H2 Performance Consulting
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City of Pensacola MIS Review

Final Report

Submitted to:
City of Pensacola

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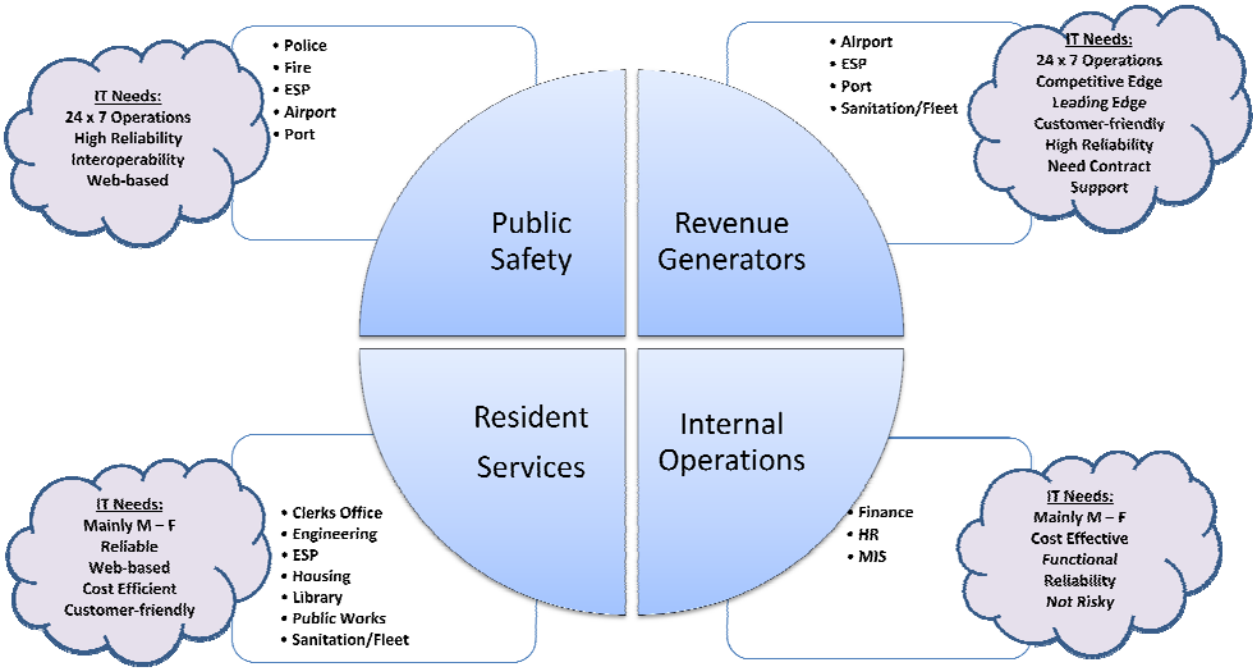
SECTION A: Executive Summary

Assessment Approach

The City of Pensacola asked H2 Performance Consulting Corporation (H2PC) to conduct a review of the Management Information Systems (MIS) function of the City, resulting in a strategy to help City Leaders move forward, as well as fix any issues identified. H2PC conducted a baseline product and service inventory analysis, which reviewed all existing assets, processes and staff functions. H2PC interviewed every member of the MIS Department and met with most City Department Heads during this assessment, as well as two meetings with City Leaders to understand their vision for the City MIS function. The resulting H2PC recommendations (Top Ten Fixes), is really a strategic roadmap for City Leaders to follow as they re-tool the MIS function. These initiatives reflect industry best practices and certainly set the foundation for the City to better support its Citizens and its Departments, while preparing for rapid growth.

Assessment Findings

H2PC classified City Departments into four groupings; Public Safety, Resident Services, Revenue Generators, and Internal Operations. Some Departments are members of more than one grouping. Each of these groups has different IT requirements for their businesses, so a one-size-fits-all approach will not work. The Top Ten Recommended Fixes outlined in this document work toward providing customer-focused and cost-efficient technology support for the City of Pensacola.



H2PC found a number of issues preventing the City and Departments from taking advantage of newer technologies and efficiencies. These include;

1. A lack of IT Governance, which leads to MIS Staff expending time and effort on projects that may or may not have any business value for the City Leadership.

2. Most Departments expressed frustration with calling the existing “help desk” only to have it go to voicemail because it is staffed by one person who is also dispatched out to fix issues. Many Departments choose to call staff in MIS directly on their cell phones to get their issues resolved. This practice goes against every industry best practice for IT Service Management.

3. A majority of Departments also expressed their frustration that new technology platforms are not supported, even though their daily business could become more cost-effective and efficient through the deployment of new technologies. Tablets and mobile devices were most often mentioned as cost-saving technologies that are not currently supported by MIS. This situation will worsen as desktop sales plummet. Industry is seeing a monumental shift to mobile platforms.

4. IT Project Management as defined by industry standards issued by the Project Management Institute (PMI) are non-existent within MIS, even though they were practiced a few years ago on a successful financial system implementation. There are currently multiple projects underway, with no project charters, schedules, status reports, or formal project reviews to keep them on schedule. In fact, a Document Management project has a team of temporary resources that is still ongoing after being launched more than 5 years ago.

5. Several Departments brought up an issue regarding Microsoft Access Databases and their use throughout the City. Several years ago, these databases were created by a City Employee who has since retired. Currently, MIS has no one on staff able to maintain or fix these databases when problems occur, so this is a risk to multiple Departments and their ability to operate in the future.

H2PC collected these issues (and more) and combined with our own knowledge of industry best practices, developed our Top Ten Recommendations, a strategic roadmap for the City of Pensacola MIS Department. The recommendations are presented in priority order with a recommended timeframe for starting each fix. There are dependencies in some cases, for example IT Governance must precede the IT Service Management, IT Support Contract, and IT Project Management fixes.

Recommendations

Top Fix	Title	Priority	Timeframe
1	Governance	Immediate	0-3 months
2	IT Service Management	Immediate	0-3 months
3	IT Blanket Support Contract	Short Term	3-6 months
4	IT Project Management	Short Term	3-6 months
5	Modernize RP Process	Short Term	3-6 months
6	Database Consolidation	Medium Term	6-12 months
7	Re-organize MIS	Medium Term	6-12 months
8	Enterprise Architecture	Long Term	12-24 months
9	IT Training	Long Term	12-24 months
10	Cloud Services	Long Term	12-24 months

Additionally, H2PC has provided some templates in the Exhibit section, which will aid the City in getting started with some of these initiatives.

SECTION B: Ten Recommended Fixes

Top Fix 1: Governance [Immediate Priority 0–3 months]

The City of Pensacola needs IT Governance a set of IT policies and processes to provide strategic IT direction and guide investments

- **Identify relative strategic value.** When faced with a stack of potential projects, it's important to find a way to see beyond their differences and compare them, accounting for their business value as well as cost and risk.

> IT governance is 'the assignment of decision rights and the accountability framework to encourage desirable behavior in the use of IT' (Weill, 2001; **Broadbent & Weill, 1998)**

- **Top City Executives should set IT priorities.** When it comes to the final decision about how to spend the IT budget, most organizations rely on a Steering Group that includes the CIO, City Executives, and Department Leaders.
- **Communicate priorities and progress clearly.** Once Board leaders have established priorities, they must communicate them clearly.
- **Monitor projects regularly.** Once IT projects are chosen, funded and launched, CIOs need a way to stay on top of their progress to protect the investments.

Approach: Establish IT Governance

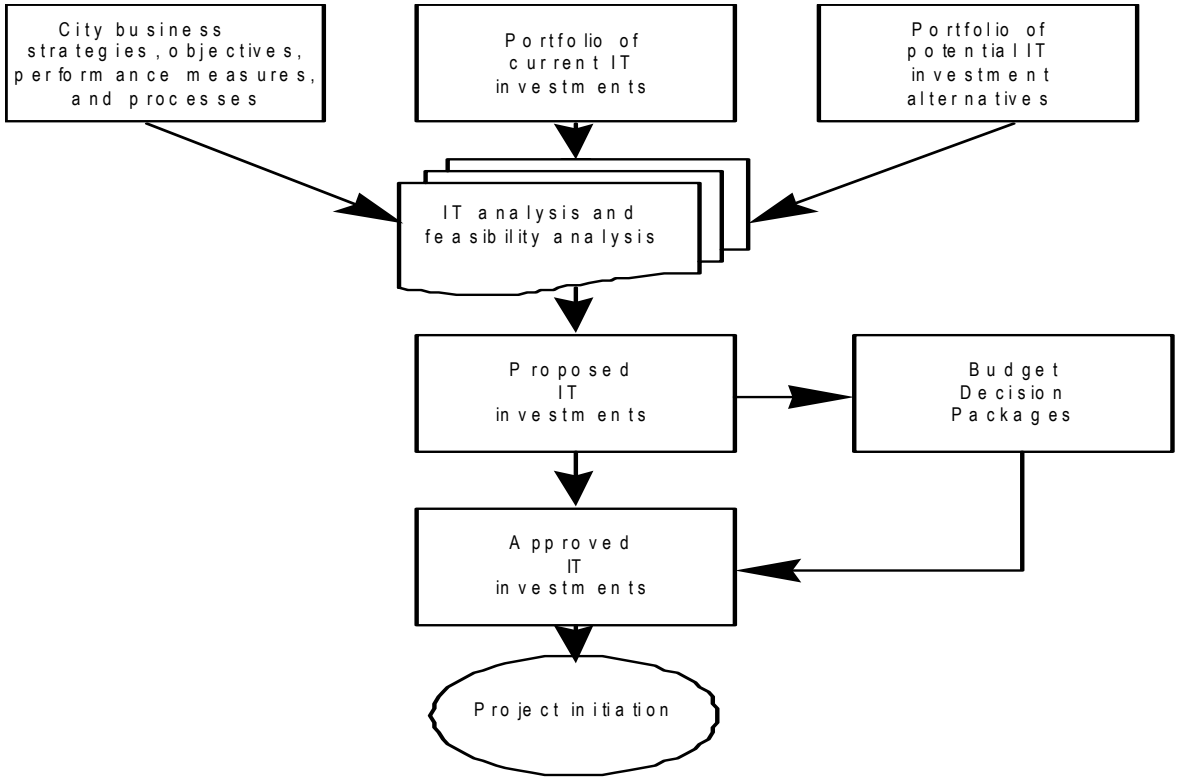
Step 1 – Implement IT Portfolio Management

IT portfolio management provides an integrated approach to the identification, selection, control, evaluation, and life cycle management of the City's technology investments. The IT portfolio process should consist of three interrelated components:

- *Planning and Selecting Technology* Investments — Decisions are made based on City strategies and business requirements regarding the selection, continuation, or cancellation of investments.
- *Managing Established Investments* — Once technology investment decisions are made, performance expectations should be achieved, costs should be kept within budgeted resources, and schedules should be met.
- *Evaluating the Performance of Investments* — Includes baseline, ongoing, and new investment assessments.

The IT Portfolio Management process is illustrated in Figure 1.

Figure 1: Information Technology Portfolio Management Process



Step 2 – Determine Relative IT Value

The value of an IT Investment is determined by an organization's predetermined value criteria. Value can be defined by the following value categories and factors:

- Financial
  - Return on Investment
  - Payback Period
  - Cost Avoidance
  - Revenue Growth
  - Cost Reduction

- Strategic Importance
    - Strategic and/or Business fit
    - Customer retention
    - Customer growth
    - Strategic alignment
    - Compliance
    - Ease of doing business
    - Fulfill commitments
    - Improve brand
    - User satisfaction
- Tactical importance
    - Improve performance
    - Improve quality
    - Risk mitigation
    - Regulatory compliance
    - Security

Once the City has established the criteria in which all IT investments will be measured against investment consideration and priority, then an IT Initiative Prioritization Scoring Sheet is utilized. The Scoring Sheet is used to score each initiative using weighted scales across value and risk criteria aggregating to a single score for each initiative. The scoring provides a ranking of initiatives and a lower threshold should be established facilitating automatic abandonment of initiatives under the threshold. An example of an IT Initiative Prioritization Scoring Sheet is shown in Figure 2.

Figure 2: Information Technology Initiative Prioritization Scoring Sheet

Initiative	Risk Rating	Strategic Tier/Time Frame	Strategic Impact	Implementation Risk	Lifecycle	Discretion	Cost	Total Score
Initiative 1	*(low)*	*(Citizens/2)*	*(High/3)*	*(Low/1)*	*(Long/3)*	*(Low/2)*	*(High/ 1)*	*(12)*
Initiative 2								
Initiative 3								
Initiative 4								

Step 3 – Establish IT Governance Board

The City's IT Governance Board should be comprised of stakeholders and representatives that are consumers of IT and City Executives that are ultimately responsible for the strategic success of the City's mission.

The general composition of the Board should be:

- City Mayor
- City Council Representative
- City General Manager
- Management Information Systems Director
- Director or Senior Leader from City Departments (Airport, ESP, etc)

Board Meetings should be held on a monthly basis at a minimum and the MIS Director should be responsible for the agenda and meeting preparation. The role of the City's IT Governance Board should be to prioritize, guide and enforce IT investments and decisions in accordance with established polices. An example of the roles of the Board in reference to strategic priorities is displayed in Figure 3.

