processes. All of this technology needs to work together as a single-system environment throughout the organization, from the Police leaders, to the officer in the field, to administration, and more.

Findings and Observations

The Police Department makes extensive use of technology, but do not have a well-documented plan on how to manage and take advantage of emerging technologies, or manage their respective existing technology environments.

Attached is a table listing the software and technology currently used by the Police Department. This is included to emphasize the significance of the amount and diversity of technology within the Police Department. This table lists over 70 different software and operational technologies.

Software Application/Module	Function/Process	Other Associated Applications that Interface
ADG – Financial Management	City financial management software	
ADG – Personnel	Legacy ADG system used only for personnel matters	
Arbitrator – Back-End Administrator	Software used to administer users, groups, and system settings	
Arbitrator – Back-End Client	In-house client used to review in-car video	
Arbitrator – Front-End	Mobile software used to by officers to operate the in-car video system	
City Hall DVR Cameras	DVR-based Video Security System maintained at City Hall	
CLEAR	Research platform with a vast collection of public and proprietary records	
Command Central	Crime-mapping and crime-data dashboard	GIS Layers, SQL Reporting, Dashboard
Communicator NXT	Internal mass notification system	
Communicator Quick Activation	Lite version of internal mass-notification system	API to personnel data
Costal Radar	RADAR system on the southeast coast of Florida	
CrimeReports.com	Used to share Riviera Beach crime data with the public	GIS Layers, SQL Reporting, Dashboard
DAVID	Driver and Vehicle Information Database	
Docuware	Citywide document management system	

Software Application/Module	Function/Process	Other Associated Applications that Interface
Equature – Voice Logging Recorder	Recording system for Communications Center 911 and Admin lines	
ESP	GPS tracking and alert system used by banks, pawnshops, etc.	
Evidence Warehouse Cameras	DVR-based Video Security System used to secure the evidence warehouse	
FACES	Pinellas County Sheriff's Office Facial Recognition System	
FCIC/NCIC	Florida Crime Information System/National Crime Information System	
Fleet Complete AVL	Police Vehicle Tracking	GIS Layers, SQL Reporting, Dashboard
Fusion Center	Regional intelligence-sharing website	
GeoCast Web	Mass-notifications system (email, text, robocall)	
IC RealTime	Security Camera System Client for The Eye	
Intellitech	Booking photos and photo line-up creation	
iyeTek Crash and Ticket (in-car)	System used issue traffic citations and complete crash reports	GIS Layers, SQL Reporting, Dashboard
iyeTek Online	Web-based system used to review and approve tickets and crash reports	GIS Layers, SQL Reporting, Dashboard
LEX Administrator	Administrative site used to manage Riviera Beach user accounts for PBC LEX	
Livescan	Fingerprint system for criminal justice employees	
LPR Speed Trailer	Speed Trailer equipped with LPR. Sends live reads to LPR VISCE Application.	GIS Layers, SQL Reporting, Dashboard
LPR VISCE	Application used for monitoring and searching License Plate Reader data.	GIS Layers, SQL Reporting, Dashboard
Mesh Manager	Broadband wireless network deployed citywide (4.9MHZ and 2.4MHZ)	
Message Archiver – Barracuda	Used to archive City exchange email	
Microsoft Office	Word, Excel, PowerPoint, Outlook	
Millennium Expert	Police Department Access Control System	
MyRBPD	Police Department Intranet	GIS Layers, SQL Reporting, Dashboard
Noodle	Legacy intranet software	
NOVOUS Agenda	City Council Agenda creation website	
Occularis	Desktop application used to monitor security cameras in the RTCC	GIS Layers, SQL Reporting, Dashboard
Occularis Media	Web based client used to monitor security cameras	GIS Layers, SQL Reporting, Dashboard
OneDrive	Cloud Storage for Excel files that are pushed to MyRBPD	
Outlook Web App	Webmail version of Riviera Beach Outlook Exchange	
PALMS	Palm Beach County Sheriff's Office information database	
PBC LEX	Palm Beach County Law Enforcement Exchange Data Sharing	
PowerDetails	Web-based software that tracks extra duty details	GIS Layers, SQL Reporting, Dashboard
PowerDMS	Site ID RIVBPED – Used to manage the accreditation process and policies	

Software Application/Module	Function/Process	Other Associated Applications that Interface
QAlert	Web-based citizen service request management system	GIS Layers, SQL Reporting, Dashboard
Qcontent	Used to develop and manage the City's webpage and MyRBPD intranet site	
Quartermaster	Inventory management software for the PD's supplies and assets	
RAPID	Regional Pawnshop website	
Rhodium – Incident Management	Used to manage and pre-plan incidents, emergencies, and events	GIS Layers, SQL Reporting, Dashboard
Security Camera Registration Program	Program used to share cameras with RBPD	GIS Layers, SQL Reporting, Dashboard
SharePoint	Riviera Beach Police Department intranet site – not implemented as of 10/03/2014	GIS Layers, SQL Reporting, Dashboard
ShotSpotter Alert Console	Used for real-time ShotSpotter alerts for patrol officers	GIS Layers, SQL Reporting, Dashboard
ShotSpotter Investigator	Used for detailed analysis of ShotSpotter data	GIS Layers, SQL Reporting, Dashboard
ShotSpotter Siren	Website for viewing ShotSpotter data and registering for email alerts	GIS Layers, SQL Reporting, Dashboard
SkyView AVL	Legacy Police Vehicle Tracking System	
SnapComms	System used for screensavers and digital signage	
StacWeb	State Attorney's Office Case Management System	
The Eye	Nuisance Abatement Vehicle	
TLO	Research platform with a vast collection of public and proprietary records	
Training Trak	Software used to track and schedule training for the Police Department	
TrainU	Online training provided by the School Police	
USA Software	Evidence inventory software	GIS Layers, SQL Reporting, Dashboard
Vacant Registry	Used to input and review information on Riviera Beach Foreclosures	
Vision CAD	Computer-Aided Dispatch software	GIS Layers, SQL Reporting, Dashboard
Vision CAD Reports	Used to run reports from the VisionCAD System	
Vision Mobile	Mobile software to monitor calls for service and to query CAD/FCIC	GIS Layers, SQL Reporting, Dashboard
Vision RMS	Records Management System	GIS Layers, SQL Reporting, Dashboard
Vison CAD Monitor	Used to monitor VisionCAD	GIS Layers, SQL Reporting, Dashboard
Vison FBR	Field-based reporting software used for completing incident reports	
VisTrak	Visitor management and ID budget software connected to the LiveScan equipment	
WebEOC	Palm Beach County emergency management platform	

Staff Feedback

- PD – Will be relocating the Police Department in the first quarter of 2016
- PD – The relocation of the Police Department will consist of moving all IT infrastructure, connecting the current Wireless MESH system on the new building, moving the Communications Center, relocating communications tower support systems to a shelter, and access to control systems, video security, Wi-Fi systems, audiovisual technology, etc.

Recommendations

Develop a Police Technology Consolidation Plan and then move to a new facility, navigating the technology available, and consolidating as well as maximizing investments in all these existing technologies; along with the potential of a new CAD/RMS solution creates a challenge where success cannot be achieved without a technology consolidation plan that includes:

- Strategies
- Best Practices
- Consolidation and elimination of duplicate technology
- Specific Initiatives with tactical and actionable steps, incorporating initiatives for the move to the new facility
- Measurement for return-on-investment or tracking non-tangible benefits, such as life-saving realities
- Resources and staffing required to support the existing and future planned technologies
- A capital investment plan (CIP) budget based on the prioritization of the previously described initiatives
- Consider assistance from an independent, third-party, industry subject-matter expert to develop the plan

Benefits

- Improved application and use of technologies, with elimination of duplication
- A smooth transition of technology to the new facility
- Better management of resources
- Better management of IT costs
- Ability to choose technology and track the expected benefits and return
- Better reporting and information for management and decision making
- Improved integration between all technologies
- Improved tools for dispatch and for officers in the field
- Improved public safety

47. Citywide Fleet Automated Vehicle Locator (AVL)

Findings and Observations

Increased population bases have put most municipal employees under greater public scrutiny and, thereby, the municipality itself. By equipping the City's fleet of vehicles with location technology, each unit can be tracked to its geographic position in real-time, allowing the City to:

- See one unit, several units, or the entire fleet on designated maps
- Monitor engine and fuel data
- Log driver information, such as number of stops or absence from the vehicle
- Keep a usage history for each vehicle

The benefits of maintaining up-to-date data on City vehicles gives managers the ability to:

- Reduce response times by locating the nearest vehicle for dispatch
- Improve driver and equipment safety
- Increase efficiency savings
- Improve public relations

Staff Feedback

- PD – Using a hosted Automated Vehicle Locator (AVL) system that requires a separate screen to view location of cars
- Parks – GPS to be placed on City vehicles, work trucks, City buses, etc.

Recommendations

- Investigate potential benefits of specific uses for AVL
- Gather requirements for AVL and investigate potential vendors
- Follow the guidelines of the *Software Selection Best Practices* initiative

48. Parks and Recreation – Call Out Notification

Staff Feedback

- Parks – Need notification system for call-outs to Patrons for announcements and promotions, etc.

Recommendations

- Several Parks and Rec systems have this capability. Check to see if the potential new software vendors have this capability.
- If not available, investigate third-party options and follow Software Selection Best Practices initiative.

49. Library Teen Cyber Bar

Staff Feedback

- Planning to implement a "Teen Cyber Bar" that will facilitate an environment for teens, to do school work, but also to engage in other music, video, and art activities. This would be an Apple Mac-oriented environment

Recommendations

- If the funding is received, complete a needs assessment and design, including all software, hardware, and network components.
- Then, follow Software Selection Best Practices initiative, and issue a RFP with these specifications and design.
- Ensure the resources are in place to maintain, sustain, and support the patrons, using the Teen Cyber Bar.