Figure 3: Sample Roles of an Information Technology Governance Board

Strategic Alignment	Value Delivery	IT Resource Management	Risk Management	Performance Management
Provide strategy direction and the alignment of IT and the business	Oversee the delivery of value by IT to the City	Provide high-level direction for sourcing and use of IT resources	Take into account risk aspects of IT investments	Verify strategy compliance (i.e. achievement of strategic IT objectives)
Issue high-level policy guidance (e.g., risk, funding, sourcing, partnering)	Review, approve, and fund initiatives, assessing how they improve City business processes	Oversee the aggregate funding of IT at the enterprise level	Confirm that critical risks have been managed	Define project success measures
Define project priorities	Ensure identification of all costs and fulfillment of cost/benefit analysis	Balance investment between supporting and growing the City capabilities	Act as a sponsor of control, risk, and governance framework	Monitor and direct key IT governance processes

Step 4 – Communicate IT Priorities

Communicating IT Priorities is the most critical element to creating awareness, gaining commitment and managing expectations of stakeholders. Communications does not end at stating IT priorities and providing project status reports but includes single definitions of success of an IT project and celebrating the attainment of critical requirements and the attainment of business value. A Communications Plan should be developed and implemented to expedite consistent communications and to ensure commitment to communicating. A standard Communications Plan includes a listing of who, what, how and how often communications should occur. Additionally, it includes

the medium that will be used to disseminate communications to include, but not limited to, portals, newsletters, bulletin boards, reports, presentations, letters and the annual report. Below, in Table 1, is a recommended City Communications Plan for an IT Project:

Table 1: Recommended Communications Plan for Technology Projects

Who	What	How	How Often	Assigned to:
Mayor's Office / City Council	*IT Strategy/ Priorities /Project Status*	*Meetings*	*Monthly*	*MIS Director*
City Citizens	*Overview/IT Strategy/Success*	*Website*	*Quarterly*	*TBD*
City Employees	*Overview/IT Strategy/Progress*	*Newsletter*	*Quarterly*	*TBD*
City Vendors	*Overview/IT Strategy/Compliance*	*Webinar*	*Semi-annual*	*TBD*
MIS Staff	*Tactics*	*Meetings*	*Monthly*	*MIS Director*

Step 5 – Measure IT Project Performance

IT Projects should always have performance measures identified in their project charter. As a starting point for every project, the triple constraints defined by the Project Management Institute (Scope, Schedule, and Budget) should be measured. Additionally, user satisfaction with the end product should always be measured. If these areas are measured on a regular basis throughout each project phase, then each project should reach a successful conclusion. As the City matures the IT Project Management capabilities, additional business-focused measures should also be added to measure business impact of the final product.

1. Scope Metrics - # of change requests submitted by project phase

2. Schedule Metrics – # of planned vs. actual tasks completed by project phase

3. Budget Metrics – # of planned vs. actual hours expended by phase (expressed in budget dollars)

4. User Satisfaction Metrics - % of satisfied end-users following acceptance testing

Top Fix 2: IT Service Management [Immediate Priority, 0-3 months]

The City of Pensacola has an immediate need for a Help Desk Operation with an easy-to-use self-service web-based ticket system

- **Service via Service Tickets.** All City Departments and employees should be required to submit a ticket in order to receive any MIS support to include information or reports.
- **Help Desk Processes.** The Help Desk should prioritize, assign, and track tickets through to close-out. The Help Desk Staff should assist customers on the phone or even through remote access tools, but should never leave the Help Desk unattended.
- **Help Desk Customer Service Management.** A quality Help Desk communicates to the customer at every step in the process including priority, assignment and expected completion timeline.
- **Help Desk Metrics and Reporting.** A ticket-based system should capture standard industry metrics to include ticket volume, problem types, trends, downtime, and completion times to name a few.

> 'The value of a service desk tool is measured by its ability to automate and manage the IT organizations service support processes, organizational structure and metrics, plus the ability to integrate with other IT service management disciplines '
>
> Gartner 2011
> 'Magic Quadrant for the IT Service Desk'

Approach: Establish and Enforce Help Desk Process

A Help Desk is a resource designed for IT users to contact when they are having problems with their IT services. Help Desks institute a multi-tiered troubleshooting approach by having personnel with extensive technical knowledge available. Help Desk ticketing processes (Incident Management) help with IT resource management and customer relationship management. However, if Help Desk service tickets are not enforced or if Help Desk customers are allowed to circumvent the requirement to submit a service ticket, then lines of communication break down and everyone suffers.

Critical Elements to Help Desk Governance:

- ✓ Ticket generation methods - The City needs to define the various methods in which a Help Desk ticket can be generated. Methods include phone call, email, or web form. However, all tickets should be captured in one system, regardless of how they were generated.
- ✓ Communicate and Educate Customers - It is paramount that the City's IT customers are communicated to about the methods they can use to submit a

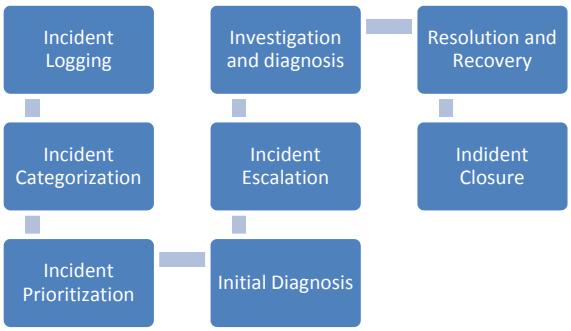
ticket to resolve their IT needs. If any changes occur in how a service ticket can be submitted then the customer must be educated and updated accordingly.

- ✓ Script Enforcement - Enforcing Help Desk Governance will undoubtedly be difficult in the beginning and a cultural paradigm shift. To support the Help Desk personnel a script should be developed for them to follow if they get push-back from customers on following the processes.

Step 1 – Establish Incident Management Process

The most strategic method of implementing a Help Desk is to follow the Information Technology Infrastructure Library (ITIL) best practices and processes. The City should have a disciplined Help Desk that tracks and manages a ticket throughout its lifecycle. Using ITIL vernacular, the management and fix for an event which disrupts or which could disrupt a service is called an **'incident'** and the management process is called **Incident Management**. A standard Incident Management Process is illustrated below.

Figure 4: Standard Incident Management Process



- Incident Logging – The City should fully log all incidents or request for service to include a date/time stamp.
- Incident Categorization – The City should classify every request for service. All classification boils down to trying to understand and identify what systems or technologies are impacted and to what degree. Effective incident classification aids in routing incidents to the correct IT staff member on the first try for response.
- Incident Prioritization - Prioritization can normally be determined by taking into account both the urgency of the incident (how quickly the business needs a resolution) and the level of impact it is causing. An indication of impact is often (but not always) the number of users being affected. In some cases, and very importantly, the loss of service to a single user can have a major business impact - it all depends upon who is trying to do what - so numbers alone is not enough to evaluate overall priority. Other factors that can also contribute to impact levels are:
  - Risk to personal safety (life or limb)
  - The number of services affected - may be multiple services

- The level of financial losses
- Effect on business reputation
- Regulatory or legislative breaches

The City should develop its own set of impact levels that will serve as the model for how the Help Desk will prioritize an incident or service call.

- Incident Diagnosis – The first point of contact attempts to resolve an incident. The Help Desk personnel should try to understand the incident being reported and get the end-user up and running while the end-user is still on the phone. If they are successful, then they will actually close the incident at this point, as the primary purpose of incident management has been fulfilled (namely the fast restoration of service for the end-user).
- Incident Escalation – The recognition that if an incident cannot be resolved at the first point of contact – namely the Help Desk, then it must be passed to a second level support group.
- Investigation and Diagnosis – The Help Desk provides initial diagnosis of an incident based on their knowledge, scripts, known errors, and other information available. However, in depth investigation and diagnosis is performed to understand what has occurred and the events leading up to failure. Also, previous incidents are researched to see if this has occurred in the past and incidents are matched with past incidents to accelerate fixes.
- Resolution and Recover – The potential resolution that is selected, can be tested by the implementer, the user, or both. Recovery of transactions and data are also attempted after resolution, but before the incident is passed back to the Help Desk for closure.
- Incident Closure – The Help Desk performs formal closure of the incident by verifying that the user is satisfied with the resolution. A problem record may be opened at this time, depending on whether a permanent resolution was found. Also, the Help Desk updates the incident record and sends a Customer Satisfaction Survey before final closeout.

Step 2 – Develop Tiered Levels of Support

The City should establish a progressive support structure for customers. Tier structure and problem type analysis are the most critical components of a best-in-class IT service support strategy. Using a tier modeling framework will help to ensure success in developing a support strategy for the MIS organization, to include self-help services. The City's MIS organization must understand their incident/call category mix, apply the appropriate organizational structure against the planned call mix, target specific call resolution goals against each tier, and ensure that communications and feedback between the tiers are maintained.

Level 0: Self-Help (Intranet/Internet Strategy) - Level 0 is an Intranet or Internet self-support function. Empowering end users to solve problems can be facilitated via

universal access to knowledge. End-User Training, as well as self-help, self-diagnosis or self-healing tools enable end-users to capture problem resolution knowledge and apply it toward consistent call types.

Level 1: Service Desk (Business and End-User Focus) - The Level 1 service desk is the support hot line. It acts as the human single point of contact for all technology-related questions, problems (servers, PCs, internal business applications, shrink-wrapped COTS software, telecommunications, LANs, hardware breaks, report requests, questions, and more) and service requests. The Level 1 service desk should be able to resolve approximately 65 percent to 80 percent of all incoming support calls and e-mail-submitted problems. Remaining calls are passed to Level 2 and Level 3 support personnel. Level 1 service has access to a common data repository. This level of support emphasizes a closer relationship with the users and has a business focus to help customers leverage technology to solve business problems. Level 1 is involved mostly in end-user management, such as password/access security, data management, workflow management, problem resolution, end-user training, service-level monitoring, application support, and moves, adds and changes.

Level 2: Service Desk (Technical Focus) - The Level 2 service desk provides support services beyond the Level 1 service desk's mission or capabilities. Level 2 should resolve 15 percent to 25 percent of the total call volume of problems. For example, Level 2 handles problems requiring greater depth of knowledge, more-technical issues or longer time on the phone. Level 2 can reside inside or outside of the MIS organization, or it can be outsourced to vendors completely. Level 2 is involved in end-user training, systems and operations, desktop support, project services, knowledge management, application support software distribution, change management, documentation management, portfolio/asset tracking, workgroup computing and directory services.

Level 3: Service Desk (Strategic Focus) - The Level 3 support team resolves the final 5 percent to 10 percent of support calls and must work with hardware and software vendors to resolve issues. These people are the resident "gurus" and often own the MIS organization's software testing and release management capabilities. Level 3 staff members handle a wide variety of issues concerning all aspects of the desktop and the network. They are focused more on strategic planning and MIS infrastructure. This group is involved in leading MIS staff members in problem avoidance, relationship management, output management, MIS training, disaster recovery planning, application recovery, archive strategies, capacity management and competency centers.

Step 3 – Develop Priority Model

The City should establish as part of their service level agreement with their customer a detailed priority system for response and completion time similar to the one below in Table 2.

Table 2: Sample Help Desk Priority System.

Priority	Criteria	Response Time	Completion Time
Urgent	Impacts more than five individuals; or is mission critical and there is no workaround. Examples: E-Mail services are not functional; network is not available	Call or page technicians for immediate response	Within 4 hours
High	Affects one to five individuals, no workaround available. Example: Computer with critical data won't boot	Within 4 hours	Within 1 working day
Medium	Affects fewer than five people, workarounds available. Example: Can't check e-mail from one computer, but could use WebMail from another computer.	Within 1 working day	Within 3 working days
Low	No affect on productivity, or unsupported software. A service request that does not require immediate attention or involves replacement parts. Examples: Monitor showing b/w instead of color. CD player has no sound.	Within 3 working days	Within 5 working days

Step 4 – Establish and Report Help Desk Metrics

Metrics should be established so that performance of the Help Desk can be evaluated at regular intervals by both MIS and City Leadership. This is important to assess the health, maturity, efficiency, effectiveness and any opportunities to improve MIS operations. Metrics for Help Desk performance must be realistic and carefully chosen. A listing of typical metrics a Help Desk should track is in Table 3:

Table 3: Typical Help Desk Metrics

Tickets Opened	Tickets Closed	Tickets Emailed
Tickets On time	Password Resets	Calls Offered
Calls taken	Abandoned Calls	Abandoned Call Rate
Average Speed Answer	Average Call Time	Customer Notifications

Top Fix 3: IT Blanket Support Contract [Short Term 3–6 months]

The City of Pensacola needs a contract vehicle to assist with emerging technologies as well as to help fill skills gaps due to employee turnover and/or pending retirements

- **Include the right Technical Functional Areas in contract.** Certain technical functional areas lend themselves to contract support. These areas should be reviewed for consideration in a support contract.
- **Labor Categories should be deep.** Support contract should have a wide range of labor categories for comprehensive coverage of potential requirements.
- **Performance Standards are critical to success.** Support contract must have a sufficient level of detail and performance standards to be successful.

Approach: Review Technical Needs for inclusion in IT Support Contract

It is recommended the City create a Blanket Purchase Agreement (BPA) or Indefinite Delivery Indefinite Quantity (IDIQ) type IT support contract because;

1. Apple tablets and other new technologies are highly desired and Departments are willing to sign up for vendor support, including hardware, software, services, and training
2. Other Mobile (Droid) platforms are quickly changing the business landscape and IT vendors would be more capable to handle these requests, especially from the revenue-generating “businesses” the City manages
3. Departments are asking “Is there a more efficient and cost-effective way to do business?” MIS is not always able to cover the broad spectrum of technologies available in the market to provide a best-fit-for-business answer
4. Other government organizations are effectively using a combination of in-house and contract resources to get the job done in their IT Departments
5. Contract vehicles, like the Florida State Term Contract and/or GSA IT 70 Contract are readily available and have broad capabilities

Step 1 – Determine Technical Support Needs

There are certain technical areas that serve as good candidates for the scope of an IT Support Contract. When considering whether or not an area should be considered in the scope of an IT Support Contract the City should consider the following factors:

- Ability to define requirements and scope of work
- Skills required beyond the ability of MIS Department
- Number of resources required beyond the availability of MIS Department
- Timeline for implementation is business critical

The following is a list of recommended technical areas that should be reviewed by the City for inclusion in an IT Support Services contract.

I. IT Service Management Support Areas

a. IT Services Management Guidance
b. IT Service Management Implementation
c. Service/Help Desk/Call Center support
d. Service Level Agreements
e. Program and Project Management Support
f. Enterprise Architecture Planning Support
g. Strategy and Planning Support
h. Standards, Policy, Procedure and Process Development
i. General IT Training and Knowledge Management

II. Enterprise and Business Applications Support Areas

a. Business Requirements Development
b. Business Analysis Support
c. Software Design and Development
d. Change and Configuration Reviews
e. Software Technology Demonstration and Transition
f. Informatics and Reporting Services
g. Web Application Design and Development
h. Database and Data Warehouse Administration
i. Application Licensing
j. Application Focused Training

III. Network Operations Support Areas

a. Enterprise Architectural Compliance
b. System Integration
c. Technical Documentation
d. Data Migration
e. Systems and Network Administration
f. Enterprise Network and Telecommunications Infrastructures
g. Enterprise Management Framework

h. Cyber Security
i. Information Assurance (IA)
j. Logical Security
k. Certification and Accreditation
l. Security Management and Operating Support
m. Operations and Maintenance (O&M)
n. Systems Administration
o. Network Administration
p. Hardware and Network Device Support
q. Disaster Recovery and Continuity of Operations
r. Capacity/Availability Planning and Management

Step 2 – Build Flexibility into the Contract

A goal of an IT Support Services contract is to give the City the flexibility to meet and respond to IT requirements that are either outside the capacities of their current staff (e.g. emerging technologies), beyond the workload capacity of the current staff (IT projects), or beyond the skill levels of the current team and vendors (e.g. enterprise database consolidation). Therefore, during the development of the statement of work for the contract the City should ask the vendor to price or expect to deliver a wide range of labor categories, devices, project support and training support. This will provide more certainty that the contract will cover nearly all future requirements, since the IT Industry and requirements are quickly changing. The winning bidder will invariably team with a number of supporting vendors to accomplish some of the task orders and those agreements will be the responsibility of the prime contractor, leaving the City to only manage a single vendor while capturing the cost advantages from competition. A complete list of recommended technical labor categories with descriptions and skill and education requirements is provided in Exhibit 6: Recommended Labor Categories for IT Support Contract. Figure 5 below highlights how mobile and tablet PC sales are quickly eclipsing desktops and industry insiders are actually declaring the death of the desktop. The City MIS Department is not well-equipped to handle these type of industry shifts, so a support contract will be key to handling the changes foreseen for IT in the coming years.

Figure 5: Technology Trends for PC

News

Tablets expected to clobber PC sales in 2011

Table 1.2 U.S. and Worldwide PC Market Segments

Unit Sales	1990	1995	2000	2005	2008	2011	2015
U.S. PC Server Sales (#M)	0.04	0.51	2.5	3.6	4.1	4.1	4.5
U.S. Desktop PC Sales (#M)	8.4	16.8	33.1	36.0	32.0	28.2	27.0
U.S. Mobile PC Sales (#M)	1.1	4.1	10.4	22.4	34.9	63.1	91.0

Step 3 – Write a Performance-Based Contract

The purpose of the City placing an IT Support Services contract is to achieve certain expected results at negotiated prices . however an IT contract that has poorly written technical requirements and undefined or ambiguous performance standards could be costly and impact quality.

The critical success factors for awarding a high-quality IT support contract include:

- Utilizing a technical expert to write the technical specifications of the SOW;
- Comprehensive exhibits describing architecture, assets, standards, service levels, and performance measures;
- Solid source selection criteria and a technically competent selection board.

Top Fix 4: IT Project Management [Short Term 3–6 months]

The City needs a process in which Technology Projects are racked-and-stacked against each other for available funding and managed through completion

- **Business Cases are a must.** Projects should have some business case analysis with lifecycle cost projections, so that City Leadership can make informed decisions.
- **Transparency.** Projects should be approved or disapproved in a transparent process.
- **Disciplined approach to Cost, Schedule and Performance.** Approved projects should have a project charter, budget, and schedule they should be tracked against schedule and cost performance.
- **Manage Projects, don't let them manage you.** City Leadership should periodically review all projects and cancel non-performing projects.

Approach: Implement IT Project Management Processes

Step 1 - Business Case Analysis

A Business Case Analysis enables those approving the resources to analyse the rationale for the project, assess the economics of the project (both financial and strategic), analyse the impact of the project and compare these against other factors, such as the major risks and the prevailing political environment.

Table 4 below presents some guidelines for items to include in every City of Pensacola IT Business Case.

Table 4: Guidelines for developing a Business Case Analysis

Planning Item	Guidelines for developing:
Customer needs (quantified)	Define the specific business needs that drive the investment proposal. Account for both current and future needs of the business. State how the proposed investment aligns with business and corporate strategic objectives.
Market window (schedule driver)	Estimate the initial delivery schedule and cost of delayed delivery.
Proposed solution features	List the features to be included and cite the specific business needs they satisfy. Present sufficient detail to allow the decision-makers to understand the business solution in order to evaluate it properly.
Project organizational framework	Describe how the project will be structured. Assess: • Complexity

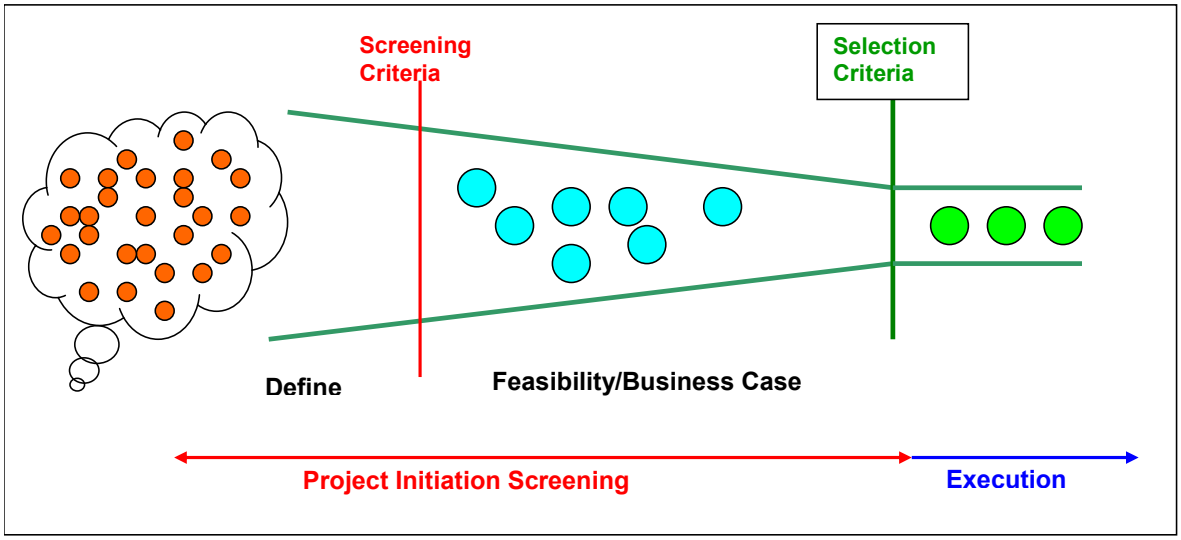
Planning Item	Guidelines for developing:
	• Duration • Project leadership requirements • Project team skill requirements • Roles & responsibilities
Competitive analysis	Describe how the proposed solution is competitive in the marketplace. Assess against the top three competitors' offerings, including price and quality.
Risks	Identify the expected risks to which the project will be exposed. Assess the likelihood of each risk occurring and its impact on the project. Outline a plan for managing the risks; include risk-minimization measures and contingency plans for recovery and damage limitation.
ROI	ROI benefits may either be incurred once upon the implementation of the proposed solution or recur over the operational life of the solution. They may yield direct revenue, or strategically position the enterprise for market gains. Identify the ROI benefits and classify them as such.
Target customers	Identify who the key target customers of the proposed solution are and why they were selected.
Critical success factors	List those factors that must be in place to ensure success of the proposed solution. Be specific. Examples (describe in specific project terms): • Commitment and awareness from Executive Sponsors • Access to necessary source data • Cooperation by affected business or IT areas • Full-time staff assignments to project • Status of interfacing systems
Resource requirements	Identify the project resources by role and quantity, but not by name, over the life cycle of the proposed project. State how the resource estimate was calculated. Include an explanation of the split of effort between in-house and external resources, if appropriate. Examples of resource needs to consider: • Technical skills • Management skills • Technology resources • Capital • Partnerships, alliances
Criteria for measuring success	Describe what measures will be applied to measure the success of the proposed solution. Examples (describe in specific project terms): • Financial (Cost vs. Revenue) • Performance • User acceptance • Schedule • Competitive differentiation

Step 2 - Establish Project Approval Process

A transparent approval process for IT investments is critical for maintaining customer and stakeholder confidence on City fiduciary decisions and confidence in the integrity of the business case analysis process. Unfortunately, the reality of scarcity of resources against the ever growing IT needs and requirements of the City will always provide an opportunity for investment winners and losers. As mentioned in the previous section, it is important that a solid business case is made for each investment.

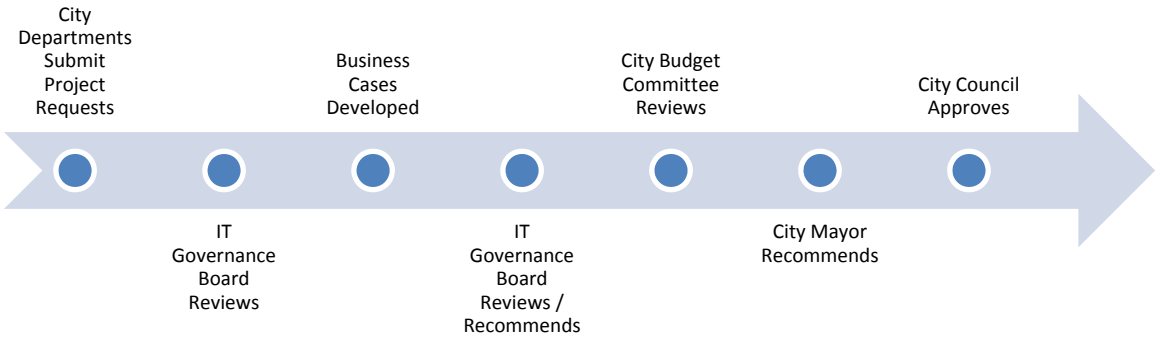
The down-select of IT 'wish list' investments happens once the Business Cases are completed and reviewed. A set of criteria should be utilized for those investments with strong business cases to be compared, prioritized, eliminated and approved.

Figure 6: Project Selection Process

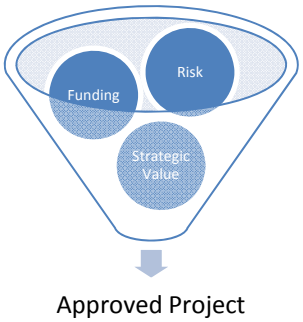


The IT Governance Board could serve as a Steering Committee and be responsible for the project initiation and business case analysis process. A process in which each City Department can submit their requests for IT projects needs to be formally developed.

Figure 7: Example of City Project Selection Process



The City should include, as part of their Annual Budget Planning Process, a review of all proposed IT projects and their associated business case. Each project should be evaluated against a standard set of selection criteria and approved based on how those selection criteria score against financial availability.



Selection criteria should include elements of risk, financial spend, resource management and strategic value to help City Officials make prudent IT spending decisions based on objective factors of evaluation.

Those projects that are approved during the process should be then be programmed in for project execution for the fiscal year and project planning activities should then commence.

<u>Step 3 – Manage IT Projects using Industry Standards</u>

The Gold Standard for how to successfully manage throughout the lifecycle of a project is published by the Project Management Institute (PMI) in their Project Management Body of Knowledge (PMBOK). The City MIS Department must adopt some standard for planning and executing IT projects which includes a standard set of documents (deliverables) used to guide and measure project performance. All IT projects must have a project charter, budget, schedule, communications plan, project status report, and requirements document prior to kick-off. Sample templates of each of these documents can be located in the Exhibits Section of this document. Also found in the Exhibits section of this document is a representative listing of the deliverables associated with any sizable IT software development project as an example of the project management discipline needed to navigate a project to a successful conclusion.

Top Fix 5: Modernize Request for Purchase Process [Short Term 3-6 months]

The City of Pensacola should overhaul the Request for Purchase process making it standardized and employing current technologies.

- **Model an enterprise RP.** Use process models to model the current process and the desired future processes. The modeling should also address technologies or mechanisms (e.g. typewriters) being employed during the process.
- **Perform a Gap Analysis.** Define the gap between where the City is now with the RP process and the future process to include any technologies required for the future state.
- **Incrementally plan.** Budgets or other constraints may prevent the City from adopting and deploying the new RP process in short order. In that case, the City should plan an incremental evolution of the RP process from current state to future state with specific technical functionality and dates (milestones).

The study produced the following findings:

- The existing process is DOS based and uses out-of-date operating systems and dot matrix printers.
- The desktops and dot matrix printers are used to print out a controlled form which is sent via hardcopy to Finance and then manually entered into Eden.
- The Engineering Department uses a typewriter to type the controlled forms, because the desktops/dot matrix printers are essentially glorified typewriters.
- It would actually be more cost effective if all Departments used typewriters and the desktops/dot matrix printers could be retired permanently.
- There are many potential fixes to this process, including various electronic forms that could be set up to work with Eden.
- A workflow process could be created that will still require Finance to pre-approve the electronic form before it is released into Eden.
- The industry standard in Financial Software is to have budgets, RPs, etc. loaded directly via electronic forms into the integrated financial system and then placed in a queue for Finance to approve and release.

Approach: Business Process Improvement

H2PC recommends the following methodology for analyzing business processes and adapting information technology to make the business process more efficient. The Stages include Assess Current State, Define Future State, and Implement Future State.