50. Library IT Master Plan for New Library Facility

Staff Feedback

- The Library is going to the Council in February to pursue a grant for building a new library building
- The new library and other activities were an outcome of the recent completion of a three-year Strategic Plan

Recommendations

- If approved, complete a moving plan with a section that addresses the move of all technology and network infrastructure.

51. Fire Pre-Planning Management Software

Staff Feedback

- Need an application to assist in creating, storing, and making information available on building construction and for Fire pre-planning

Recommendations

- Complete a needs assessment and a selection, per Software Selection Best Practices initiative.
- Investigate if available from FDM.

52. Fire Medical Supply Inventory System

Staff Feedback:

- Fire – Need to automate the apparatus daily inventory system
- Fire – Need to automate the drug log and tracking system
- Fire – Need to automate Drug Scanning Inventory system

Recommendations:

- Complete a needs assessment and a selection, per Software Selection Best Practices initiative.
- Investigate if available from FDM.

53. Public Works Fuel Management

Staff Feedback

- Have Trak and want to move to OPW

Recommendations

- Determine needs and follow *Software Selection Best Practices* initiative

54. Public Works Fuel Management

Staff Feedback

- Library – Are manually managing meeting room reservations
- Marina – Would be helpful to have the public submit dockage reservations through the website
- Parks – Maintain facility rentals in Microsoft Outlook

Recommendations

- Third-party facility scheduling systems are available. However, most Parks and Recreation software vendors offer the Facility Scheduling to various degrees, including online reservations and online payments.

Gov 2.0

With the advent of computer technologies, the world is experiencing an unprecedented explosion in communications options. Gov 2.0 is the concept of using those new technologies in combination with creativity, information sharing, and the collaborative process to better serve and interact with the public.

The principles of Gov 2.0 include:

Principle 1 – Serve as the primary source of reliable, accurate, and timely organization information delivered to the customer on their platform of choice.

Principle 2 – Maintain a real-time, interactive, and user-centered website that offers easy access to public information and online services.

Principle 3 – Offer opportunities for online civic engagement and social collaboration.

Some examples of Gov 2.0 technologies include:

- **Online Transactions and Services** – Applications, registrations, requests, and payment processing are some of the 24/7 examples being employed.
- **Online Information Requests and Queries** – As more transparency is demanded and FOIA requests increase, making common types of documents readily available through query or menu on the website creates efficiencies for organization staff and constituents.
- **311** – Is available in some communities around the country as a non-emergency general information number to a citizen service center. These centers typically centralize the inquiry and response of general and/or routine questions from citizens and customers.
- **CRM (Citizen Request Management)** – Online citizen request tracking includes automated internal routing, status reporting, etc.
- **Blogging** – This is a Web-based process (Web logging) that allows regular posting of commentary, news, events, and other materials in a more casual and interactive manner. Visitors may leave comments or communicate with each other through the blog.
- **Podcasting** – Digital media files utilizing audio, Web protocols, and a media player are released on a regular schedule and often downloaded through a Web-based subscription.
- **RSS (Really Simple Syndication)** – This is a group of formats used to publish works, such as blog entries, news headlines, and media files, in a standardized format. This allows publishers to automatically "feed" their entries to a syndicated audience, often used with podcasting.
- **Social Media** – Ranging from blogs (WordPress, LiveJournal, Twitter, Facebook) and social and/or professional networking (MySpace, Facebook, LinkedIn) to virtual worlds where people can interact in real-time (Second Life), social media is, by far, the fastest-growing form of interactive communication. Andreas Kaplan and Michael Haenlein define social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content."[12]

[12] Kaplan, Andreas M., Michael Haenlein (2010). "Users of the World, Unite! The Challenges and Opportunities of Social Media". *Business Horizons* 53 (1): 59-68. doi:10.1016/j.bushor.2009.09.003. ISSN 0007-6813. Retrieved 2010-09-15.

- **Wikis** – A wiki is a website that allows collaborative creation and editing of Web pages to produce a simplified exchange of information.

The possible benefits of developing such communication methods go beyond just simple release of information. Among the advantages are the following:

- Increased efficiency and cost reduction for public services offered electronically
- Allowance of greater government transparency
- Better-informed and involved public
- More collaborative efforts between the organization and the public
- Faster and more convenient access, which promotes public approval

55. KIOSKS

Findings and Observations

Kiosks are public access computers placed in convenient places for citizens to use to access information and conduct transactions without having to call City staff or wait in line at the office counter. This also offers the ability for citizens without home computers to use a kiosk to conduct business with the City. Potential uses include:

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

Staff Feedback

- City Clerk – Would be helpful to have kiosks with a computer for citizens to retrieve and print public information

Recommendations

- Understand potential usage patterns.
- Consider using repurposed desktop computers before spending additional funds on kiosks.
- Consider placement and use of kiosks for self-service at City facilities, libraries, etc., where appropriate.
- Deployment should include, at minimum, any transactional capability offered on the City website.

56. Social Media Collaboration Strategy

Findings and Observations

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 the presence or on 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 deter legal action.

Staff Feedback

- Marina – Using Facebook and Twitter for advertising and communicating press releases
- PD – We need to connect our databases to automate postings based on real-time information (e.g., traffic crash is reported to the police, a tweet could go out informing the public to avoid the area)
- PD – Need tighter integration between our media releases and social media accounts
- PD – We seem to be doing a lot a repetitive manual steps when it comes to getting information out to the public

Recommendations

- Typical social media policy determines:
  - What departments are allowed to establish a social media presence and on what social media services (i.e., Facebook, Twitter, etc.)
  - Sets guidelines on what type of information can be posted and what information can be fed
  - Sets guidelines on the personnel that can be responsible for social media establishment and maintenance at the departmental level and levels of departmental management review
- If two-way blog posts are allowed, most municipalities monitor them every day.
- Software products that automatically update several social media outlets from the Web page are readily available and should be used to realize efficiencies.
- Consider potential social media integration opportunities with the organization's websites.
- Provide approval to employ a limited number of named social media sites subject to review by the IT Steering Committee and approved by appropriate management levels.
- Provide tutorial for employees who use social media to promote organization events and information.

Benefits

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

57. Website Replacement with Content Management Tools

Website Findings and Observations

Municipal websites have become informational portals, so that citizens can quickly access information and conduct transactions without having to call City staff or go to City Hall. Additionally, interactive functionality is available 24/7.

- The City's website is managed and maintained by an IT Specialist that has webmaster responsibilities.

Return-on-Investment (ROI) Consideration

A study conducted by Aaron Marcus and Associates, Inc. discovered the following[13]:

- More than 83% of Internet users are likely to leave a website if they feel they have to make too many clicks to find what they're looking for.
- Once a system is in development, correcting a problem costs ten times as much as fixing the same problem in design.
- The average user interface has some 40 flaws. Correcting the easiest 20 of these yields an average improvement in usability of 50%.

Website Staff Feedback

- City Clerk – Need the ability to automatically publish contracts onto the website
- City Clerk – Would be nice to have an interactive map of the City on the website for visitors
- City Clerk – Ability for a map on the website to include the polling locations and districts for the elected officials
- Comm Dev – Website is being underutilized and needs to be managed
- Comm Dev – Website needs to be reorganized in order to make it easy to use
- Comm Dev – Need a citywide website format that has a functioning search function
- Comm Dev – City needs to have a uniform website format
- IT – Website is hosted locally at Riviera Beach
- Library – Website is updated every month, or as needed, for upcoming Library events
- Library – Library needs a reliable website with easy-to-access information
- Library – Library website is buried inside the City's website, which makes it hard to find
- Library – Library's website is not as appealing as that of other municipal libraries in Palm Beach County
- Library – The use of a domain name personalized for the Library could allow us make our resources more accessible
- PW – Would be helpful to have live chat available to the public during business hours
- PW – Need to provide the public with email addresses of key employees

Website Content Management Tool Findings and Observations

Municipal websites are typically managed with a website content management system, which is an application to create, deploy, manage, and store content on Web pages. Most newer versions of website content management tools are designed for general department staff to be able to update frequently changed information, such as events, news, schedules, etc.

[13] Aaron Marcus and Associates, 2004.