Figure 8: Stages of the Business Improvement Methodology

Step 1 - Assess Current State

The initial stage consists of focusing the project by confirming and communicating efficiency objectives, and also includes gathering and analyzing data by conducting an assessment. The assessment should review and document the existing business process and IT hardware and software supporting the process. This stage is concluded with identifying and prioritizing opportunities by conducting working sessions and a "gap analysis". An initial case for change is created and "quick hit" improvements can even be implemented immediately.

Step 2 - Define Future State

The next stage takes into account an understanding of the improvement goals for the process. Opportunities are developed by creating solutions and detailed process designs, and determining business and technology requirements. Opportunities are then refined by revising solutions and designs based on feedback, and developing detailed business cases. A plan is formed by determining key activities, timing and resources, and identifying inter-dependencies.

Step 3 - Implement Future State

In the final stage opportunities are built by creating detailed design specifications, workflows, and planning and conducting training and testing. The opportunities are then launched by implementing new processes and technology. Finally results are monitored by comparing actual to planned benefits, and taking action to sustain continuous improvements.

Top Fix 6: Database Consolidation [Medium Term 6-12 months]

The City needs to review 28+ MS Access Databases for consolidation, potential elimination, or replacement with an Enterprise Solution.

Numerous databases utilizing repetitive data sets are presently maintained by multiple departments in support of their individual work flows. The consolidation of these databases will allow the City to;

- Provide the most current and accurate information to all Departments
- Eliminate isolation of redundant data and their associated work flows
- Increase operating efficiencies and customer service through more productive use of employee resources

Approach: Conduct Review of MS Access and other City Databases

The City's existing 28+ MS Access Databases present a significant opportunity to consolidate and/or reduce databases. The following methodology is recommended for analyzing the current database inventory and designing a strategy for consolidation and/or replacement. The phases of this approach include Assess, Design, Develop, and Deploy.

Figure 9: Phases of the Database Consolidation Approach

Step 1 – Database Assessment

The initial phase consists of gathering and analyzing existing database information by conducting an assessment. The assessment should start with an inventory of all active City of Pensacola Databases. Specific steps to be undertaken in the database reduction process include validating the current database inventory, analyzing the impact of consolidation and/or reduction, and prioritizing databases identified for consolidation and/or reduction. The City should review and validate the current database inventory with MIS and with all Departments, to ensure all databases are properly captured and documented. The City should rate business critical areas as the highest priority for database consolidation.

Step 2 – Design Future State

The next phase is to develop specific plans and strategies, including Commercial Off-the-Shelf (COTS) acquisition strategies, for migration to selected applications. The future state design should consolidate most, if not all of the MS Access databases into either a single SQL database or into a collaborative platform, such as MS SharePoint 2010 which utilizes SQL Server to store and access user data. There may be other solutions as well, which all should be evaluated during the design phase.

The design phase should produce detailed designs that account for all City business and technology requirements to be addressed. A project plan should be developed that outlines key activities, timelines, and resources needed to implement the solution.

Step 3 – Develop the Solution

In this phase, a single solution is chosen that fully meets the requirements and design criteria. The development should be monitored by a technical project manager and status reports issued regularly to keep the development on schedule. Once development nears completion, the City should commit a group of end-users to assist with user acceptance testing of the solution. Once the solution passes the testing phase, it is ready to be deployed.

Step 4 – Deploy the Solution

In the final phase, the solution is deployed and all existing databases are archived. During deployment, it is critical that all impacted Departments receive regular deployment communications. Additionally, training on the new solution should be conducted just prior to go-live, so that City Departments can seamlessly transition to the new database solution.

Top Fix 7: Re-organize MIS [Medium Term 6–12 months]

The City of Pensacola needs to re-organize the MIS Department with emphasis on customer service and the outsourcing of certain functions best suited for performance by outside vendors.

- The organization should be driven by increased emphasis on Customer Service through the new IT Service Management Group.
- Certain functions in the current organization should be re-aligned, for example, PIO and Video belong with Public Affairs/Marketing (this is content creation).
- Functions such as Website Development and Hosting and Communications Services and Support are best handled by vendors and oversight through MIS Contracts using the IT blanket RFP.

> 'Providers of IT services can no longer afford to focus on just technology and their internal organization; they now have to consider the quality of the services they provide and focus of the relationship with their customers.'
>
> - IT Service Management Guide

Approach: Customer-Focused Organizational Alignment

A re-alignment of the MIS Organization to make the organization more customer-focused is recommended. This includes stand-up of an IT Service Management Group inside the Department that focuses directly on Departmental IT interactions and support, including Help Desk Operations, Contract Support, and IT Projects. The other groups recommended would focus on Enterprise Applications and Network Operations. The recommended approach to organizational transformation is to start with a strategy and then address the three principal components of any organizational entity: Programs, Processes and Systems; Organization and People; and Performance.

Figure 10: Organizational Transformation Components

Step 1 – Define Key Transformation Components

The initial stage consists of defining the key components for organizational transformation;

1. Strategy – This includes defining, validating, detailing and communicating the vision, goals, and business case driving the MIS Transformation. This also includes aligning City Leaders in support of process redesign efforts.

2. Programs, Processes, & Systems – This includes assessing MIS process effectiveness, redesigning critical processes and aligning the systems, equipment and facilities that support their execution.

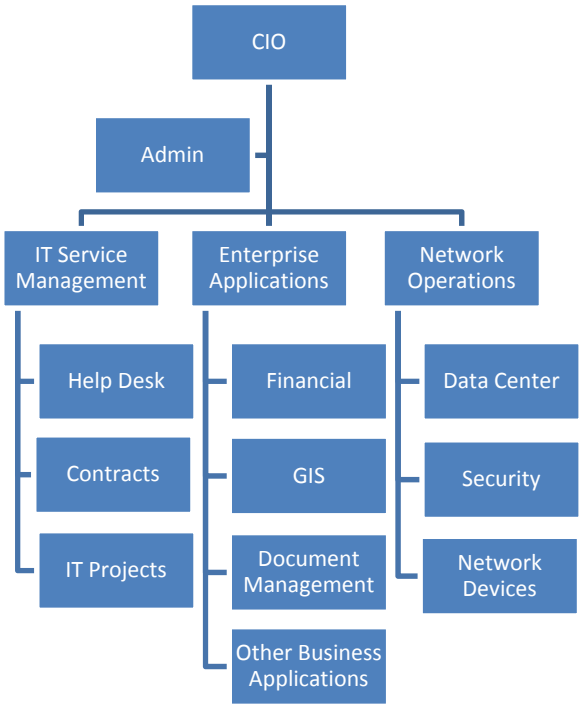
3. Organization and People – This includes designing the right structures and aligning the human resources with the right skills and competencies to perform the key processes and steward City of Pensacola IT initiatives.

4. Performance – This includes establishing and actively managing appropriate measures used to verify that overall strategy is being executed to achieve MIS Transformation.

Step 3 - Implement Future Organizational Structure

Whatever organizational structure is selected for MIS, it is of critical importance that the four groupings of customers and their business needs are identified and taken into account; Public Safety, Resident Services, Revenue Generators, and Internal Operations. Since each of these groups has different IT needs, the MIS Department must be comfortable using a mix of resources (Department Staff, Support Contractor Staff, IT Project Staff, Cloud Providers, etc.) to meet each Department's business needs. The Ten Recommended Fixes outlined in this document work toward providing customer-focused and cost-efficient technology support for the City of Pensacola, but it can only be sustained by a MIS Department organization that is organized and equipped to deal with the rapidly accelerating pace of new technologies being deployed.

Figure 11: Proposed MIS Organizational Chart



Top Fix 8: Implement Enterprise Architecture [Long Term 12-24 months]

The City of Pensacola should implement Enterprise Architecture (EA) to create alignment between the business and technical architectures to effectively reduce redundancy, reuse existing information and software and leverage new technologies.

- Reduce the multitude of City Enterprise and Business Applications using duplicative processes and duplicative data sets.
- Move to single technologies. There are several different phone systems, several different security systems, several different databases, etc.
- Enterprise Architecture (EA) will allow for a unified design and system interoperability across the City of Pensacola Enterprise.
- Functional layers are created that have specific roles and applications are chosen based on open standards and the ability to interoperate.

Approach: Enterprise Architecture

The City should use a proven Enterprise Architecture (EA) Approach to document the technology and architectural needs of the City. It is also recommended that a certified Enterprise Architect develop a High-Level Application Architecture based on the Department of Defense Architecture Framework (DoDAF), a mature EA approach used extensively across government and commercial enterprises. A distinct advantage to the City is the presence of former DoD employees in this area that are trained in this approach. As an IT Consulting and Staffing Company, H2PC, has recruited staff locally and used the DoDAF approach successfully on numerous projects. DoDAF is a comprehensive approach to documenting the Systems Views, Operational Views, and Technical Views that will clearly articulate the suite of applications that will comprise the City of Pensacola's Future IT Systems. The views presented in DoDAF are a representation of a whole system from the perspective of a set of concerns or interests. From the viewpoint of a stakeholder, a view addresses all the critical or important aspects of the system and several views are needed to cover all the stakeholders concerns.

Figure 12: DODAF Architecture Framework

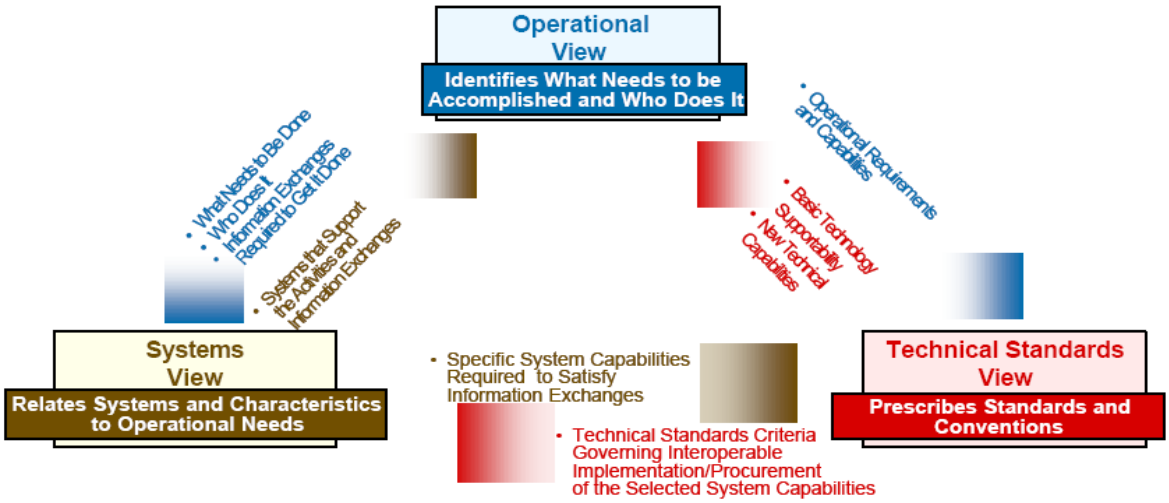


Table 5: DoDAF Operational Views

Applicable View	Framework Product	Framework Product Name	General Description
All View	AV-1	Overview and Summary Information	Scope, purpose, intended users, environment depicted, analytical findings
All View	AV-2	Integrated Dictionary	Architecture data repository with definitions of all terms used in all products
Operational	OV-1	High-Level Operational Concept Graphic	High-level graphical/textual description of operational concept
Operational	OV-2	Operational Node Connectivity Description	Operational nodes, connectivity, and information exchange need lines between nodes
Operational	OV-3	Operational Information Exchange Matrix	Information exchanged between nodes and the relevant attributes of that exchange
Operational	OV-4	Organizational Relationships Chart	Organizational, role, or other relationships among organizations
Operational	OV-5	Operational Activity Model	Capabilities, operational activities, relationships among activities, inputs, and outputs; overlays can show cost, performing nodes, or other pertinent information
Operational	OV-6a	Operational Rules Model	One of three products used to describe operational activity—identifies business rules that constrain operation

Applicable View	Framework Product	Framework Product Name	General Description
Operational	OV-6b	Operational State Transition Description	One of three products used to describe operational activity—identifies business process responses to events
Operational	OV-6c	Operational Event-Trace Description	One of three products used to describe operational activity—traces actions in a scenario or sequence of events
Operational	OV-7	Logical Data Model	Documentation of the system data requirements and structural business process rules of the Operational View
Systems and Services	SV-1	Systems Interface Description Services Interface Description	Identification of systems nodes, systems, system items, services, and service items and their interconnections, within and between nodes
Systems and Services	SV-2	Systems Communications Description Services Communications Description	Systems nodes, systems, system items, services, and service items and their related communications lay-downs
Systems and Services	SV-3	Systems-Systems Matrix Services-Systems Matrix Services-Services Matrix	Relationships among systems and services in a given architecture; can be designed to show relationships of interest, e.g., system-type interfaces, planned vs. existing interfaces, etc.
Systems and Services	SV-4a	Systems Functionality Description	Functions performed by systems and the system data flows among system functions
Systems and Services	SV-4b	Services Functionality Description	Functions performed by services and the service data flow among service functions
Systems and Services	SV-5a	Operational Activity to Systems Function Traceability Matrix	Mapping of system functions back to operational activities
Systems and Services	SV-5b	Operational Activity to Systems Traceability Matrix	Mapping of systems back to capabilities or operational activities
Systems and Services	SV-5c	Operational Activity to Services Traceability Matrix	Mapping of services back to operational activities
Systems and Services	SV-6	Systems Data Exchange Matrix Services Data Exchange Matrix	Provides details of system or service data elements being exchanged between systems or services and the attributes of that exchange

Top Fix 9: Continuously Train to Achieve Success [Long Term 12-24 months]

The City of Pensacola must make an investment in IT success through training City employees to successfully utilize technologies.