Website Content Management Staff Feedback

- City Clerk – Two hours a week are being spent on website content updates
- City Clerk – We have a staff that dedicates two hours a week on website content updates
- Comm Dev – Website content updates are done once or twice for agendas
- Fin – Each manager handles their own website content updates
- Fire – Have a full-time firefighter who also does updates to the website
- HR – Have up to three employees updating the website
- Marina – WordPress is used to Manage the Marina's Web page
- Marina – Manually performing website updates five or more times a week
- Marina – Our Accounting Specialist spends about six hours per week updating the City website, Facebook, email responses, and Twitter
- PD – A staff spends two to three hours a month updating the intranet (MyRBPD) and Internet
- PW – Two to four hours a month a dedicated for website content updates
- IT – Five approvals are required before content can be posted to the website
- IT – A separate mobile device website is created and maintained

Recommendations

- Issue a Website redesign and development Request for Proposals.
- Conduct a citywide Needs Assessment to determine all useful features and information that could be implemented to improve the website.
- Conduct cost/benefit and prioritization analysis.
- Select new website developer/software vendor according to the *Software Selection* Best Practices initiative.
- Manage improvements according to the *Project Planning and Implementation* Best Practices initiative.
- Develop a strategy and use of tools to allow the departments to easily manage frequently changing content on their Web pages. In addition, training should be regularly offered to keep staff skills fresh and ensure they have the ability to keep website content current.
- Design the website with tools to automatically convert the website content and presentation components to a mobile-compatible display format so the public can use their smart phones and tablets to access the City's intranet.
- Many municipalities have gone out to bid for municipal-based website/intranet software tool and design companies to acquire what they need and to use as a collaboration partner in the design and building of their websites and intranet. The City should consider leveraging the results of the needs assessment noted in the recommendation above to conduct a website vendor selection effort to choose a prominent vendor to partner within this effort. There are a number of municipal-focused website and online services vendors that can be of value, based on their experience in working specifically with municipality-based websites and intranets. Some of the features and capabilities these vendors bring to the table include, but are not limited to, the following:
  - Tools to develop dynamic, interactive website capabilities
  - ASP.NET and SQL Server technology on the back end
  - Easy-to-use content management tools
  - Site navigation development and maintenance tools
  - Automatic sitemap generation
  - Back-end dashboards and site auditing for overseeing and monitoring site activity and volumes
  - In-page editing

  - Automatic rendering of resolution and view to tailor the look for that visitor's screen
  - Tool to automatically convert the intranet content and presentation components to a mobile-compatible display format so the public can use their smart phones and tablets to access the site wirelessly
  - Automatic Translation tools, if there is a multilingual presentation
  - Tools that link to social networking (Facebook, Twitter, etc.) to update both the website and social network profiles simultaneously
  - Notification tools for pushing RSS feeds, Twitter, etc. (see *Outbound Communication* initiative in this report)
  - Vendors also provide helpful bolt-on services that the City could choose to consider, including:
    - Citizen Request Management (see CRM initiative in this report)
    - Job Postings and Job Applicant Management
    - eProcurement Management
    - Meetings, Events, and Facilities Scheduling (see *Meeting Scheduling* initiative in this report)
  - Ability to have your site hosted if that is the City's preference
  - These vendors can also perform custom development if the City should desire some Web development services
- There are many parallels between implementing a municipal website and implementing a municipal intranet. It is recommended that the City consider designing and building the intranet in conjunction with the website redesign so the same or similar tools and resources can be used to improve efficiencies and provide commonality and consistency.
- Implement standard practices and make the website maintenance a component of the IT Steering Committee responsibilities to ensure that the site is maintained regularly and remains relevant and up-to-date for the public.
- See similar information and recommendations in the *City Intranet* initiative.

Benefits

- Improved resident-user experiences
- Increased information-sharing capabilities
- Easy access to organization information
- 24/7 Availability
- Improved public records access
- Reduced resident in-person visits
- Resident interaction and transaction capabilities
- Promotion of City services including promotion of revenue center departments such as Parks and Recreation and others

58. CITY INTRANET

Findings and Observations

An intranet has a similar function to the Internet and uses the organization's internal computer network to house a website-structured presence to share information in a private and secure fashion. Generally, it is not freely accessible by third parties.

Intranets provide useful information, such as the ability to communicate within the organization and reduce miscommunication by providing consistent informational and instructional content. It also reduces the time spent requesting and distributing documents between and throughout departments 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, due dates, etc.
- Important news and newsletters
- Allow easy access to policies and procedures, training manuals, or forms
- Provide contact information for departments, 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, access to electronic W-4 form for filing changes, or other HR services)

Other potential citywide intranet uses could include:

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

Those who are most successful use the intranet as the staff's computer and Internet homepage.

Staff Feedback

- Fire – Need a flexible intranet system
- Fire – Need to automate online internal surveys
- HR – Would like to use SharePoint Intranet
- PD – Would like to see SharePoint implemented as our Intranet
- PD – Current systems do not allow for the collection of data via the internet (e.g. forms)

Recommendations

- Conduct a citywide needs assessment for internal Department 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.
- Provide training for employees to access self-service capabilities as users. In addition, provide training for staff that need to post content and provide self-service information to ensure they are able to post and maintain content regularly.
- Consider integration of the intranet with future EDMS capabilities.
- Make the intranet the default Internet browser home page for all City staff.
- Use the intranet site as a method to reduce other mass employee communications such as, email, flyers, and bulletin board posters (as applicable).
- Design the intranet with tools to automatically convert the intranet content and presentation components to a mobile compatible display format so employees can use their smart phones and tablets to access the City's intranet.
- There are many parallels between implementing a municipal website and implementing a municipal intranet. It is recommended that the City consider designing and building the intranet in conjunction with the website redesign so the same or similar tools and resources can be used to improve efficiencies and provide commonality and consistency.
- Many municipalities have gone out to bid for municipal-based website/intranet software tool and design companies to acquire what they need and to use as a collaboration partner in the design and building of their websites and intranet. Leverage the needs assessment noted in the recommendation above to conduct a website vendor selection effort to choose a prominent vendor to partner with in this effort.
- Implement practices and make the intranet a component of the Governance and Steering Committee responsibilities to ensure that the site is maintained regularly and remains relevant and up-to-date for the City employee community.

Benefits

- Reduction in miscommunication due to the use of a single-source communication location
- Electronic Documents (decrease in the need for physical documents, such as procedure manuals or paycheck inserts)
- Electronic Forms (decrease the need for physical employee forms)
- Increased employee productivity and collaboration
- Remote access to information when outside the office

59. Mass Outbound Communications

Findings and Observations

Outbound communication systems, such as Reverse 911, have gone through a significant transformation in the last five years. There are many more system providers, and pricing has come down significantly. Enhanced emergency notification systems can also integrate with severe weather warning systems, emails, texts, RSS feeds, etc. These systems can be used for non-emergency mass notifications as well. Examples include: street closures, interruptions in water service, major organization events, etc. Additionally, more and more school districts are using this technology for frequent mass communications to parents.

Staff Feedback

- Comm Dev – Would be helpful to generate cell phone notification alerts to the residents
- Fin – Have problems communicating during hurricane events
- Fire – Do not have an emergency mass notification system

Recommendations

- Select new software vendor according to the *Software Selection Best Practices* initiative.
- Consider including emails, texts, and RSS feeds, for more than just mass emergency notifications (e.g., street closures, street cleaning, special events, etc.)
- Consider utilizing various applications and utility bills to collect citizens' communication preferences (e.g., mail, email, text, website, opt-in or -out for specific types of communications, such as public safety, emergency, community events, general info, etc.)
- Determine costs of greater usage. Costs are usually measured per contact, but some vendors have gone to an annual subscription model based on agency population.
- Consider integration with Severe Weather Warning System, automating certain emergency notifications.

Benefits

- Increase community outreach
- Improved public relations
- Increased citizen engagement

60. Council Chambers Audiovisual Systems

Findings and Observations

- Council chambers audiovisual and lighting are older, but still functional.
- IT Division staff are responsible for Council meeting cable TV feeds.
  - IT staff support Council meeting start to validate that systems are working appropriately.
- Agenda management software, which may also include a separate module for developing meeting minutes, is not utilized.

Staff Feedback

- IT – Council chambers audiovisual has not been refreshed in a while

Recommendations

- Consider outsourcing the production of City Council meetings, captioning, and post-production to a third-party vendor that specializes in public meeting broadcasting.
  - Can include online real-time streaming of the broadcast of Council Meetings and other public meetings, if desired.
- Design and develop an RFP for replacement of audiovisual equipment and lighting systems in Council Chambers.
- Utilize PEG fund balance and PEG fees over time to keep improvements budget neutral, if possible.

Note: The upgrade of Council Changes was in progress at the start of this project and will likely be completed no later than the end of 2015.

Benefits

- Improved production quality of City Council meetings and other public meetings held in the Council Chambers
- Increased availability of IT staff for core technology projects and staff support
- Improved government transparency

61. CONFERENCE ROOM AUDIOVISUAL

Findings and Observations

- Currently, some conference rooms lack 21st century audiovisual capabilities.
  - As portable devices proliferate, demand for audiovisual capabilities will increase.
  - Wall-mounted monitors can provide very cost-effective audiovisual capabilities in most conference rooms.
- IT has been improving conference room A/V over time.
  - Improvements in the Fire Training room were recently completed.

Recommendations

- Review standard A/V design provided by *CLIENTFIRST* and update monitor specifications (the remainder continues to be applicable).
  - Expand audiovisual capabilities in conference rooms, as budget allows.

62. VIDEO/WEB CONFERENCING

More users want a user-friendly approach to teleconferencing in the future. Web conferencing is being used more and more instead of face-to-face meetings and group training. Common Web conferencing capabilities also include:

- One-to-many
- Conference room meetings with video conferencing
- From an office or home site
- Classroom
- Conference room presentations
- Group meetings

The City has WebEx listed on its Software Listing, but it was not clear how many subscriptions have been licensed. It was also not clear as to what department(s) have WebEx subscriptions assigned to them or what department(s) use WebEx.

A few vendor examples including WebEx are:

LiveMeeting

- Presentation upload
- Screen sharing
- Application sharing
- Remote control
- Annotations
- Teleconferencing
- Web chat
- Recording

GoToMeeting

- Screen sharing
- Application sharing
- Remote control
- Annotations
- Teleconferencing
- Web chat
- Recording

Webex

- Presentation upload
- Screen sharing
- Application sharing
- Remote control
- Annotations
- Teleconferencing
- Web chat
- Recording

Staff Feedback

- Comm Dev – Need the ability to conduct video conference via computers or phones in order to save time driving around the City

Recommendations

- Review current needs and number of users for each department.
- Research most cost-effective solutions for the organization.
- Determine best overall solution, required users, and alternative costs.