- Training budgets are always cut first when revenues (tax rolls) decline, however, the lack of training has a negative long-term effect on organizations.
- Cuts in Application training can have serious impacts on an organization, since errors are often compounded in these systems until the application fails.
- Employ Web-based Training. Industry and Government rely on Web-Based Training (WBT) offerings to help with employee training during periods of cost-cutting. There are a large number of cost-effective WBT providers available on an affordable subscription or per class basis. HR, MIS, and other Departments responded that WBT training would be desired to help employees increase their proficiency using IT and gain new certifications.
- Provide more training on applications the City already owns, so that Departments could utilize them more effectively, decreasing reliance on MIS.

Approach: Web-Based Training (WBT) Offering

A Web-Based Training (WBT) approach is recommended for meeting the IT training needs of the City of Pensacola in a cost effective manner. Also recommended are the following phases to transition to a WBT offering for both IT Staff and IT End-Users.

Step 1 – Develop an IT Learning Strategy

This approach provides the capability to develop an IT learning strategy that supports the overall business objectives. The Strategy phase begins by assessing the current environment for content, the technologies and organizational infrastructure need to support WBT, the culture and best methods to incentivize adoption of WBT. The development of the City of Pensacola WBT Strategy should occur in two distinct steps:

1) Analysis of IT educational needs across all Departments
2) Development of a WBT approach, including preferred WBT vendor(s)

The goal of these steps is to provide the City of Pensacola with the ability to provide employees access to the highest quality Information Technology education and training materials available within budget constraints. The City of Pensacola's WBT approach,

when executed, is intended to result in increased IT efficiency and effectiveness, particularly in the areas identified in the Table below.

Table 6: Goals of the WBT Strategy

Area of Impact	City of Pensacola's Strategic e-Learning Plan Benefits
Employee Skill Sets	Provide proper training to employees to support IT educational needs
Reduce Program Costs	Reduce training costs, including travel, reproduction of course materials, course maintenance, etc.
Reduce Organizational Impact	Employees have the opportunity to take classes anywhere-anytime
Ease of Maintenance	Courseware is maintained and managed by a cloud vendor
Reduce Burden of Training Administration	Training compliance, competencies, and metrics can all be tracked and reports can be produced

Step 2 – Implement a WBT Capability

This step includes comparing the analysis of IT educational needs against existing WBT Cloud Vendors to manage and deliver learning content more effectively. The enabler of the Internet age is a robust and comprehensive technical architecture that supports the rapid development and implementation of new training programs supporting IT initiatives. These training initiatives bring an enterprise flexibility and speed, allowing new IT initiatives to be deployed rapidly because user training can be deployed rapidly.

The vendor evaluation should focus on the following areas:

- Content availability and alignment with educational needs identified
- Hardware and software requirements for City employees to utilize the system
- Reporting capabilities

One of the challenges often faced by organizations tasked with delivery of technology-based learning is to understand the technical capabilities of their intended audience. In order to get this WBT capability adopted fully, there will probably need to be tutorials or demonstration sessions conducted with City employees until they feel comfortable accessing the WBT system, searching courses, and consuming course content.

Top Fix 10: Employ Cloud Services [Long Term 12-24 months]

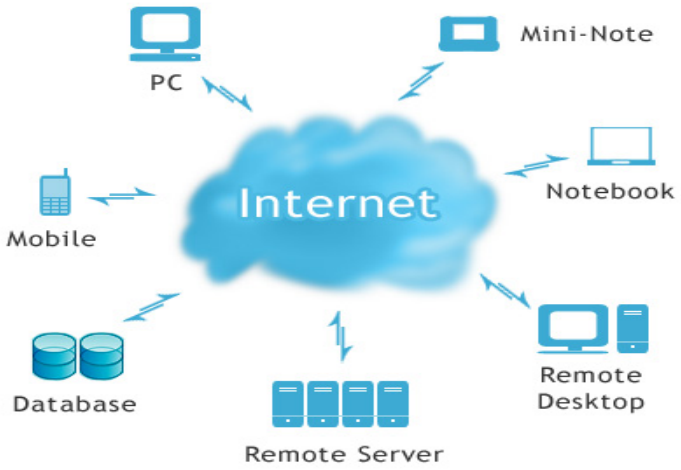
The City of Pensacola should take a hard look at the numerous enterprise and business applications that are now available on the internet through lower cost monthly subscriptions.

- Software-as-a-Service (SaaS) is ideal for organizations that want maximum flexibility on the types of devices they utilize, including Apple, Droid, and mobile devices because users are connected to applications through web-browsers.
- This approach allows Departments, especially those that operate as businesses, to be more flexible in the selection of business devices and applications.
- The City could test the concept as a pilot with one Department first, because of the organizational culture that exists today few Departments are early-adopters.

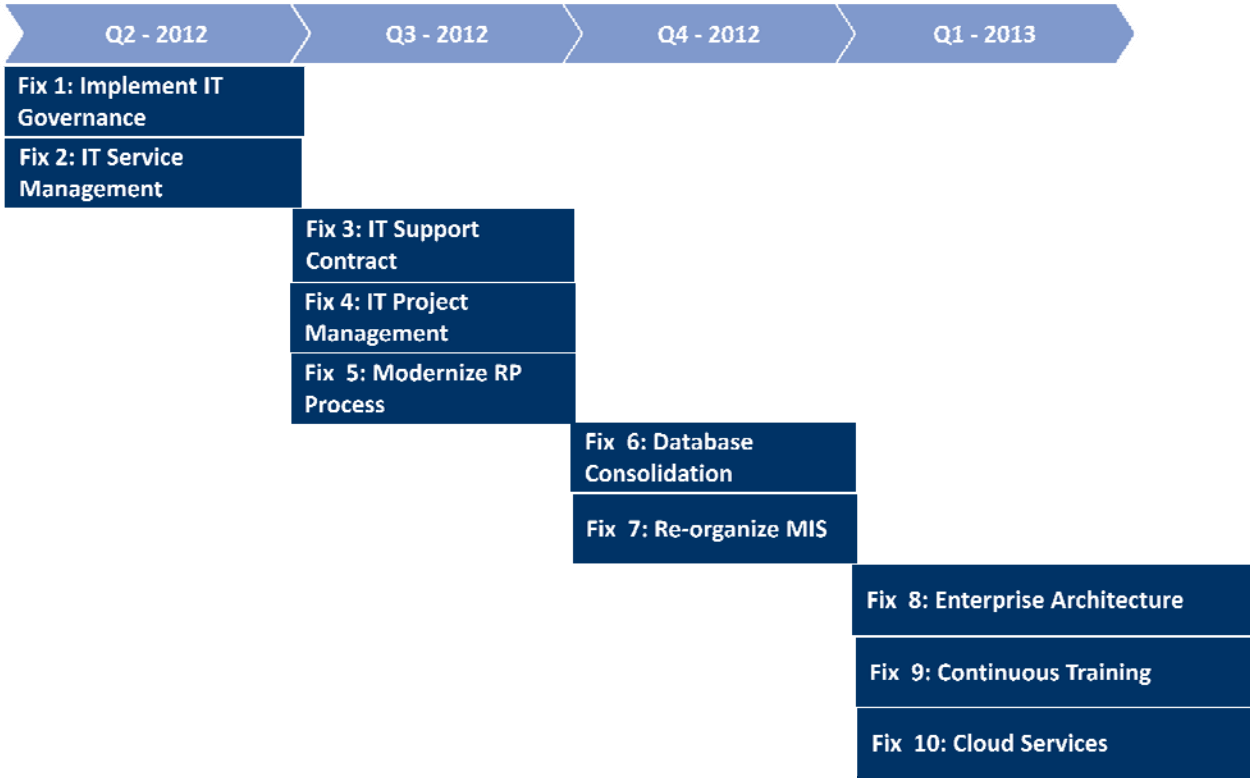
Approach: Software-as-a-Service (SaaS)

As internet bandwidth availability and speed continues to improve, this opens possibilities for the development of applications that would traditionally run in your data center. Enterprises are quickly adopting a software-as-a-service (SAAS) model which delivers the same application functionality at a higher service level and cheaper cost than you are currently capable of producing internally. As an example, typical email systems require having multiple servers and a staff to administer, perform upgrades, troubleshoot and install patches. In a cloud environment, IT staff are able to focus on providing value-added customer support. Patches and upgrades are performed by the cloud service providers. Another benefit comes from power and cooling savings in the data center. Email is the top candidate that most commercial and government enterprises are moving first to a SaaS model.

Figure 13: Cloud Services



SECTION C: Notional Schedule



SECTION D: Summary

In Summary, the list of Top 10 Fixes is not merely a list of recommendations but set of critical requirements for the City of Pensacola to take MIS and technology off life support and to prepare Pensacola to be a leader among mid-sized cities. Not acting on the Top 5 Fixes in the next 12 months will potentially lead to a crippling of City mission and even greater costs. The beauty of passionate and committed employees is they evidentially find work-arounds to get the job done. However, the consequences will be that City Departments will make their own investments in technology (as has been done many times in the past) to meet Department mission and customer requirements.

It became apparent during the course of this assessment that during past Administrations' and Leadership, the City of Pensacola starved the MIS Department and technology initiatives. Technology has again and again become the sacrificial lamb on the City budget chopping block. For the City of Pensacola to take its position as a Best City to Work, Live and Play it must recognize and embrace technology as a key enabler and invest accordingly.

SECTION E: Exhibits

Exhibit 1: Example of Software Development Project Deliverables

Project Initiation Deliverables

Develop Project Charter
Update Project Spend Plan
Development Project Management Plan (PMP)
Development Risk Management Plan (RMP)
Development Communication Plan
Document Enterprise Requirements
Plan and Conduct Formal and Quality Reviews
Obtain Stakeholder Commitment

Requirements Management Deliverables

Document Functional Solutions Specifications
Document Use Case Scenarios
Document Reliability, Performance, and Security Specifications
Package Requirements Specification Document
Develop Project Baselines
Plan and Conduct Peer Review
Create Requirements Traceability Matrix
Conduct Quality Review

Analysis Deliverables

Document Information Needs
Create Logical Data Model
Conduct Peer Review
Create Current Physiological Process Model (As-Is)
Create Logical Process Model
Conduct Peer Review
Reconcile Process and Data Models
Perform CRUD Analysis
Extend Logical Models
Plan Work Product Review
Conduct Formal Review
Implement Findings Resolutions

Architecture and Design Deliverables

Create Solution Architecture
Plan and Conduct Peer Review
Create Design Specification
Create Interface Control Document
Approve Software Design Document
Plan and Conduct Formal Review

Create Physical Data Model

Test Preparation Deliverables

Submit Testing Service Request Form

Establish Test Tool

Prepare Field Test Contract

Perform Risk Assessment

Establish Test Environment

Create Master Test Plan

Create Test Cases and Scripts

Create Test Traceability Matrix

Conduct Peer Review

Product Build & Document Deliverables

Develop Product Component

Perform Component Test

Create Product Build

Perform Integration Test

Create System Build

Perform System Tests

Perform User Acceptance Test

Conduct Quality Review

Create Technical Manual

Create User Guide

Create Release Notes

Test and Certification Deliverables

Conduct Testing Service Focus Meeting

Perform Testing Service Test

Quality Gate Review: Testing Service

Perform Field Testing

Prepare Field Testing Memoranda

Obtain Certifications

Quality Gate Review: Field Testing

Prepare Product for Release

Project Closure Deliverables

Monitor the System in Production

Perform Post Implementation Review

Perform Recognition Activities

Conduct Quality Gate Review

Close the Project

Exhibit 2: Meeting Agenda and Minutes Template

CITY OF PENSACOLA, FLORIDA

Meeting Agenda and Minutes

Meeting Name:	Scribe:	Manager:
Date:	Time:	Location:

Last Name	First Name	In Attendance

Handouts:	
Team Project #:	Task #:

Topic:	Presenter:
Discussion:	
Decisions/Deliverables:	

Topic:	Presenter:
Discussion:	
Decisions/Deliverables:	

Topic:	Presenter:
Discussion:	
Decisions/Deliverables:	

NOTE: Place the Agenda item in the first cell (Topic) and record the minutes for each item in the cell below (Discussion).

Action Item	Assigned To	Date Originated	Expected Complete Date

City of Pensacola 1

Exhibit 3: Project Charter Template

CITY OF PENSACOLA, FLORIDA

[Name of Project]
Project Charter

[Name of Organization]

Day Month Year

[Delete this page and the content in brackets once complete]

Purpose:

The project charter formally authorizes a project. The project charter provides the project manager with the authority to apply resources to the project. The project manager should always be assigned prior to the start of planning (if possible) and preferably while the project charter is being developed.

The project charter must be issued by someone external to the project team and at the appropriate organizational level to satisfy the needs of the project. Someone of the proper ranking who can acquire necessary resources, influence key stakeholders, enforce accountability on all project team members.

Inputs:

- **Statement of Work** - The SOW is a narrative description of products or services to be supplied by the project
- **Business Case** -Justify the reason, resources and capital investment necessary to bring a project to fruition
- **Contract** - A contract from the customer's acquiring organization is an input if the project is being done for an external customer
- **Enterprise Environmental Factors** - When developing the project charter, any and all of the organization's enterprise environmental factors and systems that surround and influence the project's success must be considered
- **Organizational Process Assets** - Any or all process related assets, from any or all of the organizations involved in the project that can be used to influence the project's success." Examples include: plans, procedures, lessons learned, historical information, schedules, risk data and earned value data
- **Project Management Methodology** - A project management methodology defines a set of Project Management Process Groups, their related processes and the related control functions that are consolidated and combined into a functioning unified whole

Outputs (i.e. this document feeds the following artifacts):

- Project Management Plan
- Stakeholder List/Description
- Requirements Traceability Matrix

Tips:

Expert judgment is often used to assess the inputs needed to develop the project charter. Such judgment and expertise is applied to any technical and management details during this process. Such expertise is provided by any group or individual with specialized knowledge or training, and is available from many sources, including: other units within the organization, consultants, stakeholders, professional and technical associations, industry groups, etc.

Each project document/artifact will often act as an input to other project artifacts. Spending the appropriate time and effort upfront will make creation of future document/artifact more effective and efficient.

Document History

Version	Date	Author	Revision Notes

Document Contact

Name	
Phone Number	
Email	

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7 Schedule 1
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11 Approach 4
12 Assumptions and Constraints 4
13 Performance Measures/Outcomes 5
14 Acceptance 5

1 Project Statement

[Provide a short overview of the project in approximately 15-20 words.]

2 Business Drivers/Background

[Reasons for recommending the project, including background information, business problem, etc.]

3 Vision

[The idealistic view of what business will be like after the project is completed.]

4 Goal Statement

[A high-level statement that provides the overall context for what the project is trying to accomplish.]

5 Objectives

[Specific, measurable, attainable, realistic, time-bound, concrete objectives for achieving the goal.]

6 Scope

[What will and will not be delivered as part of this project.]

In Scope:

- xyz..

Out of Scope:

- xyz..

7 Schedule

[Project start and end dates, milestones and/or phases]

Project start date:

Phase I

Milestone 1-

Milestone 2-

Milestone 3-

Phase II

Milestone 1-

Milestone 2-

Milestone 3-

Project end date:

8 Cost Projection

[The total estimated cost of the project.]

	Development Costs	Maintenance Costs
Phase I		
Hardware		
Software		
Labor and Benefits		
Admin		
Training		
Other		
Subtotal Phase I		
Phase II		
Hardware		
Software		
Labor and Benefits		
Admin		
Training		
Other		
Subtotal Phase II		

Total		

9 High Level Deliverables

[The tangible, verifiable outcomes of work that satisfy the project objectives.]

Deliverable	Description

10 Project Organization

Roles & Responsibilities

[Roles and responsibilities assigned to each individual or group resource to the project.]

Project Sponsor: *Name and contact info*

Task/Responsibility

Task/Responsibility

Project Manager: Name and contact info

Task/Responsibility

Task/Responsibility

Primary Customer Representative: Name and contact info

Task/Responsibility

Task/Responsibility

Customers: Names and contact info

Task/Responsibility

Task/Responsibility

Technical Team: Member names and contact info

Task/Responsibility

Task/Responsibility

Executive Team: Member names and contact info

Task/Responsibility

Task/Responsibility

Programmer: Name and contact info

Task/Responsibility

Task/Responsibility

Governance

[Describes the oversight committees, jurisdictional management groups and any other required approvals.]

Team Composition

[Org chart or matrix identifying all human resources allocated to the project, their reporting relationships and % of time allocated to the project.]

11 Approach

[Description of how the project will accomplish its goals.]

12 Assumptions and Constraints

Assumptions:

[The events that need to occur for the project to be successful but are outside the total control of the team]

- xyz..
- xyz..

Constraints:

[Limitations generally outside the control of the project which may negatively impact the project scope.]

- xyz..
- xyz..

13 Performance Measures/Outcomes

[Predetermined methods for assessing whether the project has achieved its goals]

14 Acceptance

[Unanimous approval by Key Stakeholders for the final charter document.]

We, the undersigned project members, have reviewed this document and approve its contents:

Name and Title	Signature	Date

Exhibit 4: Weekly Project Status Report Template

CITY OF PENSACOLA, FLORIDA

At-a-Glance Weekly Project Status Report

Project Name:	**Week Ending:**
Project No. or ID Code:	**Project Manager:**

Description of Project:

Project Start Date:	**Project End Date:**	**% Complete:**

Mark Project Status:

☐ Green (OK) ☐ Red (in danger) ☐ Yellow (in trouble)

Current Life Cycle Phase (check one):

Concept	Planning	Design	Build	Training	Implementation

Project Documentation	Resources	Materials & Equipment
☐ Not started	☐ Available	☐ Sent for approval
☐ In development	☐ Need to assess	☐ On order
☐ Revision update	☐ Need to hire	☐ Delivered
☐ Sent for approval	☐ Release resource(s)	☐ Supplier paid
☐ Other (specify)_____	☐ Other (specify)_____	☐ Other (specify)_____

Project Issues:

Project Risks:

[Replace with Company Name or Logo] 1

Exhibit 4: Project Closure Checklist Template

CITY OF PENSACOLA, FLORIDA

[Name of Project]
Project Closure Checklist

[Name of Organization]

Day Month Year

Project Closure Checklist

Project Name:	
Submitted By:	
Date:	

Final Project Checklist	
	Acceptance criteria have been met.
	Final review of deliverables is complete.
	Final deliverables have been presented and turned over to the customer.
	The Engagement Team and customer both agree that the deliverables meet or exceed expectations and that the engagement is complete.
	All outstanding issues have been determined.
	All unresolved issues have been assigned to relevant resources.
	All outstanding issues have been documented.
	All resolved issues have been documented.
Project Closure Meeting	
	Project Closure Meeting held.
	What went well discussed.
	What could have been done differently discussed.
	Conclusions and recommendations documented.
	Success celebrated.
Post-Project Assessment	
	Project Post Implementation Review Report Completed
Final Customer Sign-Off	
	Final sign-off obtained.
	Operations informed that project is ready to be closed.

Project Team Member Evaluations	
	Team member performances documented.
	Team member evaluations reviewed with each team member.
	Team supervisor provided with copies of each evaluation.
Personal Evaluations	
	Team member evaluation obtained.
	Sponsor/senior team member evaluation obtained.
	Client evaluation obtained.
Business Operation Updates	
	Apply appropriate updates to Organizational Process Assets
	Archive pertinent program/project documents to be used for historical data
Notes	

Exhibit 5: Project Management Plan

CITY OF PENSACOLA, FLORIDA

[Name of Project]
Project Management Plan

[Name of Organization]

Day Month Year

[Delete this page and all content in brackets once complete]

[Purpose:

A project management plan is what holds the key to success in any project. It is a document that not only defines your project, but guides the project's progress through completion. The project management plan is a formal, approved document that creates a map of how the project will be executed, monitored and controlled. It may be high-level or very detailed and may be made up of one or more ancillary management plans and other planning documents.

The project manager creates the project management plan following input from the project team and key stakeholders. The plan should be agreed and approved by at least the project team and its key stakeholders.

This document should be tailored to fit the particular project in question. The amount of detail required depends on the complexity of the project; the more complex the project the more detail that is needed. For highly complex projects, additional documents such as a Risk Management Plan and a Cost Management Plan are usually required and can be referenced or added as attachments. For minimally complex projects, some sections of this template can be disregarded]

The PMP further refines and advances the approaches that were defined during the initiating phase. The PMP is a living document and should be updated continually throughout the project.

The intended audience of the PMP is all project stakeholders including the project sponsor, senior leadership and the project team.

Inputs:

- **Project Charter**
- **Outputs from ancillary planning (or reference to other plans)**
  - Communications Management Plan
  - Configuration/Change Management Plan
  - Risk Management Plan
  - Etc.
- **Expert Judgment**
- **Enterprise Environmental Factors -** Any and all of the organization's enterprise environmental factors and systems that surround and influence the project's success must be considered
- **Organizational Process Assets -** Any or all process related assets, from any or all of the organizations involved in the project that can be used to influence the project's success. Examples include: plans, procedures, lessons learned, historical information, schedules, risk data and earned value data

Tips:

Expert judgment and expertise is applied to any technical and management details during this process. Such expertise is provided by any group or individual with specialized knowledge or training, and is available from many sources, including: other units within the organization, consultants, stakeholders, professional and technical associations, industry groups, etc.

Each project document/artifact will often act as an input to other project artifacts. Spending the appropriate time and effort upfront will make creation of future document/artifact more effective and efficient.]

Document History

Version	Date	Author	Revision Notes

Document Contact

Name	
Phone Number	
Email	

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1 Overview

[Provides an overview of the project's motivation, objectives, success criteria, major deliverables, and constraints.]

1.1 Project Purpose, Objectives, and Success Criteria

[Define the purpose, scope, and objectives of the project and its delivered products. Briefly state the business needs to be satisfied and the methods by which satisfaction of those needs will be determined.

Define quantitative and measurable business objectives.

Define the criteria by which key stakeholders will judge how successful the project is.

State the relationship of this project to other projects and the integration of this product with other products.]

1.2 Project Deliverables

[List the major items to be delivered to the customers or other parties. As appropriate, list the deliverables, their recipients, interim and final delivery dates, and delivery method.]

Deliverable	Recipient	Delivery Date	Comments

1.3 Assumptions, Dependencies, and Constraints

[This section describes known assumptions upon which the project is based; any external events or externally-supplied items upon which the project depends; and the constraints under which the project will be conducted.]

1.4 References

[List all documents and any other materials used as sources of information for this plan.]

1.5 Definitions and Acronyms

[Define any acronyms or project-specific terms. For each acronym, give both the meaning of the abbreviation and a definition of the item.]

1.6 Evolution of the Plan

[Describe the method for producing both scheduled and unscheduled updates to this plan and how the new information will be disseminated. For example, you could state that you will review the plan every time the product requirements specification or certain other major project artifacts are updated, or when project constraints or resources change. Alternatively or additionally, you could schedule periodic

project reviews at specified milestones and update the plan as needed following each review. Describe mechanisms for placing the baseline version and future revisions of the plan under configuration control.]

2 Project Organization

[This section describes interfaces to entities outside of the project, identifies the internal project structure, and defines roles and responsibilities for the project.]

2.1 External Interfaces

[Describe the organizational boundaries between the project and external entities. Provide high level description of communications with stakeholders.]

2.2 Internal Structure

[Describe the internal structure of the project organization. It might be helpful to include organization charts or matrix diagrams to illustrate lines of authority, responsibility, and communication.]

2.3 Roles and Responsibilities

[List the major project team roles and the individuals who will fill these roles, along with the specific responsibilities those individuals will have. Ex:

- Project Manager
- Product Manager
- Technical Lead
- Software Lead
- Hardware Lead
- Architect
- Systems Engineer
- Requirements Analyst
- Software Engineer
- Quality Assurance Manager, Coordinator, or Engineer
- Subject Matter Expert]

Role	Name	Responsibility
Program Manager		
Project Manager		

3 Managerial Process Plans

[This section defines the various project management plans and activities for the project. Can reference other documents and/or attachments in this area as well.]

3.1 Start-Up Plans

[This section specifies plans that will lay a solid foundation for a successful project. Depending on the size and scope of the project, you may incorporate these plans directly in this section, or each section may simply contain a reference to a separate document or attachment.]

3.1.1 Estimation Plan

[This section describes how project estimates will be prepared, including:

- The methods, tools, and techniques that will be used to estimate project size, effort, cost, schedule, and critical computer resource requirements
- The timing of the estimates
- Who will participate in the estimation process

You can include the actual estimates in this section or they can be stored elsewhere. For each estimate made, document the estimation method used, the assumptions made, and the confidence level for the estimate. Specify the methods to be used periodically to re-estimate the cost, time, and resources needed to complete the project.]

3.1.2 Staffing Plan

[Specify the number of staff needed by skill area or project role (see section 2.3), along with required skill levels, and the duration for which each staff member is needed. Describe the anticipated staffing profile (the mix of skills and effort levels needed at various times in the project), when people will be added to the project or depart from it, and how new team members will be brought up to speed. Specify the sources of the staff: internal from your department, internal from another department within your organization, hiring of a new employee, or hiring of contractors. Document the following information in this section:

- Candidate Requirements, including job classifications and descriptions
- Selection of candidates (if available) and assignments to tasks
- Availability and duration of assignment for all candidates

3.1.3 Staff Training Plan

[This section may be included with 3.1.2 or associated references. This section specifies any training that will be needed to ensure the necessary skill levels needed for the project. The types of training, number of people to be trained, and the training methods should be specified.]

3.1.4 Resource Acquisition Plan

[This section specifies the plan for acquiring the resources (other than personnel) needed to successfully complete the project. Describe the resource acquisition process. Specify the points in the project schedule when the various acquisition activities will be needed. Non-human resource categories include but are not limited to:

- Development resources: the software and hardware tools required to execute the project (number and size of computers, operating systems, databases, software tools needed, network connectivity needed, CM and other support tools)
- Product resources: Other Equipment

3.2 Work Plan

[Specify the various work activities required to produce the project's major deliverables, including contents and timing of the activities. Use a work breakdown structure or a table to depict the work activities, corresponding deliverables, and the relationships among the activities. If the work breakdown structure is stored in a separate location or as attachment, provide a reference to that location here. For each work package, specify factors such as staff, budget, and other resources needed, estimated duration, work products to be produced, and predecessor tasks.]

3.3 Control Plan

[This section describes how the project will control and report on the project status and activities. Specify the frequency at which the various project status indicators are to be monitored and specific events that could trigger a status evaluation. Each section may contain a reference to a separate document or attachment]

3.3.1 Data Control Plan

[Describe how the project will manage its data, including deliverable and non-deliverable documents, project status metrics, reports, specifications, and so on. Address the following:

- Types of data to be managed
- Content and format description where pertinent (such as templates to be used)
- Data requirements lists for suppliers
- Privacy requirements
- Security requirements and procedures
- Mechanisms for data collection, retrieval, distribution, and archiving]

3.3.2 Requirements Control Plan

[Describe the mechanisms for measuring, reporting, and controlling changes to the product requirements. Describe how to assess the impact of requirement changes on product scope and quality, and on project schedule, budget, resources, and risk factors. If changes in requirements affect project schedule or other commitments, update this Project Management Plan, other plans, estimates, and commitments to reflect the changes.]

3.3.3 Schedule Control Plan

[Specify the control mechanisms used to measure the progress of the work completed. Specify the methods and tools used to compare actual schedule performance to planned performance. A project schedule in the form of a Gantt chart should be created, preferably in a project tracking tool. Describe how and when schedules will be modified.]

3.3.4 Budget Control Plan

[Specify the control mechanisms used to measure the cost of work completed, compare actual to budgeted cost, and implement corrective actions when actual cost deviates excessively from budgeted cost. Explain if Earned Value Management (EVM) will be used to analyze financials. Specify the intervals or points at which cost reporting is needed and the methods and tools that will be used to manage the budget.]