Benefits

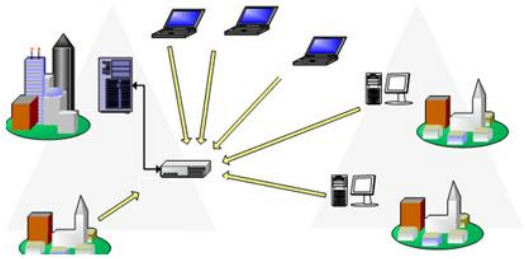
- Reduced transportation costs
- Meeting recording and storage capabilities
- Effective remote control features
- Enhanced group training capabilities

IT INFRASTRUCTURE

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

63. METROPOLITAN AREA NETWORK (MAN)

A metropolitan area network (MAN) is a network that typically spans multiple city facilities. Normal MANs interconnect multiple local area networks (LANs) to allow for better communication among organizations where a physical presence cannot be accommodated.



Findings and Observations

- City Hall campus is interconnected using private fiber
- Other sites are connected to City through a leased AT&T Metro Ethernet
- MAN speeds vary by site, but are generally slow
  - Slow network speeds cause IT to distribute servers to City facilities
  - Slow network speeds may be related to reported voice call quality issues
- Current network limits staff productivity by reducing the ability to upload or download files between sites
- MAN prices recently decreased by 50%, based on a new AT&T service offering

Recommendations

- Develop RFP for the procurement of a fiber-based, high-speed Wide Area Network (WAN).
- Replace core switch as a part of the capital replacement program and/or MAN redesign.
- Leverage increased MAN speeds to consolidate servers to the data center.
- Redesign MAN:
  - Reduce single points of failure in the network and extend the MAN to all City buildings
  - Provide for any-to-any connectivity for future disaster recovery planning needs

64. Local Area Network (LAN) Upgrade

A local area network (LAN) is a group of interconnected computers that span a building using Ethernet cables or Wi-Fi as a means of communication. A LAN allows only permitted users access to the network and use resources and applications assigned to them. LANs are very common due to their small size, low maintenance, fast speeds, and basic complexity.

Findings and Observations

- Currently have mixed deployment of switching hardware
  - Main network platform is Cisco

- Closet switches are not uplinked properly, causing reduced network performance
- A switch refresh was started, but is not fully completed
- Lack of support for POE devices and gigabit (older legacy switches still exist on network)
- Lack of centralized management software to configure switching and routing equipment
- Unmanaged switches exist on network that can cause performance degradation, bandwidth storms, and security issues (City is considering Cisco Prime for this)
- No patching schedule or deployment templates for new or existing switches; the City would like to establish a bi-monthly deployment schedule for all switches, firewalls and routers
- No network monitoring system in place to monitor traffic and health of network hardware (City is considering Solarwinds and Prime to address this network monitoring need)

Staff Feedback

- Internal staff recognizes the need for a more standardized switching platform
- Upgrades have already deployed at many locations, and plans are in place to complete upgrades for all data closets

Recommendations

- Fix issues related to uplinks between closets (should be fiber backbone recommended.)
- Replace core switch and upgrade existing stack connectivity (stack cabling).
  - Enable redundant connectivity at main site.
  - Implement advanced routing protocols to ensure resiliency.
- Edge switch upgrades are planned as a part of capital replacement cycle.
- Remove all unmanaged switches from the network.

Benefits

- Improved network performance and reliability
- Increased security on network and resources
- Reduction in cost associated with replacements and failures
- Ability to establish an internal SLA (99.9% would be standard for local government)

65. INTERNET BANDWIDTH

Increased Internet bandwidth and high availability are becoming increasingly important to organizations for daily functionality. This allows for additional resources to become available during peak Internet usage and provide for resiliency when disasters occur that may affect primary Internet connections that are no longer accessible.

Findings and Observations

- AT&T is the current service provider.
  - Service Type: Metro Ethernet IP (50MB Circuit)
- Secondary sites all connect to City Hall and then utilize the Internet (Hub-and-Spoke).
  - Marina: 4Mb
  - Port Center: 10Mb
  - Fire Station 2: 4Mb
  - Fire Station 3: 2Mb
  - Fire Station 4: 2Mb
  - Purchasing/Public Works: 2Mb
- City Hall maintains one primary Internet connection (AT&T Metro E Gateway) at City Hall.
- City Hall campus connection are all fiber-based, utilizing legacy fiber:
  - Library
  - Police
  - IT Trailer
  - Admin Utility
  - Water Plant
  - Utility Maintenance
  - Fire Station 1
- Library maintains a separate Internet connection for patrons.
- Wireless mesh network to support Public Safety.

Recommendations

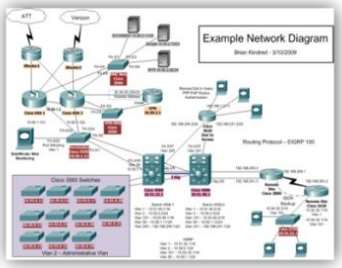
- Review current bandwidth needs and determine future rate of growth.
  - Utilize network management tools (see Network Management Initiative) to baseline and monitor Internet bandwidth.
- Immediately budget for and implement additional Internet bandwidth, using a commercial-grade, dedicated broadband Ethernet service.
- Upgrade to a higher bandwidth of 100Mb or higher.
- Investigate adding in a second Internet connection to enable HA (High Availability).

Benefits

- Improved performance
- Increased Internet uptime

66. NETWORK REDESIGN

Findings and Observations



- Current network topology is hub spoke for core buildings and mesh for secondary sites
- Bottlenecks exist in the network, resulting in poor performance and reliability
- Lack of proper design to support high availability and disaster recovery techniques
- Network was not built with future growth in mind and is limited
- Several single points of failure exist on the network (lack of redundancy)
- Cost of access is high (old contracts have not been modified to reflect industry standards)
- Network IP addressing and segmentation does not provide sufficient security
- Cisco routers will no longer be supported in October 2016

Staff Feedback

- Recognizes that network design is poor and inadequate for future needs
- Currently gathering information about network and documenting desired changes

Recommendations

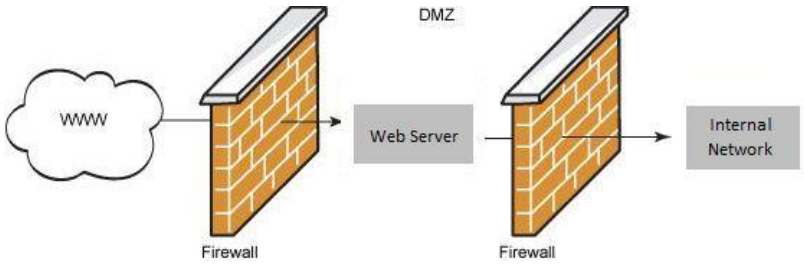
- Perform inventory and audit of network equipment (per preliminary project recommendations, the City has been working on this).
  - Determine end-of-life dates and develop capital replacement plan.
- Review switch, router, and firewall configurations equipment (per preliminary project recommendations, the City has been working on this).
- Monitor and collect performance metrics on network availability and viability.
- Upgrade WAN equipment to support increased bandwidth needs and security.
- Upgrade Internet connection to support increase in City's bandwidth needs.
- Develop new network design to fit into overall Disaster Recovery Plan.
- Develop RFP for replacement of the Wide Area Network (WAN).

Benefits

- Improved network performance speed and reliability
- Reduced support costs
- Full redundancy across sites
- Increased security

67. CREATE BEST PRACTICE INTERNET CONNECTIVITY (DMZ)

A Demilitarized Zone (DMZ) is the area of a network that is accessible to the public. This area is separate from an internal network that is used only by internal staff. DMZs are utilized to maintain online services used by the public, such as viewing the website or online applications (i.e., license renewals, online permitting, online utility billing information, online payment transactions, applications, and other online public inquiries).



Findings and Observations

- Security policy outlining DMZ and external to internal network connections has not been defined by the City
- A DMZ does not exist to proxy applications between the Internet and the City's internal network
  - DMZs are best practice security tools, used to create an additional layer of security between the Internet and an internal network
  - Email Services, such as OWA and mobile services, exist internally
  - VPN Services exist internally on the network

Recommendations

- Develop security policy, including a section outlining external to internal connection security.
- Create a DMZ using a small file server running virtualization to provide for growth.

Benefits

- Improved security and management
- Proper segmentation of publically accessible resources for external to internal network connections

68. Core Switch Replacement

Findings and Observations

- The core switch that interconnects all City Hall servers and the network is not adequate for the City's current and future needs.
- Routing through the switch is a challenge, due to limited support for current protocols.
- Physical redundancy is limited, and routing is not programmed for failover.

Recommendations

- Upgrade core network switch to resilient Cisco 4500 Series model or higher.
- Eliminate all non-managed switches.
- Implement redundant core switching capabilities.
- Institute maintenance policy and standards for switch, router, firewall, and various network devices.

Benefits

- Unified network platform will improve functionality and reduce potential compatibility issues
- Centralized management and visibility into network

69. Wireless

Public demand for Wi-Fi access continues to grow now more rapidly than ever before. Whether a citizen, engineer, or public employee is in a conference room or at soccer practice, people desire Internet access on smart phones, tablets, and laptops for presentations, checking email, or working wherever they can.

Findings and Observations

- Wireless coverage is limited to a separate guest network.
- Lack centralized management system for wireless network.
- Wireless device management systems reduce administrative time in the following ways:
  - Providing for advanced frequency troubleshooting
  - Allowing updated information to be pushed from a central console to all access points
  - Maintaining inventory information and signal-strength graphs
- "Second wave" 802.11ac will become available in summer and fall of 2015.