3.3.5 Communication Plan

[Identify the regular reports and communications expected of the project, such as weekly, monthly, quarterly status reports, regular reviews, and as-needed communication. The exact types of communication vary between groups, but it is useful to identify the planned means at the start of the project. A table such as that below is a convenient way to describe the communication expectations.]

Communication Type	Communication Schedule	Communication Mechanism	Initiator	Recipient
Progress Report	Monthly	Team meeting and document	Project Manager	Project team

3.3.6 Metrics Collection Plan

[Specify the methods, tools, and techniques used to collect and retain project metrics. The metrics to be collected, reported, and used (as well as the collection frequency) should all be addressed.]

3.4 Risk Management Plan

[This section specifies the plan for identifying, analyzing, prioritizing, and controlling project risks. It should describe the procedures for contingency planning and the methods used in tracking risks, evaluating changes in individual risk exposures, and responding to those changes. Include a plan for ongoing risk identification throughout the project's life cycle. A large project should create a separate risk management plan which may be referenced here.]

3.5 Issue Resolution Plan

[Describe how problems, issues, and action items that arise on the project will be documented, resolved, and tracked to closure.]

3.6 Project Close-Out Plan

[This section describes the actions necessary to ensure an orderly closeout of the project. Address staff reassignment, archiving of project materials, recording of metrics, holding a lessons learned meetings, etc.]

4 Technical Process Plans

[This section describes the technical approaches to be used on the project. Depending on the size and scope of the project, these plans may be incorporated directly in this section, or each section may simply contain a reference to an external plan.]

4.1 Process Model

[Describe the product development life cycle that the project will use (waterfall, Agile, etc.) If an iterative or incremental model is used, identify as best you can, clear milestones and provide the planned iteration number for each task in the work breakdown structure. The project's Gantt chart should reflect the model used.]

4.2 Configuration Management Plan

[This section could contain the configuration management plan for this project. For any but very small projects, this section should refer to a separate document. The CM plan should describe the activities and methods used for configuration identification, control, status accounting, auditing, and release management.]

4.3 Quality Assurance Surveillance Plan (QASP)

[This section could contain the quality assurance surveillance plan for this project. For any but very small projects, this section should refer to a separate document. The QASP should describe the activities and methods used to build a high-quality product by the sensible application of an appropriate process.]

4.4 Documentation Plan

[Describe the plans for creating system documentation deliverables, etc. List the documents to be created. For each type of documentation, describe: any pertinent template, standard, or conventions to be followed; who will prepare it; who will review it; and information about recipients, distribution, or storage. A table like the one shown below is a convenient way to record this information.]

Document	Template	Created By	Reviewed By	Target Date	Distribution

4.5 Process Improvement Plan

[This section describes plans for assessing the project and its processes, determining areas for process improvement, and implementing improvement plans without seriously disrupting an ongoing project. Each project should address at least one process improvement activity, selected from the following list:

- New procedure or a new example of how to implement an existing procedure or process
- Improved procedure or template based on lessons learned
- New tool or improved use of a current tool]

5 Attachments

Exhibit 6: Recommended Labor Categories for IT Support Contract

Labor Category	Description	Education Level	Degree In	Years of Experience
Analyst, Junior	A Junior Analyst must have experience with data gathering and creating reports to display data using common office automation tools.	AA or 2 year technical school	Business Discipline	0 years
Application Administrator	An Application Administrator has experience in managing the daily routine operations and maintenance of IT software system applications. Must be able to communicate with end users and understand issues related to end user applications.	AA or 2 year technical school	Computer Science, Engineering, Math, Graduate of Technical School, or equivalent	5 years
Application Analyst	An Application Analyst must have experience in gathering data regarding performance, cost, and compatibility attributes of commercial off-the-shelf software and development applications. They must also have experience in the study of application and the consumption of system resources and be able to detect problems with software applications.	Bachelor's Degree	Computer Science, Engineering, Math, or equivalent	5 years
Application Analyst, senior	A Senior Application Analyst must have experience in conducting analysis of various commercial off-the-shelf computer applications and internal applications and identify strengths and weaknesses for use in different environments. They must also have experience in the study of application and the consumption of system resources and be able to detect problems such as dead locks, run away jobs as well as security issues. A Senior Application Analyst must be able to direct and guide junior members of a project team and give feedback to developers.	Bachelor's Degree	Computer Science, Engineering, Math, or equivalent	10 years
Applications/Systems Analyst, Senior	A Senior Applications/System Analyst must have extensive IT experience in the analysis, design, and integration of information systems and commercial-off-the-shelf (COTS) and development software. Must be well versed in understanding structured analysis and design methodologies for the translation of systems requirements from business needs with a proven track record. Must be able to evaluate cost factors and risk.	Bachelor's Degree	Computer Science, Engineering, Math, or equivalent	5 years
Architect	Experience in design and development of IT architecture. Experience in creating diagrams and documentation with all components that comprise systems including network topology.	Bachelor's Degree	Computer Science, Engineering, Math, or equivalent	5 years

Labor Category	Description	Education Level	Degree In	Years of Experience
Architect, senior	Extensive experience in design and development of IT architecture. Experience must include a wide range of work in creating diagrams and documentation with all components that comprise IT systems including network topology.	Master's Degree	Computer Science, Engineering, Math, or equivalent	10 years
Architecture Analyst	An Architecture Analyst has experience in gathering and compiling data necessary to analyze software architecture. Can evaluate data to quickly identify problems, issues and gaps. Is able to recommend solutions.	Bachelor's Degree	Computer Science, Engineering, Math, or equivalent	5 years
Architecture Analyst, Senior	A Sr. Architecture Analyst has vast experience in coordinating with program and project leaders to analyze system architecture. Is able to thoroughly identify strategies for addressing requirements, risks, and issues. Is able to conduct detailed trade-off analysis of requirements against fiscal, schedule, and performance issues. Is able to quickly resolve issues and create architectural vision.	Master's Degree	Computer Science, Engineering, Math, or equivalent	10 years
Business Analyst, Senior	A Senior Business Analyst has experience in the effective use of data provided by cost estimators to create overall cost versus benefit assessment while considering functional benefits, technical performance, risks, and schedule concerns.	Bachelor's Degree	A Bachelors Degree in Operations Research, Mathematics, Computer Science, Cost Accounting or related scientific or technical discipline.	5 years
Business Process Analyst	A Business Process Analyst must have experience in the analysis of IT business and information environment, activities, and events. Must experience in finding trends, errors and reviewing data with report writing skills.	Bachelor's Degree	Business Discipline	5 years
Business Process Expert	A Business Process Expert has experience in the analysis of IT business and information environment, activities, and events. Must have deep knowledge of data analysis, trend finding, patterns and be able to identify risks and offer solutions for improving processes that will improve overall agency performance..	Master's Degree	Business Discipline	10 years
Business Process Re-engineer	A business process reengineer must have experience in the analysis of IT business and information environment and be able to effectively recommend and implement improvements to the business and data architectures that will improve overall agency performance.	Bachelor's Degree	Business Discipline	10 years
Business Process Technician	A Business Process Technician must have knowledge of IT business and information environment and be able to implement recommended improvements to the data architectures and networks in support of the business environment.	AA or 2 year technical school	Business Discipline	

Labor Category	Description	Education Level	Degree In	Years of Experience
Configuration Analyst	The Configuration Analyst has experience in reviewing proposed configuration changes, identifying areas potentially impacted, summarizing changes and impacts and presenting them in a clear and concise manner. Ability to Track processing methodologies to ensure that changes are accurately reflected in documentation and logs.	Bachelor's Degree	Computer Science, Engineering, Math, or equivalent	2 years
Configuration Manager	A Configuration manager must have experience in management configuration programs to ensure that all proposed and actual changes to program technology and documentation are properly staffed, approved, and tracked. Must facilitate the change Notification process used for updating product. Must ensure notification of performing organizations or project teams of change activity.	Bachelor's Degree	Computer Science, Engineering, Engineering Management, Math, or equivalent	5 years
Configuration Manager, Senior	A Senior Configuration Manager must have experience and be able to develop, document, and implement detailed plans for ensuring configuration control for IT programs, projects, and tasks. When issues arise, must be able to identify and implement solutions. Maintain thorough records and documentation to ensure accurate product builds, part ordering and product and/or software updates.	Bachelor's Degree	Computer Science, Engineering, Engineering Management, Math, or equivalent	10 years
Cost Estimator/Analyst	A Cost Estimator/Analyst has the ability to gather and compile cost data to accurately depict purchase cost, operations cost and overall life cycle costs of products and systems.	Bachelor's Degree	A Bachelors Degree in Operations Research, Mathematics, Computer Science, Cost Accounting or related scientific or technical discipline.	5 years
Customer Service Manager	A Customer Service Manager has experience in planning, implementing, and managing customer service systems. Is able to handle customer satisfaction issues. Has experience in reviewing data to identify trends and issues. Is able to effectively report trends to system program teams.	Bachelor's Degree	General	5 years
Cyber Security Engineer	A Cyber Security Engineer has IT experience with Cyber Security Policy and threat mitigation. Must be well versed in Cyber Security Tools, network topologies, intrusion detection, PKI, and secured networks. Must have familiarity and experience in the implementation of cyber security regulations.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	10 years
Cyber Security Specialist, Sr	A Senior Cyber Security Specialist has IT experience with Cyber Security Policy and threat mitigation. Must have knowledge and experience in Cyber Security Tools, network topologies, intrusion detection, PKI, and secured networks. Knowledge of implementation and security levels and roles necessary for successful deployment.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	10 years

Labor Category	Description	Education Level	Degree In	Years of Experience
Database Administrator	A Database Administrator has experience in managing the routine operations and maintenance of databases and ensuring their reliable and efficient performance.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	2 years
Database Administrator, Senior	A Senior Database Administrator can create, implement and manage expansive database administration programs. Has experience in reviewing database performance trends, and identifying opportunities for improvement.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
Database Architect	A Database Architect is able to clearly identify goals for data management. Can effectively translate user needs to database design. Has experience in creating database management processes and detailed documentation.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	2 years
Database Architect, Senior	A Senior Database Architect has vast experience in assessing various alternative products, tools, and approaches for data management. Is able to clearly define risks and benefits of various approaches for a given need. Is able to create overarching strategies for design	Master's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
Deployment Manager	A Senior Deployment Manager must have experience in leading a team in the fielding of IT systems, networks, hardware and software of both a simple and complex nature. Must have extensive knowledge in the creation of deployment plans, the creation of cost, schedule and performance expectations based on input from all team members. Must be able to identify all activities required in the near, mid and long term phases of a program. Must have experience in a wide variety of environments and equipment. Must have experience in planning in order to ensure that deployment can be performed on schedule and with the available resources.	Bachelor's Degree	computer science, engineering management or other engineering or technical discipline is required.	10 years
Developer, Junior	A Junior Developer must have experience in the creation of error free software code under the direction and supervision of senior software development managers. Must have experience in both windows and web development environments. Must be able to write software documentation.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	0 years
Developer, Senior	A Senior Developer must be able to create logical and functional software code in a variety of languages. Must have experience in understanding and articulating the benefits and risks associated with different coding languages in different functional environments. Must have experience reacting to problems and correcting the program as necessary.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	8 years

Labor Category	Description	Education Level	Degree In	Years of Experience
Development Manager	The Development Manager must have experience creating work breakdown structures and development of program schedules and assigning software development team personnel to tasks. Must have experience in the tracking resources and expenditures and in ensuring program success.	Bachelor's Degree	computer science, engineering management or other engineering or technical discipline is required.	8 years
Disaster Recovery Manager	A Disaster Recovery Manager has experience in creating, implementing, and managing disaster recovery programs. Is able to create documentation, processes, and procedures related to the position. Can conduct meaning training. Can conduct thorough disaster recovery testing.	Bachelor's Degree	computer science, engineering management or other engineering or technical discipline is required.	10 years
Engineering Analyst	An Engineering Analyst has experience analyzing specific aspects of a given system and/or product's architecture, design, coding, and performance. Is able to identify issues and/or risks and document specific sources.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	0 years
Engineering Analyst, Senior	The Senior Engineering Analyst has experience in coordinating with various individuals such as program and project leaders to analyze system and/or product architecture, design, coding, and performance. Is able to identify strategies for addressing requirements, risks, and issues. Is able to conduct trade-off analysis of requirements against fiscal, schedule, and performance issues. Also has demonstrable skills in resolve problems as related to their field.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	10 years
ERP Programmer	An ERP Programmer has experience in designing, coding, developing, testing and documenting enterprise resource programs using advanced technologies, such as IP or web-based technology. Technologies include HTML, CGI applications, PERL or Javascript, and Java. Does modifications to, and maintenance of, existing programs and procedures. May be required to create procedural forms and documentation, including flow charts and system documentation. May lead a small team of programmers on a project.	Bachelor's Degree	Computer Science, Engineering, Math, or equivalent	4 years
ERP Programmer Senior	A Senior ERP Programmer has extensive experience in designing, coding, developing, testing and documenting enterprise resource programs using advanced technologies, such as IP or web-based technology. Technologies include HTML, CGI applications, PERL or Javascript, and Java. Does modifications to, and maintenance of, existing programs and procedures. May be required to create procedural forms and documentation, including flow charts and system documentation. May lead a large team of programmers on a large and complex project.	Bachelor's Degree	Computer Science, Engineering, Math, or equivalent	7 years

Labor Category	Description	Education Level	Degree In	Years of Experience
ERP Systems Analyst	Duties: Applies expert systems analysis and design techniques to complex enterprise resource systems in an area. Has broad knowledge of data sources/flow, interactions of complex systems, and capabilities/limitations of systems software and computer equipment. Establishes framework of new computer systems from feasibility studies to post implementation evaluation. Recognizes probable conflicts and integrating diverse data sources. Produces innovative solutions for a variety of complex problems. Prepares overall project recommendations.	Master's Degree	Computer Science, Engineering, Math, or equivalent	7 years
Financial Technician, Junior	The Junior Financial Technician must have experience in the Input of financial data using an automated financial management tool and have experience in data validation following input. Must have experience in creating standard and ad hoc reports as directed by senior staff.	High School or GED	N/A	0 years
Functional Analyst	A Functional Analyst must have experience working with customers, users and project leads in analyzing, designing, implementing and supporting IT business applications and systems. A functional analyst has experience in having primary responsibility for individual projects and systems. Must have experience in testing functionality and matching to requirements.	Bachelor's Degree	Degree in engineering, or a related scientific or technical discipline is required.	5 years
Functional Analyst, Senior	A Senior Functional Analyst must have experience working with customers, users and project leads in analyzing, designing, implementing and supporting a wide variety of IT business systems covering many diverse applications such as healthcare and financial systems.	Master's Degree	Degree in engineering, or a related scientific or technical discipline is required.	10 years
Functional Area Analyst	The Functional Area Analyst must have experience with the analysis of business, functional, technical, activities, and events. Analyst is responsible for working with users and customers to document and strategize for process improvements for current business processes (business process reengineering). Responsible for providing market research on conditions that impact the overall operational efficiency of an organization and identifying symptoms for process improvement.	Bachelor's Degree	Degree in engineering, or a related scientific or technical discipline is required.	5 years
Functional Area Analyst, Senior	The Senior Functional Area Analyst must have significant experience with the analysis of business, functional, technical, activities, and events. Analyst is responsible for working with users and customers to document and strategize for process improvements for current business processes (business process reengineering). Responsible for providing market research on conditions that impact the overall operational efficiency	Master's Degree	Degree in engineering, or a related scientific or technical discipline is required.	10 years

Labor Category	Description	Education Level	Degree In	Years of Experience
	of an organization and identifying symptoms for process improvement. Must have deep knowledge of process and risks.			
Hardware Installation Technician	An Hardware Installation Technician has experience in following the guidance and instruction by installation engineers and deployment managers in the commissioning of IT hardware. Able to identify problems and execute solutions. Has experience in a variety of different installation environments.	AA or 2 year technical school	Computer Sciences or Computer Technologies	0 years
Installation Engineer, Senior	A Senior Installation Engineer has experience in Creating plans and approaches for executing product installation. Has extensive experience in working with site managers in execution of installations. Has strong background in installing a variety of IT systems, networks, hardware and software in a variety of complex and simple installation sites. Has ability to identify potential risks, create strategies for mitigating risks. Oversees all aspects on an IT deployment ensuring full commissioning is completed.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	10 years
Installation Technician	An Installation Technician has experience in following the guidance and instruction by installation engineers and deployment managers in the commissioning of IT systems, networks, hardware and software. Able to identify problems and execute solutions. Has experience in a variety of different installation environments.	AA or 2 year technical school	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
Integration Engineer	An Integration Engineer must have experience in the coordination and integration of multiple IT systems/subsystems into an operational unit, ensuring full functional and performance capabilities are retained. The integration engineer must be experienced in introducing new hardware or software into a new or existing environment while minimizing disruption and mitigating risks.	Bachelor's Degree	Computer Science, Engineering, Math, or equivalent	5 years
Integration Engineer, Senior	A Senior Integration Engineer must have experience in the creation of strategies and plans for integration of multiple IT systems/subsystems into an operational unit, ensuring full functional and performance capabilities are retained. The integration engineer must be experienced in introducing new hardware or software into a new or existing environment while minimizing disruption and mitigating risks.	Bachelor's Degree	Computer Science, Engineering, Math, or equivalent	10 years

Labor Category	Description	Education Level	Degree In	Years of Experience
Network Administrator	A Network Administrator has experience in managing, monitoring and configuring the routine operations and maintenance of computer systems in a variety of different networks to include high volume/high availability systems. Must have experience responding and resolving problems quickly. Must have the skills to implement agency policy regarding computer access and implement firewalls.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	2 years
Network Administrator, Senior	A Senior Network Administrator has the skills of the Network Administrator but is able to work with multiple teams f administrators involving multiple diverse networks at both the enterprise and local level. Has the knowledge to create plans to assure effective management, operations, and maintenance of systems and/or networks. Is cognizant of all agency policies regarding computer access and firewall and network protection technologies and creates the plans to implement.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
Network Engineer	The Network Engineer plans, supports and evaluates complex existing network systems and make recommendations for resources required to maintain and/or expand service levels. This resource will provide highly skilled technical assistance in network planning, engineering and architecture. Also provides and develops technical standards and interface applications; identifies and evaluates new products; provide solutions for network problems. Interfaces with internal/external customers and vendors to determine system needs. Plans and incorporates how new network resources and applications will exist on the network. Provide monthly metrics for network availability and bandwidth usage as well as other metrics as requested. Responsible for network capacity planning. Use network management tools to discover, map and maintain the network. Responsible for network equipment OS and version upgrades. Responsible for conducting research of new technologies and implementation strategies. Monitor and maintain network interfaces to insure its highest level of performance and makes modifications and enhancements as needed. Responsible for documenting procedures and keeping network diagrams and related material up to date. Handle escalated user problems, questions, and request on network issues. Work with other groups within IS to resolve network related issues as needed. Leads and directs work of other Network Engineers.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years

Labor Category	Description	Education Level	Degree In	Years of Experience
Process Analyst, Senior	A Senior Process Analyst has experience gathering, compiling, and analyzing business process data specifically as it relates to IT systems and the business systems that rely on IT; Has a thorough understanding on how to identify trends, errors, and missing data. Can reliably create alternate depictions of data to identify and highlight issues. Can clearly summarize findings in summary reports. Can create and document to-be process benefits in graphic, narrative and oral formats.	Bachelor's Degree	General	10 years
Project Manager	A Project Manager must have experience managing Information Technology related projects. Must be well versed in life cycle and project management methodologies. Must have experience in tracking costs, schedule and performance progress. Must be able to identify and mitigate risks.	Bachelor's Degree	Engineering, Computer Science, Systems, Business or related scientific /technical discipline,	10 years
Quality Assurance Manager	The Quality Assurance Manager must have experience in creating and implementing a detailed plan to ensure overall quality of all IT products, services and systems. They must have experience in resolving all project or program release problems and take corrective action, escalating as needed, to resolve and achieve results. They must also have experience in assuring the viability, functionality and effectiveness of essential tools.	Bachelor's Degree	Engineering, Computer Science, or related scientific /technical discipline,	10 years
Release Manager	A Release Manager must have experience in management of individual releases of software, hardware or other system components. Must have experience in coordinating with QA, Development, packaging and hardware teams. The release manager must have experience in documenting releases, risks and in maintaining the schedule of planned releases.	Bachelor's Degree	Engineering, Computer Science, or related scientific /technical discipline,	10 years
Security Analyst	A Security Analyst has experience in the concepts, terms, processes, policy and implementation of information security. Must have experience and knowledge of the latest security measures at all stages of an information system life cycle. Must have the ability to solve complex problems involving a wide variety of information systems. Must be able to understand and differentiate between critical and non critical systems and networks	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	
Security Analyst, Senior	A Senior Security Analyst has experience in managing teams of security analysts. Is able to effectively leverage vast detailed knowledge and familiarity with security discipline. Has thorough knowledge of security principles, concepts, policy and	Master's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years

Labor Category	Description	Education Level	Degree In	Years of Experience
	regulations. is able to identify risks in security systems and work with technical experts to resolve security issues. Possess ability to identify key concepts, factors and risks based on conversations and document these in clear and concise narrative or graphic reports.			
Software Engineer	A Software Engineer has experience in developing computer software code. Should have experience in a variety of software programming languages. Should have experience in a variety of business systems and applications. Also has experience in designing, testing, debugging and documenting software.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	
Software Engineer, senior	A Senior Software Engineer has extensive experience and knowledge to design, code, test, debug and document software in a variety of programming languages. Has the knowledge of the latest programming languages and techniques.. Has extensive experience in creating strategies for developing IT systems and applications. Has experience in evaluating alternative approaches and selecting optimal approaches.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
System Administrator	A System Administrator must have experience in conducting routine system administration tasks and logging data in system admin logs. Systems administrators are responsible for maintaining system efficiency. Experience in maintaining troubleshooting a wide variety of systems and networks to include high volume/high availability systems. Must have knowledge on a number of debugging protocols and processes. Must be able to troubleshoot problems and issues identified by customers and implement corrective actions quickly.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	3 years
System Administrator, Senior	A Senior System Administrator has the thorough knowledge to create plans to assure effective management, operations, and maintenance of systems and/or networks. Manages teams of system admins and is able to prioritize work and identify high risk critical problems and dedicate appropriate resources. Ha extensive knowledge of a wide variety of systems and networks to include high volume/high availability systems.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
System Architect	A System Architect must have experience and understand the relationship between applications, operating systems, hardware and software. Must have experience in creating a network architecture that takes all factors of a network into consideration such as functional requirements, technical considerations, business processes and end users. Must have experience in creating a wide variety of	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years

Labor Category	Description	Education Level	Degree In	Years of Experience
	IT system architectures that are beneficial and can be implemented. Must have experience in total system design including networks.			
Systems Engineer	A Systems Engineer provides technical support in system architecture, system design, system integration and technical management. Assists in providing technical input to the systems engineering process. Provides requirements analysis. May prepare and present systems assurance reviews. Identifies requirements and deficiencies in hardware and software products. Advises customer in product selection and use, capacity planning operations and performance management.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
Systems Engineer, Senior	A Senior Systems Engineer provides technical support in system architecture, system design, system integration and technical management. Assists in providing technical input to the systems engineering process. Leads teams in developing application and technical plans. Guide customers in the installation and use of strategic products through education and guidance, first-use and tuning assistance problem solving and critical situation resolution.	Master's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	10 years
System Installation Engineer	An System Installation Engineer has experience in executing the deployment of simple and complex IT systems and ensuring that the systems are functioning properly upon installation. Has the ability to solve issues that arise on site. Has experience in a variety of deployment environments and execute based on written and verbal instruction.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
System Security Administrator	A System Security Administrator has experience in managing security programs for products, tools, or programs. Is able to ensure that records are maintained, security updates are promulgated, and staff are properly briefed.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
System Security Engineer	A System Security Engineer has experience in reviewing security plans, processes, and strategies to identify areas for improvement or update. Has an understanding of security regulations, and directives for organizational and agency level requirements. Has experience in designing and implementing security requirements into products and systems.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
Test Engineer	A Test Engineer must have experience in the coordination and execution of test events in accordance with approved test plans, procedures and scripts. Must have knowledge and skills to ensure that test environments are set up accurately. Must be able to create test reports. The	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years

Labor Category	Description	Education Level	Degree In	Years of Experience
	test engineer must be able to test IT hardware, software, systems and networks.			
Test Engineer, Senior	A Senior Test Engineer must have experience working with developers, end users and organizations to create test plans and test scripts. Coordinate with test sites and other team participants to plan test events. experience in creating reports. Tracks problems and reports on errors that are identified. Must have experience with configuring necessary hardware and operating environments as needed to complete assigned testing. Must have comprehensive technical expertise on IT products, operating systems, software, hardware, systems and networks and specialized environments. Must have experience in writing or assisting in the development of test plans and test procedures. Must manage the defect database under the guidance of senior QA engineers.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
Test Manager	A Test Manager must oversee all test events and be able to manage multiple test events defining and staffing these test events with appropriate resources. Must coordinate with developers and functional end users to create test plans and test scripts. Coordinate with test sites and other team participants to plan test events. Approves test reports. Monitors and updates bug reports as needed including bug report closure. Must have experience with configuring necessary hardware and operating environments as needed to complete assigned testing. Must have technical expertise on specific products, operating systems and specialized environments. Must have experience in writing or assisting in the development of test plans and test procedures. Must manage the defect database under the guidance of senior QA engineers.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	10 years
Trainer	A Trainer must have experience in conducting training programs, presenting training materials, and interacting directly with students. Must have experience in conducting training on IT software, hardware, systems and networks. Must be able to present training classes using a variety of different media and tools.	AA or 2 year technical school	General degree	3 years
Trainer, senior	A Senior Trainer must have experience in coordinating multiple training programs, conducting live training, including complex IT technical training and utilizing multiple training techniques and tools with various media with multiple student skill levels and class	Bachelor's Degree	General degree	10 years

Labor Category	Description	Education Level	Degree In	Years of Experience
	sizes.			
Web Application Analyst	A Web Application Analyst has experience in gathering and compiling data necessary to analyze a multitude of web products. Can evaluate data to quickly identify problems, issues and gaps. Is able to recommend solutions.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	2 years
Web Designer	A Web Designer must have experience in the design of web pages/portals, ensuring that performance, functionality, ease of use, and security factors are given appropriate consideration. Should have experience in working with customers on their requirements and incorporate into the web design. Should have knowledge of a variety of tools and languages such as Flash, Silverlight and other COTS products for the design of complex web pages.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	2 years
Web Designer, senior	A Senior Web Designer should have extensive experience with the use multiple different web tools to determine best approach for web page creation, operations, management, and maintenance. Create overall management strategy and oversee implementation. Should have up to date knowledge on all current software tools available. Should have extensive experience in working with customer requirements and creating web sites. The senior web designer should be able to assure the over all look and feel of a web site and create a management strategy for keeping content fresh and up to date.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	5 years
Web Manager	The Web Manager must have experience in the management of the content of web pages based on input from customer. The Web manager should optimize page loads, templates, and have knowledge of the web environment. The Web manager should have experience ensuring that web content is appropriate and has not been compromised.	Bachelor's Degree	computer science, electronics engineering or other engineering or technical discipline is required.	8 years
Web Technician, Junior	A Junior Web Technician must have experience in the creation of web pages based on direction from functional users and designed by web designers. Should have knowledge of HTML and use of automated tools for web page construction.	AA or 2 year technical school	computer science, electronics engineering or other engineering or technical discipline is required.	0 years