Recommendations

- Develop an integrated wireless design that incorporates guest and City staff needs.
- Perform wireless survey to determine locations for wireless access points.
- Integrate mobility and wireless-usage section into existing IT policy.
- Develop a wireless design model to implement citywide.
  - Select a wireless vendor to supply a management platform.
  - Implement management platform with initial purchase and continue to expand as the wireless network grows.
  - Specify "second wave" 802.11ac access points for deployment.

Benefits

- Increased staff efficiency and comfort level with technology
- More mobile workforce
- Real-time access to information from the field
- Improved remote accessibility on the go
- Reduction in cost to add in additional cabling and infrastructure

70. WIRELESS MESH – MOTO MESH

A wireless mesh network (WMN) is a **mesh network** created through the connection of wireless **access point**s installed at each network user's locale. Each network user is also a provider, forwarding data to the next **node**. The networking **infrastructure** is decentralized and simplified because each node need only transmit as far as the next node.

Findings and Observations

- Installed in 2008
- Motorola Quattro Wireless Mesh Network
- Network was built to service public safety, public works, and general public
- Frequency Bands: 2.4Ghz & 4.9Ghz(private band) – capable of other bands
- Build Areas: Canopy Clusters, Police Tower, Singe Island, Municipal Center- designated areas
- Coverage Spans – 2.5 Miles(bandwidth peak areas at 300kbps)
- Solutions Components
  - IAP 7300 – 22(active), IAP -13(spare)
  - MWR 7300- 47(active), MWR-7300(spare)
  - MWR 7301(1)
  - MWR 7302(1)
  - WMC 733 (101) – wireless client cards
  - PIDU Plus 400 PTP (4)
  - Management Consoles(3)
  - 5251AP- 5ghz (11)
  - Ubiquity AP(2)
- Bundled Package
  - Sonicwall Firewall
  - HP Procurve Switches
  - KVM Switches
  - Servers
  - PTP 400 Series Antennae's – bridge
  - MWR7300 Motorola Wireless Mesh Router
  - WMC 7300 PCMCIA cards – only run on 4.9GHz band
- Layers
  - Back Haul (point to point connections)
  - Distribution (wireless routers)
  - Mesh Layer(mesh access point up-linking)
  - Access Layer(connectivity for client devices) – mostly on 4.9Ghz spectrum

- Surveillance Camera System – utilizes motto mesh wireless network
- ATP(Acceptance Test Plan) Initiated 2012
  - VLAN
  - Out of Range Recovery
  - Verify Compatibility
- Wireless Encryption is enabled – WPA2
- Low bandwidth – Backhaul
- Clusters design and PTP utilized for areas where cabling is not a sufficient option – see map
- SPOF – Single points of failure exist in current mesh topology

Staff Feedback

- IT Admin – Is currently working with third-party vendor to audit network settings and to better manage the environment
- Staff is currently reviewing internal wireless expansion and also review external wireless capabilities

Recommendations

- Document network design by creating a diagram.
- Work with Motorola to transfer knowledge to staff.
- Understand usage and cost savings of the mesh.
  - Determine if additional investment is warranted, or if existing third-party cellular services are more cost effective.
- If ROI warrants:
  - Investigate upgrading existing wireless mesh equipment
  - Upgrade to higher bandwidth access points
  - Add dedicated Internet connection for mesh network – do not share gateway
  - Add additional firewall to filter and segment traffic between local network and public mesh network
  - Budget for new technology implementations, which includes necessary consulting or contractor design and implementation services.
  - Implement redundant wireless core routers for mesh network – multiple bottlenecks and single points of failure exists
  - Train internal staff on wireless mesh technology.

Benefits

- Increased institutional knowledge
- Proper separation of duties
- More completed projects
- More effective projects
- Increased anticipation and management of technology upgrades

71. DATA CENTER IMPROVEMENTS

Findings and Observations

- Power to equipment racks is inadequate in placing
  - Additional PDUs may be required
    - Recommended PDUs should connect to the network and have LED meter read-outs available
  - UPS needs network monitoring and centralized management
- Telecommunications legacy equipment and cabling can be removed to allow more space
- Fire suppression is currently not in place for main data center
- Distance between the planned data center and City Hall insufficient in the event of a major disaster

Staff Feedback

- Staff agrees that current data center needs improvement.
- Changes have been put in place to consolidate hardware, reduce heat, and decrease power consumption.

Recommendations

- Investigate options to move existing data center to other areas such as City Hall or the newly acquired site.
- Consider adding in redundancy or failover into the Cloud.
  - Options: Amazon, HP, VMware (VMWare VCloud Air will be purchased in the summer once Council approves the plan for failover into the cloud that will contain all our mission critical and required virtual machines)

Benefits

- Improved productivity for IT staff as a result of more room and better organization
- Increased environmental monitoring of temperature
- Reduced application and network crashes
- Improved service assurance (uptime and reduced risk of failure)
- Increased computer room capacity

72. Data Center Relocation

Findings and Observations

- Main data center room is located in an old police station
- Raised artificial floor is made of wood blocks
- Power cabling runs underneath wood floor and is not properly run through conduit
- Power distribution (from the UPS to the equipment) does not follow best practices
- The main computer room does not have a separate air conditioning system or controls
- Cable management and distribution does not follow best practices
- The computer room is very small and not adequate for future expansion
  - Reorganization would be quite difficult
- Legacy equipment still present in racks and needs to be decommissioned
- Server consolidation will eventually reduce space requirements
  - Current generation servers utilize 20% more power than the previous generation
- Low-voltage cabling inside racks lack proper wire management
- Inadequate ventilation for the room, requiring improved cooling techniques

Staff Feedback

- Acknowledged and provided recommendations on places to put new data center
- Efforts have been made to clean up all closets and institute improved cable management techniques

Recommendations

- Move current data center to proposed City Hall space.
  - Second floor room has been designated.
- Alternatively, investigate data center space availability with other government agencies in the County.
- Design with proper power and HVAC requirement for newly proposed room.
- Implement closet and cabling standards.

Benefits

- Improved productivity for IT staff as a result of more room and better organization
- Increased environmental monitoring
- Improved service assurance (uptime and reduced risk of failure)
- Increased computer room capacity

Immediate Next Steps

- Finalize long-term location of computer room
- Review power and space requirements
- Review fire suppression needs
- Design revised computer room

73. Power Distribution Units

Findings and Observations

- Power distribution units (PDUs) are used within the computer rooms of most organizations to control and monitor power to particular network devices such as servers and switches.
- PDUs can extend the life of network hardware by utilizing power more efficiently.
- PDUs can be used to monitor and remotely control power distribution to computer infrastructure equipment.
- The City does not utilize PDUs within all of its computer rooms.
- The PDU units that are in place are not adequate for the closets and are not advanced enough to support monitoring and management functions.

Recommendations

- Budget for and implement PDUs within the City Hall and Police Department computer rooms.
- Budget for and replace UPS at City Hall.
- Consider procuring management tools for the UPS.
- Create battery and PDU replacement cycle.
- Establish downtime and standby time required by the City's disaster recovery plan.

Benefits

- Improved support for electronic devices
- Improved management and monitoring capabilities
- Longer lasting equipment
- Reduce cost in replacement of failed hardware

74. Server Upgrades and Consolidation

Findings and Observations

- Inventory of Servers: 31
- Mixed environment of brand: Dell & HP
- Majority of server hardware consists of Dell Power Edge 2950, 2960
- Most City Hall production servers are using the Microsoft Windows Server
  - Current Microsoft server operating system is a mix of 2003, 2008, and 2012

Staff Feedback

- Staff has made changes to existing server infrastructure by virtualizing hardware
- Staff intends to migrate to standardized server operating platform (Windows 2012)

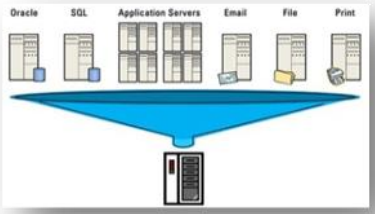
Recommendations

- Consolidate servers and retire legacy Dell Power Edge Servers (City implementing a plan to have the Dell legacy Dell Servers retired no later than the end of 2015).
- Upgrade to standard Windows Server Format (2012 Standard).
  - Upgrade process should be combined with the increased virtualization implementation.

75. VIRTUAL SERVER UPGRADE

Hardware virtualization refers to the creation of a virtual machine(s) that acts like a real computer with an operating system. Software executed on a virtual machine is separated from the underlying hardware resources. Virtualization enables servers to be easier to implement and less costly to own and manage.

Findings and Observations



- Implemented VMWare ESX Version 5.0 for virtualizing its servers
  - Current version of VMware is 5.5
- Out of 31 servers, about 80% are virtualized to-date
- There are many legacy servers in productions which are past their end-of-life

Recommendations

- Upgrade all host servers to same version of VMware for standardization (City has a plan to upgrade to version 6.0 no later than the end of 2015).
- Purchase Enterprise Licensing of VMware to enable advanced feature sets.
- Configure a stand-alone physical machine to be vCenter Host Manager.
- Dedicate shared storage between all host machines for active vMotion capabilities.
- Establish active SNMP monitoring and logging.
- Setup NTP on all host machines time synchronization.
- Enable authentication using LDAP to better secure environment.
- Enable additional features on virtual environment:
  - Fault Tolerance
  - Network Interface Bonding
  - DR and Failover Services
- Upgrade to the current version of VMware products, such as VMware vSphere Hypervisor (ESXi) 5.5 or higher.
- For business continuity and high availability of the City's virtual servers, VMware vSphere vMotion should be implemented to enable the live migration of virtual machines from one VMware vSphere 5 host to another.

Benefits

- Reduced data center space needs
- Reduced power requirements
- Improved failover and reliability

76. STORAGE AREA NETWORK (SAN) UPGRADE

Storage area networks (SANs), or the use of shared storage using a data communications infrastructure, provide several unique benefits over direct attached storage, including easier scalability, centralized management, and increased disk utilization. SANs became increasingly popular with the advent of the Fibre Channel (FC) standard in 1994. The IP SCSI (iSCSI) storage networking protocol was standardized in 2004 and is generally considered to be easier to manage and less expensive than Fibre Channel, but does not perform as well.

Findings and Observations

- The City has a NetApp QNAP SAN that utilizes iSCSI Internet Protocol (IP)-based networking for storage management.
  - The City appears to have sufficient available disk space for immediate growth needs.
- When compared to Fibre Channel SAN, the advantages of iSCSI SAN outweigh its disadvantages, especially in the relatively small data center environment that the City operates.
- The City utilizes its VMware virtual server environment on its SAN. This has many benefits for VMware, including centralized management, failover, and load balancing.

Staff Feedback

- Staff has made changes to existing server infrastructure by further virtualizing hardware
- Staff has investigated and is seeking to acquire additional SAN

Recommendations

- Procure an additional iSCSI-based SAN for failover and redundancy (replication.)
- Institute Storage Tiering to improve the performance of core data and applications.
- Include a necessary backup capacity as a part of the design process.

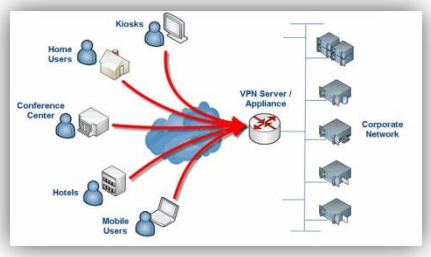
Benefits

- Increased performance and enhanced reliability
- Reduction in reoccurring costs for maintenance and expansion

77. REMOTE ACCESS UPGRADE

Findings and Observations

- Demand for remote access will continue to grow, especially for staff that works in the field the majority of the time.
  - Access to mobile applications for smart phones and tablets will be a portion of remote-access demand.
  - The other major demand segment will continue to be remote access from laptops and desktops.



- Remote access can generally be provided through three methods: traditional terminal services/remote desktop, Virtual Desktop Infrastructure (VDI), and remote application publishing.
- The City uses Cisco ASA firewall for VPN connectivity.

Recommendations

- Perform a detailed needs assessment and requirements definition for remote access for the City that takes into account the diverse user needs of staff and long-term goals for the use of remote access to conduct City business.
  - We believe that a virtual desktop design may provide greater long-term flexibility because virtual desktop technology is device-independent (works with PCs, tablets, smartphones, etc.)
- SSL/VPN provides better management and security.
- Migrate and centralize all remote connections into existing Barracuda SSL-VPN appliance.
- Review and revised current remote access policy to better align with the City's technology needs.

Benefits

- Increased remote access
- More mobile workforce
- Real-time access to information from the field
- Ability to be mobile, but in a secured environment
- Increased remote access with intuitive navigation
- Improved network performance

78. COMPUTER UPGRADES

Findings and Observations

- On April 8, 2014, Microsoft ended support for the Windows XP desktop operating system
- The City has approximately 180 XP desktop computers
- The City does not utilize an imaging platform to distribute applications to desktops

Recommendations

- Finalize an inventory of desktops and laptops to determine age, model, and operating system of all systems, focusing on identifying the number of computers running Windows XP.
- PCs and laptops running Windows XP should have their operating systems upgraded to Windows 7 or 8.1, or be replaced with a new computer (at the publish date of this report the City had nearly completed the replacement of 170 PCs with the final 10 XP workstations not scheduled for replacement due to their functionality problems with particular legacy software. Waiting to replace that software).
- Windows 8.1 has recently become a viable alternative to Windows 7, although Windows 10 will allow many organizations to skip Windows 8 altogether.
- Evaluate and procure a desktop imaging system.
  - Acronis has become our standard recommendation.
- Staff to prioritize potential dual monitor implementations.
- All new PCs should be purchased with the ability to natively connect two monitors.

79. DUAL MONITORS

Findings and Observations

Utilizing dual monitors for many users can significantly increase the speed of completion for certain computer tasks, thereby increasing overall employee productivity. Some studies have shown increased overall productivity of 20-30% for office staff and up to 50% and 74% for certain computer tasks. These studies demonstrate a return-on-investment multiple times the cost of the additional monitor when calculating the efficiency savings with gross hourly labor costs.

- The majority of staff use single-monitor systems
- Studies show dual monitor systems are approximately 20% more productive
- Our experience has been that staff requires 30 days to understand how to use the technology for productivity improvement.

Return on Investment (ROI) Considerations

- A Microsoft productivity study concluded that adding an extra monitor can boost productivity by 9% to 50%.[14]
- A study conducted by the University of Utah found that dual monitors helped users complete tasks as much as 52% faster.[15]

Recommendations

- Staff to prioritize potential dual monitor implementations.
- Implement as PCs are replaced, or more quickly, if demand requires.

Benefits

- Improved staff productivity return on investment (multitasking)
- Easy to compare work
- Sharing data between applications
- Compatibility with both laptops and computers

[14] "4 Studies which Show that Using a Second Monitor Can Boost Productivity", Core Communication 11 Dec. 2010, 4 Apr. 2013, < http://www.corecommunication.ca/4-studies-which-show-that-using-a-second-monitor-can-boost-productivity/ >.
[15] Core Communication, 11 Dec. 2010.

80. TECHNOLOGY SUPPORT FOR THE EOC

Findings and Observations

- The City's Emergency Operations Center (EOC) does not have sufficient technology to support emergency operations staff needs in the event of a large-scale emergency.
- Typical technology includes:
  - Laptop computers
  - Wireless network
  - Advanced audio/video capabilities
  - Access to GIS data
  - Access to advanced weather station information and cable TV
  - Telephones
  - Fax machine

Recommendations

- Conduct a study of EOC needs and budget recommended improvements accordingly.
- Assign appropriate City staff members (Fire, Police, and IT) to assist in determining technology needs for the EOC and budget for new technology.
- Assign Public Safety and IT staff to the role of supporting EOC technology.
- Audiovisual improvements:
  - Multiple monitors and monitor control systems
  - Workstation display systems
    - GIS mapping capabilities housed within room
    - Ability to switch traffic displays onto monitors in EOC
- Consider adding Smart Board display technology.

Benefits

- Centrally managed information
- Alignment with Disaster Recovery Plan
- Improved Incident Command capabilities
- Incident Command System
- Event information tracking
- Coordinate support for emergency responders
- Basis for communication to the public during local incidents and for recovery activity

IT OPERATIONS

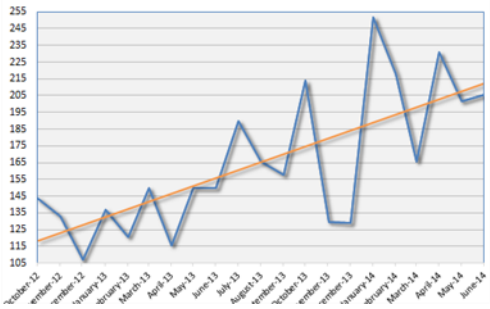
IT Operations refer to the daily support and maintenance of all IT infrastructure and user support.

81. HELP DESK TICKETING SYSTEM

Findings and Observations

- IT currently utilizes Track-It! software for Help Desk ticketing.
- Track-It! provides communication to requestors as IT staff updates the tickets while working through requests.

Staff Feedback



- City Clerk – Use Track-It! to report technical issues
- CMO – QAlert is also used by IT for service management
- CMO – IT doesn't think QAlert is an ideal solution
- Fire – Need a Help Desk system for a quick benefit on software and hardware issues
- Fire – Would like to see a service level agreement (SLA) for specific departments
- Marina – IT responsiveness to emergency situation is about one week

Recommendations

- Develop customer service measurement metrics associated with the Help Desk system so these performance measurements can be reported monthly.
- Consider integration of the Help Desk system to a network monitoring system.
  - Provide consistent system for managing responses to problems.

Priority Description	
Priority	**Response Time**
Emergency	1-Hour
High	2-Hour
Medium	8-Hour
Low	48- to 72-Hour
Very Low	5 Business Days

Benefits

- Increase in resolution rates
- Support for all devices
- Better diagnostics and problem identification
- Metrics and reporting (including performance tracking)

82. DESKTOP MANAGEMENT

The concept of desktop management refers to the comprehensive approach to managing all computers within an organization, including laptops and other devices. Tasks include installing and maintaining hardware and software, setting up spam filters, and providing user permissions. As security-related tasks have increased over the years, desktop management is also providing more patch management (code changes), corrections against viruses and spyware, and controlling greynet applications (programs installed without permission).

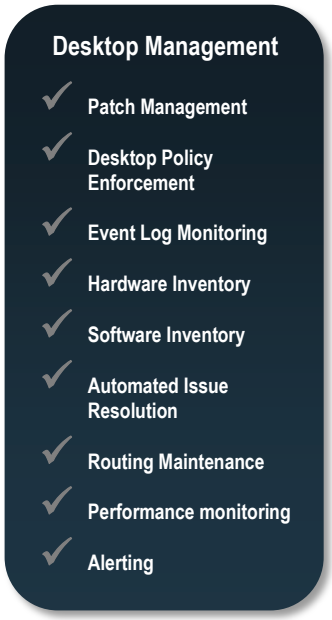
A desktop management (DM) interface is a framework for managing and keeping track of the hardware and software components of an organization's computers.

Findings and Observations

- Currently not utilizing a desktop management system
- Automation and scripting techniques are not currently in use
- Centralized patch management and distribution does not exist
  - Centralized patch management can reduce Internet bandwidth utilization significantly
- Staff is utilizing manual and redundant processes to maintain desktop environment which is very time-consuming and inefficient

Staff Feedback

- City does not utilize a desktop management product for non-Microsoft software patches and security updates
  - IT deploys software to each computer manually
- IT is not using Microsoft Windows Software Update Services (WSUS) to distribute Microsoft patches to the environment



Recommendations

- Implement WSUS while evaluating enterprise desktop management products.
- Implement a desktop management product, example alternatives include:
  - Dell KACE
  - Altiris
  - Kaseya
- Standardizing hardware and software platforms provides the following:
  - Reduced spyware infections
  - 30% reduction in Internet bandwidth usage
  - Reports summarizing PCs that are not updated
  - Increases distribution of antivirus updates
  - Reduced time spent managing virus protection

83. PRINT MANAGEMENT

Reducing time spent managing printers and print queues can yield significant productivity improvements. Centralized management of printers and print queues (through Windows) can reduce maintenance by providing simple and straightforward inquiry for print jobs. Centralized management can also make it much easier for IT staff to add or remove City print queue access.

Ongoing costs for printers can be significant. The cost-per-page on a small personal printer can be as high as $0.10 for black and white and $0.25 for color. In addition, studies show that up to 25% of Help Desk calls are attributable to printers and print queues.

Large multi-function scanner/copier/printers can reduce the cost-per-page by a factor of greater than ten. Coincidentally, these devices require less support from IT.

Findings and Observations

- The City's ratio of PCs-to-printers is consistent with best practices.
- The City leases Multi-Function Copiers (MFC), which is a cost-effective method to provide copy, scan, and print capabilities in one device.

Staff Feedback

- Library – Need an easier method for printing wirelessly from laptops and Android phones
- Library – We currently contract public printing to MJP, Inc.
- Library – The system in place only supports wireless printing from an Apple iOS device

Recommendations

- Continue with program to lease multi-function copiers.
- Train departments to replace toner, clear basic printer jams, and interface with the copier vendor.
- Utilize a printer/copier vendor to conduct an overall printer study.
  - Locate larger departmental or building printers in central areas.
- Implement access key codes for security and charge back as necessary.

Benefits

- Reduced cost for printer supplies
- Increase availability to many users
- Reduce unnecessary software or hardware purchases
- Multifunctional for printing, copying, and scanning (scanning capabilities will be synchronized with the ECMS initiative described earlier)
- Reduction of IT support time

IT SECURITY

IT Security refers to all security systems and practices, including disaster recovery, to protect City systems and data.

84. IT SECURITY - GENERAL

Findings and Observations

- IT security best practices for password management have not been followed.
- Age of existing environment precludes implementation of best practices for staff password management.
- The current group policy implementation, the ability to centrally manage groups of log-ons with similar characteristics is not trusted by staff.
- IOS versions on Cisco equipment is out of date (has been corrected).

Staff Feedback

- Staff has taken necessary steps to inventory network equipment and apply latest patching for critical hardware

Recommendations

- Develop and implement an IT password security procedure based on ClientFirst recommendations.
- Redesign and implement IT security as a part of an Exchange and Active Directory implementation.
- Implement virtual VLANs; tag and assign based on usage.
- Implement ACL schema that is more secure (between subnets).
- Investigate intrusion detection systems or third-party mechanism.

Benefits

- Improved security measurements
- Increased security awareness for staff

85. IT Security Review

An IT Security Review is a complete review of IT assets and the development of recommendations for improvements to security-related policies, security systems, physical security, servers, workstations, laptop security, and compliance with existing policies and procedures. The focus of an IT Security Review is on the security of the IT infrastructure, including the physical computer room(s) and environment, data network, file servers and backups, desktop PCs, laptops, and disaster recovery.

Findings and Observations

- IT staff members made the following observations which identify security risks:
  - VLAN configuration and functionality not defined
  - Weak username and password requirements
  - No password refresh policy
  - Outdated operating system software for desktops
  - Microsoft Exchange Server is at end-of-life
- An IT Security Review is necessary to identify risks and required security controls.

Recommendations

- Utilize best practices for network security as a part of the network redesign.
- Implement other changes, as specified, to improve security.
- Redesign and implement IT security as a part of the Active Directory upgrade implementation.
- Develop security policies and procedures, as recommended.
- Upon completion of the above recommendations, conduct a third-party IT Security Review.

Benefits

- Improved performance and efficiency
- Meet compliance requirements and industry best practices

86. BACKUPS

Findings and Observations

- Symantec Backup Exec 2012 current software used for physical backups.
  - 4 Servers
- VEEAM is used to archive virtual machines.
  - 32 VMs
- Notifications and Alerts are sent through Email.
- Backup sequence is disk-to-disk-to-tape.
- Backup jobs occur weekly and on weekends.
- Backups are copied to tape for off-site storage.
- Backups require one to two hours per day to maintain.
- Backup jobs failure rate is high and job completion status is inconsistent.
- Backup data is encrypted.
- Total environment backup size: 16TB

Staff Feedback

- Legal – Current electronic files are stored on disks
- Library – Have had several issues where IT had to roll out a back-up version of the "H" drive, causing us to lose hours of computer use time

Recommendations

- Replace Symantec with more robust enterprise backup software solution (e.g., CommVault, ArcServe, etc.)
- Plan for disk-to-disk replication to either a second site at the City or another organization in the County.
- Move to cloud-based storage instead of tape for tertiary backup.
- Encrypt backup data (this is considered to be sensitive material).
- Move to a disk-disk-cloud topology.
- Conduct a test restore of data from backup.

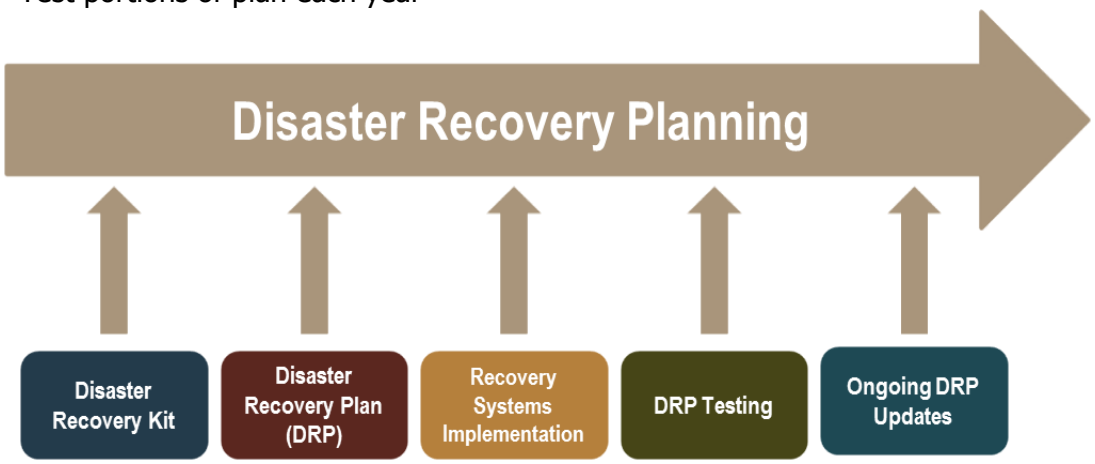
87. Disaster Recovery Planning

Findings and Observations

- City does not have a Disaster Recovery plan.
- City does not have Service Level Agreements (SLAs) for application recovery in the event of a disaster.

Recommendations

- Develop a Disaster Recovery Plan and strategy.
- Consider three disaster recovery scenarios when developing strategies:
  1. Loss of data center at Police Department
  2. Major disaster eliminating all area communications and IT infrastructure
  3. Loss of City Hall data center
- True disaster recovery of applications would require either vendor-by-vendor or outsourced arrangements.
- Evaluate application portfolio and determine SLA for restoration.
- Develop strategies for restoration of high-priority applications.
  - Begin to implement based on strategy and application priority
  - Test portions of plan each year



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

88. Windows Active Directory

Windows Active Directory (AD) is a central directory structure that provides authentication to network resources (files, printers, applications, and more). Groups and organizational units can be created in AD to lessen the ongoing maintenance requirements of adding and deleting user rights. Domain controllers are Windows Servers running a version of AD Domain Services.

Findings and Observations

- Domain controllers are not routinely maintained (pruning, record updating, replication). Domain controllers are running Windows Server 2003 and are only present at Police Department data center.
- Domain controllers are also used as file servers.
- Sites have domain controller scattered due to low bandwidth.
- IT security best practices for password management have not been followed.
- Routine password change policy has not been implemented.

Recommendations

- Upgrade all AD domain controllers to Windows Server 2012.
- Move non-AD services to other servers.
- Implement redundant domain controllers by placing other domain controllers in other City sites, and ensure separation of services between domain controllers.
- Implement integration between AD and Remote Authentication Dial-In User Service (RADIUS) to provide a means for centralized authentication for network device management.
- Develop and implement an IT password security procedure based on security best practices.
- Specifications for future application software should include the requirement to support AD.

Benefits

- Improved functionality and security
- Meet industry compliance standards
- Enhanced feature sets are available that were once non-existent

89. Two-Factor Authentication

The need for both increased information sharing and access to government data networks creates new requirements to certify confidence in the identity of the individuals accessing information. To meet these new requirements, many agencies at all levels of government are using a strategy known as "advanced authentication" or "two-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

- Two-factor authentication is a network protection strategy based on the principle of defense-in-depth.
- Two-factor authentication is not currently being used at the City.
- Federal Bureau of Investigation (FBI) systems Criminal Justice Information Services (CJIS) Security Policy (Version 5.2) requires advanced authentication methods for remote access to all systems that contain Criminal Justice Information (CJI) beginning September 30, 2014.
- The CJIS mandate includes access to data from City police vehicles or any location that cannot be determined physically.
- Other systems that the City maintains that should use advanced authentication for remote access include electric, water, and wastewater utility supervisory control and data acquisition (SCADA), HVAC/building control systems, and IT system administration.

Recommendations

- Budget for and implement two-factor authentication for remote access to SCADA systems.
- Include two-factor authentication in the requirements for the purchase of a new remote access system.

Benefits

- Enhanced security and compliance

90. Firewall Filtering and Consolidation

Findings and Observations

- Currently, the City utilizes a Cisco ASA firewall
  - Citywide – Cisco ASA
  - Library – Smoothwall
- The Web content filtering appliance – utilizing Barracuda
- Email traffic filtering – utilizing Barracuda
- Firewall rules need to be reviewed and redefined
- Smoothwall is not sufficient for Library (can be consolidated into one global solution).

Recommendations

- Replace firewall and Web filter with a single appliance that also incorporates Intrusion Prevention Systems (IPS).
- Remove Smoothwall solution and replace with enterprise firewall.

Benefits

- Reduction in cost for maintaining multiple filters

91. PCI Compliance

Payment Card Industry (PCI) compliance can reduce credit card transaction fees by complying with the Payment Card Industry Data Security Standard (PCI-DSS) for credit and debit card transactions. The major card brands (Visa, MasterCard, American Express, Discover, and JCB) issued the PCI-DSS in an effort to enhance the protections in place against the theft of cardholder data and require all merchants and service providers who store, process, or transmit payment card information to comply with its provisions.

Findings and Observations

- Utility billing personnel work in a secured room.
- Credit cards are accepted as a form of payment at the City.

Recommendations

- All payment card data should be separated from the City's data network.
- Consider processing all future credit card transactions in the cloud.
- Budget for and conduct a PCI Assessment before implementing any additional payment card processing.
- In the interim:
  - Ensure all payment card machines are PCI-compliant and only display the last four digits of a credit card number.

- As a point of policy, prohibit emailing of credit card or personal identifying information (PII).
- As a part of policy, prohibit storing credit card numbers either on paper or electronically.
  - Inventory all forms and ensure that none contain credit card numbers.

92. RECORDS AND DATA RETENTION

Findings and Observations

- Electronic records retention durations should mirror paper electronic records and data retention durations.
  - As with paper records, timely destruction is important.
- Detailed records classifications and retention guidelines are maintained by the City Clerk's Office.
- A policy for email retention is not in place.
- Records retention is not applied to backup tapes.
- Video records retention policies and procedures do not exist.

Recommendations

- Inventory all forms of electronic records storage at the City.
- Work with the Clerk's office to develop procedures for electronic records retention for the various record types.
- Implement procedure for records retention and subsequent destruction of electronic records.

TELECOMMUNICATIONS

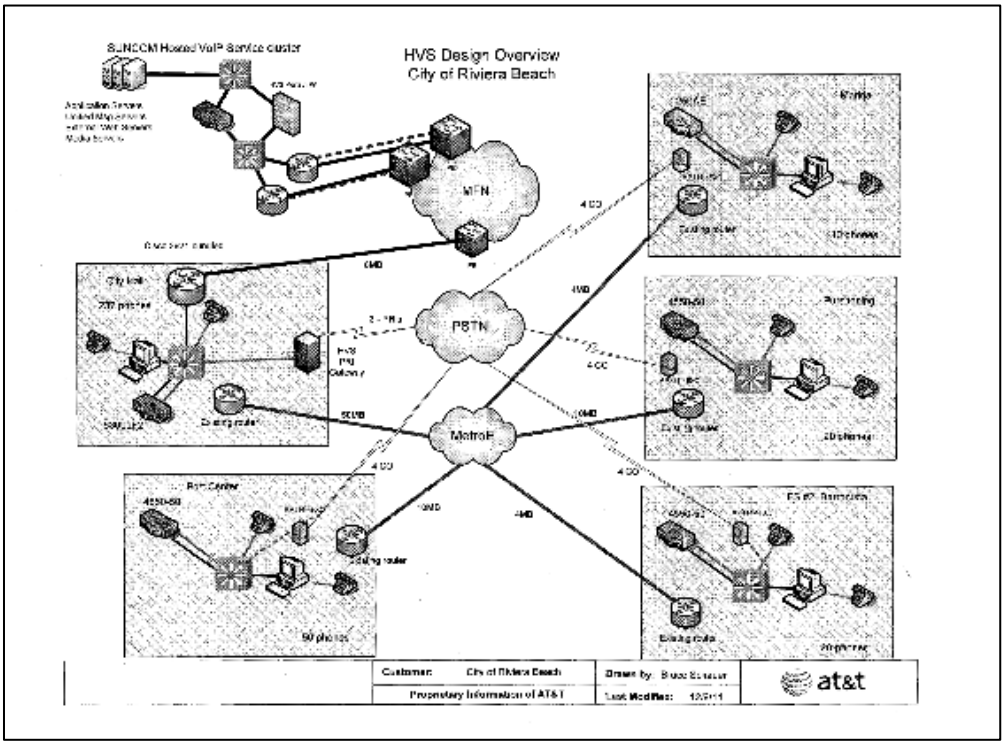
93. CURRENT TELECOMMUNICATION SITUATION

Findings and Observations

The City of Riviera Beach is renting a hosted telecommunications system from AT&T, using a statewide contract through SunCom and the State of Florida. A hosted telecommunications system rents the features and calls control equipment from a remote vendor for each user on a monthly basis.

Deployment of hosted solutions can vary as it relates to the equipment placed on the City premises. In this case, SunCom deployed a Cisco router at City Hall that connects that router to their hosted system using a dedicated 8Mbps connection. This remote router acts as a gateway to the telephone system located at the SunCom location. Telephones in City Hall and all other locations are connected to the City's existing data network, which is then connected to the SunCom Router at City Hall. Access to the Telephone company Public Switched Telephone Network (PSTN) for all users is provided by three Primary Rate Interface (PRI) lines installed at City Hall. The design also provides four local copper telephone lines for each remote location for backup and 911 notification.

A schematic drawing of the initial arrangement is shown below:



The contract for this service is month-to-month, so there are no long-term commitment or termination liabilities with the existing system.

- We believe the City has too many talk paths. The drawing shows that the City has three PRI lines which represent 69 talk paths to the outside world. This equates to a ratio of roughly five phone users for each talk path. A more typical ratio would be eight phone users for each talk path. With the current ratio of lines-to-users, we believe many of the lines are not being used. We believe the City could reduce the number of PRIs to two. This could reduce the City costs by more than $14,000 annually.
- The current system depends on the Internet connection to SunCom for call control, access to features, and the entire operation of the telecommunications system. If the Internet connection is down, the system will perform differently than normal, or not at all.
- Most hosted vendors state that the City will not have any maintenance or support costs. This is not true. The City will have internal support costs for the system, as well as maintenance of the telephone stations that are owned by the City.
- The City purchased, installed, owns, and maintains the 337 telephone sets that are in place. The City pays monthly rent that appears to cover the user license for each of the 337 users and the lines and phone lines that are required to connect to the PSTN.
- A hosted solution (in theory) reduces the capital expenditure required to purchase a premise-based system, but has a much higher monthly cost to rent the software licenses and call-control features.
- Most local government agencies are able to use a telecommunications system for many years. We have found that with systems this size, when reviewed over a typical seven- to ten-year life cycle using realistic operational costs and purchase prices for alternative arrangements, a hosted solution like the City's is almost always more costly.

Staff Feedback

- City Clerk – The land line has a tendency of dropping calls
- CMO – Need telephone features to communicate in the field or while away from the office through a mobile device.
- CMO – AT&T hosted phone system support is lacking
- CMO – Need to replace AT&T's hosted phone system with an on-premise solution
- Comm Dev – There are integration issues between the phones and computers
- Comm Dev – Voicemail boxes are too small
- Comm Dev – There should be an option for voicemails to be forwarded to your email
- Fin – Need more phone lines for business tax staff (can only take one call and hold two at a time)
- Fin – Have issues with voicemail boxes becoming full
- Fire – Palm Beach County offer hosting services, including VoIP hosting
- HR – Need phones to have multiple line capabilities
- HR – Need a button to release voicemail calls
- Marina – Voicemail system sometimes does not work and is likely due to construction
- PD – Concerned about the current hosted phone solution as to whether it's the best solution for a police department; a premise-based system seems more cost effective and more secure
- PD – Hosted or on premise-based phone solution is an important decision for the new police facility currently ready to go out to bid
- PD – Would like all police officers to be able to have voicemail-to-email option so Dispatchers can transfer calls to the officers
- PW – Need an active Phone Directory

Recommendations

- We believe the City should participate in the following initiatives and projects:
  - Perform a line utilization review to determine if three PRIs are really necessary.
  - Conduct a telecommunications operational assessment to determine if the current system is meeting the City's needs.
  - Perform an alternative telecommunications system cost comparison to determine if the current system is providing the City with value versus other alternatives.

Benefits

- Reduced annual expense
- Reduced total cost of ownership
- Improved operational efficiencies
- Improved phone answering services to constituents

94. ANNOUNCEMENT SYSTEM (INTERCOM)

Staff Feedback

- PD – Lost intercom capability with the new AT&T hosted phone system; need this functionality in the new police building

Recommendations

- Research alternatives.
- Consider whether the phone system has these capabilities.
- Determine needs and follow *Software Selection Best Practices* initiative.